RICOH

M132
Service Training

AL-P2

Slide 1

Version 1.0

This training course provides service technician training for the AL-P2. It only explains the differences from the AL-P1, so knowledge of that model is required.

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M132
Service Training

Product Overview

Slide 2

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

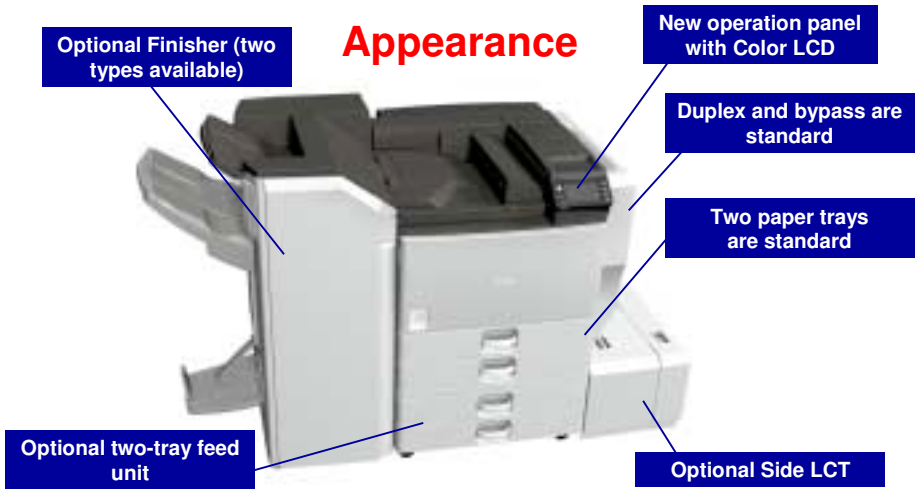
What Models are there in the Series?

- **AL-P2 (M132)**
  - 50 ppm

- **Contains PostScript3, duplex unit, and bypass tray as standard equipment.**

Slide 3

No additional notes



- **Either of the following paper tray options can be installed below the main unit.**
  - Two-tray paper feed unit
  - Tandem LCT
- **If either of the above is installed, a 1200-sheet side LCT can also be installed.**

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Compared with related models:

- There is no shift tray, side tray, or one-bin tray option.
- There is also no mailbox option.

Options: Paper Feed and Finishing

		Also used with these new models:	Similar to:	Note
Two-tray paper feed unit (D580): PB3130		AL-C2, AP-P3	AL-P1	Can be installed by users (AL-P1: installed by technicians)
Tandem LCT (D581): PB3140		AL-C2, AP-P3	AL-P1	Can be installed by users (AL-P1: installed by technicians)
Side LCT (D631): RT3020		AL-C2, AP-P3	AL-P1	Requires one of D580 or D581
Bridge unit (D634): BU3060		AL-C2, AP-P3	AL-P1	
1000-sheet finisher (D588): SR3090		AL-C2	AL-P1	Requires bridge unit and one of D580 or D581
3000-sheet finisher (D636): SR3120		AL-C2, AP-P3	AL-P1	Requires bridge unit and one of D580 or D581
Punch unit (D570): Punch Unit PU3030		AL-C2, AP-P3	AL-P1	For D636
Output jogger unit (B703): Output Jogger Unit Type 9002A	New	MT-C5, AP-P3	AL-P1	For D636

Slide 5

No additional notes

Options: Printer

		Note
M416: IPDS Unit Type 8300	New	
M416: SD card for NetWare Printing Type N	New	
M416: Hard Disk Drive Option Type 8300	New	160 GB
D641: SD Card for Fonts Type D		Used with S-P2
D594: Memory Unit Type L 512MB		

Slide 6

- There is no RPCS driver.

