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EPSON

SR-600

Specification

STANDARD	
Rev. No.	A
Notes	

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REVISION SHEET

The table below indicates which pages in this specification have been revised.
 Before reading this specification, be sure you have the correct version of each page.

Revisions		Design Section			Sheet Rev. No.							
Rev.	Document	WRT	CHK	APL	Sheet	Rev.	Sheet	Rev.	Sheet	Rev.		
A	Enactment	Okizaki	Takahashi	Miyagawa	I	A						
					II	A						
					III	A						
					1	A						
					2	A						
					3	A						
					4	A						
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					12	A						
					13	A						
					14	A						
					15	A						
					16	A						
					17	A						
TITLE SR-600 Specification (STANDARD)				Front Part					Contents Appendix Total	Contents Appendix Total	Contents Appendix Total	Contents Appendix Total
				Cover	Rev. Sheet	Scope	General Description	Table of Contents				
				1	2	-	1	2				

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REVISION SHEET

REV.	SHEET	CHANGED CONTENTS
A	All	The specifications of the IM-600 and the DM-LS121T are combined.
<p>TITLE</p> <p style="text-align: center;">SR-600 Specification (STANDARD)</p>		

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1. APPLICATION

This product specification applies to the SR-600 POS terminal system.

2. GENERAL DESCRIPTIONS

2.1 Features

The IM-600 is a base unit of the SR terminal. Designed for use in hospitality, and other high-end establishments, it provides the following features;

- IBM® PC/AT® compatible
- Intel® Celeron™ (PPGA package: up to 366 MHz, FCPGA package: up to 733 MHz) can be used.
- Two 168-pin DIMM sockets are ready for a maximum 512MB of memory.
- 2 MB video memory installed with the video controller in the PCI bus.
- TFT 12.1-inch color liquid crystal display.
- Two disk spaces are available for 2.5-inch hard disk drive, CD-ROM drive or CompactFlash™ card.
- An Ethernet controller for 10BASE-T/100BASE-TX is installed in the PCI bus.
- One PCI expansion slot (PCI version 2.1 compliant.)
- Cash Drawer/CRT interface board available as a factory option.
- A customer display can be installed as an user option.
- Case lock prevents unauthorized access to the inside of the terminal.
- Display angle adjustable from 20 to 65 degrees.
- Maximum dimensions are 310 (W) × 363 (D) × 277 (H) mm (including rubber feet, excluding LCD clamp.)
- A high resolution display of 800x600 dots, using 12.1-inch color TFT LCD.
- A high-luminance backlight with 350 cd/m² (except for touch panel).
- Input by finger using the resistive film type of the touch panel.
- Water-resistant surface on the touch panel, equivalent to JIS waterproof class I.
- MSR units (DM-MS123) connection.

2.2 Accessories

- User's manual
- Front lock key
- DM holder
- DM cover

NOTE: A power cable is not supplied with the SR-600.

2.3 Related Documents

Refer to the document related to specific options for their specifications.

- DM-MS123 specification

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3. GENERAL SPECIFICATIONS

3.1 Summary of Specifications

3.1.1 IM-600 specifications

Item		Specifications
CPU	Usable CPU types	Celeron™ (PPGA package: up to 366 MHz) Celeron™ (FCPGA package: up to 733 MHz)
	Socket	370-pin socket
	Secondary cache	128KB built-in
Memory	Main memory	168-pin DIMM slots × 2 maximum 512 MB 3.3V SDRAM, PC100 compliant DIMM
	BIOS ROM	256 KB
Chipset		Intel® 440BX chipset
Video controller		CHIPS® 69000 (PCI) Video memory 2 MB (SDRAM) built-in
	DM-LS121T	12.1-inch TFT 256K (262,144)-color
Mass storage	FDD	One 3.5-inch external floppy drive can be connected (1.44MB/720KB) (User option)
	HDD	One 2.5" HDD IDE interface / Ultra DMA/33
	CD-ROM drive	Optionally installed in factory, IDE interface, can be set as boot drive
	CompactFlash™	One or two special interface boards can be installed, in place of the hard disk drive and CD-ROM. (Factory option) IDE interface, can be set as boot drive
Interface ^{*3}	Ethernet	10BASE-T/100BASE-TX ^{*1} is installed, "Wake On LAN" is supported.
	Keyboard / mouse	One PS/2-type (6-pin mini-DIN) port on the front of the terminal. Mouse is connected through Y-connector cable
	Serial ^{*2}	Three ports (9-pin D-sub male) +5 V can be output to pin 1 of COM1 or COM2 by a BIOS setting
	Parallel	One port (D-sub 25-pin female)
	CRT	One port (D-sub 15-pin female) (Factory option on the drawer board)
	USB ^{*3}	Two ports
	Customer display	One port
	Cash drawer	Two ports (for two drives ^{*4}) (Factory option with CRT)
	FDD	One port for external floppy drive connection on the front of the terminal
Expansion slot	PCI slot	One slot (PCI version 2.1 compliant)

