Digital
Human Machine Interface

Pro-face

PL-6900 Series
Panel Computer
User Manual

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Digital
Digital Electronics Corporation

Preface

Digital's PL-6900 series (PL) of Panel Computers are multipurpose factory automation (FA) computers, which embody Digital's latest, cost-effective architecture. Before using the PL, read this manual thoroughly to familiarize yourself with the PL's operation procedures and functions.

NOTE:

1. It is forbidden to copy the contents of this manual in whole, or in part, without the permission of the Digital Electronics Corporation.
2. The information in this manual is subject to change without notice.
3. This manual was written with care; however, if you should find any error or omissions, please contact Digital Electronics and inform them of your findings.
4. Please be aware that we are not responsible for any damages resulting from the use of our products, regardless of article 3 above.

Essential Safety Precautions

This manual includes the following cautions concerning procedures that must be followed to operate the PL correctly and safely. Prior to operating the PL, be sure to read this manual and any related materials thoroughly to understand the correct operation and functions of this unit.

Safety Icons

To allow you to use the PL correctly, throughout this manual, the following icons are provided next to operations requiring special attention. These icons are used to describe the following situations:

⚠ Warning — Indicates situations where severe bodily injury, death or major equipment damage may occur.

⚠ Caution — Indicates situations where slight bodily injury or machine damage can occur.

⚠ WARNINGS

- **To avoid the possibility of an electric shock, be sure to connect the power cord to the PL before connecting it to the main power supply.**
- **A fire or electrical shock may occur if voltages used with the PL are beyond the specified range. Be sure to use only the specified voltage.**
- **Before opening the PL's protective cover, be sure to turn the unit's power OFF. This is because the PL's internal parts carry high voltages.**
- **To avoid fires or electrical hazards, do not modify the PL in any way.**
- **Do not create touch panel switches that are used to either control or to ensure the safety of equipment and personnel. Mechanical switches, such as an emergency stop switch, a deadman (two-handed) start switch, etc., must be installed and operated via a separate control system.**

⚠ WARNINGS

- **Do not create touch panel switches which could possibly endanger the safety of humans and equipment. This is due to the possibility of a malfunction in the PL or its cable(s), causing the output of a signal that could result in a major accident. All of a system's major, safety-related switches should be designed to be operated separately from the PL.**
- **After the PL's backlight burns out, unlike the PL's "Standby Mode", the touch panel is still active. If the operator fails to notice that the backlight is burned out and touches the panel, a potentially dangerous machine miss-operation can occur.**

  If your PL's backlight suddenly turns OFF, use the following steps to determine if the backlight is actually burned out.

  1) If your PL is <u>not</u> set to "Standby Mode" and the screen has gone blank, your backlight is burned out.

  2) Or, if your PL <u>is</u> set to Standby Mode, but touching the screen does not cause the display to reappear, your backlight is burned out.
- **If metal particles, water or other types of liquids contact any of the PL's internal parts, immediately turn the unit's power OFF, unplug the power cord, and contact either your PL distributor or the Digital Electronics Corporation.**
- **Read and understand Chapter 4 "Installation and Wiring" thoroughly in order to select an appropriate installation location for the PL.**
- **Before either plugging in or unplugging a board or interface connector, be sure to turn the PL's power OFF.**

⚠ WARNINGS

- **To prevent a possible explosion, do not install the PL in areas containing flammable gases.**
- **The PL is not appropriate for use with aircraft control devices, aerospace equipment, central trunk data transmission (communication) devices, nuclear power control devices, or medical life support equipment, due to these devices' inherent requirements of extremely high levels of safety and reliability.**
- **When using the PL with transportation vehicles (trains, cars and ships), disaster and crime prevention devices, various types of safety equipment, non-life support related medical devices, etc. redundant and/or fail-safe system designs should be used to ensure the proper degree of reliability and safety.**

CAUTIONS

- **Do not push on the PL's screen too strongly, with either your finger or with a hard object. Excessive pressure can scratch, crack or damage the screen. Also, do not use a pointed object, such as a mechanical pencil or screw-driver, to press any of the touch panel's switches, since they can damage the display.**
- **If the screen becomes dirty or smudged, moisten a soft cloth with diluted neutral detergent, wring the cloth well, and wipe the display. Do <u>not</u> use thinner or organic solvents.**
- **Avoid exposing the PL to, or operating the PL in direct sunlight, high temperatures and humidity, and in areas where excessive dust and vibration will occur.**
- **Avoid using the PL in areas where sudden, extreme changes in temperature can occur. This may cause condensation to form inside the unit, possibly leading to an accident.**
- **To prevent the PL from overheating, be sure its air circulation vents are clear and clean, and keep the unit's operation area well-ventilated.**
- **Avoid operating or storing the PL near chemicals, or where chemicals can come into contact with the unit.**

<u>When PL Hard Disk (HDD) data is lost:</u>

- **The Digital Electronics Corporation can not be held responsible or provide any compensation for damage(s) caused by the loss of data stored in the PL's hard disk drive (HDD). It is therefore strongly suggested that all important data and software be backed up regularly to an external data backup device.**
- **Please be aware that the Digital Electronics Corporation bears no responsibility for any damages resulting from the customer's application of this unit's hardware or software.**

- The displayed color will look different when viewed from an angle outside the specified view angle. This is also normal.
- Displaying a single screen image for long periods of time can cause an afterimage to remain on the screen. To correct this, turn the unit OFF for 5 to 10 minutes, then ON again. This phenomenon is a common attribute of the LCDs, and is not a defect. To prevent this effect, you can:

  - use the Display OFF feature; if the same image is to be displayed for a long period of time.

  - change the screen display periodically to prevent the displaying of a single image for a long period of time.

Notes on Handling the Hard Disk Drive

- The Digital Electronics Corporation cannot take responsibility or provide any compensation for damage(s) caused by the loss of data stored in the PL-6900 series' hard disk drive (HDD). It is therefore strongly suggested that all important data and software be backed up regularly to an external data backup device.
- Please be aware that the Digital Electronics Corporation bears no responsibility for any damages resulting from the customer's application of this unit's hardware or software.
- Please be aware that the Digital Electronics Corporation will not provide compensation for any damages occurring as a result of problems with this unit's software or hardware.
- Since the PL's hard disk drive (HDD) is a consumable item, i.e. it has a finite usage lifetime, be sure to back up its data frequently and perform regular maintenance.
- To prevent damage to file data, be sure to shut down the PL's OS before turning OFF the main power.

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Chapter 4 Installation and Wiring

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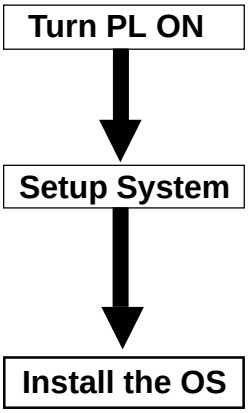
Prior To Using the PL

Prior to actual use, be sure to setup your PL as follows.



Refer to 4-3 Wiring the PL

Refer to Chapter 5 System Setup

Refer to the OS maker's Installation Manual.

After completing the hardware setup, before any data or applications can be placed on the drive, the OS (Windows® or MS-DOS®, etc.) must be used to initialize the HDD and create partitions. For details concerning these procedures, refer to the OS maker's installation manual.

CAUTION!

- **The PL's hard disk is designed for use with the Windows® 95, Windows NT®4.0 or later OS. The Mirror Disk unit will operate only with the Windows NT®4.0 operating system. Other operating systems do not support this driver software, etc.**
- **For system setup and OS installation, a PS/2 type keyboard is necessary.**
- **When using Windows® 95/Windows NT®4.0, be sure to install the PL-6900 Series Driver & Utility Disk's Display Driver (For installation procedures, see the disk's readme files (README.95E or README.NTE).**
- **For information on the PL's bundled utility software, see the README file on the Driver & Utility Disk.**
- **Since the PL's hard disk drive (HDD) is a consumable item, i.e. it has a finite usage lifetime, be sure to back up its data frequently and perform regular maintenance.**
- **After turning the PL OFF, be sure to wait at least 5 seconds before turning ON again. If the unit is stated within 5 seconds, it may not start up correctly.**

Information Symbols

This manual uses the following icons:

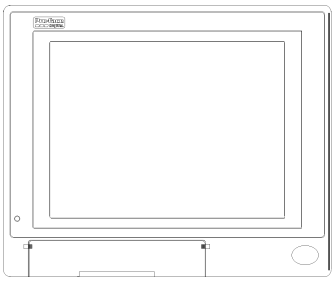
	Indicates a warning or a product limitation. Be sure to follow the instructions given with this icon to insure the safe operation of the PL.
	Contains additional or useful information.
*	Indicates terms or items that require further explanation. See the footnote on that page.
	Indicates pages containing related information.
1), 2)	Indicates steps used to accomplish a given task. Be sure to follow these steps in the order they are written.