Options: Controller

		Also used with these new models:	Note
B679: IEEE 1284 Interface Board Type A		AL-C2	
M344: IEEE 802.11a/g Interface Unit Type L		AP-P3	
M344: IEEE 802.11g Interface Unit Type M or Type P		AP-P3	
G874: Gigabit Ethernet Board Type A (EU)		AL-C2	
M394: Gigabit Ethernet Board Type C (NA)			
D640: VM Card Type U		AL-C2, AP-P3	

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- No Bluetooth option

Controller Options
Memory Upgrade Options

- **Optional hard disk**
  - 160 GB
- **Memory**
  - Standard memory: 512 MB
  - Upgrades: 512 MB
  - Max possible memory: 1 GB

Slide 8

No additional notes

Slots

1. **USB-A: Both USB slots can be used for the Bluetooth option or a card authentication device.**
2. **USB-B: Built-in for connection of USB devices (USB 2.0)**
3. **SD Card Slot 1 (upper slot)**
4. **SD Card Slot 2 (lower slot)**
5. **Ethernet, standard LAN connection point for a 100BaseT LAN**
6. **Board Slot: A slot for one optional interface board.**

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- Board Slot: One of the following can be installed.
  - Gigabit Ethernet Board Type A
  - IEEE 802.11a/g Interface Unit Type J or IEEE 802.11g Interface Unit Type K
  - IEEE 1284 Interface Board Type A
- The SD Card slots are discussed in more detail on the next few slides.

SD Card Slots (1)

- **Slot 1 (upper slot):**
  - The slot is empty when shipped
  - Use when installing the following options
    - » IPDS
    - » SD card for Netware printing
    - » SD card for fonts (EU model)
    - » VM card
  - If the number of options that you wish to install is more than the number of available SD card slots, move them onto one SD card.
    - » Destination card: SD slot 1
  - If more than one SD card options must be merged, and the VM card is one of them, the VM card must be the target SD card.
    - » The VM card option cannot be moved.

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Installation > Controller Options

- PDF Direct/PCL/PostScript 3 are pre-installed in the controller ROM.

SD Card Slots (2)

- **Slot 2 (lower slot)**
  - The slot is empty when shipped.
  - Use this slot for service procedures, such as firmware update and NVRAM backup.

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No additional notes

SD Card Slots (3)

- **Operation panel SD card slot**
  - Use this for:
    - » SMC data export (SP5992).
    - » Media print/PDF direct print from SD card

Slide 12

No additional notes

Data Overwrite Security, HDD Encryption

- **These features are built into the controller board for all models.**
  - There is no Security SD Card.
- **After installing an optional hard disk, these features must be switched on with a User Tool.**
  - The features can be activated after the optional HDD is installed.

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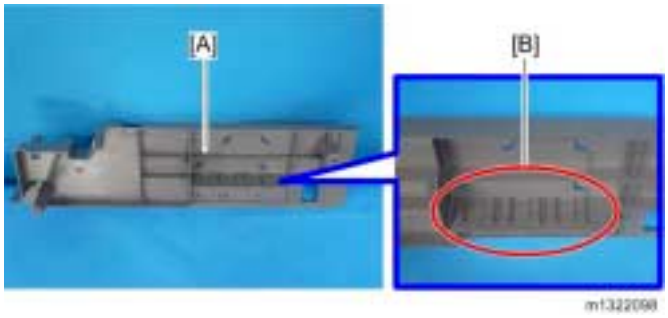
No additional notes

SD Card Storage Location



- Remove the lower inner cover [A].
- Store the original SD cards at [B] after you move the application to another card.

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No additional notes

This section provides an overview of the main specifications and explains improvements over the AL-P1.

Specifications

- **Paper Size - Paper trays:**
  - A3/11" x 17" SEF - A5 LEF
  - Non-standard sizes:
    - » Width: 182 - 297 mm (7.2" - 11.7"), Length: 148 mm - 432 mm (5.8" - 17")
- **Paper Size - By-pass tray:**
  - A3/11" x 17" SEF - A6 SEF, 12" x 18"
  - Non-standard sizes:
    - » Width: 90 - 305 mm (3.6" - 12"), Length: 148 - 600 mm (5.8" - 23.6")
- **Paper Size - Duplex:**
  - A3/11" x 17" - A6 SEF
  - Non-standard sizes:
    - » Width: 90 - 297 mm (3.6" - 11.7"), Length: 148 - 432 mm (5.8" - 17")
- **Paper Weight**
  - Paper trays: 60 - 216 g/m2 (16 lb. Bond - 80 lb. Cover)
  - By-pass: 52 - 216 g/m2 (14 lb. Bond - 80 lb. Cover)
  - Duplex: 60 - 169 g/m2 (16 lb. Bond - 60 lb. Cover)
- **Printing Speed (A4, 81/2" x 11" LEF):**
  - 50 ppm (same as AL-P1)
- **First Print Time (1st Tray, A4/81/2" x 11" LEF):**
  - 3.5 s or less (same as AL-P1)
- **Warm-up Time**
  - 25 s or less (same as AL-P1)

