FRESA WIN+
(Machine Code: G047/G048)

SERVICE MANUAL

[Controller]

⚠IMPORTANT SAFETY NOTICES

PHYSICAL INJURY PREVENTION

1. Before disassembling or assembling parts of the printer and peripherals, make sure that the power cord is unplugged.
2. The wall outlet should be near the printer and easily accessible.
3. Note that some printer components are supplied with electrical voltage even if the main switch is turned off.
4. If an adjustment or operation check must be made requiring the removal or opening of the exterior covers while the main switch is on, keep hands away from electrified or mechanically driven components.
5. The printer drives some of its components when it completes the warm-up period. Keep hands away from mechanical and electrical components when the printer starts operation.
6. The interior and metal parts for the fusing unit become extremely hot while the printer is operating. Do NOT touch these components with bare hands.

HEALTH SAFETY CONDITIONS

1. Never operate the printer without ozone filters installed.
2. Always replace the ozone filters with the specified replacement at the specified maintenance intervals.
3. Toner is non-toxic, but if it gets in your eyes by accident, it may cause temporary eye discomfort. Remove it with eye drops or flush eyes with water. If this is unsuccessful, get medical attention immediately.

SAFETY AND ECOLOGICAL NOTES FOR DISPOSAL

1. Do NOT incinerate toner cartridges, development toner magazine (DTM) or used toner. Toner dust may ignite suddenly when exposed to an open flame.
2. Dispose of used toner bottle and photoconductor unit (PCU) in accordance with local regulations. (These are non-toxic supplies.)
3. Dispose of replaced parts in accordance with local regulations.

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1. OVERALL MACHINE INFORMATION

1.1 BASIC SPECIFICATIONS

Page Description Language:	• IPDL-C (Intelligent Page Description Language for Color) • Ricoh-Script 2
Printer Driver:	• IPDL-C: Windows 95/98/2000/NT 4.0 • Ricoh-Script 2: Windows 95/98/2000/NT 4.0, Macintosh (PPD for LaserWriter 8)
Resolution:	600 dpi
Color Mode:	Color, B&W
Gradation Mode	1 or 2 bits/pixel
Toner Saving:	On/Off (printer driver setting) Default Setting: Disabled
Color Correction:	On/Off (printer driver setting) Default setting: Enabled
Interface:	• Standard: Parallel port (IEEE1284: Compatible/Nibble/ ECP mode supported) • Option: Parallel port (IEEE1284: only Compatible mode supported), Ethernet (100 BASE-TX, 10 BASE-T)
Fonts	Ricoh-Script 2: 39 Roman fonts
Memory	Standard: 32 MB (simplex model), 64 MB (duplex model), (It can be replaced with optional memory.) Up to 256 MB (Replace the standard memory with optional 128-MB memory SDRAMS.)
SDRAM DIMM Slot	2 (for optional memory)
Option Bus Interface	2 (for optional network I/F board and optional parallel I/F)

Options

- 32 MB Memory
- 64 MB Memory
- 128 MB Memory
- Network Interface Board
- IEEE1284 Parallel Interface

2. DETAILED DESCRIPTIONS

2.1 DIFFERENT POINT FROM BASE MODEL (G024)

2.1.1 SYSTEM SOFTWARE

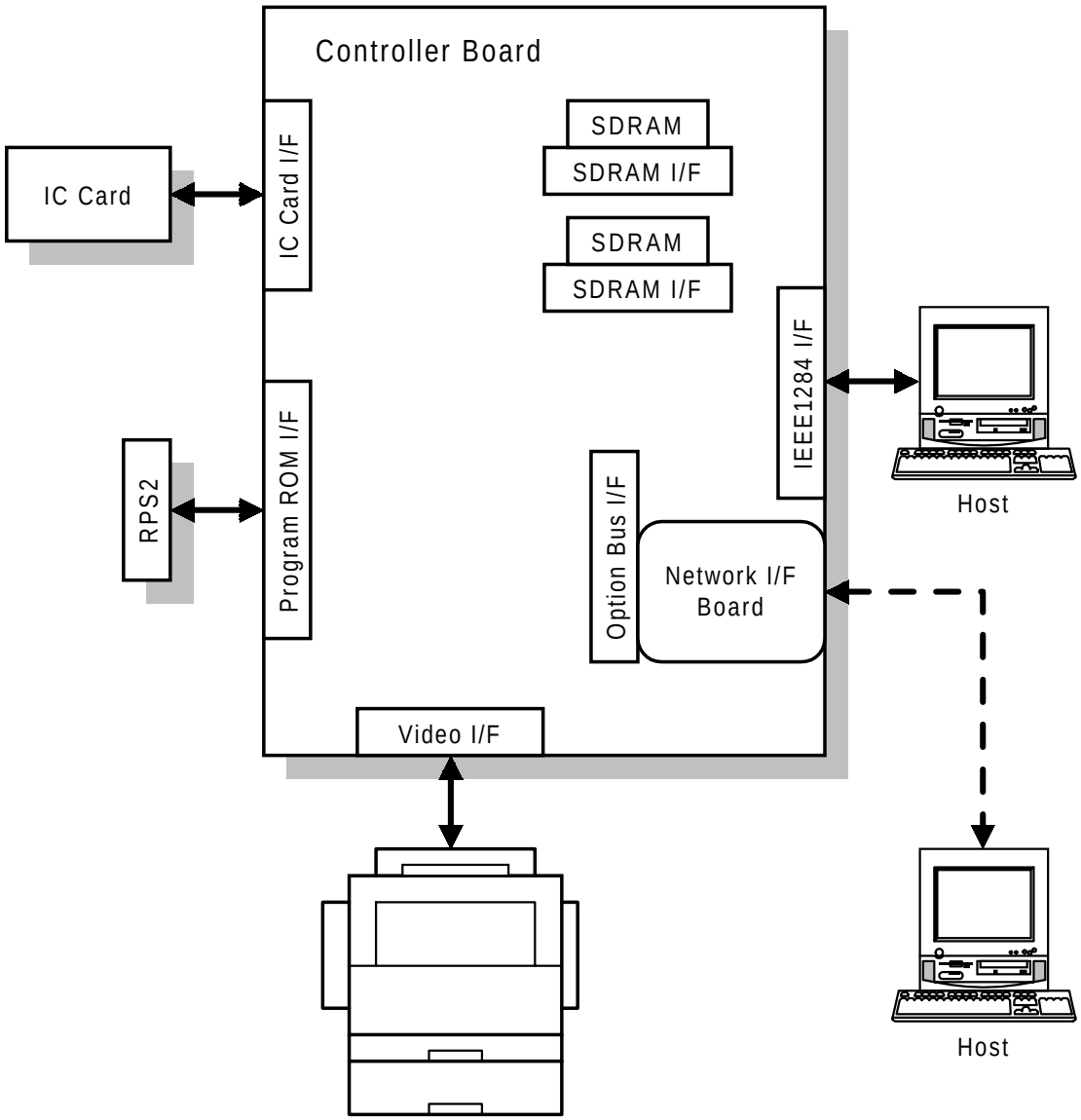
1. Automatic duplex printing is available for the duplex model.
2. Manual duplex printing (printing on the reverse side) is available for the simplex model.
3. The appropriate electric counter can be selected depending on the type of maintenance contract for meter click charge. A new User mode, “Show Counter”, has been added to display the Color and B/W counter values.
4. If the printer driver has been installed, the printer keeps a record of the number of pages printed out under each registered User Code (Up to 100).
5. This printer has a job log which shows the time, number of pages and current status of each print job. Up to 64 User IDs (User Codes) can be set.
6. The bypass tray can be used as a manual tray. If it is set to “Manual”, the paper size selected by the printer driver takes priority over the size selected on the operation panel.
7. The printer can be set so that it will either stop or continue printing when toner has run out.
8. 300-dpi mode is not supported.
9. It is possible to enter SP mode without turning the machine off and on.
10. The optional network interface board (C4000 Ferret) supports PortNavi.

2.1.2 HARDWARE

1. CPU
   NEC VR4310-177
2. ASIC
   Rocky-R, which is compatible with SDRAM. FCI2.5C was removed because 300-dpi mode is not supported. Therefore, toner saving mode is controlled by firmware.
3. SDRAM
   The type of SDRAM used has been changed from SIMM to DIMM.
4. NVRAM
   The capacity of the NVRAM has been expanded to 8 KB to store the Job and Print Logs.
5. DIP Switches
   Dip switches do not require resetting when upgrading firmware.