Package Contents

The PL package should include the following items:

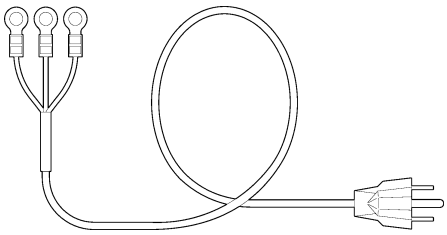
PL Unit

(PL-6900T/PL-6901T)



CAUTION! **Be careful when installing the PL not to damage the built-in HDD**

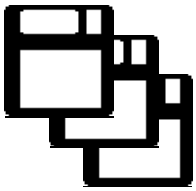
Power Cord



CAUTION! **This cord is designed only for AC100/115V use. Any other voltage will require a different cable.**

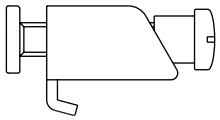
Floppy Disks (3)

"PL-X900 Series Driver & Utility Disk"



CD-ROM (1)
Contains PL-6900 Series User Manual (This Manual)*

Installation Brackets (8)



Instruction Guide
(English1/Japanese1)

If your PL contains a built-in HDD

Your PL unit package will also contain an Installation Guide for your built-in HDD unit.
Be sure to check that guide's package contents.

PL-6900 Series Features

The PL-6900 series displays are equipped with the following features:

- **The Latest, High-Performance Architecture**

  Designed around the AMD-K6®-2 333 MHz CPU, the PL utilizes the type of high performance architecture that offers you superior compatibility. Add to this unrivalled support of the Windows®95/Windows NT® and other operating systems.

- **Bright 12.1" LCD with a Wide Viewing Angle**

  The PL's large 12.1-inch 800 x 600 dot TFT LCD display offers excellent visibility and brightness.

NOTE

- Digital's top of the line TFT color LCD model allows you to create detailed and powerful visual images, with excellent brightness, a wide viewing angle, and a display capable of 260,000 colors.

- **Easy Front Panel Installation**

  The PL is designed to be installed easily into the front of any panel or device. It is also rugged enough for use in harsh, industrial environments, such as those found in the factory automation industries and boasts an IP65f rating.

- **High Resolution, Analog-Resistance-Film Touch Panel**

  Standard equipment with the PL is a high resolution 1024 x 1024 touch panel. Also, the Windows® 95 mouse emulation utility provides mouse-like functionality and pointer control.

- **Highly Expandable**

  The PL units consist of two types; a 2 slot type (with 1 PCI bus also available), and a 4 slot type (with 2 PCI buses available). These slots can accommodate both Digital's own optional boards as well as other commercially available expansion boards.

  Digital also offers a wide variety of optional products, such as a -5/-12V DC power unit, DIM memory modules, etc.

UL/cUL Application Notes

The PL690*-T4* is (c)UL 1950 recognized product. (UL File No. E171486). Please pay special attention to the following instructions when applying for UL/cUL approval for machinery which includes any of these PL units.

The PL conforms as a component to the following standards:

UL 1950, Third Edition, dated March 1,1998 (Standard for Safety of Information Technology Equipment, including Electrical Business Equipment)
CSA-C22.2 No. 950-95 (Standard for Safety of Information Technology Equipment, including Electrical Business Equipment)

PL6900-T4* (UL Registration Model No.: 2780054-04)
PL6901-T4* (UL Registration Model No.: 2780054-03)

- Equipment with a PL mounted in it requires UL/cUL evaluation for the combination of the PL and equipment.
- The PL must be used as a built-in component of an end-use product.
- Use the PL indoors only.
- When connecting the PL's power cable, be sure to use a cable that is appropriate for the current and voltage used and that has conductive wires that are 0.75 mm^2 or larger.
- With an end-use product which includes the PL, be sure to place the PL's Power cut-off switch as the disconnect device where the unit's operator can easily reach it.
- Danger of explosion if backup battery is incorrectly replaced. Replaced only with same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- Be sure the unit the PL is built into uses a UL1950 compatible equipment structure.

CE Marking

The PL690*-T4* units are CE marked, EMC compliant products.

<Complies with the following Standards>

■ **Safety**

EN60950

■ **EMI (EN50081-2)**

EN55011 group1 (Class A)

■ **EMS (EN50082-2)**

EN61000-4-2, EN61000-4-3, EN61000-4-4,
EN61000-4-6, EN61000-4-8, ENV50204

If following requirements are not met, the PL may fail to meet EN60950 standard requirements.

- Equipment with a PL mounted in it requires UL/cUL evaluation for the combination of the PL and equipment.
- The PL must be used as a built-in component of an end-use product.
- Use the PL indoors only.
- When connecting the PL's power cable, be sure to use a cable that is appropriate for the current and voltage used and that has conductive wires that are 0.75 mm^2 or larger.
- When installing the PL in a metal panel or cabinet, be sure to place the PL's Power disconnect device (cut-off switch) where the unit's operator can easily reach it.
- There is a danger of explosion if the backup battery is incorrectly replaced. This battery should be replaced only with same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- Be sure the cabinet/enclosure the PL is built into uses an EN60950 approved sheet steel structure.

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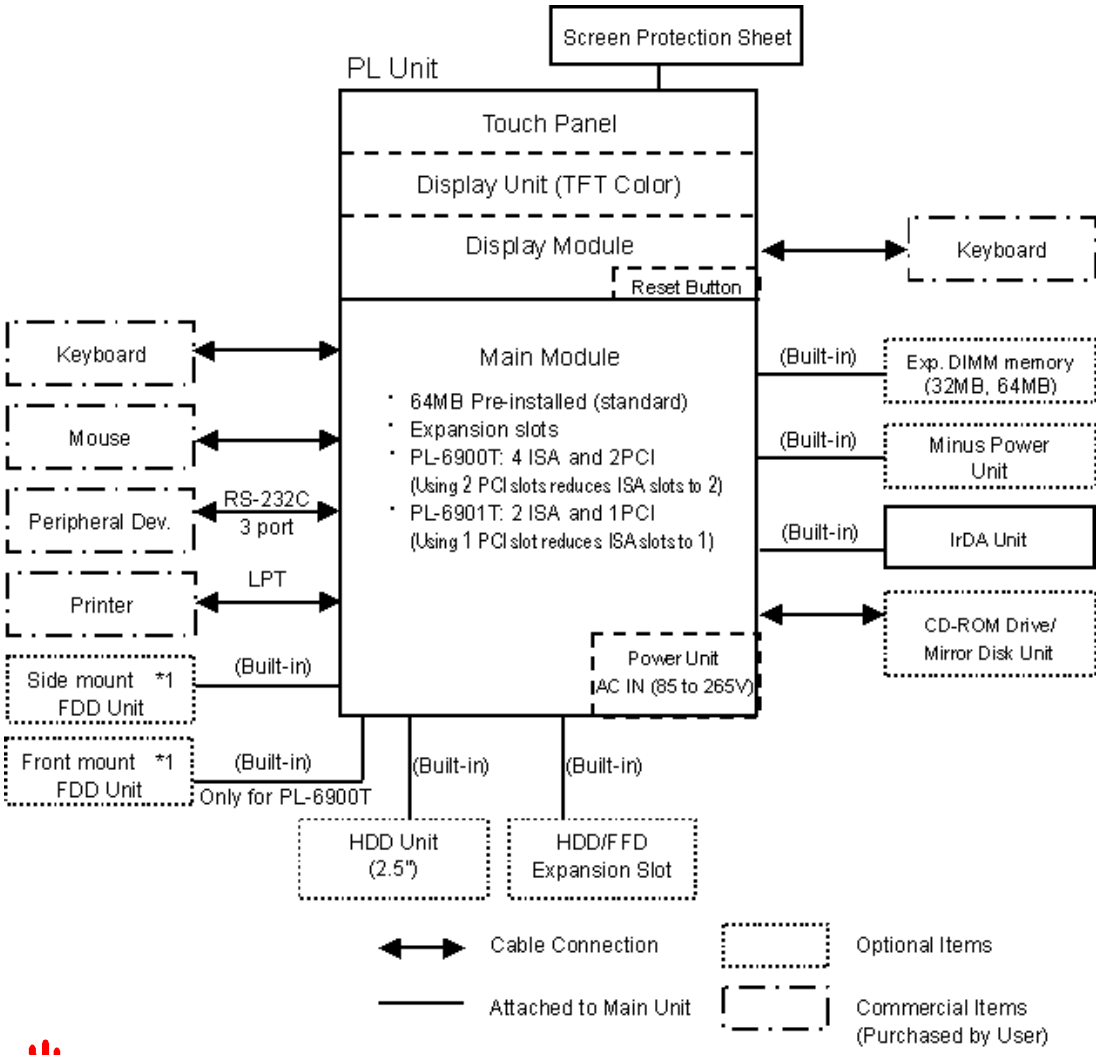
Chapter 1

Overview

1-1 System Configuration

The following chart shows the range of peripheral items connected to the PL.