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- Print speed: Same as the AL-P1

Targets

	AL-P1	AL-P2
APV, per month	15k	12k
PM Cycle	160k	160k
MPBF (Mean Prints Between Failure)	150k	150k
EM ratio (Mainframe)	0.1	0.08
Estimated Unit Life	3,200k or 5 years whichever comes first	3,200k or 5 years whichever comes first

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No additional notes

Yield of Consumables

- **Toner**
  - Capacity: 630 g
  - Yield: 30,000 prints per cartridge (A4/LT, 6% coverage)
- **Developer**
  - Yield: 320,000 prints per bag

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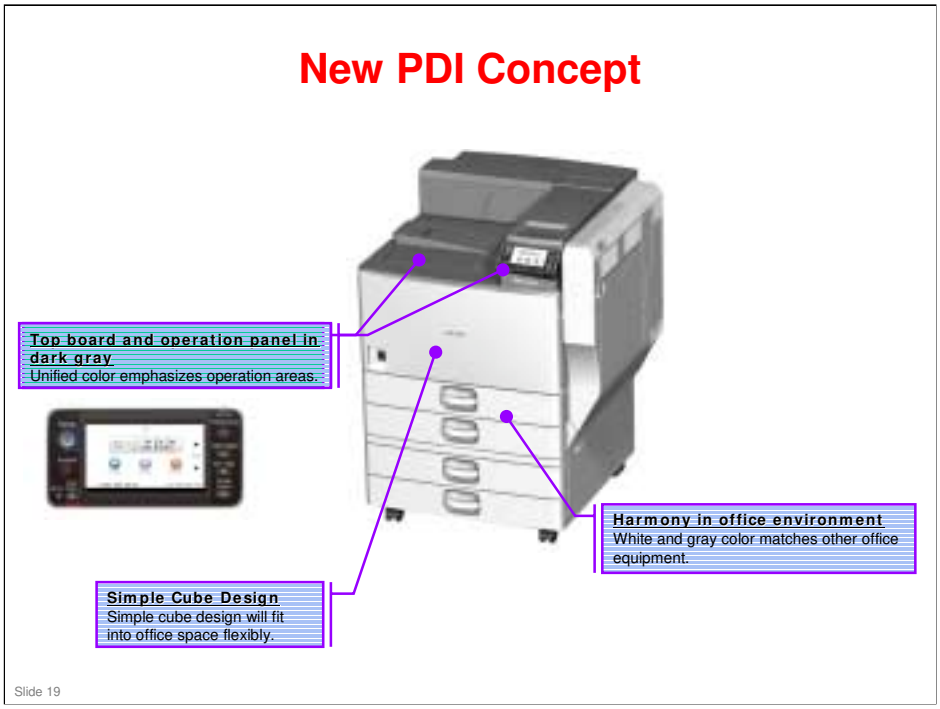
- Same as AL-P1



PDI: Product Design Identity

New Operation Panel

- The angle of the operation panel cannot be changed.
- A home button is added. You can return to the home screen from anywhere.
- An SD/USB slot is built-into the right side of the panel as standard equipment (not an optional unit).

Slide 20

No additional notes

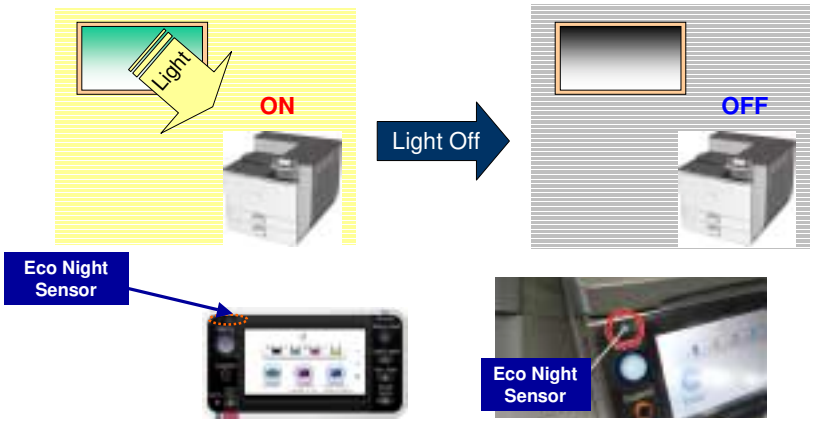
Touch Screen Calibration

- The procedure is different from previous models.
- Also, it must be done after you clear the memory, replace the operation panel, LCDC board or NVRAM.