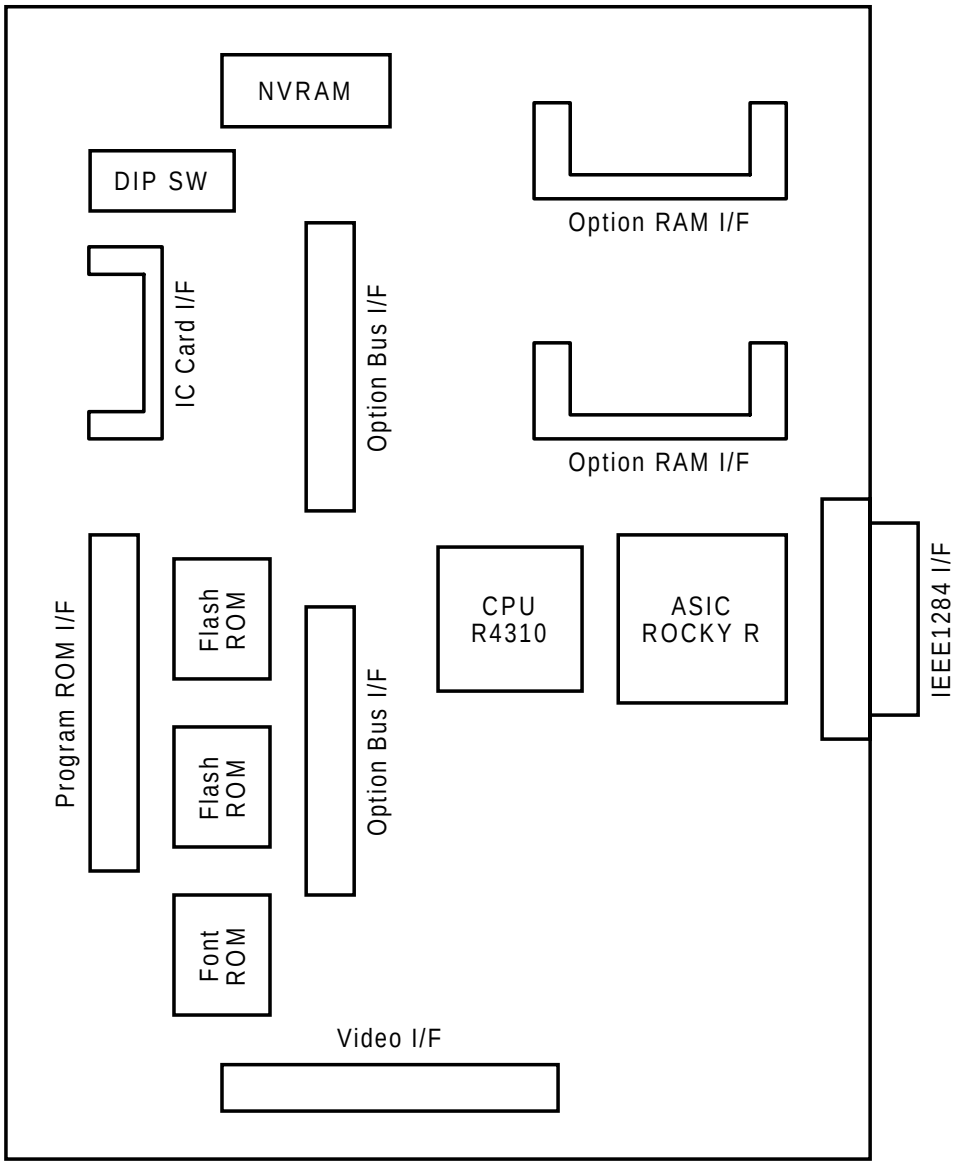
2.2 FUNCTIONAL OVERVIEW

2.2.1 SYSTEM LAYOUT



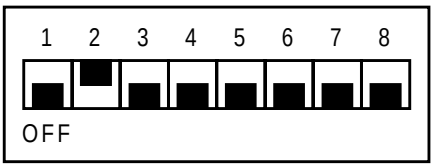
G048O701.WMF

2.2.2 CONTROLLER BOARD LAYOUT



G048O702.WMF

2.2.3 FUNCTION OF EACH DEVICE

<table>
<tr><th>Device</th><th>Function</th></tr>
<tr><td>CPU</td><td>VR4310-177 (177 MHz)</td></tr>
<tr><td>ASIC ROCKY R</td><td>This ASIC controls the following:
• Memory mapping
• Reset
• DRAM
• Data received from the parallel
• Video DMA
• PvDMA
• Interrupt
• Serial communication with engine
• IEEE1284 interface
• Timer
• I/O Port</td></tr>
<tr><td>FLASH ROM</td><td>Stores program (2 MB) The flash ROM is programmable via an IC card.</td></tr>
<tr><td>NVRAM</td><td>Stores the initial settings and printer parameters.
(8 KB EEPROM)</td></tr>
<tr><td>FONT ROM</td><td>Stores internal printer fonts.
(One 64-Mbit mask ROM)</td></tr>
<tr><td>Program ROM</td><td>Ricoh-Script 2 Emulation Module
The emulation module is programmable by IC card.</td></tr>
<tr><td>DIP SW</td><td> 

G048O708.WMF
<table>
<tr><th>SW No.</th><th>Setting</th><th>Content</th></tr>
<tr><td>1</td><td>OFF</td><td rowspan="3">Do not touch these switches in the field.</td></tr>
<tr><td>2</td><td>ON</td></tr>
<tr><td>3-8</td><td>OFF</td></tr>
</table></td></tr>
<tr><td>Video I/F</td><td>Interface the controller with the printer engine.</td></tr>
<tr><td>IEEE1284 I/F</td><td>Provides an interface that connects to a local host (IEEE1284 compliant).</td></tr>
<tr><td>Option Bus I/F</td><td>Two slots; each can hold either an optional network interface or a parallel interface board. You cannot install two boards of the same type.</td></tr>
<tr><td>Option RAM I/F</td><td>A slot for accommodating the memory.</td></tr>
<tr><td>IC Card</td><td>Accommodates an IC card to upgrade firmware.</td></tr>
</table>