CAUTION!

- **Only one FDD unit can be used at one time, i.e. either the front panel's FDD, or the main unit's FDD.**

**1 Only one FDD unit can be used at one time, i.e. either the front panel's FDD, or the main unit's FDD.*

1-2 Options

The following table provides a list of optional products for the PL

Expansion Options

Name	Model number	Description
LAN Board	DAX-IET02	NE2000 compatible board. Provides connectors for 10BASE-5, 10BASE-2 and 10BASE-T.
DIM Module	PL-EM220	SDRAM (DIMM) Provides 32MB of memory
	PL-EM230	SDRAM (DIMM) Provides 64MB of memory
FDD Unit	PL-FD200 *1	IBM PC Compatible 3.5" FDD unit (Attaches to side slot)
	PL-FD210 *1	IBM PC Compatible 3.5" FDD unit (Attaches to front slot) Only for PL-6900T
-5V/-12V Power Unit	PL-PW100	Provides –5V and –12V power to expansion slots. Can provide a total of 200mA of current (sum of both slots).
FFD Unit (Flash File Disk)	PL-FF200	Flash File Disk Provides 20MB of memory, connected to IDE I / F. Used as HDD.
CD-ROM Unit	PL-DK200	IDE (ATAPI) compliant CD-ROM drive unit – for development and maintenance use. (special connection cable is included with unit)
Mirror Disk Unit	PL-MD200-HU01	IDE compliant mirror disk unit without OS

Accessories

Name	Model number	Description
Screen Protection Sheet	PL-CS100	Disposable overlay sheets for display face protection and stain resistance. Touch panel senses User's touch through sheet. (5 sheets/set)

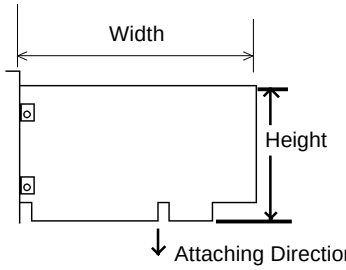
**1 Both the PL-FD200 and the PL-FD210 cannot be used at the same time.*

Maintenance Options

Name	Model number	Description
Mounting Brackets	GP070-AT 01	Used to install the PL into a panel or cabinet. Same as original equipment brackets. (4 brackets/set)
Moisture Resistant Gasket	PL-WS100	Used to prevent moisture from entering into the PL's case from the front face. Same as original equipment gasket.
HDD Unit	PL-HD220	2.5" HDD unit (10.0GB or larger - contains no pre-installed OS
Mirror Disk Unit Replacement HDD	PL-MD200-MD01	Mirror Disk Unit's replacement HDD (1).
Full-sized cover	PL-FC200	Attached when ISA bus full sized board is used in the expansion slot. (for PL-6901T)
	PL-FC210	Attached when ISA bus full sized board is used in the expansion slot. (for PL-6900T)
Backlight	GP675T-BL 00-MS	Spare Backlight for maintenance.

- **Since the PL's hard disk drive (HDD) is a consumable item, i.e. it has a finite usage lifetime, be sure to back up its data frequently and perform regular maintenance.**
- **Both the PL-FD200 and the PL-FD210 cannot be used at the same time.**

Commercially Available Products

Product	Description	Installation Area
PCI/ISA Bus compatible board	In all PL-6900 series units, slot 1 can accommodate boards up to 163mm wide. Slot 2 (slots 2, 3 and 4 for PL-6900T) can accommodate boards up to 250mm wide. ■ All PL-6900 series slot heights are 122mm. When using the full-sized cover, be sure to use boards that are no more than 338mm wide and 122mm high in slot 2. ■ The height of the devices attached to the face of an expansion board can be, for slot 1 (slots 1 and 4 for PL-6900T), up to 13mm, and for slot 2 (slots 2 and 3 for PL-6900T), up to 18mm.  	Into the PL's expansion slots.

<Expansion Slot's Width and Power Supply>

- **Check that your expansion board's "foot" matches the width of the expansion slot. Slot 1 (slot 1 and 4 for PL-6900T) is 20 mm wide, and slot 2 (slot 2 and 3 for PL-6900T) is 25 mm wide. Be sure the width of your expansion board's width matches that of the intended slot.**

<Power Supply>

- **Since the PL does not supply -5 and -12 V current, ISA(AT)-bus compatible boards requiring -5 or -12 V can be used only if the optional PL-PW100 power supply is installed.**

<Commercially Available Boards>

- **Certain commercially available boards may not be compatible with Digital's PL unit. Installing incompatible boards may result in either damage to or failure of the PL and will void your warranty. Prior to using those boards, be sure to contact your local PL distributor.**

<PCI Bus>

- **Within the entire range of PCI buses currently available on the market, there may be certain devices which will not operate when used with the PL. Prior to the use of any PCI Bus, be sure to contact your local PL distributor.**

<Main Memory>

- **Be sure to use only DIM modules manufactured by Digital. Installing other DIM modules may result in either damage to or failure of the PL, and will void your warranty.**

<When using Standard PC Peripheral Devices>

- **Within the range of peripheral devices currently available on the market, there may be certain devices which will not operate correctly when used with the PL. Prior to using any peripheral device, be sure to contact your local PL distributor. Installing incompatible boards may result in either damage to or failure of the PL and will void your warranty.**

1-3 PL Series Panel Types

Model Number:

PL690 X - TXX - XX XX

A B C D E F G

A	PL690	PL-6900 Series Unit
B	0	4-slot type
	1	2-slot type
C	T	TFT Color LCD display
D	4	CE Marking, UL/cUL Approval
E	X	PL Revision No.

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Chapter 2

Specifications

2-1 General Specifications

1 Electrical Specifications

	PL-6900T	PL-6901T
Operating Voltage	AC 100V to AC 240V	
Voltage Endurance	AC 85V to AC 265V	
Rated Frequency	50/60Hz	
Allowable Pause Duration	shorter than 1 cycle (however, pause occurrences must be more than 1 second apart)	
Power Consumption	less than 150VA	less than 100VA
Voltage Endurance	AC 1500V at 20mA for 1 minute (between the live wire and the grounding (FG) terminal)	
Insulation Resistance	Greater than 10MΩ at DC 500V (between the live wire and the grounding (FG) terminal)	

2 Environment Specifications

Ambient Operating Temperature (Panel Interior&Panel Face)	W/Fan	0 °C to 50°C
	W/out Fan*1	0 °C to 40°C
Ambient Storage Temperature	-10 °C to 60 °C	
Ambient Operating Humidity	30% RH to 85% RH (no condensation)	
Ambient Storage Humidity	30% RH to 85% RH (no condensation)	
Dust Level	Free of dust	
Operating Atmosphere	Free of corrosive gas	
Vibration Endurance	2G: 10 to 25Hz applied in X, Y, and Z directions for 30 minutes each (0.5G when using HDD unit, 1.0G when using FDD)	
Noise Endurance	Noise Voltage: 1500V(via noise simulator) Pulse Duration: 50ns, 500ns, 1μs Start-up Time: 1ns	
Noise Immunity	2kV IEC 61000-4-4	
Electrostatic Discharge Immunity	4kV IEC 61000-4-2	