Slide 21

No additional notes

Eco Night Sensor - 1



- **The machine saves electricity by automatically turning off the main power (or entering sleep mode) when the room is dark.**
  - Ambient light is detected by the Eco Night Sensor on the operation panel.
  - The sensor is a translucent circular window 4 mm in diameter
- **This will prevent waste of electricity when people forget to turn off the machine.**

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No additional notes

Eco Night Sensor - 2

- **The Eco night sensor has five brightness sensitivity levels (trigger thresholds).**
  - Select with [User Tools] > [System Setting] > [Administrator Tools] > [ECO Night Sensor] > [Power Off] (or [Sleep Mode]) > [Brightness Sensor Level]
  - 1 is the darkest setting
- **The timer to enter the sleep mode or turn off the power is set from 1 to 120 min.**
  - Select with [User Tools] > [System Setting] > [Administrator Tools] > [ECO Night Sensor] > [Power Off] (or [Sleep Mode]) > [Timer to Turn Off]
  - The timer is reset if the ambient light level increases, printing is done, or any key is pressed before the specified time elapses.
- **The Eco night sensor function can be enabled or disabled with the following user tool.**
  - Enable/disable with [User Tools] > [System Setting] > [Administrator Tools] > [ECO Night Sensor]
  - There are three settings:
    - » Inactive (disabled)
    - » Sleep mode (the machine goes to sleep mode when the timer runs out)
    - » Power off (the machine switches off when the timer runs out)

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No additional notes

Eco Night Sensor - 3

- If the controller is executing a process, the Light Detect Function activates after the process is completed.
- Light Detect also cannot activate if printing stopped due to a lack of paper or a paper jam.
- If a spooled print job is stored in the machine, the machine cannot activate Light Detect.
- After the Light Detect Function turns off the power, the machine cannot power on by itself. To power on the machine, the main power switch has to be turned on manually.

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No additional notes

External USB Keyboard

- **This lets you use a Windows-compatible external USB Keyboard for typing when the software keyboard is displayed in GW applications.**
- **Before you can use an external USB keyboard for GW applications, it must be enabled in SP mode (set SP5075-001 to ON, then cycle the main power off/on).**
  - You cannot type in both SDK applications and GW applications from one keyboard. If the USB keyboard is used for GW applications, it can't be used for SDK applications.
- **The external USB keyboard can be connected to the USB port on the operation panel or the USB port on the back of the controller board.**
- **Keyboards and tables are not provided as options.**

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No additional notes

Envelope Printing

- The standard tray and the bypass tray support printing on envelopes.

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No additional notes

SMC Data

- SMC data can now be downloaded to an SD card.

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No additional notes

Updating Firmware

- **Please take note of this new step that must be performed for this model and future models.**
  - Disconnect the Ethernet interface cable, Gigabit Ethernet cable, IEEE1284 interface cable and remove the Wireless LAN interface board before you start the firmware update procedure.

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No additional notes

- This section explains important changes to the installation procedure since AL-P1.

Overview

- **The customer installs the mainframe and options, except for the following.**
  - LCIT RT3020: D631
  - Bridge Unit: D634 (required for Finisher SR3120 and SR3090)
  - Finisher SR3120: D636
  - Punch Unit: D570 (for Finisher SR3120)
  - Jogger Unit: B703 (for Finisher SR3120)
  - Finisher SR3090: D588
- **For these options, follow the installation procedures in the field service manual.**
  - The procedures are basically the same as for the previous model.

Slide 30

No additional notes

Bridge Unit – Extension Tray

- **Pull out the extension tray [A] if the 1000-sheet finisher (D588) is to be installed.**

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- This is new.