2.3 PRINT DATA PROCESSING

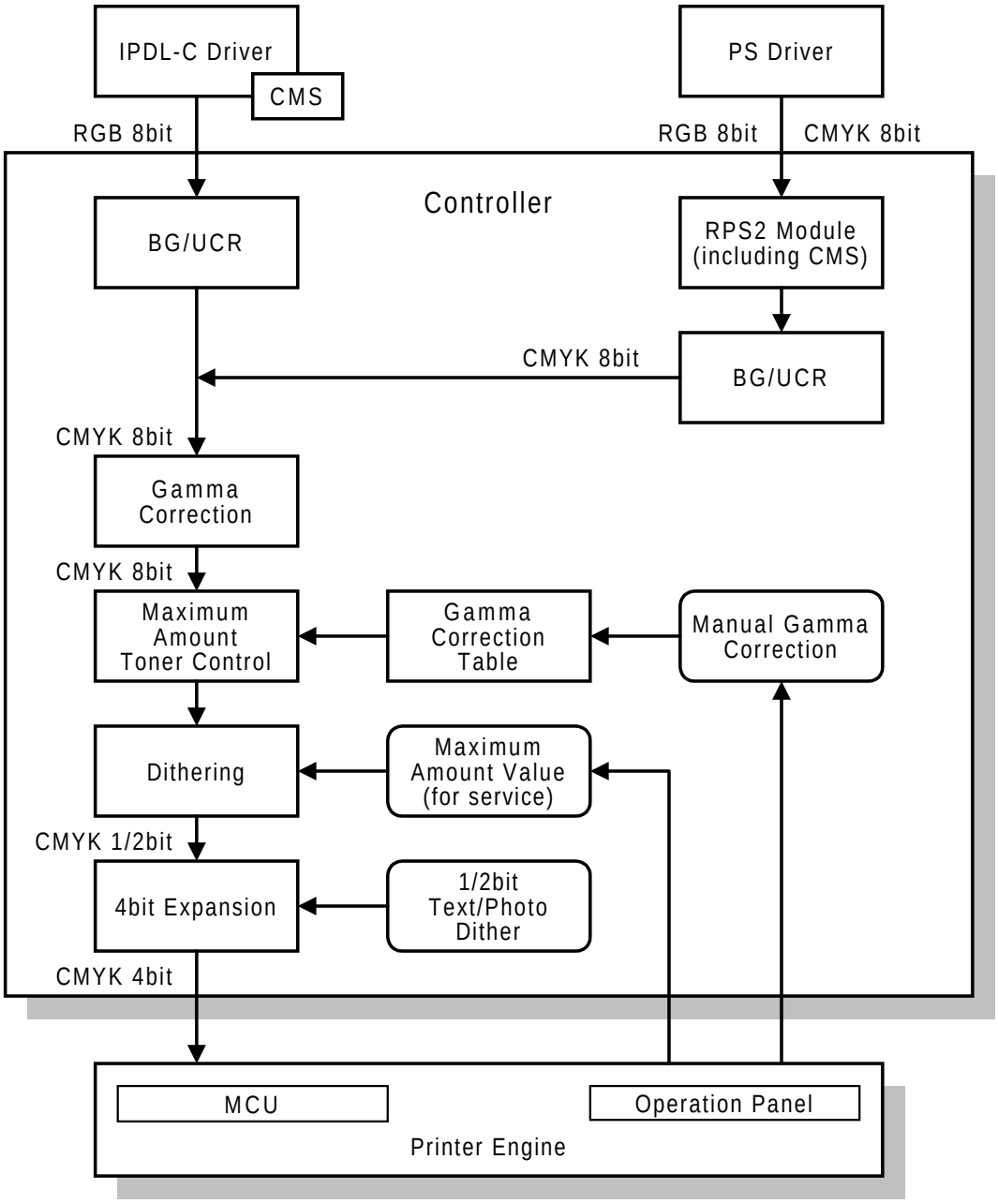
2.3.1 GRADATION & PRINTABLE DATA

The image can be printed with 1 bit or 2 bits (Default) in 600 dpi. However, a page cannot be printed and the job is automatically canceled if the memory for image processing overflows while converting the image data to bitmap format. This may happen depending on the mode selected or the image data size.

If the memory overflows, gradation settings in the driver require changing by printing the error message.

The printable size (combination of resolution, gradation and page size) is as follows:

2.3.2 IMAGE DATA PROCESSING FLOW



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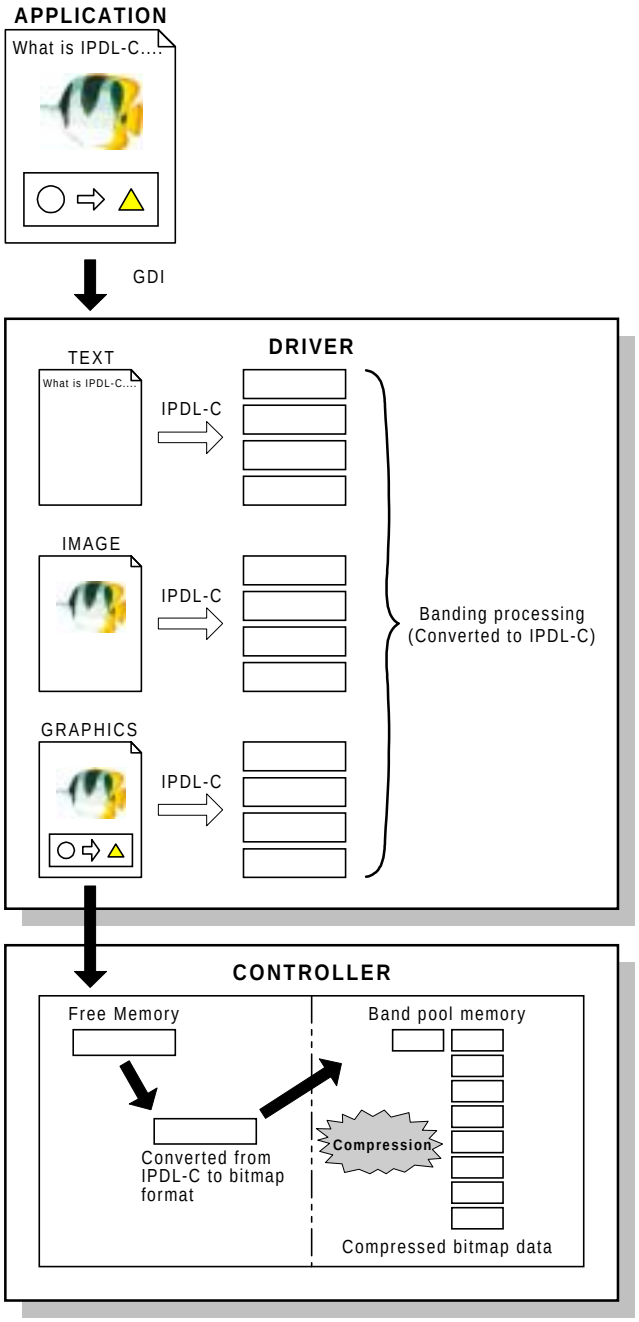
IPDL-C (Intelligent Page Description Language for Color)

The image data received from an application is separated into three elements: text, graphics, and images. Then, the data for each element is converted to IPDL-C. The data converted is not done for the whole page at once. Each band (area specified) is independently processed (banding processing) for the data conversion as shown in the figure.

The IPDL-C conversion from each element is stored in free memory and converted to bitmap data. Bitmap data is compressed and stored into the band pool memory, DRAM.

After data processing is complete, the controller sends the decompressed data to the printer engine and the engine starts printing.



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CMS (Color Management System)

CMY realizes to optimize the color print quality by the color profile based on the characteristics of the printer.

In Rcioh-Script2, CMS functions like the IPDL-C; but RGB conversion is done in the controller.

CMS is used whenever the color profile setting in the printer driver is set to any value other than “Off”.

Color Correction by the Driver

The driver adjusts the following parameters in accordance with the driver settings made by the users: Brightness, Contrast, Saturation, and Color Balance

The driver does not perform RGB to CMYK conversion.

BG/UCR (Black Generation/Under Color Removal)

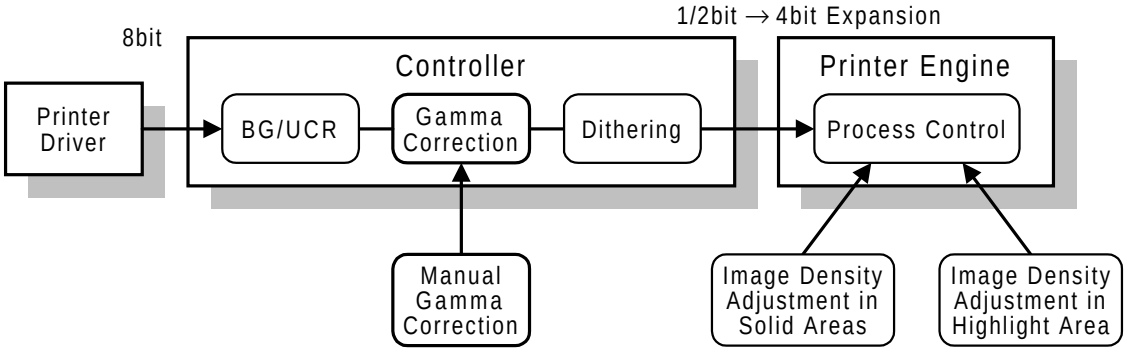
The RGB data sent to the controller is converted to CMYK data. During CMYK conversion, some CMY data is replaced with K data by the BG/UCR algorithm.

Gamma Correction

The gamma curve can be adjusted in SP mode. For the adjustment procedure, see “Section 6:Replacement and Adjustments” in the Controller Service Manual for the base model (G024).

For CMYK, the density can be adjusted every 15 points from 0 to 100% (0,15, 30, etc.). The corrected gamma data is stored in NVRAM memory.

The controller performs the gamma correction, RGB/CMYK conversion and dithering.



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Dither Processing

The dither pattern is prepared for the photo, text, graphic and thin lines independently for 1- and 2-bit modes. These dither patterns creates the illusion of 256 gradations for high quality prints.

The optimum dither pattern is automatically selected based on the Text, Photographic, and Image elements on the pages.

Maximum Amount Toner Control

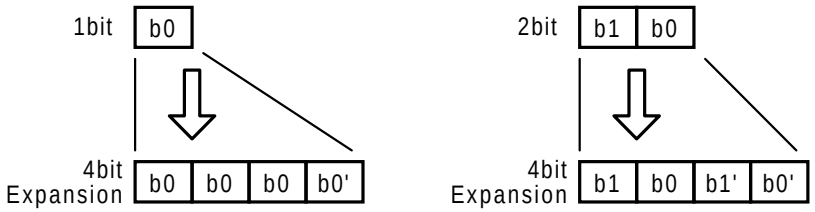
The maximum toner amount is controlled in order to prevent toner from being scattered around texts or lines printed.