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Item	Specifications
Speaker	Built-in monaural speaker with volume control
BIOS	APM/ Plug & Play / DMI
Front key lock	Locks the front cover and terminal cover to the chassis
Backup battery	Vanadium-lithium battery backs up the RTC
Power supply	Internal, 100 to 240 V / 50/60 Hz, 130 VA
Case color	EPSON dark gray, EPSON cool white

- *1: The supplied standard Ethernet controller can be disabled with a BIOS setting.
- *2: A total of four serial ports are provided. One port is dedicated to the touch panel, so three are available for external connections.
- *3: The USB interface supports Windows® 98 (Second Edition), or Windows® 2000.
- *4: OPOS ver. 1.95 does not support the two drawers since the OPOS cannot know each drawer status simultaneously.

3.1.2 DM-LS121T specifications

Item		Specification
LCD	Size	12.1 inch
	Type	Color TFT
	Resolution	800 × 600 dots
	Color	256K color
Backlight	Numbers of backlight	2 lights
	Brightness	350 cd/m ² typ. (except touch panel) 290 cd/m ² typ. (including touch panel)
Touch panel	Method	Resistive film (touch with finger)
	Surface solidity	2H or more (JIS K-5400)
	Positioning accuracy	±5 mm maximum
Interface connector		1 port for DM-MS123/112
Indicator		POWER LED, HDD LED
Power supply		+3.3V, +5V, +12V (Supplied from the IM-600)
Case color		Epson dark gray, Epson cool white
Others		Connecting to the IM-600 through an exclusive cable. Possible to adjust the LCD contrast with two adjustment buttons on the left-side of the panel.

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3.2 External Dimensions

310 (W) × 363 (D) × 277 (H) mm (including rubber feet, excluding LCD clamp)

