SERVICE MANUAL

Monochrome Laser Printer

EPSON EPL-N2050

SEPG99009

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PRECAUTIONS

Precautionary notations throughout the text are categorized relative to 1) Personal injury and 2) Damage to equipment.

Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by a WARNING heading.

Signals a precaution which, if ignored, could result in damage to equipment.

The precautionary measures itemized below should always be observed when performing repair/maintenance procedures.

DANGER

1. ALWAYS DISCONNECT THE PRODUCT FROM THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.
2. NOWORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.
3. WHEN PERFORMING TESTING AS DICTATED WITHIN THIS MANUAL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNTIL INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.

WARNING

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.
2. MAKE CERTAIN THAT THE SOURCE VOLTAGES IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY AC RATING DIFFERENT FROM AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.
3. ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.
4. IN ORDER TO PROTECT SENSITIVE MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.
5. REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS BY THE MANUFACTURE; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NONAPPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.

PREFACE

This manual describes basic functions, theory of electrical and mechanical operations, maintenance and repair procedures of EPL-N2050. The instructions and procedures included herein are intended for the experienced repair technicians, and close attention should be given to the precautions on the preceding page. Chapters are organized as follows:

CHAPTER 1. PRODUCT DESCRIPTIONS

Provides a general overview and specifications of the product.

CHAPTER 2. OPERATING PRINCIPLES

Describes the theory of electrical and mechanical operations of the product.

CHAPTER 3. TROUBLESHOOTING

Provides the step-by-step procedures for troubleshooting.

CHAPTER 4. DISASSEMBLY AND ASSEMBLY

Describes the step-by-step procedures for disassembling and assembling the product.

CHAPTER 5. ADJUSTMENT

Provides adjusting procedures.

CHAPTER 6. MAINTENANCE

Provides preventive maintenance procedures.

APPENDIX

Provides the following addition information for reference:
- Connector Pin Diagram
- Circuit Board Component Layout
- Parts List & Exploded Diagram
- Circuit Schematics

Revision Status

Revision	Date of Issue	Description
A	December 2 , 1999	First Release

Contents

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CHAPTER

1

PRODUCT DESCRIPTION

1.1 Features

EPL-N2050 is a non-impact page printer, using the laser and electro-photographic technology. The following shows features of the printer. This manual also contains specifications for the Optional Units: Duplex Unit, Shifter, Envelope Feeder, and Large Capacity Paper Unit. Refer to the Service Manual of Optional Units for the detailed specifications of the Multibin Unit.

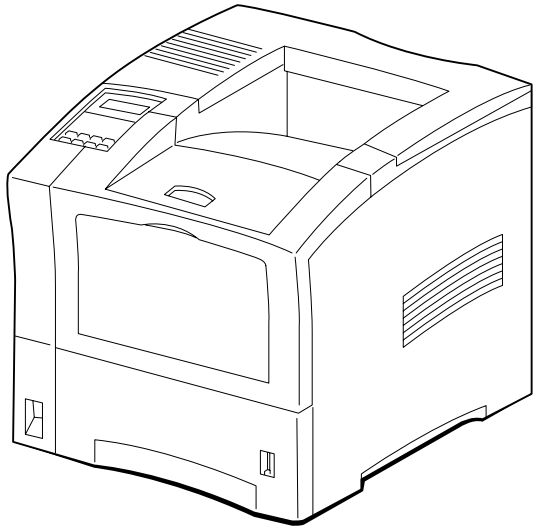


Figure 1-1. External Appearance of EPL-N2050

ENGINE FEATURES

- ☐ High-speed and high-reliability A4 engine.
- ☐ Resolution of 1200 dpi with printing speed of 20 ppm (A4) and 21 ppm (Letter).
- ☐ Standard paper supply includes one universal cassette (550 sheets) and the multiple purpose tray (100 sheets).
- ☐ Wide range of options for paper source and output bins: Universal Cassette (550 sheets) x 2, Duplex Unit, Envelope Feeder, Multibin Unit, and Shifter.

CONTROLLER FEATURES

- ☐ High-speed controller VR4310 / 166.7MHz CPU.
- ☐ 16 MB RAM as standard.
  Expandable to 256 MB using commercially available SDRAM DIMM.
- ☐ Three standard interfaces:
  - IEEE 1284 parallel interface
  - RS232 serial interface
  - Ethernet interface (100Base-TX)
- ☐ Storing data of the entire job in HDD and RAM enables high speed multiple collate function by transferring data only once.
- ☐ One slot for Type B interface (Level 3).
- ☐ One slot for Token Ring interface.
  (Optional for dealers or EPSON sales companies. Cannot be used with Type B interface at the same time.)
- ☐ Enhanced Micro Gray support.

SOFTWARE FEATURES

1. Emulation installed.

PCL5e	Paper handling support
PCLXL	1200 dpi support (Protocol 2)
ESC/Page	1200 dpi support, Enhanced Micro Gray support (disabled when printing in 1200 dpi), paper handling support, Page96 supported.
FX (FX-880), ESCP2 (LQ-2170), I239X (IBM239Plus)	Paper handling support
PJL, EJL	
PostScript Level3*	1200 dpi support (refer to Adobe PS 3 kit Product Specifications)
RCC	Firmware updating function

**PostScript Level3 is optional, and it will be installed in Slot A or B. Dedicated to EPL-N2050.*

2. Installed Utility: Web Assist

3. Rewriting of Flash ROM DIMMs
   Flash ROM DIMMs in Slot A and the program slot can be rewritten from any I/F (Not open to users except for Slot A).
   When downloading NLSP, it is written using Slot A, and it is inserted into Slot B when used.