The maximum amount values are prepared independently for text and photo. They can be adjusted by the SP mode

- Default: 300%
- Adjustable range: 100% to 400% (step: 10%)

4 Bit Expansion

When the controller sends the data to the printer engine, the controller expands the data to 4 bits to meet the image-processing algorithm of the printer engine. When expanding 1/2 bit to 4 bit, add some of the same data to the original data as shown in the figure. Even when the data is expanded, dithering remains the same.



G048O710.WMF

3. INSTALLATION

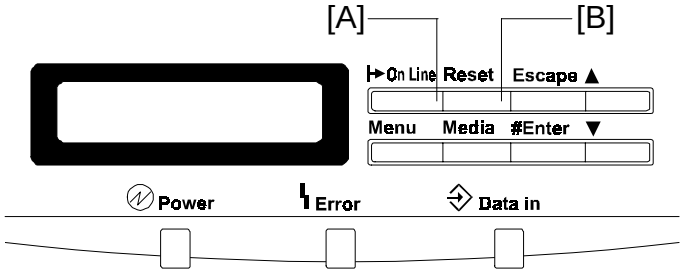
Refer to Section 3 INSTALLATION in the engine service manual.

4. SERVICE TABLES

4.1 CONTROLLER SP MODE

When accessing SP mode, the SP mode menu is added to the “Job Timeout”, “Maintenance” and “Media” menu.

4.1.1 ENTERING AND EXITING CONTROLLER SP MODE



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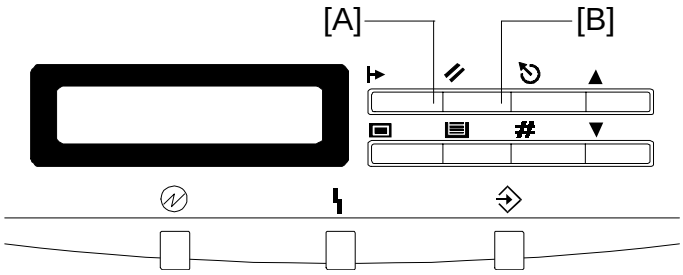


G048O016.WMF

To enter controller SP mode: There are two ways to enter SP mode.

- Turn on the printer while holding down the **[On Line]** [A] and **[Reset]** [B] keys on the operation panel. Hold the keys down until all of the LEDs and the LCD turn off.
- When on-line, first press **[Reset]** [B], **[On Line]** [A], and then press **[Enter]** [C] sequentially (don’t take more than a few seconds to press each key).

To exit controller SP mode: There are two ways to enter SP mode.

- Turn the main switch off and on. Be sure to exit from SP mode when you are finished.
- Follow the procedure for entering SP mode.

NOTE: When accessing SP mode, “SP” is displayed on the display. Do not forget to exit SP mode after servicing, because users may change the settings or clear all the settings by accident.

Service Tables

4.1.2 MENUS AND DISPLAY

Same as the base model (G024)

4.1.3 SP MODE MENU HIERARCHY

The table below shows the controller SP menu hierarchy. The items in the table can be accessed in the controller SP mode. When in SP mode, S1 to S9 are added to the Maintenance menu.

Layer 1	Layer 2	Layer 3	Layer 4
Show Counter	Color: xxxxxxx Black: xxxxxxx		It can be accessed if the meter click mode is selected.
IPDL-C Menu (displayed if IPDL-C is selected.)	1. Job Timeout	Off 0 – 999 seconds	
	2. I/O Timeout	0 – 999 seconds	
	3. MinLineWidth	1 – 4 dots	It can also be accessed in SP mode.
	4. Toner Usage	Off On	Same as above
RPS2 Menu (displayed if RPS2 is selected.)	1. Color Level	1 bit 2 bit	
	2. Color Mode	Color Black & White	
	3. Color Set	Off Vivid Super Vivid Fine Super Fine	
	4. ColorProfile	Photograph Presentation Solid Color	
	5. TonerSaving	Off On	
	6. Dithering	Auto Photographic Text	
	7. Paper Type	Plain Paper OHP Thick Paper Plain (Duplex Backside) Thick (Duplex Backside)	
	8. Auto Tray SW	On Off	
	9. Duplex Print	Off On	
	A: Duplex Bind	Long Edge Short Edge	
	B: Job Timeout	Off 0 – 999 seconds	
	C. I/O Timeout	0 – 999 seconds	

Layer 1	Layer 2	Layer 3	Layer 4
RPS2 Menu (displayed if RPS2 is selected.)	D: Feed Timeout	60 seconds 0 – 999 seconds	
	E: Print Errors	Off On	
	F: Ktalk Mode	Not available	
	G: Parallel IF1	System Default ACK Inside ACK Outside	
	H: Parallel IF2	System Default ACK Inside ACK Outside	Displayed if an optional parallel interface board is installed.
System Menu	1. Paper Tray	Tray 1 By-pass Tray 2 Tray 3	"Tray 2 and 3" are displayed if an optional paper feed unit is installed.
	2. Tray Size [*]	8.5 x 13 A5 B4 JIS B5 JIS 8.5 x 5.5 8 x 13 8.25 x 15	
	3. Bypass Use	Manual Auto Tray	
	4. I/O Buffer	16 KB 32 KB 64 KB 128 KB 256 KB 512 KB	
	5. Energy Saver	Off 5 minutes 15 minutes 30 minutes 45 minutes 60 minutes	
	6. Energy Level	Level 1 Level 2	
	7. PDL Sensing	Auto Manual	
	8. Transfer	Hi-speed Normal	
	9. Parallel 1	ACK inside ACK outside STB down	
	10. Parallel 2	ACK inside ACK outside STB down	
	11. Bi-direction	Original Mode Standard	
	12. OHP Slip	On Off	
	13. Printer Language	IPDL-C RPS	

Layer 1	Layer 2	Layer 3	Layer 4
System Menu	14. Language	English French German Italian Dutch Spanish Japanese	
	32. IP ADDRESS to 39. Active PTL.		Displayed if an optional network interface board is installed.
Maintenance	1. Reinstall	Charger	
	2. Toner Select	Cyan Magenta Yellow Black	
	3. Toner level		
	4. Registration	Byps.: Vert. Bypass/Thick: V Tray: Vert. Dup.: Vert. Tray1: Horiz. Tray2: Horiz. Tray3: Horiz.	"Tray 2 and 3" are displayed if an optional paper feed unit is installed.
	5. Toner Empty	Continue Stop	
	6. Menu Reset		
	7. Menu Protect	Off On	It can also be accessed if the **[Enter]**, **[Escape]**, and **[Menu]** keys are pressed in sequence when the printer is on line. It is always displayed in SP mode.
	8. Log Protect	Off On	Same as above
	9. Log Clear		If "Menu Protect" is selected, it is not displayed.
	10. Ethernet	Auto 10 Mbps 100 Mbps	It can also be accessed if the **[Enter]**, **[Escape]**, and **[Menu]** keys are pressed in sequence if the printer is on line, and if an optional network interface board is installed. It is always displayed in SP mode.
	S1. Maint. Page		
	S2. Color Chart		
	S3. Maint. Clear	Fusing Unit	
	S4. Clear All Mem.		

Layer 1	Layer 2	Layer 3	Layer 4
Maintenance	S5. Gamma Calib.	Load Setting	Default Setting-Old Setting-Current
		Mode Select	1 bit/photo, 2 bit/photo 1 bit/Text, 2 bit/text
		Print Sheet	
		Gamma Select	Black Cyan Magenta Yellow Save Settings
	S6. Printer ID	Not used	
	S7. Toner Limiter	Text Photo	
	S8. Brand	RICOH.EXP SAVIN NRG Infotec Gestetner LANIER RICOH.JPN	It can be accessed only if **[▼]**, **[▲]**, and **[Menu]** keys are pressed in sequence.
	S9. Meter Click	Off Print/Japan Develop. Count Print Count Print/Japan: D Dev.Count: D Print Count: D	
List Print	1. Config. Page		
	2. Color Sample		
	3. Job Log		
	4. Statistics		
Select PDL	IPDL-C		
	OPTION#1 RPS2		

4.1.4 SP MODE DETAILS

S1. Maintenance Sheet

The table below explains the contents of the engine maintenance list printout. The controller obtains the data from the engine (MCU).