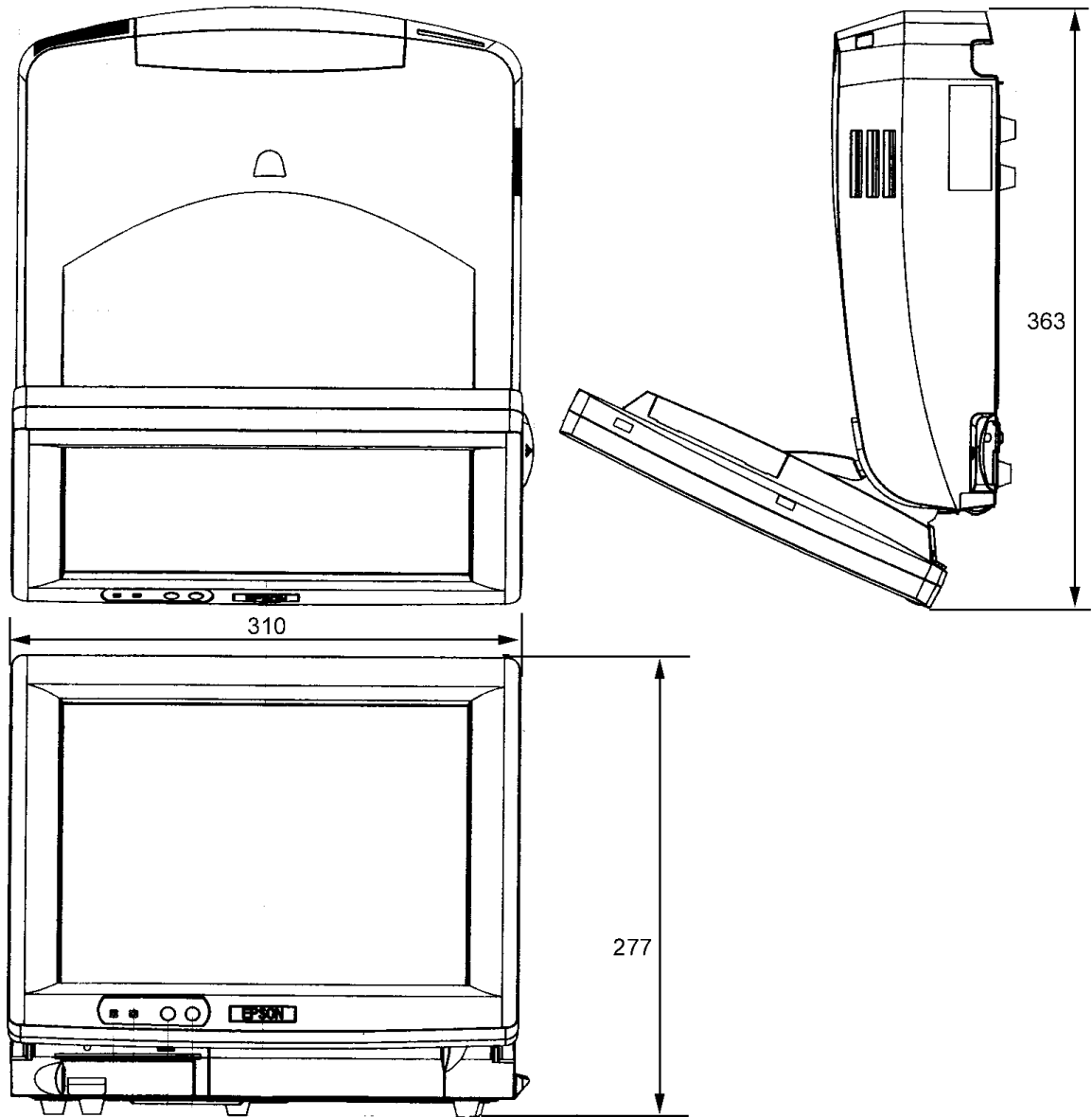


Figure 3.2.1 DM-LS121T overall dimensions

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3.3 EMI and Safety Standards Applied

3.3.1 For North America

EMI: FCC class A
 Safety standard: UL1950
 CSA C22.2 No.950

3.3.2 For Europe

CE marking: EMC:
 EN55022 class A
 EN61000-3-2
 EN61000-3-3
 EN55024
 IEC61000-4-2
 IEC61000-4-3
 IEC61000-4-4
 IEC61000-4-5
 IEC61000-4-6
 IEC61000-4-11
 Safety:
 EN60950

This device can be damaged by surges induced by nearby electrical storms when connected directly to an external aerial LAN cable. Therefore, the terminal should be connected only through an appropriate surge suppressor when connection to such a cable is necessary. Otherwise, such connection should be avoided.

3.3.3 For Japan

EMC: VCCI class A
 Harmonic current control guideline of Japan
 JEIDA52

3.3.4 For other countries

Oceania EMC: C-Tick marking AS/NZS 3548 (CISPR22) Class
 Taiwan EMI
 Korea EMC
 China EMC

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3.4 Environmental Specifications

3.4.1 Temperature

Operating: 5 to 35°C
 Storage: -10 to 50°C

3.4.2 Humidity

Operating: 30 to 80% RH (no condensation)
 Storage: 30 to 85% RH (no condensation)

3.4.3 Vibration resistance

When packed:

Frequency: 10 to 150 Hz
 Acceleration: 19.6 m/s² {2 G}
 Sweep: 10 minutes (half cycle)
 Duration: 1 hour
 Directions: x, y, and z

No external or internal damage should be found after the vibration test, and the unit should operate normally. The test does not include options.

When unpacked and operating:

Frequency: 10 to 150 Hz
 Acceleration: 4.9 m/s² {0.5 G}
 Sweep: 10 minutes (half cycle)
 Duration: 1 hour
 Directions: x, y, and z

No external or internal damage should be found after the vibration test when operating, and the unit should operate normally. The test does not include options.

3.4.4 Impact resistance

When packed:

Packing specifications: EPSON standard packing
 Height: 40 cm
 Directions: 1 corner, 3 edges, 6 faces

No external or internal damage should be found after the drop test, and the unit should operate normally.

When unpacked:

Height: 3 cm
 Directions: 4 sides; lift one edge and release it

No external or internal damage should be found after the drop test (performed when the unit is not operating), and the unit should operate normally.