**1 The PL's internal cooling fan is removed.*

- **When using any of the PL's optional devices, be sure to check that device's specifications for any special conditions or cautions that may apply to its use.**
- **When using a full sized expansion board, be sure to check its dimensions and shape, since they will affect the board's environment specifications, such for vibration, etc.**
- **Be aware that not only does the Hard Disk have a fixed lifetime, but that accidents can always occur. Therefore, be sure to back up your Hard Disk's data regularly, or prepare another Hard Disk unit that can be used for backup.**
- **The Hard Disk lifetime given here may be reduced due to unforeseen environmental factors, however, generally speaking, at an operating temperature of 20°C the disk should last for 20,000 hours (of operation) or approximately 5 years, whichever comes first.**
- **Using the Hard Disk in an environment that is excessively hot and/or humid will shorten the disk's usage lifetime. A maximum wet bulb temperature of 29°C or less is recommended. This is equivalent to the following data.**

Temperature	Humidity
at 35°C	no higher than 71%RH
at 40°C	no higher than 54%RH
at 50°C	no higher than 33%RH

3 Dimensions

	PL-6900T	PL-6901T
Grounding[*1]	Exclusive grounding only. Less than 100Ω, or your country's applicable standard.	
Rating[*2]	Equivalent to IP65f (JEM1030)	
Cooling Method	Via heat convection tubes and electric fan	
Weight	Less than 9.0 kg (with HDD and FDD installed)	Less than 8.5 kg (with HDD and FDD installed)
External Dimensions	W346 x H287 x D170 mm (excluding projections)	W346 x H287 x D123mm (excluding projections)
Dimensions Including Full-sized Cover	W393 x H287 x D170 mm (excluding projections)	W393 x H287 x D123 mm (excluding projections)
Dimensions Including Mirror Disk Unit	W346 x H287 x D173 mm (excluding projections)	W346 x H287 x D174 mm (excluding projections)

1  ***4-3-3 Grounding Cautions***.

2 *The front face of the PL unit, installed in a solid panel, has been tested using conditions equivalent to the standard shown in the specification . Even though the PL unit's level of resistance is equivalent to the standard, oils that should have no effect on the PL can possibly harm the unit. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oils are allowed to adhere to the unit for long periods of time. If the PL's front face protection sheet becomes peeled off, these conditions can lead to the ingress of oil into the PL and separate protection measures are suggested. Also, if non-approved oils are present, it may cause deformation or corrosion of the front panel's plastic cover. Therefore, prior to installing the PL be sure to confirm the type of conditions that will be present in the PL's operating environment.*

If the installation gasket is used for a long period of time, or if the unit and its gasket are removed from the panel, the original level of the protection cannot be guaranteed. To maintain the original protection level, you need to replace the installation gasket regularly.

2-2 Performance Specifications

1 Performance Specifications

CPU		**AMD-K6®-2 333 MHz (AMD Corporation)**		
DRAM (SDRAM DIMM)		**Equipped with 64MB (2 DIMM sockets – max. of 128MB)**		
BIOS		**AWARD PC/AT Compatible**		
Secondary Cache Memory		**512KB (built-in)**		
Graphics		**SVGA (800 x 600 dots)** **VESA 16 colors/256 colors/32K colors/64K colors**		
Video Memory		**2MB (SDRAM)**		
Touch Panel	**Type**	**Analog Resistant Film**		
	Resolution	**1024 x 1024**		
	Interface	**COM4 (uses Mouse Emulator)**		
Front and Rear Interfaces	**Serial**	**RS-232C (w/FIFO)**	**COM1**	**D-Sub 9 pin (male)**
			COM2	**D-Sub 9 pin (male)**
			COM3	**D-Sub 9 pin (male)**
	Printer	**Complies with Centronics Standards (ECP/EPP equivalent) D-sub 25 pin, female**		
	Keyboard	**PS/2 Interface (mini DIN 6 pin, female) side & front**		
	Mouse	**PS/2 Interface (mini DIN 6 pin, female) side**		
	RAS	**RAS Interface (D-sub 25 pin, male)**		
	Disk I/F	**FDD Unit**	**Side Access/ 2 modes/ 3.5" FD**	
			Front Access/ 2 modes/ 3.5" FD (Available for only PL-6900T)	
		E-IDE	**2.5" HDD I/F** **PL units equipped with a built-in HDD will use a 6.0 or more GB unit.**	

2 Display Functions

Display Type	TFT Color LCD
Pixel Density	800 x 600 pixels
Dot Pitch	0.3075 x 0.3075 mm
Effective Display Area	W246.0 x H184.5 mm
Display Colors	260,000 colors
Contrast Control	Not Possible
Backlight	CFL (Replaceable)
Backlight's Life span	More than 25,000 hours at an ambient temperature of 25°C. (Until the backlight's brightness dims to half of the original level.)

CAUTION! **The PL's backlight should be replaced by only an authorized repairman. For information about this service, please contact your nearest authorized distributor.**

3 Expansion Slots

	PL-6900T (4-slot type)	PL-6901T (2-slot type)	Board Size		Slot Pitch	Actual thickness of Expansion Board
			Without the Full-sized cover	With the Full-sized cover		
1st slot	ISA	ISA	163 x 122 mm	163 x 122 mm	20 mm	Less than 13 mm
2nd slot	PCI	PCI	250 x 122 mm	250 x 122 mm	25 mm	Less than 18 mm
	ISA	ISA		338 x 122 mm		
3rd slot	PCI/ISA	None	250 x 122 mm	338 x 122 mm	25 mm	Less than 18 mm
4th slot	ISA	None	250 x 122 mm	338 x 122 mm	20 mm	Less than 13 mm
Power Supply	5V: 4A, 12V: 1A (total for 4 slots)	5V: 2A, 12V: 0.5A (total for 2 slots)	———	———	—	———

NOTE • For the 2nd and 3rd slots on the PL-6900T, and the 2nd slot on the PL-6901T, either the PCI or the ISA type can be used.

4 Clock(RTC) Accuracy

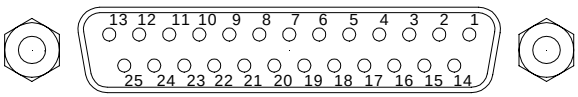
Clock(RTC) accuracy	**±180 seconds per month**

The PL's built-in clock (RTC) may have a slight error. With the ambient temperature mentioned in the specification with no power flow, the allowance is ±180 seconds per month, however, the allowance may vary and could be up to +300 seconds per month depending on the ambient temperature difference or how old the unit is. If the clock accuracy is essential for the system, you need to adjust the clock regularly.

2-3 Interface Specifications

1 Printer Interface (LPT1)

D-sub 25 Pin (Female)



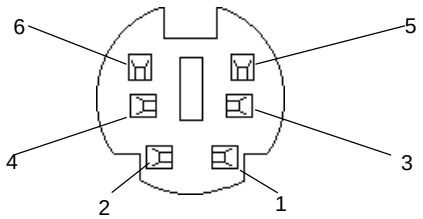
Screw Size: (4-40): Inch Type

Pin No.	SPP/ECP Mode Signal Name	EPP Mode Signal Name	Direction	Electrical Specif.	Pin No.	SPP/ECP Mode Signal Name	EPP Mode Signal Name	Direction	Electrical Specif.
1	$\overline{\text{STRB}}$	$\overline{\text{WRITE}}$	In/Output	O.D	14	$\overline{\text{AUTOFD}}$	$\overline{\text{DSTRB}}$	In/Output	O.D
2	DATA0	DATA0	In/Output	O.D	15	$\overline{\text{ERROR}}$	$\overline{\text{ERROR}}$	Input	TTL
3	DATA1	DATA1	In/Output	O.D	16	$\overline{\text{INIT}}$	$\overline{\text{INIT}}$	In/Output	O.D
4	DATA2	DATA2	In/Output	O.D	17	$\overline{\text{SLCTIN}}$	$\overline{\text{ADSTRB}}$	In/Output	O.D
5	DATA3	DATA3	In/Output	O.D	18	GND	GND		
6	DATA4	DATA4	In/Output	O.D	19	GND	GND		
7	DATA5	DATA5	In/Output	O.D	20	GND	GND		
8	DATA6	DATA6	In/Output	O.D	21	GND	GND		
9	DATA7	DATA7	In/Output	O.D	22	GND	GND		
10	$\overline{\text{ACKNLG}}$	$\overline{\text{ACKNLG}}$	Input	TTL	23	GND	GND		
11	BUSY	WAIT	Input	TTL	24	GND	GND		
12	PE	PE	Input	TTL	25	GND	GND		
13	SLCT	SLCT	Input	TTL					

2 Keyboard Interface

(The PL's front and side connectors are the same)