1200-sheet LCT Installation

- A procedure has been added to the service manual, to explain how to change the side fence position for different paper sizes (A4 LEF/ LT LEF/ B5 LEF).
- After adjusting the side fences, input the correct paper size with SP5181-017.

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No additional notes

Entering SP Mode

- **Do one of the following.**
  - If the power is already on, press the "Home" and "Simple screen" keys at the same time for more than 3 seconds, and then press the "User tool" key.
  - Press the "Home" and "Suspend" keys at the same time while turning the main switch on.

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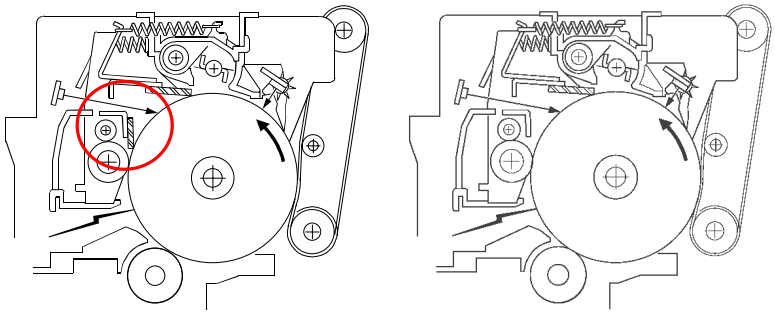
No additional notes

No additional notes

PCDU



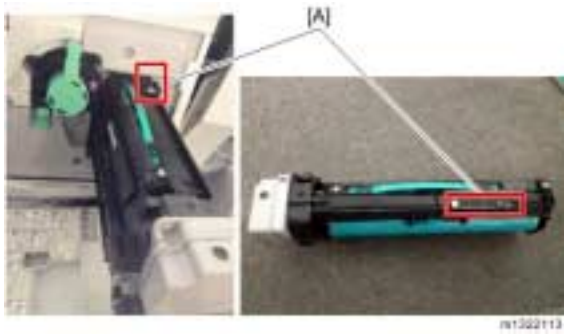
AL-P1 AL-P2

- **Drum cleaning blade 2 has been removed.**
  - This simplifies PCDU replacement and cleaning, because it is not necessary to move springs to retract the cleaning blade away from the drum

Slide 35

No additional notes

Pulling out the PCDU



- **When you pull out the PCDU, push the lock [A].**
  - You don't need to do this when you are installing a PCDU.
- **If the lock is not pressed, the PCDU will be stuck in the machine and cannot be pulled out completely.**
- **The lock prevents the PCDU from coming out accidentally.**

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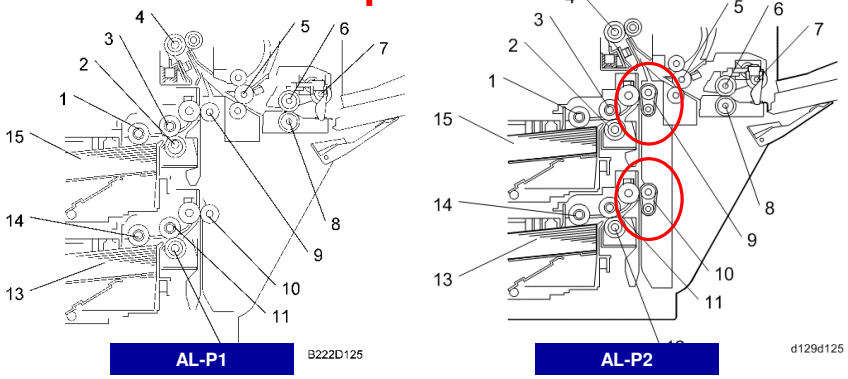
No additional notes

Paper Feed



- **A belt has been added at each vertical transport roller.**
  - These are called the upper and lower relay belts.