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3.5 Reliability

3.5.1 MTBF

33,000 hours (except HDD, fan)

3.5.2 Life

1) Cooling fan (IM-600)

CPU fan: 40,000 hours
 Power supply fan: 27,000 hours

2) Hard Disk Drive (IM-600)

5 years or 20,000 hours, whichever comes first, with a maximum of 300,000 times of accessing the drive.

3) Cold cathode fluorescent tube for backlight (DM-LS121T)

40,000 hours or more (at 25 ± 5°C)

Life is defined as when a brightness becomes a half-value.

This cold cathode fluorescent tube is changeable.

4) Durability of touch panel (DM-LS121T)

1) Durability by finger-input strokes: 10 million times or more

Condition:

Strokes one point by the material of the silicon gum (round of the tip: R8, solidity 60°), with stroking load 1.96N {200gf}, for stroke cycle 5Hz.

2) Durability by pen-input writing: 1 million characters or more

Condition:

Writes optional alphanumeric or symbol characters which has the size of 7.5x 6.75 mm by the material of the polyolefin plastic (round of the tip: R0.8), with writing load 3.43N {350gf} in the area of 10x9 mm.

NOTE: Turning the power off when the IM-600 is not used will increase its life.

3.6 Power Consumption

The values below for the power consumption are given when the DM-LS121T is attached.

1) When the power is turned on but the HDD is not being accessed.

0.22 A 240 V
 0.50 A 100 V

2) During the power on suspend

0.12 A 240 V
 0.23 A 100 V

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3.7 Power Supply

3.7.1 Power supply capacity to external devices

Total power available to devices connected to the interface boards (PCI slots, COM1 and 2 ports, keyboard/mouse, customer display, and the USB ports) is as follows. Current drain must not exceed the capacity shown for each supply voltage: +5, +3.3, +12, -12 and +24 volts.

Table 3.1 Power Supply Capacities

Power Supply	Used for	Capacity
+5 VDC	PCI slots, COM ports, keyboard, FDD, USB	2.5 A
+3.3 VDC	PCI slots	0.5 A
+12 VDC	PCI slots, DMD	0.7 A
-12 VDC	PCI slots	0.25 A
+24 VDC	Cash drawer	0.5 A, peak 2.0 A

Each port has the following current limitation:

Table 3.2 Power Supply Capacities for Each Port

Port	Voltage	Current Supply Capacity	Remarks
COM port	+5 VDC	400 mA each	Total current at +5 VDC must not exceed 2.5 A
USB port	+5 VDC	500 mA each	
Keyboard	+5 VDC	500 mA	
PCI slots	+5 VDC	1A	
FDD	+5 VDC	500 mA	
PCI slots	+12 VDC	500 mA	Total current at +12 VDC must not exceed 700 mA
DMD	+12 VDC	600 mA	

3.7.2 Lithium rechargeable battery

The Bacchus is internally equipped with a vanadium-lithium rechargeable battery, which supplies the backup voltage to the RTC, the RTC's built-in CMOS RAM.

Charging period: 40 hours or more

Backup time: 200 days or more

WARNING: Don't attempt to open or disassemble the Vanadium-lithium battery, which could result in burns or release of hazardous chemicals.
 Don't charge or leave the vanadium-lithium battery in a hot place, such as near a fire or on a heater, as it could overheat and ignite.
 When you dispose of the vanadium-lithium battery, insulate it by wrapping the terminals with tape. Do not mix with other metals or batteries; this may lead to fire, heat, or explosion.

Vanadium-lithium batteries are not charged fully on delivery from the factory. As a result, BIOS may display 'cmos check sum error'.