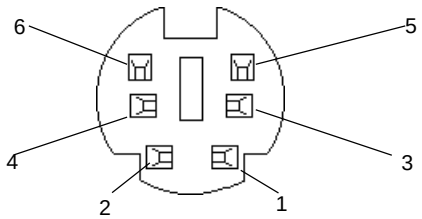
Mini - DIN 6 pin (Female)



Pin No.	Signal Name
1	KEY DATA
2	NC
3	GND
4	+5V
5	KEY CLK
6	NC
SHIELD	GND

3 Mouse Interface

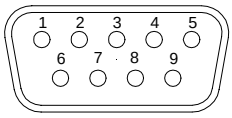
Mini - DIN 6 pin (Female)



Pin No.	Signal Name
1	Mouse DATA
2	NC
3	GND
4	+5V
5	Mouse CLK
6	NC
SHIELD	GND

4 RS-232C Interface (COM1/COM2/COM3)

Dsub 9 pin (Male)



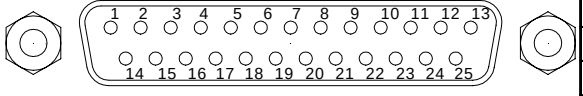
Screw Size: (4-40): Inch Type

Pin No.	Signal Name	Pin No.	Signal Name
1	CD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

5 RAS Interface

Item		Feature
Input	DIN 0,1	Digital Input Port (2 points)
	RESET	Hardware can be reset via external reset signal.
Output	DOUT	Digital output port (1 point)
	Alarm	Alarm signal output port (1 point)
	Lamp	Alarm lamp connection port (1 point)

D-Sub 25 pin (Male)



Screw Size: (4-40): Inch Type

Pin No.	Signal Name	Pin No.	Signal Name
1	GND	14	GND
2	+5V	15	+5V
3	+12V	16	NC
4	NC	17	NC
5	RESET INPUT (+)	18	NC
6	DIN 0 (+)	19	NC
7	DOUT (-)	20	NC
8	DOUT (+)	21	LAMP OUT (-)
9	ALARM OUT (-)	22	LAMP OUT (+)
10	ALARM OUT (+)	23	NC
11	RESET INPUT (-)	24	DIN1 (-)
12	DIN 0 (-)	25	NC
13	DIN 1 (+)		

■ Power Lamp LED Error Display

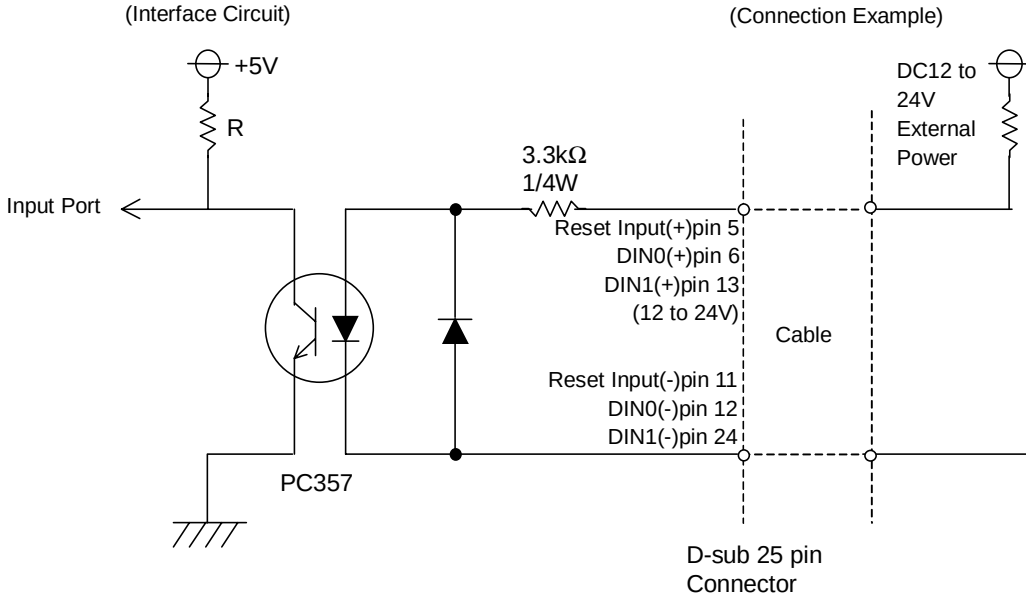
The Power Lamp LED indicates when the RAS feature has detected an error, due to a PL operation or environment related problem.

To use this feature, you need to install the RAS system monitor feature from the PL's additional floppy disk. ***6-1 Floppy Disk File List***

LED	Status
Green,Lights Continuously	Normal Operation
Orange, Lights Continuously	System Monitor Alarm has occurred
Orange, Blinking	When the Mirror Disk unit is installed, indicates that a hard disk error has detected

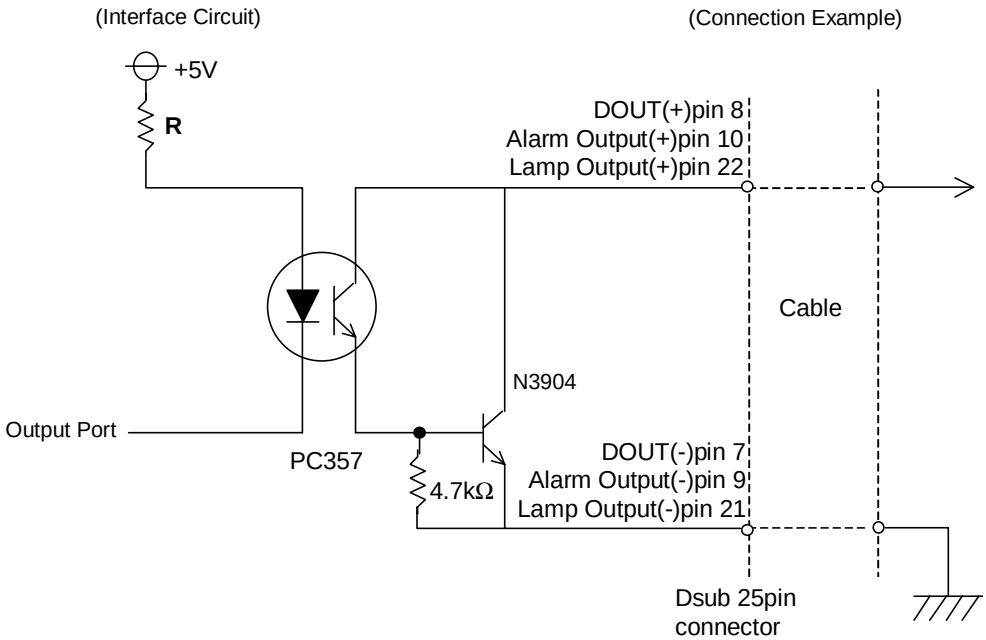
■ Input Port (Dual use of DIN, Remote Set Input Port)

- External Power : DC12V to 24V connection possible
- Input Hold : Hold Diode
- Isolation : Used (Photo isolation)

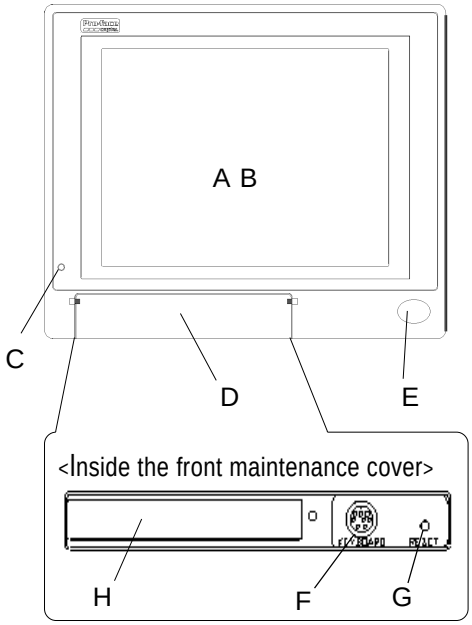


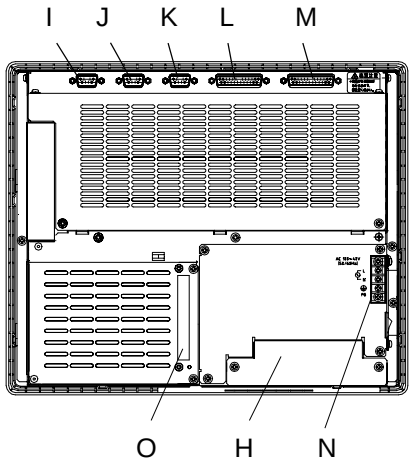
■ Output Port (DOUT, Alarm Output, Lamp Output Port)

- Output Spec. : DC 24V 100mA (MAX)
- Isolation : Used (Photo isolation)

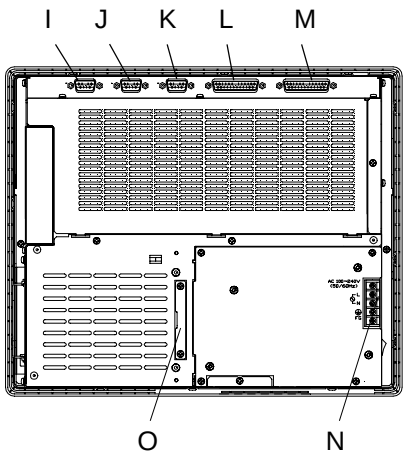


2-4 PL External Features





PL-6900T(4Slot)



PL-6901T(2Slot)

A:Display Area

Display output area. The built-in SVGA controller supports PC compatible architecture.