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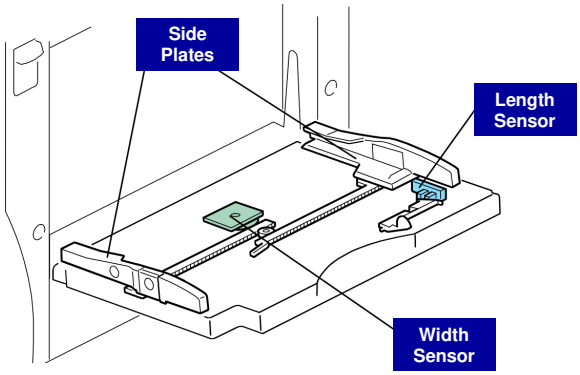
No additional notes

Bypass Tray



- A length sensor has been added to the bypass tray.
- In North America models, the sensors cannot distinguish LG SEF from LT SEF. The paper size (LT or LG) must be selected with SP1-007-002 in advance.

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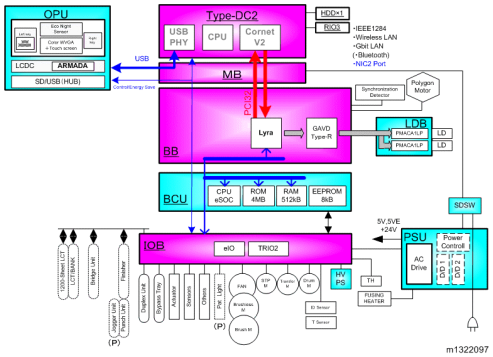
No additional notes

Boards



- The IPU board of the AL-C2 is replaced by the BB board.
- The BB (Bridge Board) controls the image processing. It also controls the print engine.

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No additional notes

Detailed Self-Diagnostic Mode

- Do not use the detailed self-diagnostic mode in this model.
- This mode is only for factory use.
- If you entered the self-diagnostic mode by accident, turn the main power switch off and on.

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No additional notes

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Environmental Conservation

Technology for Environmental Conservation

Energy Saving

Paper Saving

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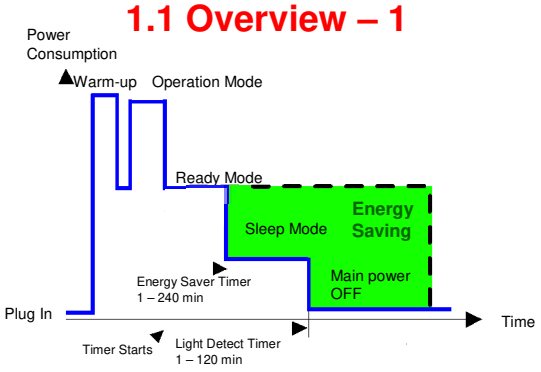
- This section explains the technology used in this machine for environmental conservation, and the default settings of related functions.

1. Energy Saving

1.1 Overview – 1



Energy Saver Mode	Description
Sleep Mode	The fusing temperature is lowered to the prescribed temperature (below ready temperature).

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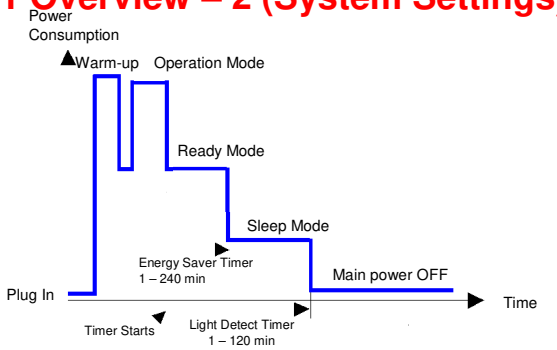
- When the machine is not being used, the machine enters energy saver mode to reduce the power consumption by turning off the LCD of the operation panel and lowering the fusing temperature.
- The area shaded green in this diagram represents the amount of energy that is saved when the timers are at the default settings. If the timers are changed, then the energy saved will be different. For example, if the timers are all set to 240 minutes, the green area will disappear, and no energy is saved before 240 minutes expires.
- Power consumption during warm-up may be much higher than shown in this diagram.

1. Energy Saving

1.1 Overview – 2 (System Settings)



Timer settings and recovery time (System settings => Timer setting)

Mode	Timer	Default	Setting range	Recovery time
Sleep Mode	Energy Saver Timer	Off	1 to 240 min.	15 sec.
Main power OFF	Light Detect Timer	120	1 to 120 min.	25 sec.