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4. BASE UNIT STRUCTURE

4.1 Terminal Front Panel (IM-600)

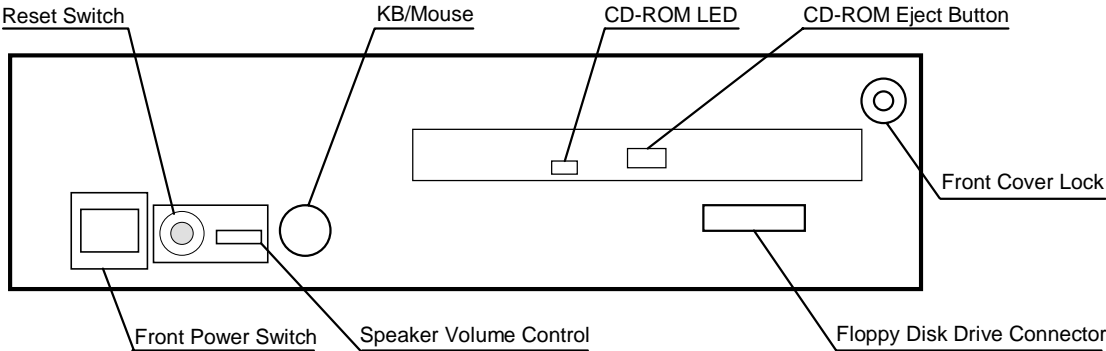


Figure 4.1 Front Panel Controls & Connectors

4.1.1 Front Power Switch

This pushbutton switch at the lower left switches between power on and off. The switch is covered to prevent inadvertent operation.

NOTE: Some operating systems might shut the power down automatically when the operating system shuts off.

4.1.2 Reset Switch

Like the Power switch, this switch is behind a cover at lower left side of the front panel. This switch resets the entire system. A pointed implement is required to press the switch.

4.1.3 Speaker Volume Control

Like the Power and Reset switches, the speaker volume control at the lower left of the front panel is also covered. Turning it to the right increases volume.

4.1.4 Front Cover Lock

This lock secures the large cover at the front right side of the terminal. Locking this cover secures the CD-ROM or CompactFlash from theft.

This lock operates in conjunction with the terminal cover lock, so that when the front cover is locked, the terminal cover is also locked. The terminal cover locks in such a way that it cannot be opened with a screwdriver, thus also securing the hard drive and other internal components from theft.

4.1.5 Floppy Disk Drive Connector

An external 3.5-inch floppy disk drive can be connected here. Power should be turned off before connecting or disconnecting the drive.

4.1.6 Keyboard/mouse

A PS/2 compatible keyboard/mouse interface is provided. Use a Y cable when the keyboard and mouse are used simultaneously.

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4.2 Terminal Rear Panel (IM-600)

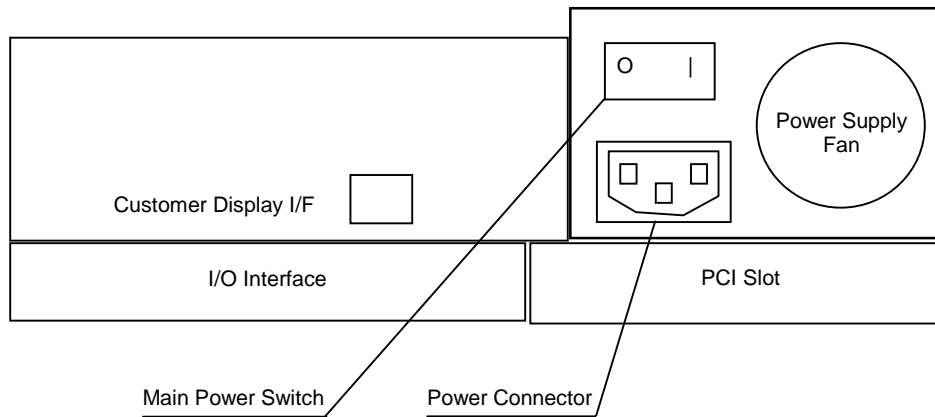


Figure 4.2 Terminal Rear Panel

4.2.1 Main Power Switch

Power to the primary side of the power supply is applied through this switch. Power is turned off when the rear cover is removed, so this switch is normally kept in the ON position. The switch is not accessible externally, to prevent power being turned off inadvertently.

4.2.2 Power Connector

This connector accepts external AC power using a type-L AC cable. The rear cover must be removed to access the connector.

4.2.3 Customer Display Connector

The customer display connects here. The rear cover must be removed to access the connector.
CAUTION: Customer display unit can be attached and removed only with the power turned off.
 Please do not connect non-customer display devices such as network cable. The network device may be damaged.

4.2.4 Power Supply Fan

This fan is on the back of the power supply.
 To avoid damage, do not allow the fan outlet to be obstructed.

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4.3 Structure of the LCD (DM-LS121T)

Figure 4.3.1 shows an external view of the DM-LS121T system.