1.2 Specifications

1.2.1 Controller Specifications

CPU

- ☐ RISC CPU VR4310 166.7MHz

RAM

- ☐ SDRAM 64bit width DIMM (168 pin, 3.3V)
  - ■ Standard 64 MB
  - ■ DIMM Option 8 MB*, 16 MB, 32 MB, 64 MB, 128 MB, 256 MB (SDRAM type, 1 slot)
    Maximum 256 MB

  *8 MB is scarcely distributed, and therefore it is not stated in the catalog or specifications.

ROM

- ☐ Fonts 4 Mbytes (mounted on the main board)
- ☐ Program 4 Mbytes (mounted on the flash ROM DIMM board)
  Program data is compressed. Decompressed on the RAM and executed when it is called.
- ☐ Expansion ROM Two ROM DIMM slots (can be mounted and removed when the power is off)
  Slot A: PS3 or option fonts
  Slot B: PS3 or option fonts
  Only one piece of PS3 can be mounted, and only one piece of ROM DIMM can be installed.

HOST INTERFACES

- ☐ Standard Parallel: IEEE 1284 compliant, bi-directional, B-type connector, compatibility, nibble, ECP
  Ethernet: 10BaseT/100BaseTX
  RS232C serial interface
- ☐ Option Type B I/F 1 slot
  Token Ring 1 slot (dealer option)
  Type B and Token Ring cannot be used together.
  Token Ring and standard network interface cannot be used together.

PRINTER SETTING

- ☐ By EJL, PJL, HTTP, SNMP and ENPC.
  Memory element EEPROM serial type 16 KB

CONTROL PANEL

- ☐ 8 switches, 6 LEDs, 20-character LCD

MOUNTING

- ☐ Fixed to main unit.

HDD OPTION

- ☐ IDE type. 6GB.

MISCELLANEOUS

- ☐ Mechanical control function is not built in.

1.2.2 Engine Specifications

- ☐ Printing Method — Electrophotographic method using scanning semiconductor laser beam and dry one-component toner.
- ☐ Resolution — 600 dpi/1200 dpi (switching with engine)
- ☐ Printing Speed — Applies to MP tray, cassette 1 and cassette 2/3 (option).

Table 1-1. Printing Speed

Paper Size	One-Side Printing (ppm)	Duplex Printing*1 (ppm)
Letter (LT)	21	14.5
A4	20	13.5
Legal 14″ (LGL)	17	11.5
Legal 13″ (GLG)	17	12
Executive (EXE)	21	15
B5	21	15
Thick Paper*2	17	--
OHP Film*2	17	--
Envelope*3	9	--

*1 *Duplex printing speed is in the case of 2 sheet batch mode.*
*2 *Switching with paper type setting.*
*3 *In the case of continuous printing, up to 20 sheets (TBD for over 21 sheets).*

- ☐ First Printing Time

Table 1-2. First Printing Time

Size	MP Tray (sec)		Cassette 1 (sec)		Cassette 2 (sec)		Cassette 3 (sec)	
	One-Side Printing	Duplex Printing*	One-Side Printing	Duplex Printing*	One-Side Printing	Duplex Printing*	One-Side Printing	Duplex Printing*
LT	13.2	20.5 21.5	13.2	20.5 21.5	14.4	21.7 22.7	15.6	22.9 23.9
A4	13.3	20.8 22.6	13.3	20.8 22.6	14.5	22.0 23.8	15.7	23.2 25.0

**Upper Tray: one sheet batch mode*
Lower Tray: two sheet batch mode

- ☐ Warm-Up Time — 65s max. (at 22°C, 100V/220V, rated voltage)

☐ Paper Supply

Table 1-3. Paper Supply

Paper Supply Method		Capacity	Paper Size	Paper Thickness
Standard	MP Tray	100 sheets	Standard Paper Xerox-4042 (LT) Xerox-RX80 (A4)	75g/m^2 (20lb)
		120 sheets	Standard Paper FX-L (A4)	64g/m^2
		30 sheets	Japanese Official Postcard*1	190g/m^2
			OHP, Labels	--
		10 sheets	Envelopes (Monarch, C10, DL, C5)*1,2	--
		Height 11.5mm	Standard or custom size shown 1-10	60-216g/m^2 (16-80lb)
	Cassette 1	550 sheets	Standard Paper Xerox-4024 (LT) Xerox-RX80 (A4)	75g/m^2 (20lb) 80g/m^2
		600 sheets	Standard Paper FX-L (A4)	64g/m^2
		200 sheets	Japanese Official Postcard*1	190g/m^2
			OHP, Labels	--
		Height 60mm	Envelopes (Monarch, C10, DL, C5)*1,2	--
		Height 60mm	Standard or custom size shown 1-10	60-105g/m^2 (16-28lb)
Option	Cassette 2	Same specification as Cassette 1.		
	Cassette 3			
	Envelope Feeder	75 sheets	Envelopes (Monarch, C10, DL, C5)*1,2	60-105g/m^2 (16-28lb)
		50 sheets	Envelopes (C5)*1,2	
		100 sheets	Japanese Official Post Card*1	190g/m^2
		Height 24mm	Standard or custom size shown 1-10	60-105g/m^2 (16-28lb)

**1* *Curls of postcards and envelopes are corrected within 5mm.*
**2* *Refer to Section 1.2.13.1 for feeding direction of envelopes.*

