





This course explains how to service the Soleil-PJ2.5 short-throw projector. To learn about this machine, please study the user’s guide and the field service manual in addition to this TTP.



This section provides an overview of the machine, and the options that can be installed.


 **What Models are there in the Series?**



imagine. change.

- Soleil-PJ2.5a (Y0A1): PJ WX4152
 - 3500 lumens, WXGA resolution
- Soleil-PJ2.5b (Y0A2): PJ WX4152N
 - 3500 lumens, WXGA resolution, network capability
- Soleil-PJ2.5d (Y0A3): PJ WX4152NI
 - 3500 lumens, WXGA resolution, network and interactive capabilities

3

No additional notes


 **What Type of Projectors are They?**




- These are DLP projectors.
- These are 'very short-throw' models, for use in a tight space.
 - 31.7 cm for 80-inch display
 - 18.8 cm for 48-inch display
- The Y0A1 cannot be used as a network projector.
 - This model does not work with network utilities, or projector management utilities.
- @Remote is not available for any of these models.

4

No additional notes




Important Changes from the Predecessor Model


imagine. change.


- Brightness of the lamp increased from 3300lm to 3500lm.
- Contrast increased from 1:5000 to 1:13000
- It is possible to project downwards onto a table. A special jig is required to install the projector.
- Network connectivity changes - different board but same shape and same disassembly procedure
 - Support for Miracast (same as Altair PJ2, and additional new functions)
 - New QuickProjection (QP) function
 - 1) Discussion Mode
 - 2) New QP requires an installation. But once installed, no admin right is required
 - Enhanced wireless LAN security (same as Altair PJ2)
 - Support for Wireless/Wired simultaneous access (same as Altair PJ2)
 - Support for additional movie format (same as Altair PJ2)

5

No additional notes



Main Specifications



imagine. change.

	Soleil-PJ2.5a	Soleil-PJ2.5b	Soleil-PJ2.5d
Type	DLP		
Resolution	WXGA		
Screen Size	48 – 80 inches		
Contrast Ratio	13000:1		
Brightness	3500 lm		
Lamp Type	High-pressure mercury lamp Standard: 250W (3,500hrs) Eco: 150W (5,000hrs)		
Power Consumption	< 313 W (normal), < 208 (Eco)		
Wired LAN	No		Yes
Wireless LAN	No		Yes
USB Type A (for image projection)	No		Yes
Interactive ready	No		Yes
Miracast	No		Yes
PJLink	No		Yes
@Remote	No		

All models have a USB mini-B connection for service mode.

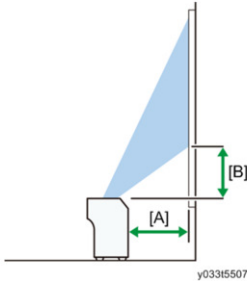
Wired and wireless LAN can operate simultaneously.

Red text indicates important changes from the Soleil-PJ2 series.

Projection Distance

RICOH

imagine. change.





Projection size	[A] Projection distance	[B] Projection height
48 inches	12cm (4.6 inches)	9cm (3.6 inches)
60 inches	17cm (6.5 inches)	12cm (4.5 inches)
80 inches	25cm (9.8 inches)	16cm (6.1 inches)

y033t5507

7

No additional notes


 **Consumables and Options**


imagine. change.


- PJ Replacement Lamp Type 11 (Y216)
- Replacement Air Filter Type 4 (Y217)
- High Contrast Screen Type 1 (Y119)


8

No additional notes

	Low Energy Consumption	RICOH imagine. change.
<ul style="list-style-type: none">▪ 3,500 hour lamp life and lower power consumption in Eco mode▪ 0.3W power consumption in standby mode		
9		

No additional notes

 **Reliability Information**



imagine. change.


- Average monthly projection time: 58.3 hrs/month
 - 2.65 hrs/day x 22 working days/month
- Failure Rate
 - 1st year: 0.00256 cases/unit/month
 - 2nd year: 0.00305 cases/unit/month
 - 3rd year: 0.00387 cases/unit/month
 - The failure rate of a projector increases with its total power-up time. This is due in part to the failure characteristics of optical engines in projectors.
- Lamp Life
 - Normal Mode: 3,500 hrs
 - Eco Mode: 5,000 hrs

10

No additional notes

11


 **Lamp Near-end/End Alerts**




- There is no near-end alert.
 - The lamp end alert occurs when the machine calculates that the life time has expired.
 - If used in Normal Mode only, the alert appears after 3,500 hrs projection time
 - If used in Eco Mode only, the alert appears after 5,000 hrs projection time
 - If the user switches between modes, the machine calculates when to display the alert based on how long the lamp was used in each mode.