Item	Description
MCU version	The MCU board firmware version number.
Toner density	Toner density can be adjusted via the Maintenance. Menu by customers. Adjusted values are stored in NVRAM on the MCU.
Registration	Side registrations from Optional tray can be adjusted with Maint. Menu by customers. And leading edge registration can be done with engine SP mode (1. Margin). These values are stored in NVRAM on the MCU.
Total counter	Indicates the total number of printouts. The counter is incremented when the paper exit sensor detects paper exit completion (regardless of paper size, type, and mono/color mode).
Color	Counter value printed in color mode.
Mono color	Counter value printed in black mode.
PCU counter	PCU replacement is indicated when this value reaches 72000. This value is incremented by 4 in color mode printing and by 1 in Black mode printing except A3/DLT. When printing with A3/DLT, double counting occurs.
Fusing unit	Fusing unit replacement is indicated when this value reaches to 60000. This counter is incremented by 2 for A3/DLT size printing and by 1 for other size printing.
Fusing unit/Counter reset time	Number of Fusing unit resets with controller SP mode (S3).
Charger Counter	Charger replacement is indicated when this value reaches to 24000.
Charger Reset Counter	Number of Charger resets with controller UP mode.
A3/DLT, A4/LT, LG, B4 and Other Size counter	Number of each size paper that passed the exit sensor.
Feed Jam, Transfer Jam and Exit Jam counter	Number of paper jams in each section.
Feed Jam, Transfer Jam and Exit Jam counter (Duplex)	Number of paper jams in each section for duplex printing.
SC counter	Number of SCs
Meter Click	Type of counting method for meter click mode
Count by developments	Number of developments. This counter increases by 1 when a print of any size is made.
Count by prints	Number of prints. This counter increases by 1 for any size printing.
Count by developments (A3/DLT double)	Number of developments. This counter increases by 2 for A3/DLT size printing and by 1 for all other sizes.
Count by prints (A3/DTL double)	Number of prints. This counter increases by 2 for A3/DLT size printing and by 1 for all other sizes.

Item	Description
Count by prints (Japan)	Not used.
Count by prints (Japan:A3/DTL double)	Not used.
SC Logging	The most recent 3 SC codes.
Jam Logging	The most recent 10 jamming codes and the total counter value at the time. 000: At paper cassette 001: At paper pass 002: At paper exit
Process-Control Error Logging	The most recent 3 errors while process control and the total counter value at the time. Not all of the errors are indicated as SC errors.
ID sensor PWM	The value set with engine SP mode, 9: ID Sensor PWM.

S2. Color Chart

Same as the base model (G024)

S3. Maintenance Clear

Same as the base model (G024)

S4. Clear All Memory

Executing this function resets the following user settings, stored in the NVRAM on the controller, to their default values:

- System Menu
- Printer ID
- Printer name on the network
- Gamma (γ) calibration
- Brand

S5. Gamma (γ) Calibration

Same as the base model (G024)

S6. Printer ID

Not used for this model.

NOTE: This is used for controller identification when installing fonts for Ricoh-Script 2 onto the hard disk. However, since it is not possible to install the hard disk in this model, it is not necessary to set the printer ID.

S7. Toner Limiter

The maximum toner values can be adjusted from 100 to 400% for both Text and Photo Modes. The default value for both is 300%.

If this value is set high, the printed image appears more true to the original data. However, since a greater amount of toner is used, it is easy to scatter the toner around lines and text areas. If the value is set low, the color balance of low-density areas varies, however toner does not scatter as easily.

NOTE: The values for the maximum toner amount are fixed for the base model (G024), but adjustable for the G047/48.

S8. Brand (Default Setting: RICOH.EXP)

Use this mode to specify the brand. The machine will then display the correct model name on the LCD and in the configuration page header.

NOTE: This must be done before delivering the printer to the customer site.

S9. Meter Click

In this mode, the counting method can be selected depending on the type of Service Contract.

When the mode is activated:

1. A new user mode, “Show Counter” displays the counter values.
2. The printer will stop printing when toner has run out. In addition, “Toner Empty” disappears from the Maintenance menu.
3. The configuration sheet includes the value for the counting method selected in Meter Click mode, not the total counter value. Both counter values are included in the engine maintenance sheet.
4. After selecting meter clock mode, the counter value for the selected counting method is automatically set to 0. However, it cannot be reset to 0 after the machine begins counting.
5. All developments/prints are counted at paper exit.

6. Counting method:

   1) By developments

	Black	1C	2C	3C	Full color
Full color		+1	+2	+3	+3
Black and white	+1				+1

   NOTE: If the meter click mode is set to "Dev. Count: D", it is incremented by 2 for A3/DLT size.

   2) By prints

	Black	1C	2C	3C	Full color
Full color		+1	+1	+1	+1
Black and white	+1				

   If the meter click mode is set to "Print Count: D", it is incremented by 2 for A3/DLT size.

7. The following are not counted:
   1) A sheet of paper that is placed between printed transparencies in OHP Slip Mode.
   2) The final page when printing an odd number of pages in duplex mode.
   3) The engine maintenance sheet, color chart and gamma calibration sheets in controller SP mode.
   4) All sheets printed out in engine SP mode.
   5) The Low-Memory Error Sheet.
   6) A list of settings (B/W) if a non-fatal error is detected during Self-Diagnostics.

8. "Change Fuser", "Change PCU", and "Need Charger" are not displayed.

IPDL-C Menu

Item	Description
3. MinLineWidth	Adjusts the minimum line width within 1 to 4 dots.
4. Toner Usage	Displays the toner usage independently for each color when printing the page. (Number of dots on the page/ maximum number of dots)

Media Menu ([Media] key)

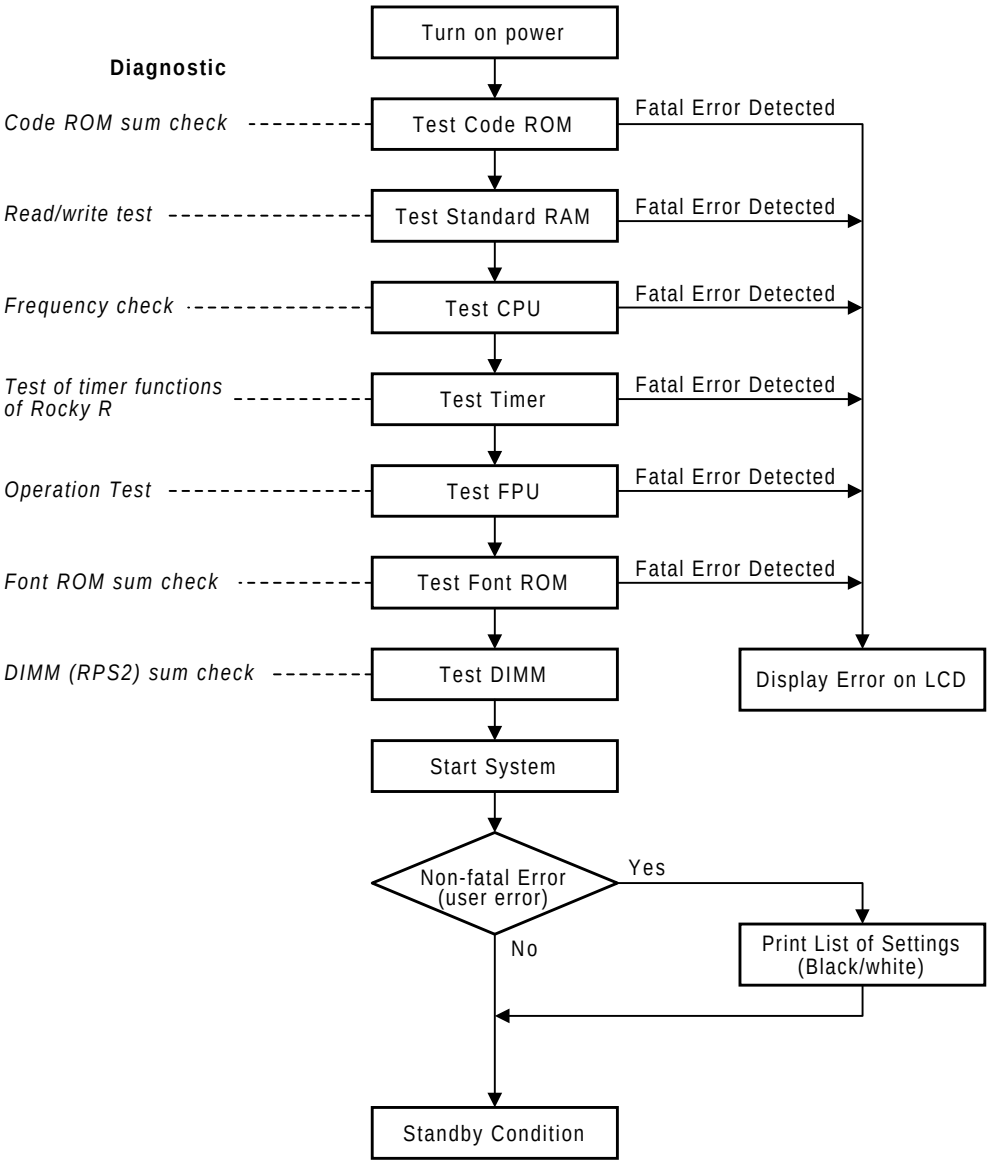
Controller SP mode adds special menu items to the user menu accessed from the **[Media]** (access by pressing the **[Media]** key, then scroll through the menu on the display) menu.