☐ Maximum Paper Supply Capacity*1

Table 1-4. Max. Paper Supply Capacity

Combination	MP Tray	Cassette 1	Cassette 2*2	Cassette 3*2	Total
1 (Standard Component)	100 sheets 120 sheets	550 sheets 600 sheets	--	--	650 sheets 720 sheets
2	100 sheets 120 sheets	550 sheets 600 sheets	550 sheets 600 sheets	--	1200 sheets 1320 sheets
3	100 sheets 120 sheets	550 sheets 600 sheets	550 sheets 600 sheets	550 sheets 600 sheets	1750 sheets 1920 sheets

**1* *Upper Tray: 75g/m^2 or 80g/m^2, Lower Tray: 64g/m^2*
**2* *Option*

☐ Paper Size

Table 1-5. Paper Size

Paper Type		Paper Size	Japan	Abroad	MP Tray	Cassette 1, 2, 3*1	Duplex Printing
Standard Paper	A4	210.0 x 297.0mm (8.27 x 11.69″)	❍	❍	❍	⊙	❍
	A5	148.0 x 210.0mm (5.83 x 8.27″)	❍	❍	❍	⊙	--
	B5	182.0 x 257.0mm (7.16 x 10.12″)	❍	❍	❍	⊙	--
	ISO-B5	176.0 x 250.0mm (6.93 x 9.84″)	❍	❍	❍	❍	--
	Letter (LT)	215.9 x 279.4mm (8.5 x 11.0″)	❍	❍	❍	⊙	❍
	Half Letter (HLT)	139.7 x 215.9mm (5.5 x 8.5″)	❍	❍	❍	❍	--
	Legal 13″	215.9 x 330.2mm (8.5 x 13.0″)	❍	❍	❍	⊙	❍
	Legal 14″	215.9 x 355.6mm (8.5 x 14.0″)	❍	❍	❍	⊙	❍
	EXE	184.2 x 266.7mm	❍	❍	❍	⊙	❍
	F4	210.0 x 330mm (8.27 x 13″)	❍	❍	❍	❍	--

Table 1-5. Paper Size (continued)

Paper Type			Paper Size	Japan	Abroad	MP Tray	Cassette 1, 2, 3*1	Duplex Printing
Special Paper	COM10		104.8 x 241.3mm (4.13 x 9.5″)	❍	❍	❍	❍	--
	Monarch		98.4 x 190.5mm (3.88 x 7.5″)	❍	❍	❍	❍	--
	C5		162.0 x 229.0mm (6.38 x 9.02″)	❍	❍	❍	❍	--
	DL		110.0 x 220.0mm (4.33 x 8.66″)	❍	❍	❍	❍	--
	Index (3″ x 5″)		76.2 x 127.0mm (3 x 5″)	--	❍	❍	--	--
	Japanese Official Postcard		100.0 x 148.0mm	❍	--	❍	❍	--
	Label	A4	210.0 x 297.4mm (8.27 x 11.69″)	❍	❍	❍	❍	--
		LT	215.9 x 279.4mm (8.5 x 11.0″)	❍	❍	❍	❍	--
	OHP	A4	210.0 x 297.0mm (8.27 x 11.69″)	❍	❍	❍	❍	--
		LT	215.9 x 279.4mm (8.5 11.0″)	❍	❍	❍	❍	--

*1 *Cassette 2 and 3 are optional items.*

❍: Can be fed.

⊙: Auto paper size detection.

☐ Consumables Imaging Cartridge

☐ Applicable Paper Size to Feed:

Table 1-6. Applicable Paper Size to Feed

		Paper Width	Paper Length
Standard	MP Tray	76.2-215.9mm (3-8.5 inch)	127-355.6mm (5-14 inch)
	Cassette 1	98.4-215.9mm (3.87-8.5 inch)	148.5-355.6mm (5.85-14 inch)
Option	Cassette 2 and 3	98.4-215.9mm (3.87-8.5 inch)	148.5-355.6mm (55.85-14 inch)
	Envelope Feeder	98.4-178.0mm	148.5-254.0mm

☐ Paper Feed Standard Center-line reference for each paper size.

☐ Output Paper Capacity

Table 1-7. Output Paper Capacity

Paper Output Method		Capacity	Paper Size	Usable Paper Thickness
Standard	Face Down	500 sheets	Standard Paper Xerox-4024 (LT) Xerox-RX80 (A4)	75g/m^2 (20lb) 80g/m^2
			Standard Paper FX-L (A4)	64g/m^2
Option	Shifter*1	500 sheets	Standard Paper Xerox-4024 (LT) Xerox-RX80 (A4)	75g/m^2 (20lb) 80g/m^2
			Standard Paper FX-L (A4)	64g/m^2
			Paper Width: 98.7-215.9mm (3.87-8.5 inch) Paper Length: 148.5-355.6mm (5.85-14 inch)	

*1 Off-set Deal = More than 10mm

☐ Dimension

Main Unit: 422 (W) x 439 (D) x 413 (H) mm

Optional Units:

Table 1-8. Optional Unit Dimension

	Width (mm)	Depth (mm)	Height (mm)
LCP Unit	422	433	175
Shifter	422	293 (455*1)	142 (234*2)
Envelope Feeder	289	290 (343*3)	116
Duplex Unit*4	315	250	98

*1 *When the extension output tray is extended.*
*2 *When exit chute and extension output tray are extended.*
*3 *When extension feed tray is extended.*
*4 *Installed inside the main unit.*