12

No additional notes


 **Disposal of Broken Lamps**


imagine. change.

- Projector lamps normally contain mercury vapour.
- These lamps can rupture due to impact or being used longer than their life expectancy.
 - The time that the breakage will occur differs widely for each lamp and its circumstances of use.
- These lamps must be disposed of in accordance with local environmental regulations.

13


No additional notes

	Operation at High Altitude	RICOH imagine. change.
<ul style="list-style-type: none">▪ In a high-altitude location (higher than 1500 m above sea level) where air is thin, cooling efficiency is reduced so use the projector with [High Altitude Mode] turned [On].		
		14

No additional notes



This section provides an overview of the machine’s most important features, with emphasis on the new ones.

 Basic Features	RICOH imagine. change.
<ul style="list-style-type: none">▪ This product can be installed by users.▪ This product is designed for user maintenance. Regular on-site maintenance is not needed.▪ There is no display panel, but LEDs show the symptoms for troubleshooting (blinking/lit, number of times the LEDs blink, etc).▪ A service mode is available.	

No additional notes

■ Projecting onto a Table



- The projector is installed on a stand as shown above, and tilted down at a 90 degree angle.

17

It is the customer's responsibility to procure and install the stand. Marketing will assist customers who wish to install a stand.

Simultaneous Wired and Wireless LAN


RICOH

imagine. change.


- When projecting from a PC via network, we can connect via both a wired LAN connection and a wireless LAN connection, without changing the setting screen.
- For example, we can connect via adhoc temporarily to a projector which is connected via a local network with wired LAN.

18

No additional notes




Wireless LAN Encryption



imagine. change.

- Compatible with WPA/WPA2-EAP for improved security

19

No additional notes

 **Device Management (PJ2.5b and d)**


imagine. change.

- @Remote
 - @Remote is NOT available on this model.
- Crestron
 - Crestron is a network device management environment that is similar to @Remote. It is a popular standard solution worldwide.
- AMX
 - AMX is a network device management environment that is similar to @Remote and Crestron. It is also known worldwide as a standard solution.


20

No additional notes

4-in-1 Projection

RICOH

imagine. change.



The diagram illustrates the 4-in-1 Projection feature. A large screen at the top displays a composite of four different Windows desktops. Below the screen is a white Ricoh projector. Four laptops are positioned around the projector, each with a blue arrow pointing towards it, indicating that content from all four laptops is being projected onto the screen simultaneously.

- Selecting “Discussion mode” in Quick Projection allows you to project from up to 4 PCs at the same time

21

No additional notes

Remote Whiteboard Sharing

imagine. change.

- The projector can be connected with up to 4 units of IWB D5500 or D5510.
- This requires “Interactive Whiteboard Remote Viewer Type 1” in the PC.

No additional notes

 **Miracast**






y0a1a0019


- PJ WX4152N/WX4152NI are Miracast compatible.
- You can display the screen of a mobile terminal such as a smart phone or a tablet on the projector screen with Miracast.
- Also, you can display the video or audio sent from the mobile terminal on the projector screen when you connect the projector to a DLNA compatible device.

23

It is not necessary to install an application or make special settings.



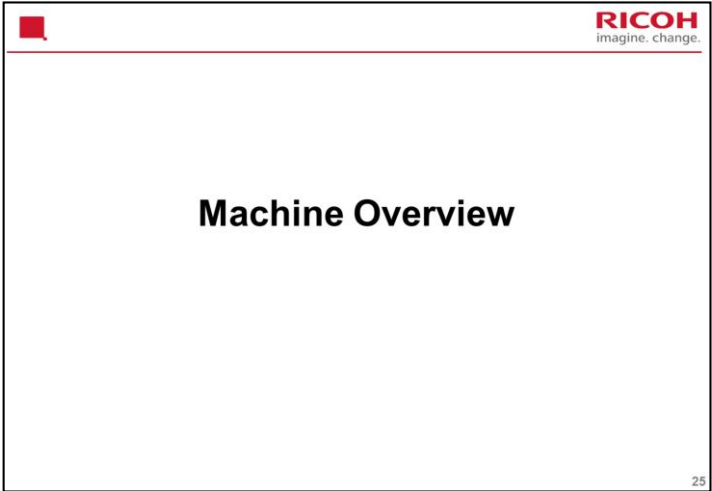
Power-up/Power-down


imagine. change.

- **Quick power ON**
 - Power is automatically on, when the interface cable is connected to the projectors. No need to press the power button.
- **Quick start, Quick shut down**
 - The start screen appears 3 seconds after the power is turned on, and you can start the conference and the presentation instantly.
 - You can shut the projector down and put it away by removing the power cord without waiting for it to cool down.
- **Lamp power down when no signal**
 - The projector lowers the lamp power 30 seconds after the input signal disappears.