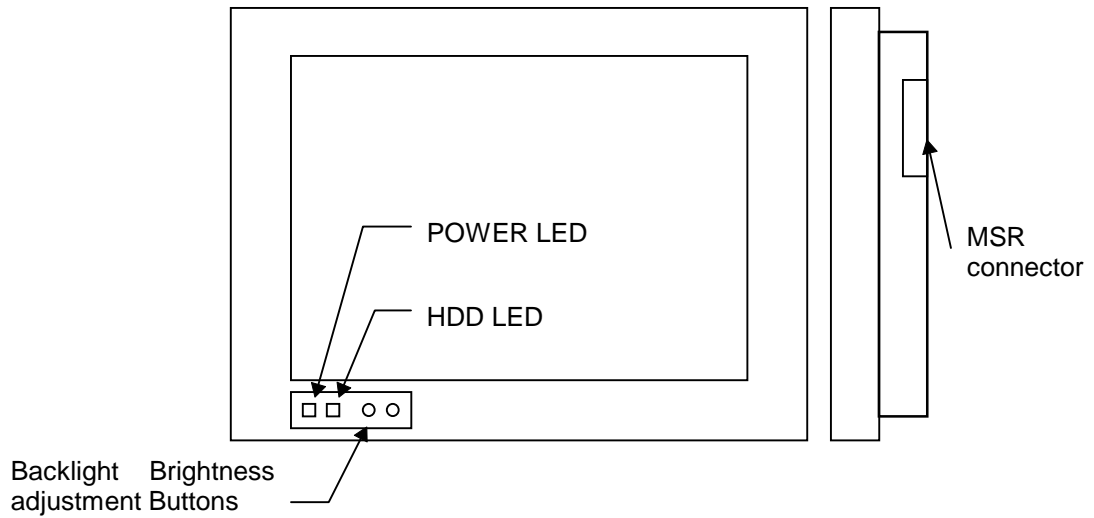


Figure 4.3.1 External system view

4.3.1 Indicators

Two LEDs - POWER LED and HDD LED are on the lower side of the front panel on the main unit.

Table 4.3.1 shows the meaning of each LEDs.

Table 4.3.1 LED functions

LED	Color	Meaning when lit
POWER	Green	Power is turned on (operating)
	Orange	During power-on suspend
	Off	Power is turned off.
HDD	Green	Accessing
	Off	Not accessing

4.3.2 Adjusting backlight brightness

Buttons to adjust the backlight brightness are on the left-hand side of the unit. You can adjust the brightness by operating the two backlight brightness adjustment buttons. If the brightness is set once, the same level is kept even if the power is turned off.

4.3.3 MSR Unit Connector

An MSR unit (DM-MS123/DM-MS112) can be attached to the right side of the DM-LS121T.

4.3.4 Base Unit Interface Cable

The DM-LS121T is connected to the base unit of the IM-600 through the exclusive cable.

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4.4 Circuit Board Configuration (IM-600)

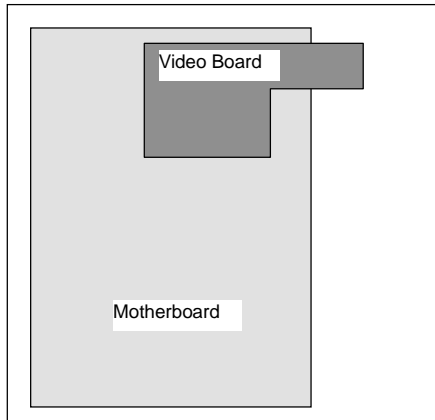


Figure 4.4.1 Circuit Board Configuration (top)

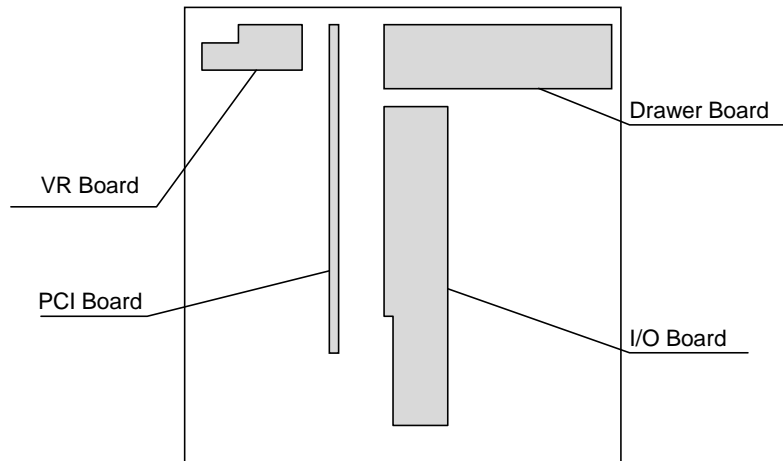


Figure 4.4.2 Circuit Board Configuration (bottom)

4.4.1 Motherboard

The motherboard provides basic PC functions, and consists of the CPU, chip set, memory (DIMM), Super I/O and power circuitry.