☐ Weight

Main Unit: 26 kg
Main Unit + Imaging Cartridge: 27.7 kg

Optional Units:
LCP Unit: 9.8 kg
Shifter: 2.5 kg
Envelope Feeder: 1.8 kg
Duplex Unit: 1.2 kg

- ☐ Power Supply
  100V Model: 100V/120V 90-132V (50-60Hz ±3Hz)
  200V Model: 220V/240V 198-264V (50-60Hz ±3Hz)
- ☐ Power Consumption*1

Table 1-9. Power Consumption

			100V	120V	220-240V
Max Rated Current			8A	6.66A	3.33A
Power Consumption	Maximum		800W	800W	800W
	Continuous Printing (Average)		TBD	386W	315W
	Stand-by (Average)	Heater ON	TBD	96W	95W
	Power Save (Average)	Heater OFF*2	30W	30W	30W

**1 Controller Supply: 3.3V/5A, 5V/2.5A*
**2 Controller Consumption: 10W(3.3V/3A)*

- ☐ Machine Life: 600,000 pages or 5 years, whichever comes earlier.
- ☐ Acoustic Noise (based on ISO7779):

Table 1-10. Acoustic Noise

	Stand-by	Power Saving	Printing
Main Unit*1	35 dB (A)	Background Noise	49.5 dB
Main Unit + Option*2	--	--	53.0 dB

**1 Measurement is done with MP Tray closed.*
**2 Options: Duplex Unit, Cassettes 2 and 3, Envelope Feeder, and Shifter.*

- ☐ Ozone Concentration: TBD (Less than 0.01ppm, in accordance with Blue Angel).
- ☐ Toxicity: OPC, toner, and plastics materials are all non-toxic.

1.2.3 Process Specification

- ☐ Method: Electrophotographic method using dry one-component developing.
- ☐ Light Source: Laser Diode
- ☐ Photoconductor Unit: OPC (Organic Photo Conductor) Drum
- ☐ Charging: Roller Charging Method
- ☐ Developing: Exposed Area Development
- ☐ Toner: One-component magnetic toner
- ☐ Transfer Method: Roller Transfer
- ☐ Fixing: Heat Roller
- ☐ Density Adjustment: Laser Power Variable (adjustment with video command is possible.)

1.2.4 Paper Specification

☐ Paper Type

- ■ Standard Paper Xerox 4024 (75 g/m^2), RX-80 (80 g/m^2)
- ■ Plain Paper
  60 g/m^2 - 105 g/m^2 (16 lb - 28 lb)
  Photocopier paper, bond paper, recycled paper
- ■ Special Paper
  Labels, Japanese official postcards, transparency films, Colored paper, thick paper, DTP paper, letter-head

Note 1 lb: Ream weight = lb/500 sheets/17"x22" (431.8 x 558.8mm)
g/m^2: 1 g/m^2 = 0.2659763 lb

Note 2 Do not use any of the paper types listed below with this printer. They may cause defective printing, paper blockages, or damage to the printer.

- *Carbon paper, non-carbon paper, thermal paper, pressure-sensitive paper, acidic paper*
- *Paper previously printed in a thermal printer or inkjet printer*
- *Extra thick or extra thin paper*
- *Damp paper*
- *Surface-coated paper or surface treated color paper.*
- *Extra smooth or glossy paper. Extra rough paper. Paper with significantly different roughness on each surface.*
- *Paper with punched holes or perforations.*
- *Folded, curled, or tom paper.*
- *Irregularly shaped paper or paper with non-perpendicular corners.*
- *Sheets of labels that peel off easily.*
- *Paper with glue, staples, or clips attached.*
- *Special inkjet paper (superfine paper, glossy film, etc.)*
- *OHP film for color laser printers or photocopiers.*
- *Sheets already printed on other color or black/white laser printers or photocpiers.*
- *Sheets of paper stuck together.*

Note 3 When printing on some postcards with pre-printed pictures, the paper may not feed correctly due to paper particles adherring to the paper-feed roller. If this occurs, clean the printer as described in Section 1.2.12 "Maintenance".

☐ Paper Batch Division

Table 1-11. Paper Batch Division

	Standard Paper	Plain Paper	Special Paper				
			OHP	Japanese Official Postcards	Labels	Thick Paper	Evnvelopes
MP Tray	●	◆	◆	●	◆	◆	◆
Cassette 1/*2/*3	●	◆	◆	●	◆	◆	◆
Env. Feeder*	X	X	X	●	X	X	◆
Duplex Unit*	●	◆	X	X	X	X	X

* Option
● Paper feeding reliability and image quality guaranteed.
◆ Paper feeding reliability and image quality guaranteed. Restricted to normally used paper types.
X Paper feeding not possible.