24

No additional notes



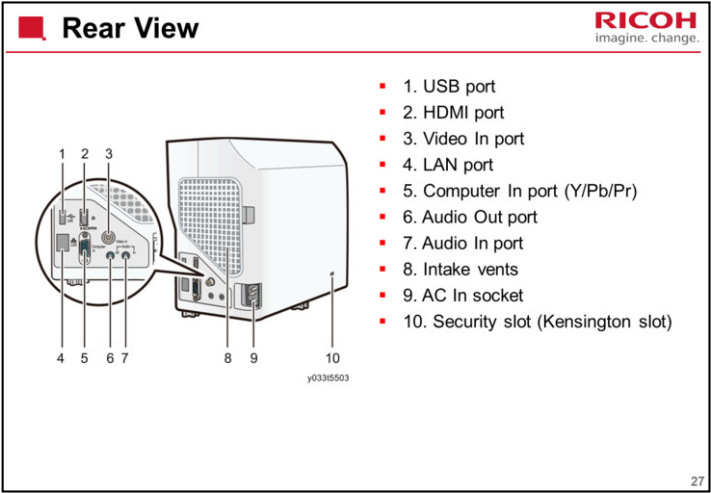
This section provides an overview of the machine’s components.

Front View

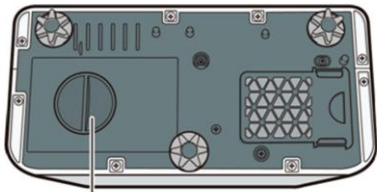
- 1. Speaker
 - Outputs the audio input from an external device.
- 2. Lamp indicator
 - Shows the status of the lamp.
- 3. Temp indicator
 - Shows the status of the temperature inside the projector.
- 4. Remote control receiver
 - Receives the signal from the remote controller.
- 5. Adjustable feet
 - Adjusts the angle of the projection.
- 6. Focus lever
 - Adjusts the focus of the image.
- 7. Exhaust vents
 - Do not obstruct the vents. Doing so risks fire caused by overheated internal components.

y03315502

No additional notes



- 1. USB port
For connecting a USB memory device or USB device cable.
- 2. HDMI port
For inputting HDMI signals from a computer or video player.
- 3. Video In port
For inputting image signals from a video player.
- 4. LAN port
- 5. Computer In port (Y/Pb/Pr)
For inputting RGB signals from a computer or component image signals (Y/Pb/Pr) from a video player.
- 6. Audio Out port
For outputting audio signals to an external speaker.
- 7. Audio In port
For inputting audio signals from a computer or video player.
- 8. Intake vents
For circulating air from the outside to cool the projector. Do not obstruct.
- 9. AC In socket
For connecting the power cord provided with the projector.
- 10. Security slot (Kensington slot)
For connecting an anti-theft cable.



A technical diagram showing the bottom view of a Ricoh projector. A line points from the number '1' to a circular lamp cover on the left side of the device. The device has a blue base with various components like fans, vents, and a speaker grille visible.

Bottom View

RICOH
imagine. change.

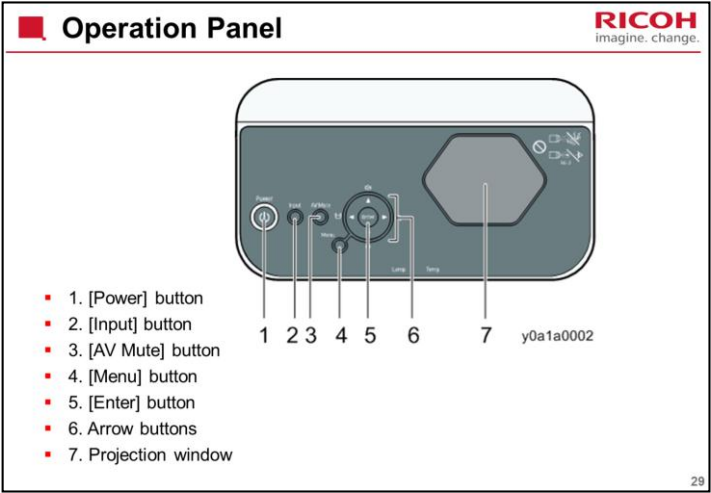
1

y033t5504

- 1. Lamp cover
 - Remove to replace the lamp.

28

No additional notes



1. [Power] button

Turns the projector on and off. You can confirm the status of the projector with the indicator.

On: Power is on.

Off: Power is off.

Flashing at long intervals: Standby.