Menu Item	Function/Use
3. Summary	Displays the currently installed versions of the controller system, emulation modules, and engine (MCU) firmware, and the amount of memory installed in the controller.

4.2 POWER-UP SELF-DIAGNOSTICS

Same as the base model (G024)

4.3 POWER-UP SELF-DIAGNOSTICS FLOW CHART

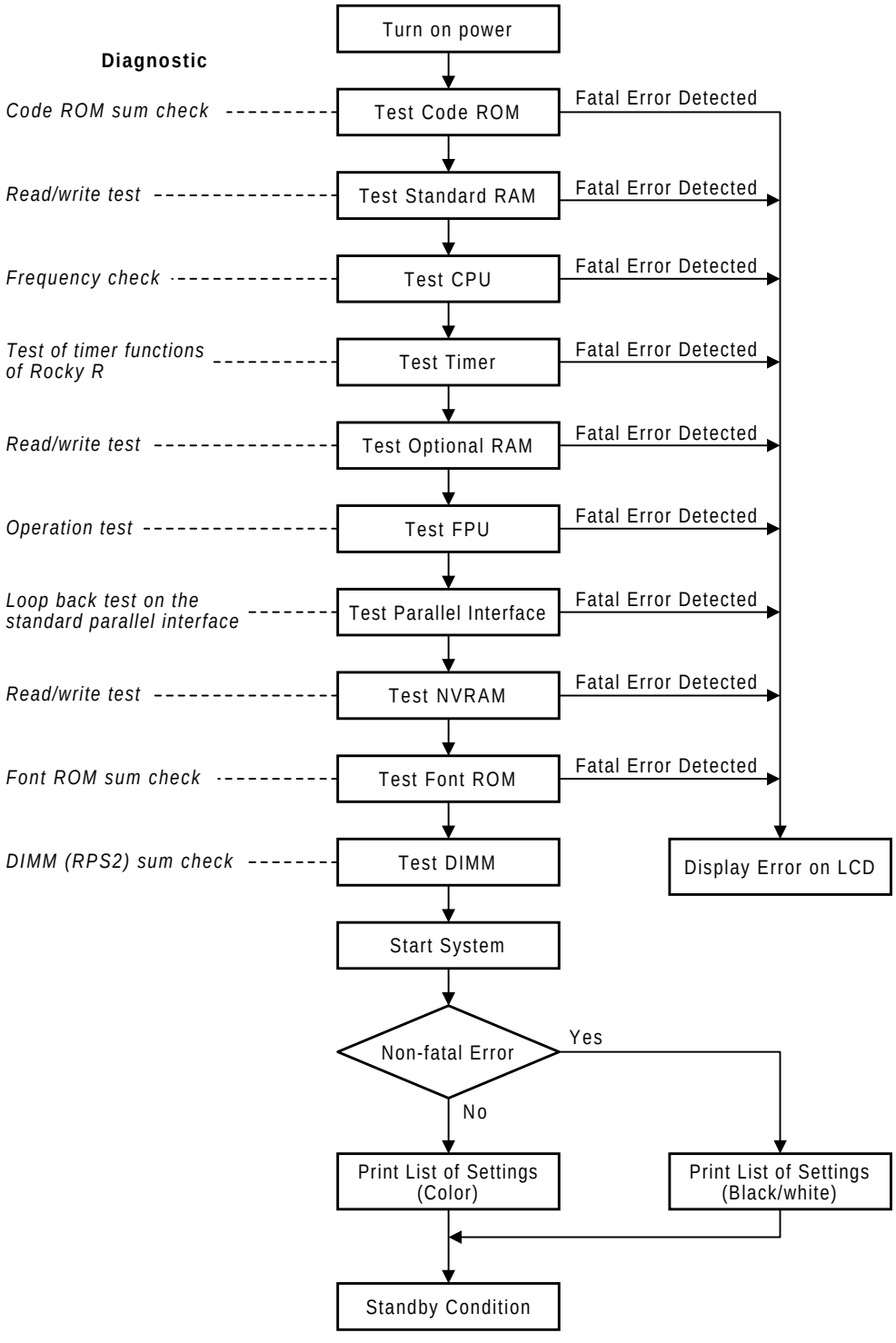


G048O711.WMF

4.4 DETAILED SELF-DIAGNOSTICS MODE

Same as the base model (G024)

4.5 DETAILED SELF-DIAGNOSTICS FLOW CHART



G048O712.WMF

5. PERIODIC MAINTENANCE

Refer to Section 5 Periodic Maintenance in the engine service manual.

6. REPLACEMENT AND ADJUSTMENT

6.1 CONTROLLER BOARD REPLACEMENT

Refer to section 6.7.1 Controller Board of the Engine Service manual for the replacement.

6.2 IMAGE ADJUSTMENT

Same as the base model (G024)

6.3 SOFTWARE UPGRADE PROCEDURE

The controller, Ricoh-Script 2, and network interface boards have a flash ROM for storing control software. This allows version upgrades using an IC card.

The engine firmware cannot be upgraded using this procedure. See the engine service manual for details on how to upgrade the engine firmware.

NOTE: Before starting an upgrade procedure, make sure that the software in the IC card is newer than the software in the controller, Ricoh-Script 2, or network interface board.
To check, do one of the following:
- Print out a configuration page (user mode).
- Enter controller SP mode and execute “3. Summary” with the **[Media]** key. The software version is shown on the operation panel LCD.

Follow the procedure shown below to upgrade the software:

1. Turn off the machine, and then unplug all cables from the parallel interface boards and network interface board, if connected.
2. **For the duplex model only:** Open the vertical transport unit.
3. Remove the controller board cover.
4. Remove the controller board and then install the upgrade IC card in the card slot.
5. Turn on the machine. The machine automatically copies the software from the IC card to the appropriate IC (controller, Ricoh-Script 2, or network interface board).

CAUTION: Do **NOT** turn off the machine while the software is being updated. Otherwise, the controller, NIB, or Ricoh-Script 2 module may be damaged.

For the controller or Ricoh-Script 2:
The LCD display on the operation panel changes as shown below as the rewrite procedure proceeds. ('MELT' is displayed during the software upgrade for Ricoh-Script 2 since it involves a decompression process.)

```
(MELT ->) ERASE -> WRITE -> VERIFY -> OK!!OK!!
```

The appearance of the message "OK!!OK!!" indicates that the controller has received the data from the IC card. However, note that it takes about 30 seconds to rewrite the data in the controller or Ricoh-Script 2 after this message is displayed.
The message NG!!NG!!" is displayed if an error occurs during the rewrite process. If this condition occurs, reinstall the IC card and turn the power off and on again.

For the network interface board:
The appearance of the message "DOWNLOAD OK." indicates that the controller has received the data from the IC card. However, note that it takes about 30 seconds to rewrite the data in the network interface board after this message is displayed.

```
DOWNLOAD -> ############ -> DOWNLOAD OK.
```