☐ Printing Area

Guaranteed printing area:
Entire paper area except for a 4mm margin at each edge (see the figure shown below). (a1, a2, c1, c2 = 4mm)

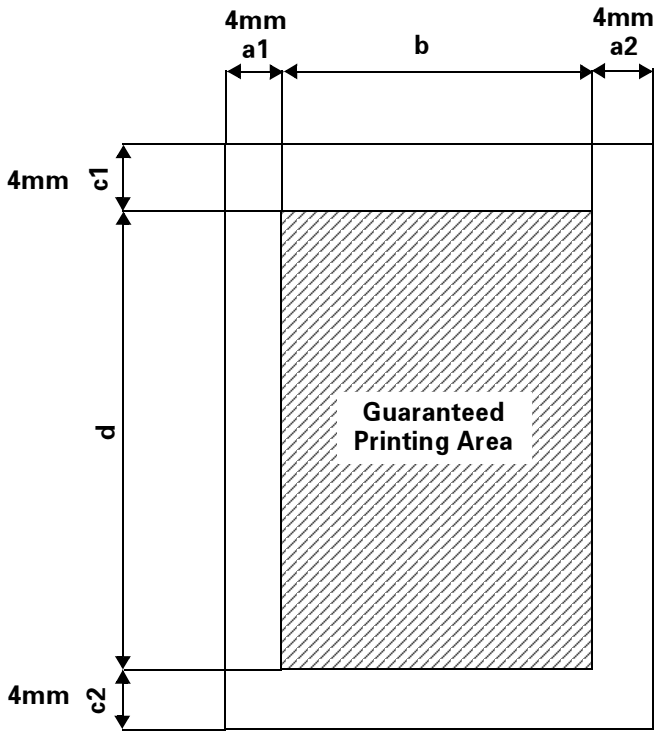


Figure 1-2. Printing Area

1.2.5 Sensors

Table 1-12. Sensors

Unit		Detected Item	Detection Method	Comments
Imaging Cartridge		Mounted/unmounted	Exist	
		Genuine SEC product	Combination of SW on the main unit and Key on the cartridge.	
		Toner near end	Automatic detection with magnetic sensor.	Detects residual volume approx. 3.3% (A4/5% duty: 500 pages)
Standard Paper Feeders	MP Tray	Out of paper	Automatic detection by photosensor and actuator.	
	Cassette 1	Cassette mounted/unmounted	By sensor SW.	
		Out of paper	By photosensor and actuator.	
		Residual paper	By photosensor and actuator.	Detects 50 ± 30 sheets.
		Paper size	By sensor switches.	7 sizes
Optional Paper Feeders	Cassette Unit	Same as Cassette 1.		
	Envelope Feeder	Unit mounted/unmounted	Automatic detection by connector.	
		Out of paper	Automatic detection by photosensor and actuator.	
Standard Paper Output Units	Face Down	Full detection	Automatic detection by photosensor and actuator.	

Table 1-12. Sensors

Unit		Detected Item	Detection Method	Comments
Optional Paper Output Units	Duplex Unit	Unit mounted/unmounted	Automatic detection by connector.	
	Shifter	Unit mounted/unmounted	Automatic detection by connector.	
		Full detection	Automatic detection by photosensor and actuator.	

1.2.6 Reliability, Durability, Serviceability

- MPBF 200,000 pages
  Note: This figure indicates the mean pages until a failure requiring part replacement or failure unrecoverable by user occurs.
- Printing Volume Maximum of 75,000 pages/month
  Average 5,000 pages/month (one-side printing)
- Paper Feeding Reliability

Table 1-13. Cassette 1/2/3 (Cassette 2, 3 are optional)

	Jam Rate		Multiple-sheet Feed Rate
	One-Side Printing	Duplex Printing	One-Side / Duplex Printing
Standard Paper	1/10,000	1/6,666	1/5,000
Plain Paper	1/5,000	1/3,333	1/2,500
Special Paper	1/1,500	--	1/800

Table 1-14. MP Tray

	Jam Rate		Multiple-sheet Feed Rate
	One-Side Printing	Duplex Printing	One-Side / Duplex Printing
Standard Paper	1/1,000	1/666	1/300
Plain Paper	1/500	1/333	1/150
Special Paper	1/100	--	1/50

Table 1-15. Envelope Feeder (Option)

	Jam Rate	Multiple-sheet Feed Rate
	One-Side Printing	One-Side Printing
Standard Paper	1/300	1/300

- Printing Start Position Accuracy
  - Main Scanning Direction: ±2.0mm
  - Sub Scanning Direction: ±2.5mm
- Skew
  ±0.63%
  (Reference) A4: Main Scanning Direction (202mm) ±1.27mm
  Sub Scanning Direction (289mm) ±1.82mm
- Durability 600,000 pages or 5 years, whichever comes earlier. (including replacing maintenance parts by service technicians)
- Serviceability
  MTTR: In 30 minutes average
  (time for service technician to locate and repair a failure)
- Output Paper Curl Height
  Max. 12mm (in the standard environment)

1.2.7 Operating Conditions

☐ Temperature and Humidity

Table 1-16. Temperature & Humidity

	Condition	Main Unit
Temperature	Operation	5-35°C
	No Operation	-20-40°C
Humidity	Operation	15-85%RH
	No Operation	5-85%RH

NOTE: *Including consumables.*
No condensation.

☐ Barometric Pressure Altitude: 0-3100m

☐ Horizontality Max. 1° tilt (front-rear or left-right)

☐ Illumination Max. 3000 lx (no direct sunlight)

1.2.8 Storage Environment

Table 1-17. Temperature & Humidity

	Condition		Main Unit
Temperature	Normal condition (12 months)	0-35°C	0-35°C
	Severe condition (Max. 1 month)	High temperature	35-40°C
		Low temperature	-20-0°C
Humidity	Normal condition (12 months)		15-80%
	Severe condition (Max. 1 month)	High humidity.	80-95%
		Low humidity.	5-15%

1.2.9 Electrical Characteristics

The following items do not apply to the Optional Units.