Flashing at short intervals: Starting up or cooling.

2. [Input] button

Switches the signal input.

3. [AV Mute] button

Temporarily blanks the screen and mutes the audio.

4. [Menu] button

Displays the menu screen. Press it again to close the menu screen.

5. [Enter] button

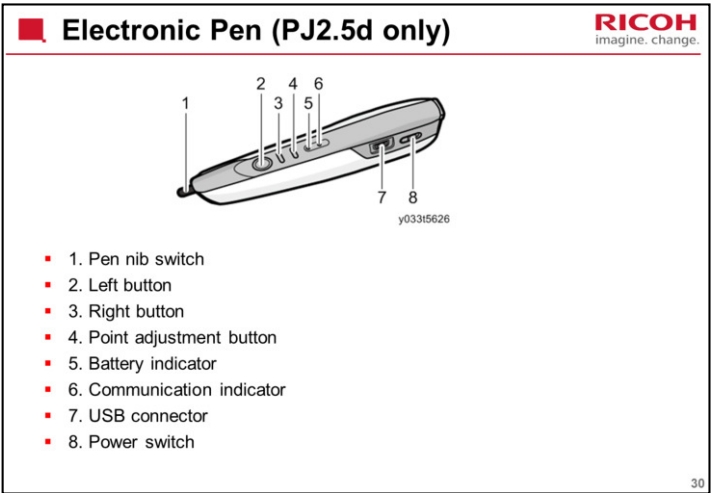
Enters the selected item or mode.

6. Arrow buttons

The left/right buttons are used to adjust the keystone distortion. The up/down buttons are used to adjust the volume. These buttons are also used to operate the menu screen and the value bar.

7. Projection window

Enlarges and projects the image.



1. Pen nib switch

Used to write, draw, and select operations on the projected screen. This switch is functionally equivalent to the left button of a computer mouse.

2. Left button

Similar to the left button of a computer mouse.

3. Right button

Similar to the right button of a computer mouse.

4. Point adjustment button

Used to adjust the point position of the pen nib when the pen is held in a different way. The standard position of the point is the center of the pen, and it moves each time this button is pressed. The order in which the point moves is as follows: up, down, and to the center.

5. Battery indicator

Indicates the battery status of the electronic pen.

The battery indicator keeps lighting while charging and goes off when the charge is completed.

6. Communication indicator

Indicates the communication status of the electronic pen.

This indicator flickers in red until the projector recognizes the electronic pen.


When the projector recognizes the electronic pen, the indicator lights up in green or flickers rapidly.


7. USB connector

Used to connect the electronic pen charge cable.

8. Power switch

Switches the power of the electronic pen between on and off.

 **Using the Interactive Functions - 1**



imagine. change.


- The interactive function allows you to operate a computer connected to the projector (Soleil-PJ2.5d only) directly on the projection screen.
 - You can also write and draw on a projected screen using the included software "RICOH PJ Interactive Software".
- To use the interactive function, you must use an RGB cable or an HDMI cable to connect the projector and computer.
 - You cannot use the interactive function if another type of cable is used for the connection.
- A wireless connection is used.
- The interactive function cannot be used when a screen is displayed on the Windows extended desktop.

31

This is available only in the Soleil-PJ2.5d.

The software supports Windows 10, and support for XP has been dropped.

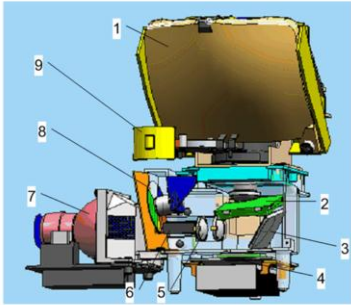
 **Using the Interactive Functions - 2**


imagine. change.

- To use the interactive function, the following settings are required.
 - Set Interactive Mode to [On].
 - Register the computer USB adapter to the projector.
 - Enable the projector to recognize the electronic pen.
 - Install RICOH PJ Interactive Software on a computer.
- These steps are explained in the Projector Installation Section of the service manual.

32

This is available only in the Soleil-PJ2.5d.



Optical Components of this Series

RICOH
imagine. change.

1. Free-form surface mirror: Allows this to be an ultra short throw projector

2. Concave Mirror

3. Cylinder Mirror

4. DMD (Digital Micro-mirror Device)

5. Relay lens

6. Light Pipe (also known as the Rod)

7. Mercury Lamp

8. Color Wheel

9. Focus Lever

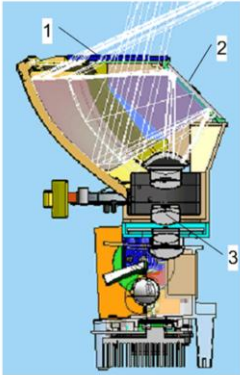
33

No additional notes

Optical Components of this Series

RICOH

imagine. change.