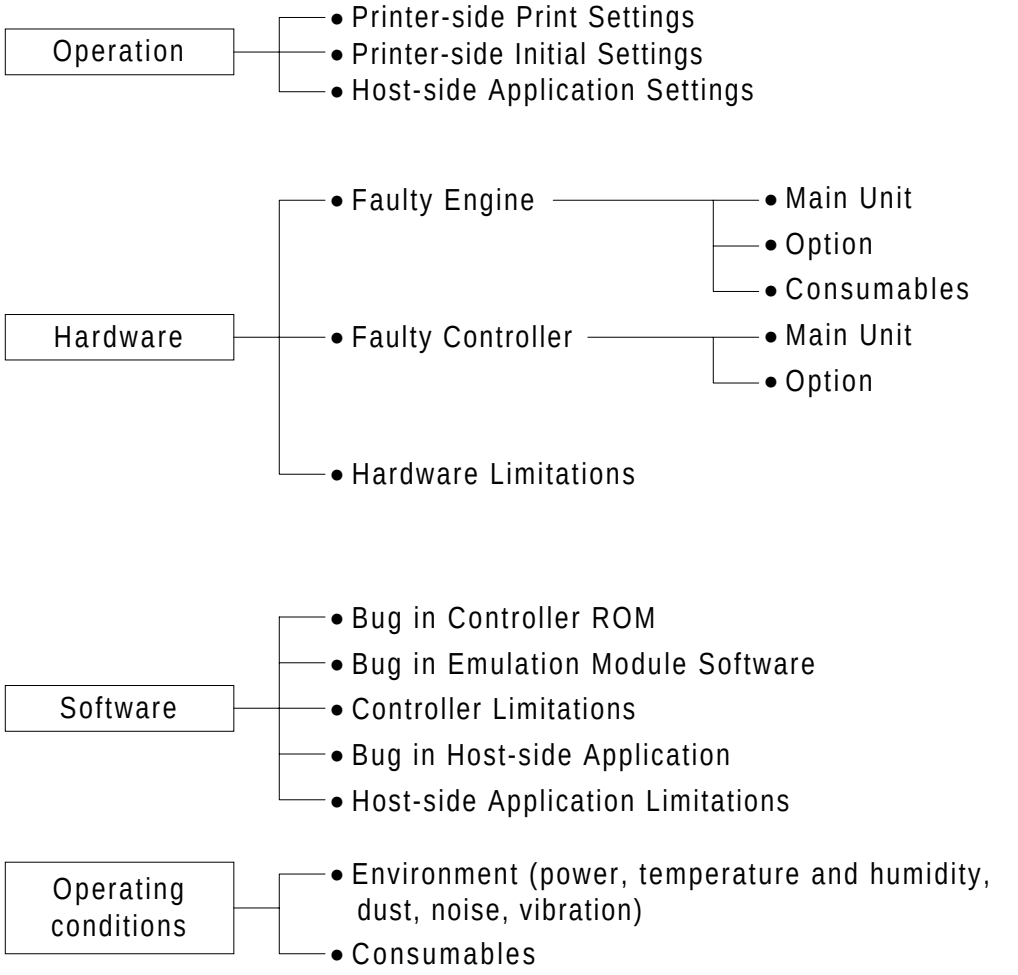
The message "DOWNLOAD NG." is displayed if an error occurs during the rewrite process. If this condition occurs, reinstall the IC card and turn the power off and on again.

1. When the rewrite ends, turn off the main unit, and remove the IC card.
2. Close the controller board cover.
3. **For the duplex model only:** Close the vertical transport unit.
4. Turn the power on again and print the user mode configuration page.
5. Check the new software version listed on the configuration page and make sure that it matches the version on the IC card.

7. TROUBLESHOOTING

7.1 TYPES OF PROBLEMS

The problems can be classified as follows:



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7.2 TROUBLESHOOTING PROCEDURE

7.2.1 HARDWARE TESTS

Same as the base model (G024)

7.2.2 OPERATION-RELATED TESTS

Same as the base model (G024)

7.2.3 SOFTWARE-RELATED TESTS

Same as the base model (G024)

7.3 ERROR MESSAGES

7.3.1 OVERVIEW

The error messages for this unit are classified as follows:

1. Controller Self-diagnostic Errors
   Errors detected while the unit performs power-up self-diagnostics/detailed self-diagnostics on the controller hardware.
2. Controller User Errors
   Errors caused because the controller software cannot process the job because of, for example, insufficient memory.
3. Internal Errors
   Errors caused because the controller's control function fails to function normally.
4. Engine User Errors (Cautionary)
   Errors that do not require user intervention to continue printing (the printer can still communicate with the PC over the interface). However, for the best printing quality, the user should correct the problem as soon as possible.
5. Engine User Errors
   Severe errors that cause the unit to stop printing, requiring the user to fix the problem before printing again.
6. Engine Service Codes (SCs)
   Severe errors that cause the unit to stop printing, requiring a technician to fix the problem before printing again.

Only one error message can be displayed at a time. There is an order of priority for displaying errors. This is as follows, starting with the highest priority: Internal Errors, Controller Self-diagnostics Errors, Engine Service Codes (SCs), Engine User Errors, Engine User Errors (Cautionary), and Controller User Errors.

7.3.2 CONTROLLER SELF-DIAGNOSTICS ERRORS

When a controller self-diagnostics error occurs, the error code is displayed on the first line of the operation panel LCD.

The second line contains an 8-digit code that gives details of the error for designers to debug. For a memory error, the second line of the LCD indicates the address where the error occurred. For errors other than memory errors, the second line always reads “FFFFFFFF”.

Code	Description	Location
00XX	Exception processing error	Controller
0101	Code ROM sum check error	Controller
0201	Standard memory read/write error	Controller
0301/0401	Optional memory read/write error Non-fatal error (printed as B0 in the error log.)	Optional memory
060X	CPU exception self-diagnostics error	Controller
0D0X	ASIC timer error	Controller
0EXX	AISIC operation panel interface error	Controller
110X	ASIC Centronics interface error Non-fatal error (printed as B1 in the error log.)	Controller
1401	NVRAM error (Read/Write)	Controller
160X	Font ROM error (Sum)	Controller
1B0X	Optional Interface 1 Error	Controller
1C0X	Optional Interface 2 Error	Controller
1D0X	Optional parallel interface board error Non-fatal error (printed as B6 in the error log.)	Optional parallel interface board
250X	DIMM (emulation module) error Non-fatal error (printed as B5 in the error log.)	Emulation module/Controller
400X	FPU error	Controller

7.3.3 CONTROLLER USER ERRORS

Display	Description	Location/action
85: Error	Graphics environment initialization error	Optional memory/Controller
86: Error	Invalid control code parameter	Incorrect printer driver or incorrect cable installed
91: Error	Font/image environment initialization error	Install additional memory.
94: Error	Download data error	Incorrect 'total memory size' setting in the driver
A3: Error	Receive buffer overflow	Increase the I/O buffer size using the system menu (user mode)
A6: Error	Overflow during compression	Install additional memory.
A7: Error	Error during drawing processing	Use a smaller font size or a less complex font, or replace the controller
A8: Error	Error during library drawing	Switch the machine off/on. If that does not work, replace the controller.
AB: Error	Print overrun	Install additional memory.
B0: Error	Optional memory error	Reinstall/replace optional memory.
B1: Error	Standard parallel interface error	Interface cable/controller
B3: Error	Invalid initial set-up setting	Reset the printer settings using 'Menu reset' in the Maintenance menu (user mode).
B4: Error	IC card slot error	Controller/IC card
B5: Error	Optional emulation module error	Reset/replace emulation module.
B6: Error	Optional parallel interface board error	Reset/replace optional parallel interface board
B7: Error	Optional network interface board error	Reinstall/replace network interface board

7.3.4 INTERNAL ERRORS

When an internal error occurs, the message “Power Off/On” is displayed on the first line of the operation panel LCD. The internal error code is on the second line in the format “Error XXYY-ZZZZZZZZ” (“XX” denotes a classification code; “YY” denotes a process number, and “ZZZZZZZZ” indicates the program address where the error occurred).

The classification code portions (XX) and their descriptions are shown below. The “YY” and “ZZZZZZZZ” portions are for designer use only (for debugging).

Code (XX)	Description
00	Error in the TLB user area.
01	CPU TLB update exception
02	CPU mismatch exception (load or fetch)
03	CPU mismatch exception (store)
04	CPU address error exception (load or fetch)
05	CPU address error exception (store)
06	CPU bus error exception (load or fetch)
07	CPU bus error exception (store)
08	CPU system call exception
09	CPU break point exception
10	CPU reserved instruction exception
11	CPU coprocessor disabled exception
12	CPU operation overflow exception
13	CPU trap exception
14	Coherency (instruction) error
15	CPU floating-point operation exception
16	CPU timer interrupt
17	ROCKY level 4 interrupt (ART or Tim)
18	ROCKY level 3 interrupt (CP)
19	ROCKY level 2 interrupt (XINT1 or XINT0)
20	ROCKY level 1 interrupt (CBE, DBE, Dtc0, Verr, Fin, Vdtc, Fout)
21	ROCKY level 0 interrupt (Debug)
22	Software interrupt
23	Software interrupt
24	Other CPU exceptions
25	Memory allocation error
26	Overflow error
27	Frame allocation error
28	Card eject error
29	Printer engine error
30	Option board error
31	Session-to-network interface board communications error

7.3.5 ENGINE USER ERRORS (CAUTIONARY)

The unit can continue printing even when one of the messages listed below is encountered.