- ☐ AC Line Noise
  - ■ Pulse Width: 50-1000ns
  - ■ Pulse Polarity: +/-
  - ■ Repeating: Asynchronous
  - ■ Mode: Common / Normal
  - ■ Voltage: 1kv
    No component damage to 2kv.
- ☐ Instantaneous Power Failure

  DIP 100% (at rated voltage - 10%)
  No abnormality to quality in print cycle.
- ☐ Static Electricity Resistance
  - ■ Up to 10kv No hardware error.
    No software error that the user cannot remedy.
  - ■ Up to 15kv No component damage.
- ☐ Inrush Current
  - ■ 1/8 cycle 100A max.
  - ■ 1/2 cycle 50A max.
- ☐ Insulation Resistance 10MΩ max.
- ☐ Dielectric Strength
  No breakdown when the following voltage is applied for one minute.

	Across Primary and Chassis
100V Model	AC1000V
200V Model	AC1500V

- ☐ Leak Current
  - ■ 0.25mA max. (100V model, 100V input)
  - ■ 3.5mA max. (100V model, 120V input)
  - ■ 3.5mA max. (200V model)

1.2.10 Applicable Standards and Regulations

The engine specification meets the following standards and regulations. Depending on the destination, some standards and regulations apply to the product only when including controller.

Table 1-18. Safety Standards

Model Name	Applicable Standards
100V Model	UL 1950 CSA 22.2 No. 950 NOM
200V Model	IEC 950 CCIB, Russian Safety Standards (TBD) Singapore Safety Standards (TBD) Hong Kong Safety Standards (TBD)

Table 1-19. Safety Regulations (Laser Radiation)

Model Name	Applicable Standards
100V Model	FDA (NCDRH) Class 1
200V Model	IEC 825 Class 1

Table 1-20. EMC

Model Name	Applicable Standards
100V Model	CNS 13438 (Taiwan) FCC Part15 Subpart B Class B/CSA C108.8 Class B
200V Model	EC EMC Directive 89/336/EEC • EN55022 Class B • EN61000-3-2 • EN61000-3-3 • EN50082-1 AS/NZS 3548 Class B (Australia)

☐ Power Consumption — Complies with International Energy Star Program standards.

☐ Others

- ■ Toner — No effects on the human body (conforming to OSHA, TSCA, EINECS, Labor Safety Law, CSCL).
- ■ OPC — No effects on the human body (conforming to OSHA.)
- ■ Ozone Generation — Conforming to UL478, Edition 5.
- ■ Materials — Conforming to Swiss environmental-protection laws (not including Cds).

1.2.11 Consumables

☐ Specifications

Table 1-21. Consumables

Name	Contents	Life (Toner Consumption)
Imaging Cartridge	• OPC Drum • Charger • Developer • Black, one-component, magic toner	Average 15,000 pages*1,*2

*1 *The above is the approximate number of printable sheets when using continuous printing of Letter or A4 landscape sheets at 5% of the image occupation ratio (SEF).*
The cartridge life varies depending on the image occupation ratio and type of printing (continuous, intermittent, print density and toner saving).

*2 *If the number of photoconductor rotation reaches the value equivalent to the continuous printing of 30,000 pages before the toner life end is detected, it is handled as if toner empty of Imaging Cartridge was detected.*

☐ Storage Environment Refer to Section 1.2.8.

1.2.12 Maintenance

Table 1-22. Maintenance

Maintenance Item	Timing	Maintenance by	Possibility of User Maintenance
Cleaning Transfer Roller	When an error occured.	User	--
Replacing Transfer Roller Unit	Replace after printing 200,000 pages.	Service Personnel	O
Cleaning Paper Feed Roller	When paper-feed error occured.	User	--
Replacing Paper Feed Roller Kit	Replace after printing 200,000 pages.	Service Personnel	O
Replacing Fuser Unit	Replace after printing 200,000 pages.	Service Personnel	O
Replacing Imaging Cartridge	Replace after printing every 15,000 pages.	User	O
Retard Roller Kit of Envelope Feeder	Replace after printing every 100,000 sheets.	Service Personnel	X