1. Dust Shield Glass

2. Mirror

3. Projection Lens

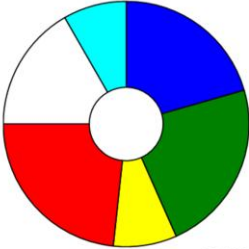
34

No additional notes

Color Wheel

RICOH

imagine. change.



In this series, the color wheel has cyan, yellow, and white sectors in addition to the usual red, green, and blue.

35

No additional notes

Component Layout - 1

RICOH

imagine. change.

The diagram shows an exploded view of the printer's internal components. The components are numbered as follows: 1. Control panel board (top front), 2. PSU (Main) (top center), 3. Lamp ballast (top right), 4. PSU (Sub) (top left), 5. DMD board (middle left), 6. Interface board (bottom left), 7. Wireless LAN module (PJ WX4152N/WX4152NI) (middle right), 8. Network board (PJ WX4152N/WX4152NI) (bottom right), 9. Main board (bottom center), and 10. Lamp Cover Open Sensor (bottom center, near the main board). The diagram is labeled with 'y03315625' at the bottom left and '36' at the bottom right.

1. Control panel board

2. PSU (Main)

3. Lamp ballast

4. PSU (Sub)

5. DMD board

6. Interface board

7. Wireless LAN module (PJ WX4152N/WX4152NI)

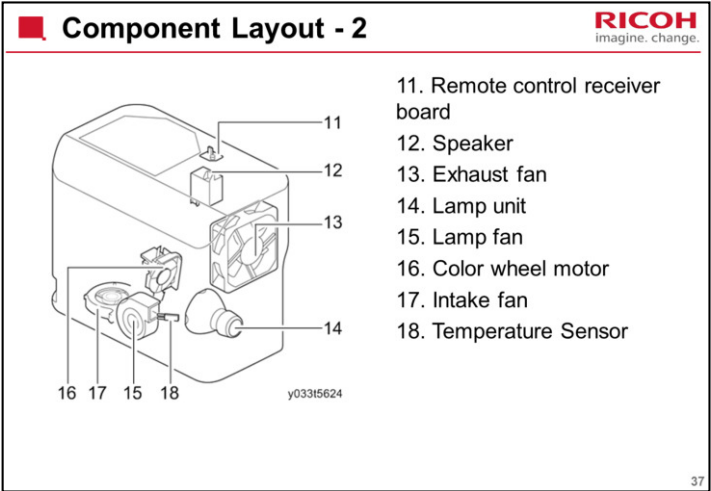
8. Network board (PJ WX4152N/WX4152NI)