B:Touch Panel

This high-resolution analog touch panel allows you to configure a keyboard-less system.

C:Power Lamp LED

The status of the lamp changes according to the alarm type detected by the RAS feature.

2-3-5 RAS Interface

D:Front Maintenance Cover

Open this cover to connect the optional FDD unit.

E:IrDA

Infra-red signals can be sent and received by this unit.

F:Keyboard Connector

A PS/2 compatible keyboard is connected here.

G:Hardware Reset Switch

H:Front Mount FDD Slot

Slot for installing the FDD unit (PL-FD210). (only PL-6900T)

I:RS-232C Connector (COM1)

J:RS-232C Connector (COM2)

K:RS-232C Connector (COM3)

These RS-232C interfaces (D-sub 9 pin male connectors), allow communication with other computers and connection to peripheral devices.

L:Printer Connector (LPT1)

Centronics standard interface (D-sub 25 pin female connector), which connects a parallel device, such as a printer (supports ECP/EPP).

M:RAS Connector

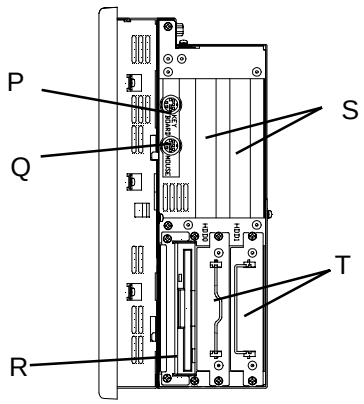
Interface for DIN, DOUT, Watchdog, and Remote Reset. (D-sub 25 pin male connector)

N:Power Terminals

The PL's AC100V/240V power cord terminals are connected here.

O:IDE I/F Cover

To connect the optional CD-ROM drive unit (PL-DK200) and Mirror Disk Unit(PL-MD200-HU01), remove this cover and use this connector.



PL-6901T(2Slot)

P:Keyboard Connector

A PS/2 compatible keyboard can be connected here.

Q:Mouse Connector

A PS/2 compatible mouse can be connected here.

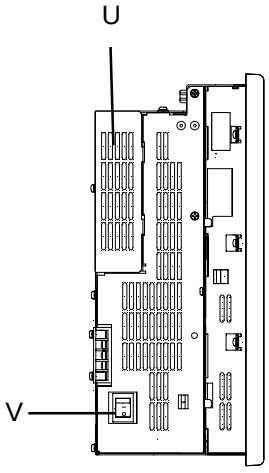
R:Side Mount FDD Slot

Houses the FDD unit.

S:Expansion Slots (2)

T:HDD/FFD Expansion Unit Slot

Houses an additional HDD unit, or FFD unit.



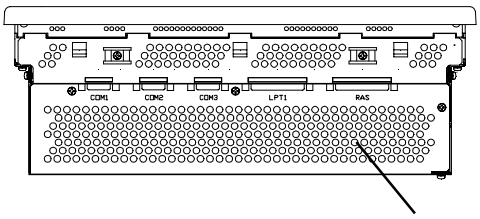
PL-6901T(2Slot)

U:Half Cover

When an optional DIM module or expansion board is used here, this cover is removed.

V:Power Switch

Use this switch to turn the PL's power ON or OFF.



PL-6901T(2Slot)

W:Rear Maintenance Cover

Remove this cover to install the optional DIM module, or an expansion board.

CAUTION!

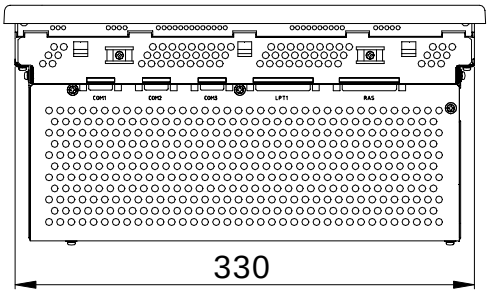
- **When attaching peripheral units to the PL, be sure the PL's power cord is disconnected from the main power supply.**
- **To avoid an electrical shock, be sure to disconnect the PL's power cord from the power supply before connecting the cord's power terminals or any peripheral devices to the PL.**

4-3-1 Connecting the Power Cord

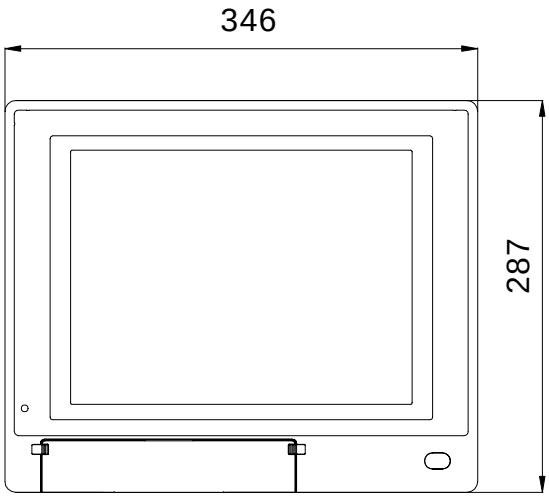
2-5 PL Dimensions

1 PL- 6900T General Dimensions

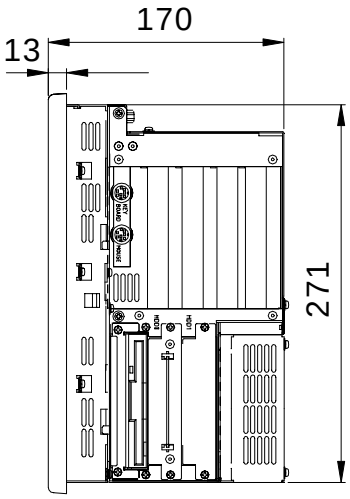
(Unit: mm - excluding projections)



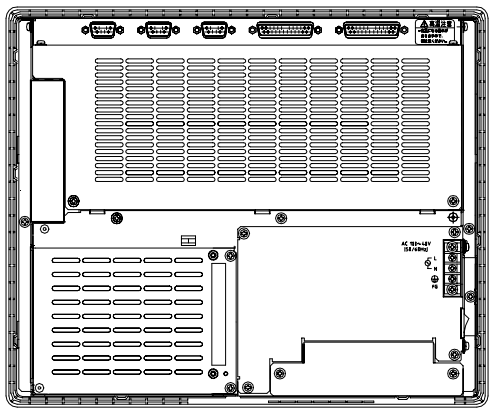
Top View



Front View



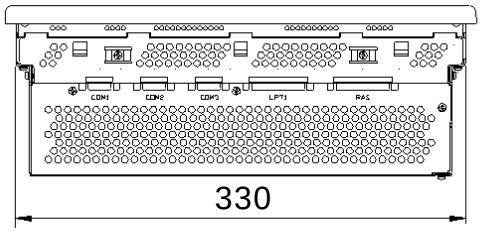
Side View



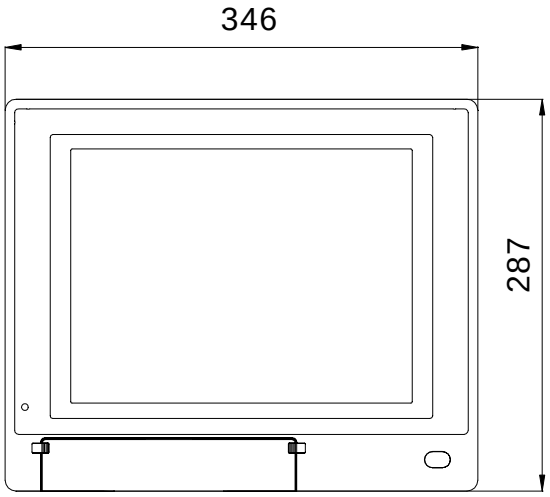
Rear View

2 PL- 6901T General Dimensions

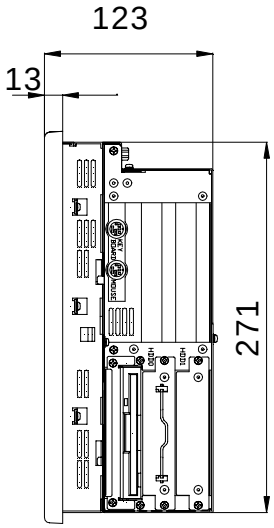
(Unit: mm - excluding projections)