4.4.2 Video Board

This board consists of the video controller and a connector for the LCD cable.

4.4.3 I/O Board

This board provides the connectors for most external devices. It is located on the bottom of the terminal, and connects via its own connector directly near the rear of the motherboard. Connectors are provided for three serial ports, one parallel port, two USB ports and one LAN port.

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4.4.4 PCI Board

This board provides the PCI interface. It connects via its own connector directly near the rear of the motherboard.

4.4.5 VR Board

This board consists of the Power and Reset switches, speaker volume control and keyboard/mouse interface.

4.4.6 Drawer Board (Option)

This optional board may be installed to provide ports for two cash drawers and a CRT. This is a factory option which is installed in the SR-600.

4.5 Miscellaneous

4.5.1 CPU

The CPU and its cooling fan are installed in a 370-pin socket on the motherboard.

4.5.2 DIMM

Two DIMM slots are provided, supporting up to two 32, 64, 128 or 256-MB DIMMs for up to 512 MB of RAM capacity. The cabinet cover must be removed to access the DIMMs.

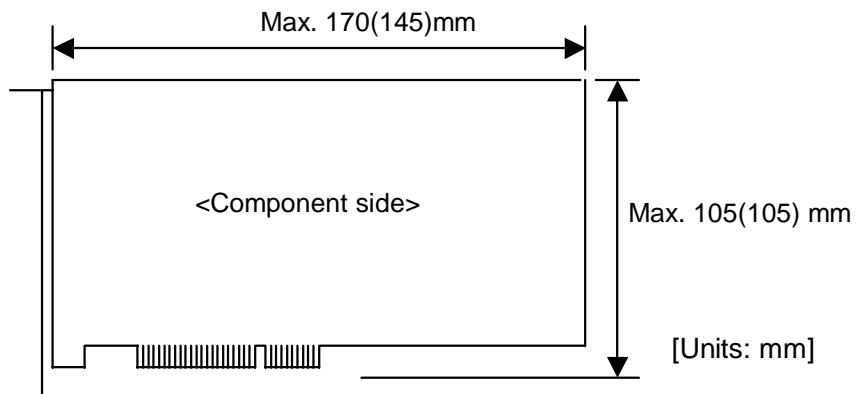
4.5.3 Hard Disk Drive

A 2.5-inch hard disk drive is normally installed. Access requires opening the case. The hard drive is affixed with one screw.

4.5.4 PCI Slot

The PCI slot is located beneath the power supply on the bottom of the chassis. The maximum dimension of installable PCI card is 170 mm × 105 mm. A PCI card can be installed or removed by removing the cabinet cover and the bottom frame.

Or the PCI card which is smaller than 145 mm × 105 mm can be installed or removed from the access slot exposed by just removing the PCI slot cover instead of removing the bottom frame. A card which is longer than 145mm might be installed if it's width is less than 105mm.



() : Dimensions of PCI slot which can be installed or removed from the access slot of the IM-600.

Figure 4.5.1 Dimensions of Installable PCI Cards

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4.6 Cautions

1. Cut edges of the metal case can become corroded depending on storage and operating conditions.
2. The AC cable must removed from the unit before
 - (1) Replacing the CPU, hard drive, DIMMs and other internal devices.
 - (2) Attaching or detaching options such as MSR, customer display and FDD.
 - (3) Connecting or disconnecting the devices such as TM printers, barcode scanners and keyboard.

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5. SOFTWARE SPECIFICATIONS

5.1 Available operating systems

We are considering providing localized language support for the following operating systems:

- 1) Windows[®] 95
- 2) Windows[®] 98
- 3) Windows NT[®] Workstation 4.0
- 4) MS-DOS[®] 6.2
- 5) Windows[®] 2000

5.2 Available Driver Software

- 1) Video driver (for Windows[®] 95/98 or for Windows NT[®] 4.0)
- 2) Touch panel driver (for Windows[®] 95/98 or for Windows NT[®] 4.0 or for DOS or Windows[®] 2000)
- 3) Network driver (for Windows[®] 95/98 or for Windows NT[®] 4.0 or for DOS)
- 4) CD-ROM driver (for MS-DOS[®])

5.3 Available Tools

- 1) BIOS update tool
This is a tool to rewrite the BIOS when the BIOS needs to be updated.
- 2) MSR firmware update tool
This is a tool to rewrite the BIOS when the BIOS needs to be updated.