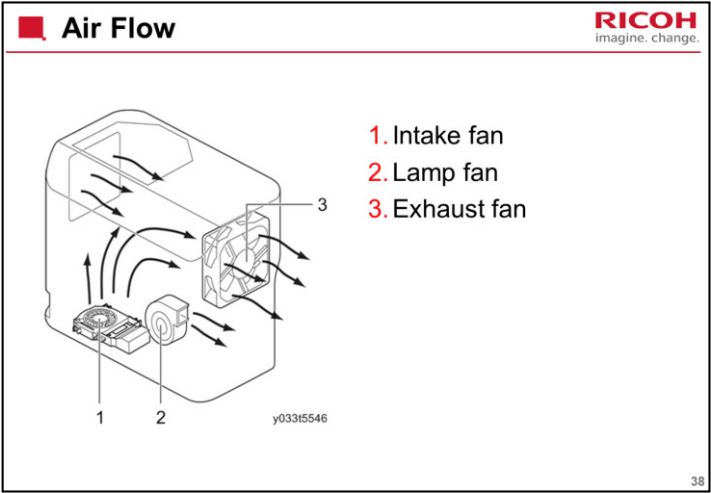
9. Main board

10. Lamp Cover Open Sensor

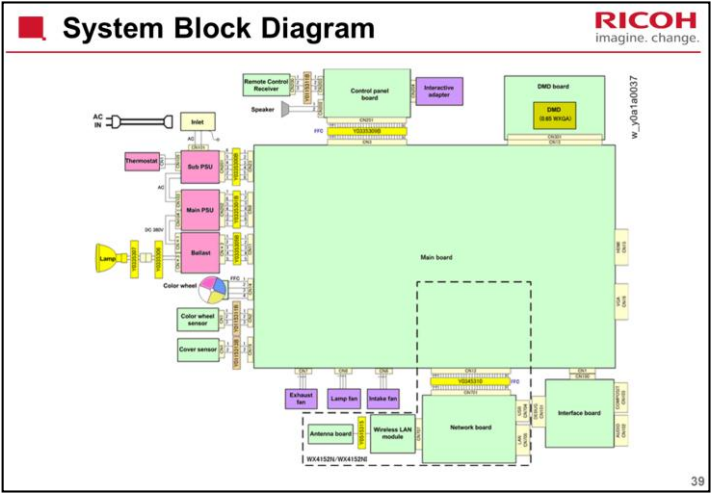
No additional notes

36







No additional notes



Network board: Soleil-PJ2.5b/d only

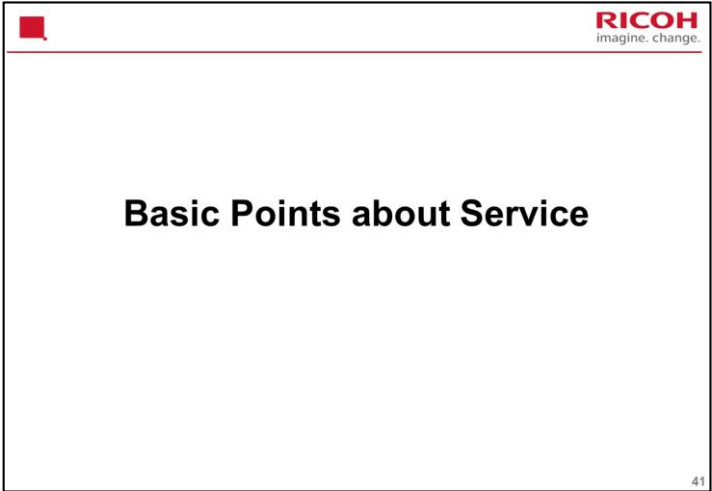
 **Main Boards**



- Main board (MB): Power/signal control and processing
- DMD board (DMD BD): Image signal processing and DMD control
- Network board (for Soleil-PJ2.5b/d): Network connection
- Lamp driver (Ballast): Starts the lamp
 - When the lamp is being lit, the voltage is over 10,000V.

40

No additional notes

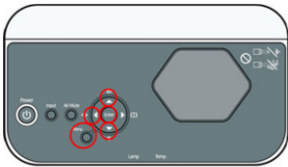


This section explains the basic points about servicing the machine.

Entering Service Mode

RICOH

imagine. change.



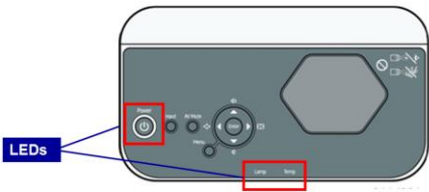
- Hold down "Enter" and "Menu" simultaneously for 2 seconds.
- Then press the left button, then the down button, then the up button.
- Then press and hold the [Enter] button on the projector for longer than 2 seconds.
- When the projector enters the Service Mode, the buzzer beeps for 3 seconds.
 - If it doesn't beep, repeat from the beginning.
- The projector remains in this mode until you disconnect the power cord.

42

No additional notes

42

LED Display



- The status of the three LEDs on the front panel indicate the machine's condition.
 - See the table 'LED Display/Error ID' in the Troubleshooting section of the service manual.

43

No additional notes

Displaying the Service Status - 1

RICOH

imagine. change.

Service status

(MENU) Out

Version (Main-PC)	0090000000 - 0000		
Version (Network)	00000000		
Version (DOP-AP)	02.01.00	Version (Audio)	v1.0 - v1.0 - v1.0
Total time	04 - 49M - 01S	Model	PJ25041524
Clear lamp time	04 - 49M - 01S	Serial No.	E79300000000
Lamp reset count	0	Engine No.	S20300000000
Lamp voltage	84 V	Region Code	00M
Lamp wattage	210 W	Sub contrast	1180 - 1203 - 1208
		CMV index delay	350
KC0	25 - 3345 - 2055	Altitude	0
KC1	25 - 3347 - 1805	Temp (intake)	27 deg
KC2	25 - 3346 - 2302		
KC3	25 - 3422 - 2052	Lamp Mod) display	Enable
Fan1 (intake)	3510 rpm	Filter Mod) display	Enable
Fan2 (lamp)	4681 rpm	Password function	Enable
Fan3 (exhaust)	2409 rpm	HCAM overcard function	Disable
		Shut down	0
Error log (PC)	FF-FF-FF-FF-FF	Error count (Main)	0
Error log (Map)			0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0

y0a1a0020

When the projector is in service mode, press the [AV Mute] and up buttons simultaneously.