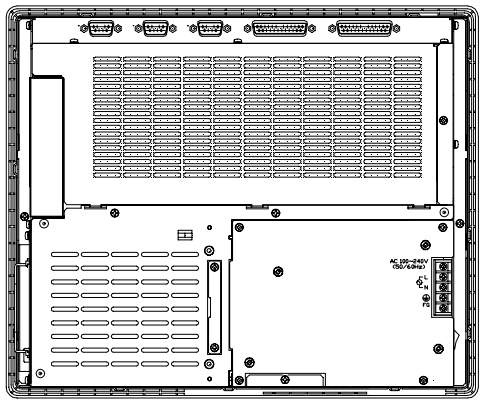
Top View



Front View



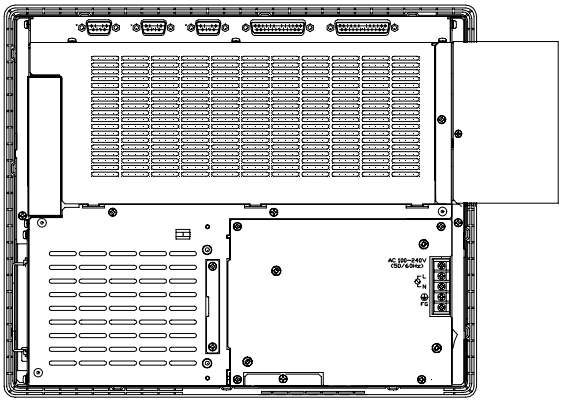
Side View



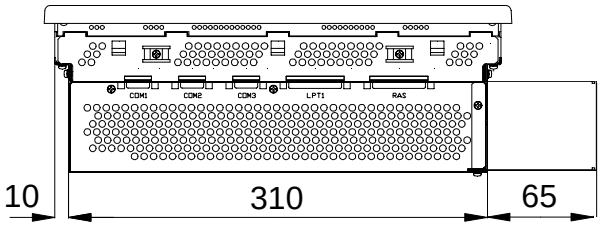
Rear View

3 Full Sized Cover Attachment Dimensions

(Unit: mm)



(PL-6901T)



Top View

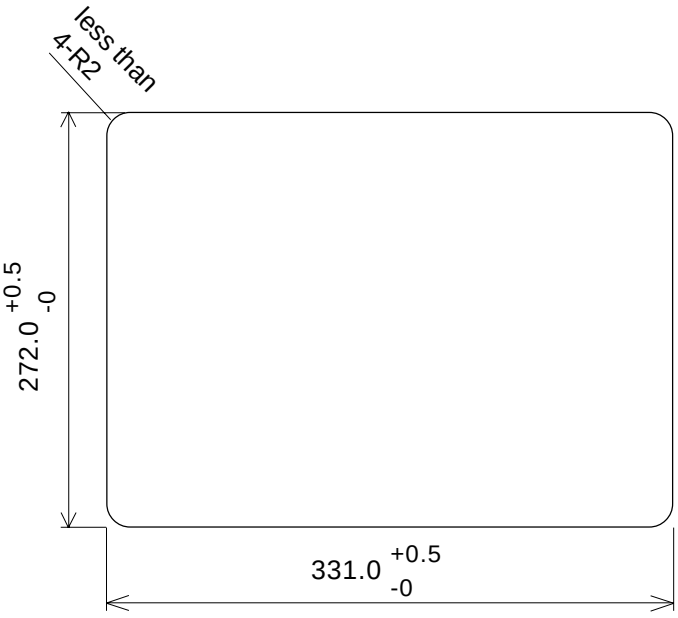
NOTE

- The above figure's dimensions are the same for the 2 and 4 slot units.

CAUTION!

- **When using a full-sized board and the PL's full-sized cover (PL-FC200/PL-FC210), be sure that the PL is mounted in its attachment panel/cabinet before starting this work. Due to size differences, the full-sized cover or a full sized expansion board cannot be attached first and then the PL installed into a panel.**
- **When using a full-sized expansion board, be sure to check its dimensions and shape, since they will affect the board's environment specifications, such as for vibration, etc.**

4 Installation Slot Dimensions



(Unit: mm)

CAUTION!

- **Be sure the thickness of the panel is from 1.6 to 10 mm.**
- **All panel surfaces used should be strengthened. Especially, if high levels of vibration are expected and the PL's installation surface (i.e. an operation panel's door, etc.) can move (i.e.open or close) due consideration should be given to the PL's weight.**
- **To insure that the PL's water resistance is maintained, be sure to install the PL into a panel that is flat and free of scratches or dents.**
- **Be sure all installation tolerances are maintained to prevent the unit from falling out of its installation panel.**

Chapter 3

3-1 Installing Options and Expansion Boards

Installing Optional Units and Expansion Boards

The User can install a variety of optional units and expansion boards made by Digital in the PL, as well as a number of commercially available ISA-bus compatible boards. This chapter describes both the products that can be installed in the PL and how to install them.

3-1 Installing Options and Expansion Boards

The following explanation pages describe the installation procedures for the PL's DIM module (PL-EM220/PL-EM230), FDD unit (PL-FD200/PL-FD210), HDD unit (PL-HD220), expansion boards, and the CD-ROM drive unit (PL-DK200).

For information about the installation of other option units, please refer to those unit's individual [Operation Instructions].

⚠ WARNING

To avoid electric hazards, be sure to turn the PL's power OFF before installing any optional units or expansion boards.

CAUTION!

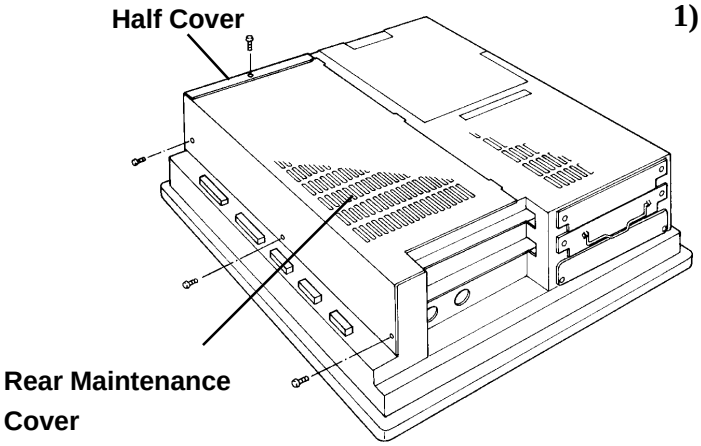
Use a screw driver to loosen or tighten the screws. Be careful not to over-tighten any screws, since it may damage the equipment.

Be careful when removing or inserting any screws inside the body of the PL.

1 Removing the rear maintenance cover

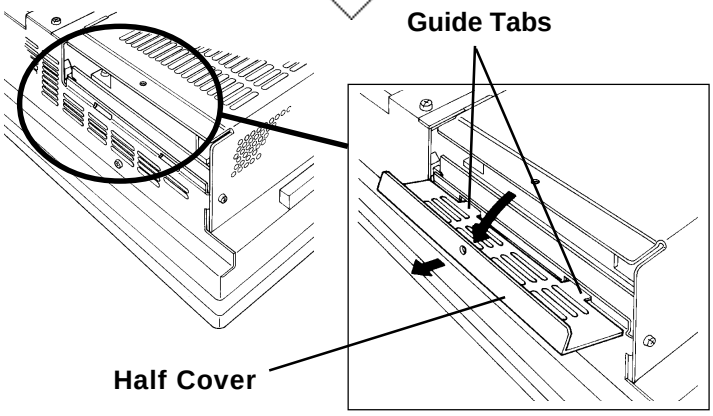
Handle the rear maintenance cover with care, since it is made of aluminum and is easily bent.