O*: Can be replaced without implements.*

1.2.13 External Dimension

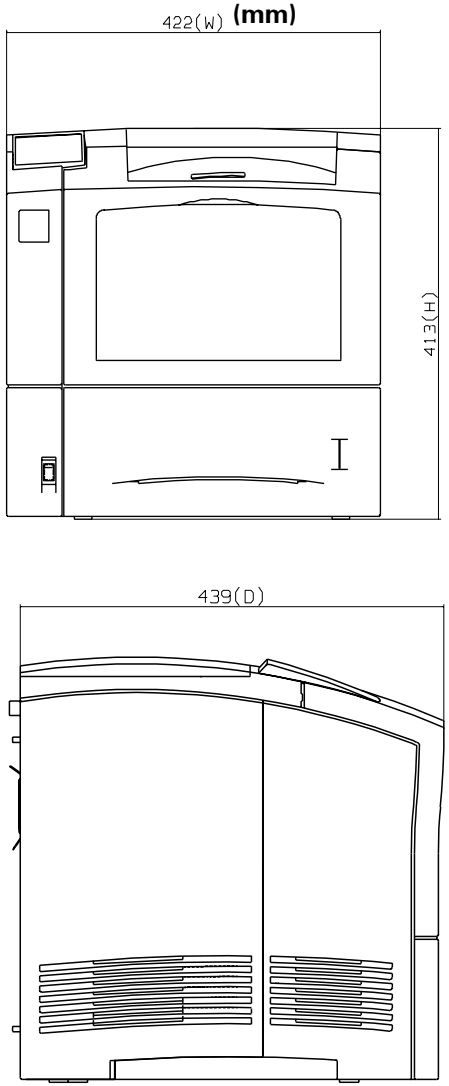


Figure 1-3. External Dimension

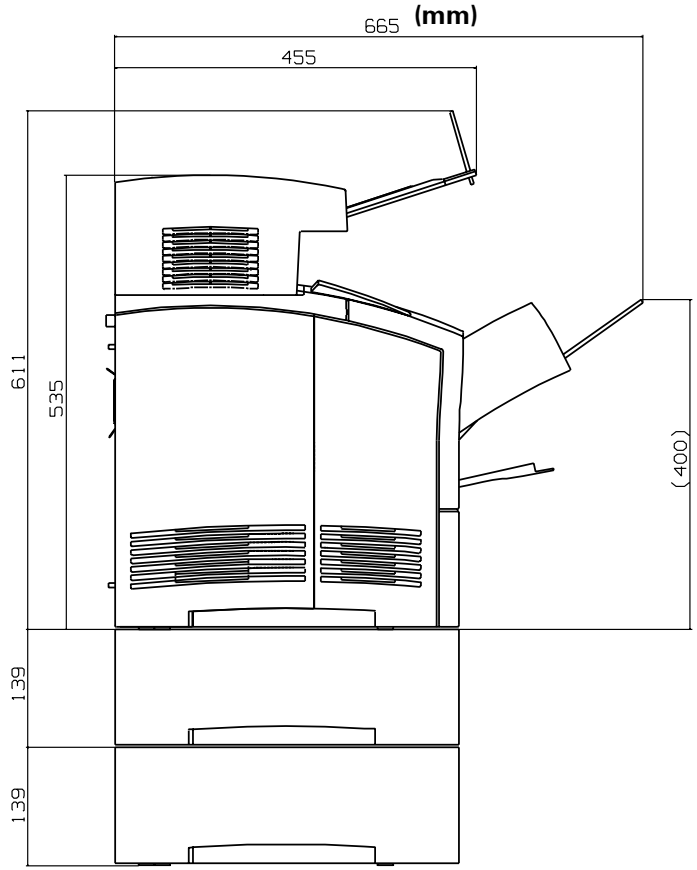
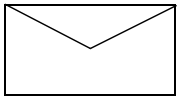
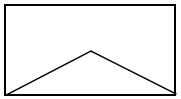
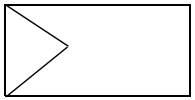


Figure 1-4. External Dimension with Optional Units

1.2.14 Other Specifications

1.2.14.1 Setting Direction for Envelopes

⇐ Feed Direction				
Envelopes	COM10, DL MONARCH	COM10, DL MONARCH	C5	C5
MP Tray	O*3	X	O*3	O*1, *3
Cassette 1, 2*2, 3*3	O*4	O*4	O*4	O*1, *4
Envelope Feeder*2	O*3	X	O*3	O*1, *3

*1 *Only for not adhesive or adhesive tape.*
*2 *Option*
*3 *Set the flap upwards.*
*4 *Set the flap downward.*

1.2.14.2 Paper Supply

If this is lower than the bin which is supplying paper, paper-supply during printing is possible.

1.2.15 Configuration

The following settings can be configured in the EPL-N2050 controller. The settings are made with jumper resistors, and they must be set at the factory. See Table1-24 for details of the jumper settings.

Table 1-23. Factory Setting for Printing Menu

	Factory Setting for Printing Menu - Page Size
RJ7 installed (RJ8 not installed)	A4
RJ8 installed (RJ7 not installed)	LT

Table 1-24. Jumper Setting

	IOP0		IOP1		IOP2		IOP3		INPT5		PB0	
	RJ1	RJ2	RJ3	RJ4	RJ5	RJ6	RJ7	RJ8	RJ9	RJ10	RJ11	RJ12
EAI Latin	O		O		O			O		O		O
Others	O		O		O		O			O		O

1.2.16 Host Interface Specifications

The EPL-N2050 has the following host interfaces as standard.

- IEEE 1284 parallel interface
- Ethernet interface
- RS232C serial interface
- Option Type B: 1 slot
- Token Ring: 1 slot
  (Remove Type B guardrail to install Token Ring)

Each interface will be affected by XXX I/F Use/No Use setting in each I/F Menu of SelecType.

Note: Type B and Token Ring, or Ethernet and Token Ring should not be installed at the same time.
Network Menu-Topology setting specifies which interface to be used.

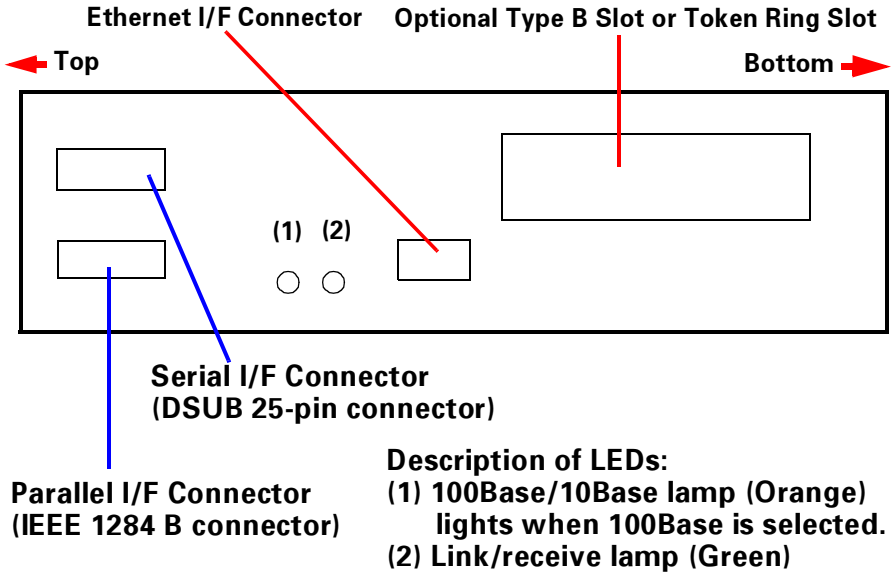


Figure 1-5. Rear View (Interface Bracket)