The “Service status” window appears.

To quit, press the [Menu] button.

The displayed items are explained in the following section of the service manual:

Replacement and Adjustment - Electrical Adjustment

No additional notes

44

Service Tool

Backup Restore Tool

Backup Restore Tool

Error Log Tool

Service Status Tool

Start

w_y050i3202

Service Status Window

Get Service Status

Connect

Version: (Star - Standby/Run - Network) 100118000-000-10010

Total Time: 004-029-022 Model: FJ0201

User Lamp Time: 004-029-022 Serial No: 0270000001

Lamp Reset Count: 0 Engine No: 0000000000

Error Log (Standby/Run): Shut down: 0

Error Log (Standby/Run): Error count: 0

Error Log (Standby/Run): Error count: 0

w_y050i3203

- If the lamp is broken, you can still see the service status, if you connect a computer to the projector.
- You need to do the following before you can use this method.
 - Download “Backup/Restore Tool”
 - Install the USB driver on the computer
 - Connect the projector to the computer


45

See the Service Status section of the manual for more details.

Connecting the Projector to a PC

RICOH

imagine. change.



y033i5150

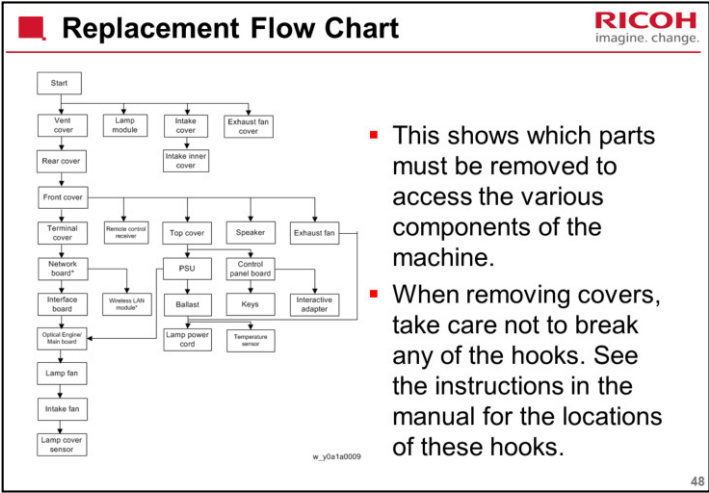
- Use a USB cable to connect to the USB mini-B port of the projector.

46


No additional notes




This section shows the main points about replacing parts, and how to calibrate the machine after installing new parts. See the service manual for details of all procedures.



See the service manual for details of the procedures. The next few slides will cover the main points.



Adjustments Required after Replacement


imagine. change.

	Keystone	Sub Contrast	Color Wheel Index Delay
Main Board	Yes	No	Yes
Operation Panel Board	No	No	No
Optical Engine	Yes	No	Yes

- The above table shows which adjustments are needed after replacing the Main Board or Optics Engine.
- For this model, Sub Contrast is adjusted at the factory and no further adjustment is required.
- The adjustments are in the service manual.

49


Keystone

When you project an image onto a surface at an angle (because the projector is not quite centered on the screen), the image will be larger at the top than at the bottom (in the case when the projector is on a table pointing up at the screen).


Modern projectors correct for this digitally, but calibration is needed.

Sub-contrast

Inputs from both computer interfaces must be calibrated.




Replacing the Lamp



imagine. change.

- To replace the lamp, unplug the power cord and then wait for 60 minutes to make sure that the lamp has cooled down.

50

No additional notes


**Backup/Restore Tool**


imagine. change.

- When replacing the main board or the optical unit, the backup/restore tool can be used for backing up and restoring projector settings.
- The service manual explains how to download and use this tool.
- This product requires that the backup/restore tool's version is Ver. 1.6.0.0 or later.

51

No additional notes


imagine. change.

Replacing the Main Board

- You must enter the color wheel index delay after installing the new board.
 - Search for the best value by trial and error, as explained in the service manual.
- Also you must do keystone calibration.
 - These procedures are explained in the following section of the service manual: Replacement and Adjustment - Electrical Adjustment
- Then you must input the machine's serial number.
 - This is explained in the Backup/Restore Tool section of the manual.


52


No additional notes

Replacing the Optics Engine

RICOH

imagine. change.







y033i5101

- When handling the optics engine, hold the metal parts shown above.
- When installing the optics engine, make sure the cables are not trapped under the leg of the optics engine.
- After replacing the optics engine, adjust the color wheel index delay by trial and error until the screen looks correct (see the procedure in the manual for details).
 - There is no label with the correct value attached to the unit.
- Also, do the keystone calibration after replacing the optics engine.