Display	Description	Number of sheets until warning state
Change Fuser	Fusing unit replacement time arrived.	Information only
Change PCU	Photoconductor unit replacement time arrived	Information only
Need Charger	Charger replacement time arrived.	Information only
Low on: XXX	Toner near end XXX denotes the color name (CMYK or their combination).	100
Add Fusing Oil	Fusing oil near end	100
Waste T Full	Waste toner bottle is nearly full.	20

NOTE: "Change Fuser", "Change PCU", and "Need Charger" are not displayed if meter click mode is selected by SP mode.

7.3.6 ENGINE USER ERRORS

The unit can no longer continue printing when this error message is displayed. Refer to the Troubleshooting section in Setup Guide of Operating Instructions.

7.3.7 ENGINE SERVICE CODES

Refer to the Troubleshooting section in Engine Service manual.

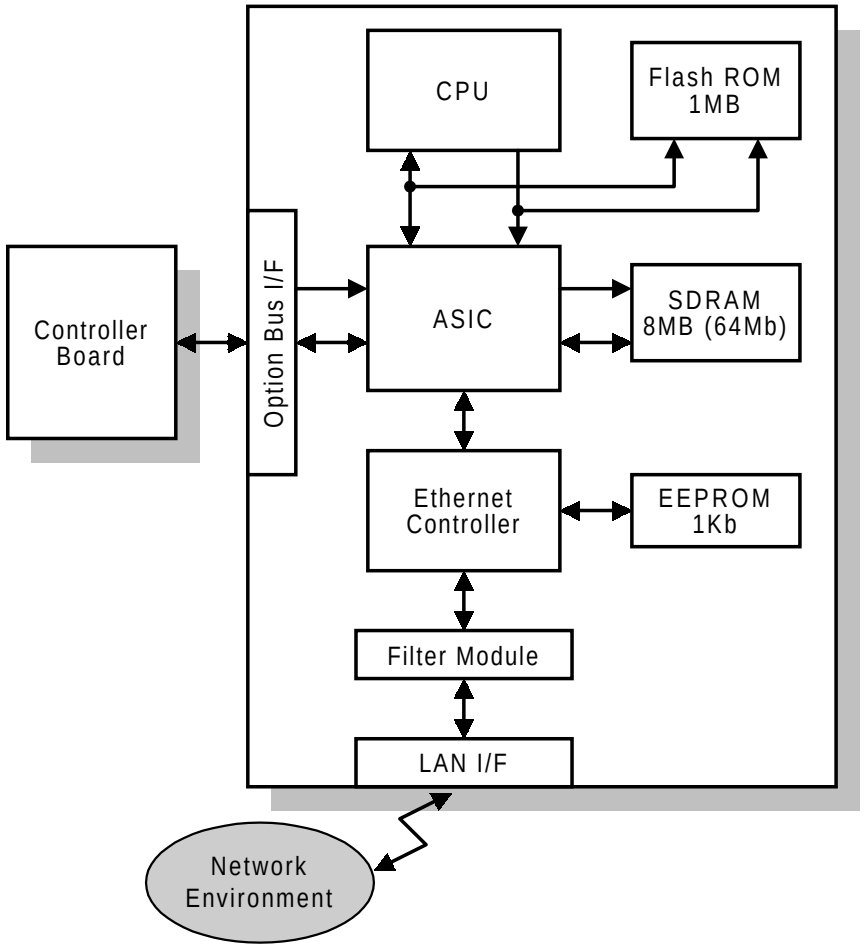
8. NETWORK INTERFACE BOARD (C4000 FERRET)

8.1 OVERVIEW

8.1.1 SPECIFICATIONS

Configuration:	Embedded
LAN Interface:	100BASE-TX/10BASE-T
Frame Type:	Ethernet II, IEEE802.3, IEEE802.2, SNAP
Protocol:	TCP/IP, AppleTalk, NetWare, NetBEUI
SNAP:	MIB-II, PrinterMIB, HostResourceMIB, RicohPrivateMIB

8.1.2 BLOCK DIAGRAM



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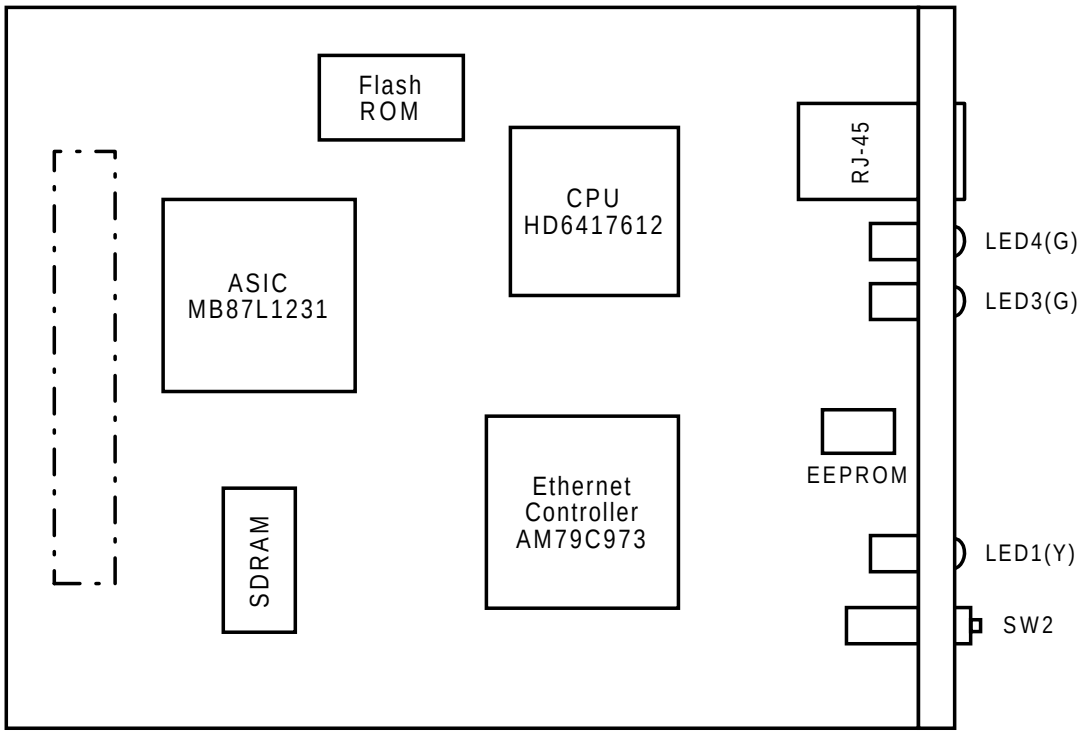
8.2 COMPONENT LAYOUT

8.2.1 NETWORK INTERFACE BOARD DIAGRAM



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8.2.2 DEVICES

Device	Description
CPU	HD6417612RF
ASIC	MB87L1231
Flash ROM	MBM29LV800BA-70PFTN (8 Mbit)
SDRAM	64Mbit: 100MHz
EEPROM	M93C46-WMN6 (1kbit)
Ethernet Controller	AM79C973KC/W

8.3 BASIC OPERATIONS

8.3.1 OVERVIEW

This network board can manage both 100BASE-TX and 10BASE-T. It has a maximum data transfer speed of 100Mbps.

The auto-negotiation function automatically switches the communication speed.

The controller board supplies the power source (+5V) and provides the reset signal. The controller board communicates with the network interface board through the option I/F connector.

The function of LED and SW is as follows;

	Functions
LED1	Displays the operating status. ON: Ready, OFF: Busy
LED2	Not used
LED3	Displays the LAN Type. ON: 100 BASE-TX, OFF: 10 BASE-T
LED4	Displays the link status. ON: Link safe, OFF: Link failure or Link disable
SW1	Resets the NVRAM on the network interface board. **NOTE:** This board has the hardware to execute a “Summary Printout”. However, it does not function on this printer due to the controller specifications.

8.3.2 SWITCH FUNCTION

SW1 resets the NVRAM on the network interface board.

NOTE: This board has the hardware to execute a "Summary Printout". However, it does not function on this printer due to controller specifications.

NVRAM Reset Procedure

This procedure resets all the network settings to the defaults.

- IP address, Subnet Mask, Default Gateway Address, Access Control Mask, Network Boot, Frame Type (NetWare), Active Protocol, and so on

1. Turn on the main switch while pressing SW1. Keep pressing SW1 for 15 seconds.
2. Release SW1 for 3 seconds, press it again for 3 seconds, and then release it.
3. Turn the main switch off/on to complete the NVRAM reset procedure.
   NOTE: There is a margin of less than 1 second for error. Use a watch to measure the time periods as accurately as possible.
4. Print out the configuration page, and then check the settings. If the procedure failed, the previous settings remain. Repeat the above procedure until the old settings have been cleared.