1.2.16.1 Parallel Interface Specifications

Interface Type: IEEE 1284 bi-directional high-speed interface

Operation Modes: Compatibility, Nibble, ECP

Connector Type: 57RE-40360-830B (D7A) DDK or equivalent

Compatible Plug: Amphenole or equivalent

The default device ID setting for this printer is as follows. The information is shown below including line breaks, but the actual data is a continuous character string with no line break characters. The CMD items are not in order. The CID, MODE and STATUS items are not included. The DES item contents are MFG and MDL connected by a space. XXXX is the product name.

When PS3 is not installed:

MFG: EPSON;
CMD: PJL, EJL, ESCPL2, ESCP9, PRPXL24-01, PCL, HPGL2-01, ESCPAGE-04, PCLXL;
MDL: XXXX;
CLS: PRINTER;
DES: EPSON XXXX;

When PS3 is installed:

MFG: EPSON;
CMD: PJL, EJL, ESCPL2, ESCP9, PRPXL24-01, PCL, HPGL2-01, ESCPAGE-04, PCLXL, POSTSCRIPT;
MDL: XXXX;
CLS: PRINTER;
DES: EPSON XXXX;

MFG, MDL, DES and CID of Device ID are user-redefinable. The DES and CID fields do not respond to the default value, but respond to the defined character string only if redefined. Device ID upon redefinition is as shown below. **** is a user-defined character string.

When PS3 is not installed:

MFG: **;**
CMD: PJL, EJL, ESCPL2, ESCP9, PRPXL24-01, PCL, HPGL2-01, ESCPAGE-04, PCLXL;
MDL: **;**
CLS: PRINTER;
DES: **;**
CID: **;**

When PS3 is installed:

MFG: **;**
CMD: PJL, EJL, ESCPL2, ESCP9, PRPXL24-01, PCL, HPGL2-01, ESCPAGE-04, PCLXL, POSTSCRIPT;
MDL: **;**
CLS: PRINTER;
DES: **;**
CID: **;**

1.2.16.2 Serial Interface Specification

Interface Type:	RS-232C
Transfer Format:	Asynchronous Mode
Transfer Rates:	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200
Parity:	None, even, odd
Start Bit:	1
Stop Bit:	1, 2
Data Length:	7, 8
Hardware Protocol:	DTR, DSR
Software Protocol:	Xon/Xoff (supports Robust)
Connector Type:	17LE-13250-27 (D57) DDK or equivalent.

1.2.16.3 Ethernet Interface Specifications

Interface Type: 10BaseT, 100BaseTX, Half Duplex,
Full Duplex: Automatically switched when power is turned on.

Communication Protocol:

1) IPX/SPX (IPX, SPX, NCP, RIP, SAP, PrintServer, RemotePrinter, NDS, SNMP)
2) NetBIOS (SMB)
3) TCP/IP (IP, UDP, TCP, LPR, FTP, TELNET, ARP, ICMP, DHCP, SNMP, HTTP)
4) AppleTalk (ELAP, DDP, ATP, PAP, AARP, NBP, ZIP, RTMP)
5) ENPC (EPSON Network Peripheral Control Protocol)

Connector Type: RJ45

Appropriate Cable: 2-pair Category 3 or 4 or 5 STP (10BaseT, 100BaseTX)
For compliance with FCC Class B, EN55022 Class B, and VCCI Class B, a shielded type cable must be used.

Table 1-25. Pin Assignments

Pin	Signal	I/O
1	Tx+	O
2	Tx-	O
3	Rx+	I
4	N.C.	-
5	N.C.	-
6	Rx-	I
7	N.C.	-
8	N.C.	-

Printer Name: Factory default setting is the same as Product Name.

Product Name: Product Name

Emulation Type: See the table below.

Entity Type: See the table below.

Table 1-26.

Emulation	Emulation Type	Entity Type
PS*1	POSTSCRIPT-00*1	LaserWriter*1
ESC/Page	ESCPAGE-04	EPSONPAGE4
LJ4	PCL5E-00	EPSONPCL5
PCLXL	-	-
RCC*2	-	-
1239X	PRPXL24	EPSONPRPXL24
GL/2	HPGL2	EPSONHPGL2
FX	ESCP9	EPSONFX
ESCP2	ESCPL2	EPSONLQ2

*1 Added when PS3 is installed.
*2 RCC cannot be selected by users.

Emulation Type:

When Emulation is "Auto":

PS not started: AUTO (Emulation Type 1, 2, 3...)
PS started: EJL (POSTSCRIPT-00, other Emulation Type 1, 2, 3...)

When Emulation is fixed:

EJL (Default Emulation Type, other Emulation Type 1, 2, 3...)

Entity Type:

When Emulation is "Auto": As shown in the table.

When Emulation is fixed: Entity Type of default Emulation and EPSONPAGE4 are returned.