53

No additional notes


 **Optics Engines**


imagine. change.


- These are the same for each model.
- The optics engine contains the DMD board, DMD chip, lens, and rod.
- These cannot be replaced as individual parts.

54

No additional notes




Equipment Required for the Adjustments



imagine. change.

- Personal computer (Windows PC, using Windows Vista, 7, or 8)
- Cables: RGB Cable and Control (USB-A to Mini-B) Cable
- Protractor: Used to measure angles for the Keystone Calibration

55

No additional notes

 **Before you Start the Adjustments**


imagine. change.


- Copy the current settings data to EEPROM: Press the [Up], [Down], [Left] and [Right] buttons simultaneously.
- Enter service mode.
 - See the service manual for the procedure.
- The buzzer beeps for 3 seconds if you enter service mode successfully.
- To exit service mode, disconnect the power cord.


56

The EEPROM is a backup area to hold the old settings if the adjustments do not go well.



This section explains the basic points about updating the firmware.


 **Overview**




- There are two firmware files for this series.
 - Main firmware
 - Network firmware

58

Previous models in this series have three files.




Using a Computer (Soleil-PJ2.5a)



imagine. change.

- Before you begin firmware update, the SiLabs driver software must be installed on your computer.
- You also need the following:
 - Ricoh Projector FW Update Tool (File name: ProjectorUpdateTool)
 - New firmware for the projector
 - USB cable (USB A / mini-B) to connect the projector and the PC.
- For the procedure, see Firmware Update > Updating the Firmware Using a Computer (PJ WX4152) in the service manual.

59

No additional notes

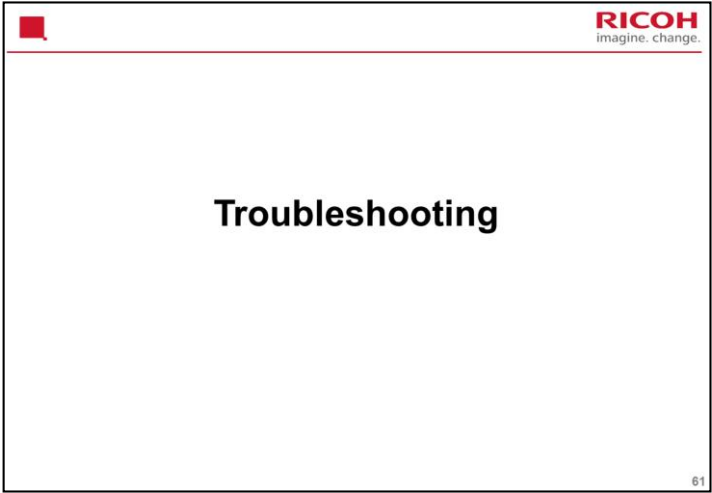
**Using a USB Memory Device (Soleil-PJ2.5b/d)**


imagine. change.


- Copy the firmware data to the root directory of a USB memory device.
- Check the power cord of the projector is disconnected.
- Connect the USB memory device to the projector.
- While holding down the [Power] and [Input] buttons, plug in the power cord.
 - After checking the firmware data, the projector starts writing the firmware.
 - When the writing process starts, the power button, the lamp indicator and the temperature indicator flash sequentially.
- When the update is successfully completed, the [Power] button lights up blue and the lamp and temperature indicators light up red and the projector restarts in normal mode.
- For details of the procedure, see Firmware Update > Updating the firmware using a USB memory device (PJ WX4152N/WX4152NI) in the service manual.


60

No additional notes




For basic troubleshooting procedures, see the service manual.

 LED Display



- The combination of LED indicators show if a problem has occurred.
 - These are the Power, Input, and AV Mute indicators.
 - See the following section of the service manual for how to determine the problem: Troubleshooting > LED Display/Error ID



62

No additional notes

■ LEDs on the Electronic Pen


A technical diagram of a Ricoh Electronic Pen. The pen is shown in a perspective view, angled upwards. Two small circular LEDs are highlighted on the side of the pen. Line [A] points to the first LED, and line [B] points to the second LED. The pen has a black tip and a silver body with some black accents. The Ricoh logo and tagline 'imagine. change.' are in the top right corner.


y033i5201

- These LEDs [A, B] also have some diagnostic functions, as explained in the service manual.

63

No additional notes


 **Symptom**



imagine. change.

- The Troubleshooting section of the service manual contains some notes on symptom troubleshooting.

64

No additional notes

 **Error Logs**



- Error logs can also be generated. If you are asked for one of these, follow the procedure in the Troubleshooting > Error Log section of the manual.
 - You will need to connect a computer to the projector to get these logs.

65

No additional notes



The End