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- The user can set these timers with User Tools
  We recommend that the default settings should be kept.
  - If the customer requests that these settings should be changed, please explain that their energy costs could increase, and that they should consider the effects on the environment of extra energy use.
- Power consumption during warm-up may be much higher than shown in this diagram.

1. Energy Saving
1.2 Energy Saver Mode: Condition of LEDs

❑ Condition of LEDs on the operation panel

Mode	Operation Switch LED	Energy Saver LED	Main Power LED
Sleep Mode	On	Off	On

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No additional notes

1. Energy Saving

1.3 Energy Saver Mode: Sleep Mode

- **The machine enters sleep mode when the energy saver timer runs out after the last job.**
- **When the machine enters Sleep Mode, the fusing temperature is lowered to the prescribed temperature (below the machine ready temperature).**
- **The machine recovers to the ready condition if one of the following occurs:**
  - The Energy Saver key is pressed
  - The user touches the operation panel
  - The front door is opened or closed
- **The recovery time depends on the model and the region.**
  - 15 seconds or less

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No additional notes

1. Energy Saving

1.4 Energy Save Effectiveness

- **With the data from SP 8941:Machine Status, and the power consumption values from the specifications, we can estimate the amount of energy that is used by the machine.**
  - 8941-001: Operating mode time
  - 8941-002: Standby mode time
  - 8941-004: Low power mode time
- **This should only be used as a reference value, because the power consumption specifications are measured in a controlled environment with a constant power supply.**
- **To get an exact measurement at the customers site, a watt meter must be used to measure the actual energy consumed.**

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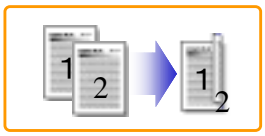
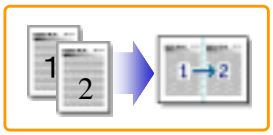
No additional notes

2. Paper Saving
2.1 Measuring the Paper Consumed – 1

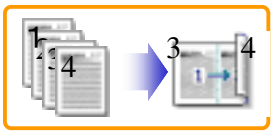
1. Duplex: Reduce paper volume in half!



2. Combine: Reduce paper volume in half!



3. Duplex + Combine: Using both features together can further reduce paper volume by 3/4!



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No additional notes

2. Paper Saving
2.1 Measuring the Paper Consumed – 2

- **To check the paper consumption, look at the total counter and the duplex counter.**
  - Total counter : SP 8581 001
  - Single-sided with duplex mode : SP 8421 001
  - Double-sided with duplex mode : SP 8421 002
  - Book with with duplex mode : SP 8421 003
  - Single-sided with combine mode : SP 8421 004
  - Duplex with combine mode : SP 8421 005
- **The total counter counts all pages printed.**
- **The duplex and combine counter counts all pages printed with duplex and combine mode.**

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No additional notes

2. Paper Saving

2.1 Measuring the Paper Consumed – 3

- **How to calculate the paper reduction ratio, when compared with Single-sided copying, with no 2-in-1 combine mode**
- **Paper reduction ratio (%) = Number of sheets reduced: A/Number of printed original images: B x 100**
  - Number of sheets reduced: A
    = Output pages in duplex mode/2＋ Number of pages in Single-sided with combine mode + Number of pages in Duplex with combine mode x 3/2
    A = (②+③+④)/2 + ⑤+⑥ x 3/2
  - Number of printed original images: B
    = Total counter＋ Number of pages in Single-sided with combine mode ＋ Number of pages in Duplex with combine mode
    B = ①+⑤+⑥

① **Total counter**	**: SP 8581 001 (pages)**
② **Single-sided with duplex mode**	**: SP 8421 001 (pages)**
③ **Double-sided with duplex mode**	**: SP 8421 002 (pages)**
④ **Book with with duplex mode**	**: SP 8421 003 (pages)**
⑤ **Single-sided with combine mode**	**: SP 8421 004 (pages)**
⑥ **Duplex with combine mode**	**: SP 8421 005 (pages)**

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In the above formula:

- Sheet: A sheet of paper
- Page: A side of a sheet of paper. In duplex mode, one sheet is two pages
  - Output page: One side of a sheet of output paper
- Original Image: An image of one original page (or, an image of one side of a two-sided original)
  - For one sheet of output paper in two-in-one copying, four original pages are copied onto two output pages.

The End