5.4 Available utilities

- 1) MSR set up utility
Program to set the MSR condition.
- 2) Device Diagnostics
Program to check each interface (included within the BIOS ROM)
- 3) Touch panel calibration (for Windows[®] 95/98 or for Windows NT[®] 4.0 or for DOS or Windows[®] 2000)
This is a program to calibrate the touch panel.
- 4) Login utility for Windows[®] 95/98, or for Windows NT[®]
This is a utility to login to Windows[®] 95/98 or Windows NT[®] 4.0 without the keyboard unit.

5.5 OPOS

Recommended version: Version 1.95 or later

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6. OPTIONS**6.1 Factory Options**

Options below are installed in the IM-600 before shipping. Specify the options when purchasing the IM-600.

1) CD-ROM drive unit

Model	Key Specifications
OI-S02	Thin-profile CD-ROM drive unit IDE interface With Eject button and access lamp

NOTE: The CD-ROM drive might be damaged if you adjust the LCD angle when CD-ROM drive is open. The CD-ROM must be closed when you adjust the LCD angle.

2) Drawer Board

Cash drawer and external CRT interfaces are provided on a single board. By installing this board, a cash drawer can be controlled independently of the TM printer, and a CRT can be used.

Model	Key Specifications
OI-B08	Two cash drawer ports One external CRT port

NOTE: OPOS ver. 1.95 does not support the two drawers since the OPOS cannot know each drawer status simultaneously.

3) CompactFlash Board

This board is required to use a CompactFlash card, which can be installed in place of either the hard drive or CD-ROM drive.

Two types of connector boards are planned: one for use where a CompactFlash card would replace the CD-ROM, and be accessible for replacement and removal from the front panel. This board could be installed only in the CD-ROM location (not the hard drive location).

Model	Key Specifications
OI-S03-012	Board to enable using CompactFlash Card instead of CD-ROM drive.
OI-S03-022	Board to enable using CompactFlash Card instead of HDD.

NOTE: CompactFlash cards can be inserted and removed only with the power turned off. Doing so with the power on could corrupt data stored on the card.

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6.2 User Options

Options below are not installed in the IM-600 before shipping. They may be purchased independently.

1) MSR Units

Two types of MSR are available: one for Japan and one for overseas markets. The card slot is angled 20° from the plane of the LCD to allow easy access. Installation entails removing the connector cover on the right side of the LCD unit (DM-LS121T), and affixing the MSR unit with two screws.

Model	Key Specification
DM-MS123	ISO Tracks 1, 2, and 3 compatible (for overseas)
DM-MS112	JIS II, Tracks 1 and 2 compatible (for Japan)

NOTE: MSR can be installed and uninstalled only with the power turned off. The connector cover should be installed even when no MSR unit is installed.

2) Customer Display Units

A special DM holder (attached) at the center of the rear of the terminal is used for installation.

The customer display port is on the motherboard at the rear of the terminal.

The following model of the Epson customer display can be used.

Model	Key Specifications
DM-D110	20-character × 2-line display

NOTE: Customer display unit can be attached and removed only with the power turned off.

3) Floppy disk drive units

An optional external 3.5-inch floppy disk drive can be connected for installing maintenance software. The interface connector is at the right side of the front panel of the terminal.

Model	Key Specifications
OI-S01	External floppy disk drive 3.5-inch, 720 KB/1.44 MB

NOTE: Floppy disk drive unit can be connected and disconnected only with the power turned off.

6.3 Precautions Related to Internal Components

1. CPU, DIMM, HDD

EPSON quality assure the assembled CPU, DIMM and HDD in IM-600 under the EPSON shipping condition.

In case a customer exchange CPU, DIMM and HDD, EPSON quality assure only for CPU, DIMM and HDD which are purchased from EPSON.

2. Interfaces and expansion slot

EPSON guarantee that each interfaces(include the compact flash interface) and PCI expansion slot are in conformity to each interface standards.

When customer use any equipment and/or any PCI boards connected to IM-600, please check those functions with IM-600 by yourself. Please refer to the "EPSON Operational testing products list" for your selection of any equipment and/or any PCI boards.

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