■ **PL-6901T (2 slot type)**

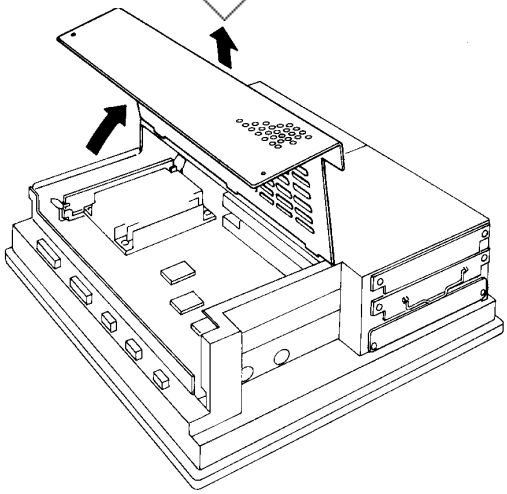


1) Unscrew the four attachment screws used to hold the rear maintenance cover and half-cover in place.

Remove the half cover, and then the rear maintenance cover.

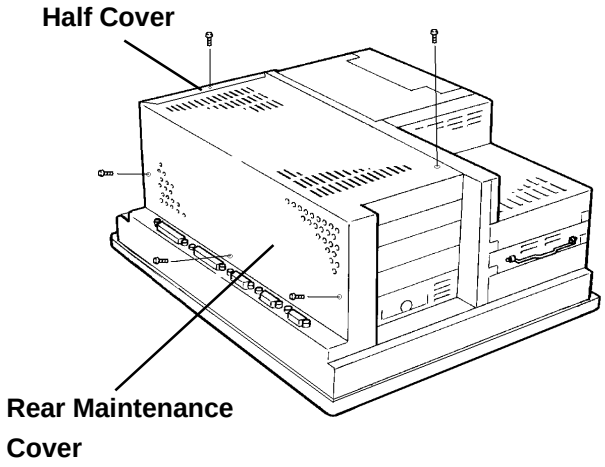


2) Pivot the half cover open and lift up slightly to free the guide tabs. Next, remove the half-cover.



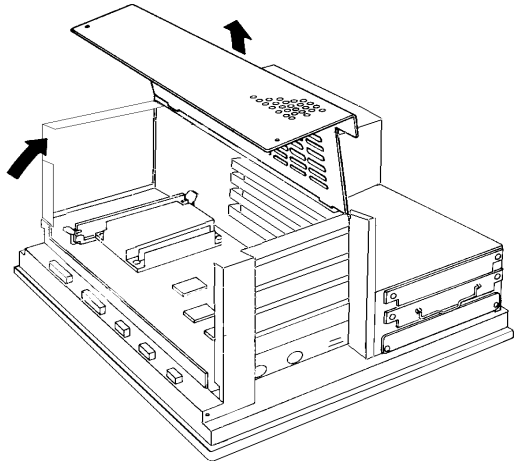
3) Remove the rear maintenance cover.

■ PL-6900T (4 slot type)

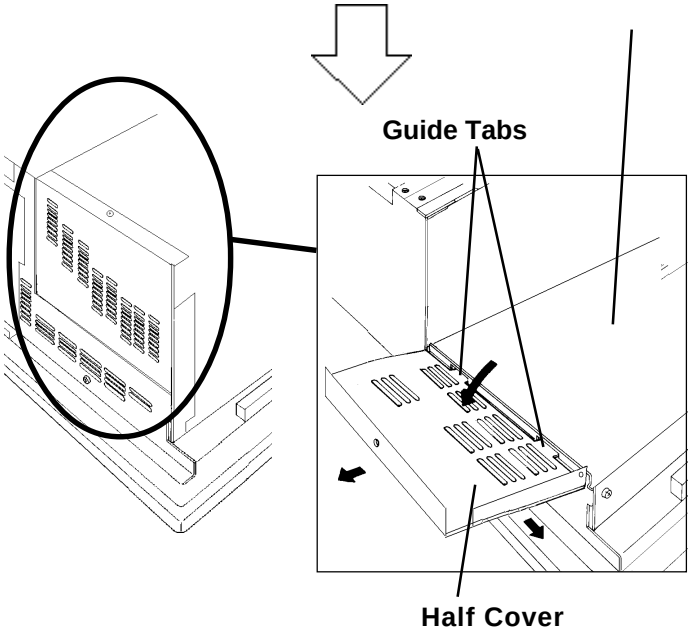


1) Unscrew the attachment screws used to hold the rear maintenance cover(4) and half cover(1) in place.

CAUTION! **Remove the rear maintenance cover, and then the half cover.**



2) Remove the rear maintenance cover.



3) Pivot the half cover open and lift up slightly to free the guide tabs. Next, remove the half cover.

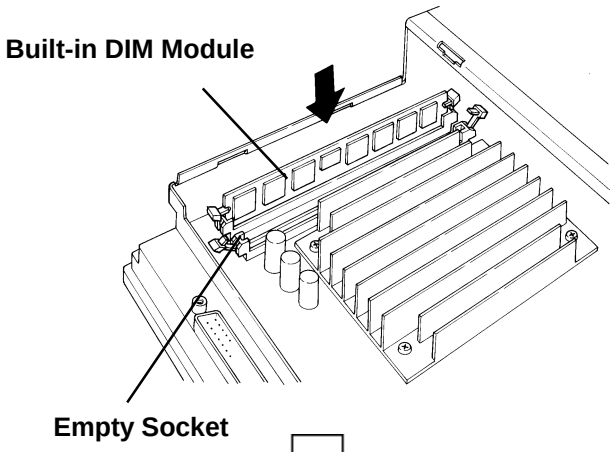
2 Installing the DIM Module (PL-EM220 / PL-EM230)

CAUTION! **Since DIM module sockets are easy to break, be sure to install the DIM module very carefully.**

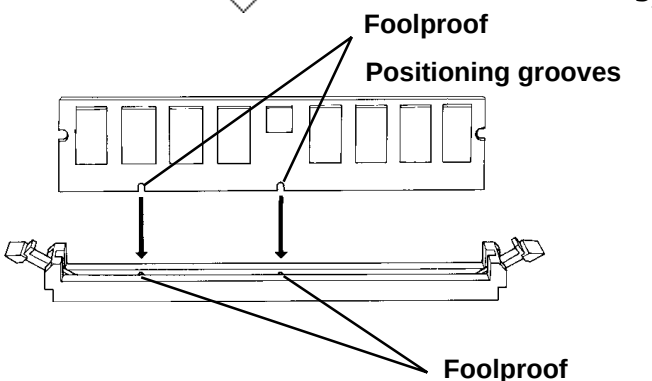
The PL comes with a single, 64MB DIM module pre-installed. There is one more empty socket that can be used and the procedures that follow describe how to install a second DIM module in that socket.

1) Replace the rear maintenance cover and the half cover.

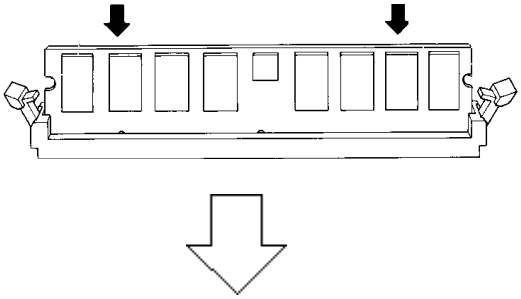
3-1-1 Removing the rear maintenance cover



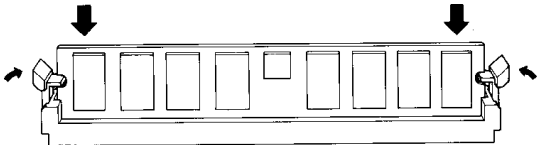
2) Install the DIM module for expansion on the empty socket.



3) Adjust the foolproof positioning grooves so that they align with the foolproof positioning pins.



4) Insert the DIM module into the DIM module socket.

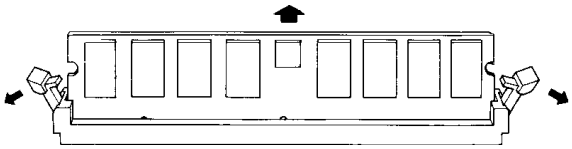


5) Push the DIM module down until the side stoppers lock.

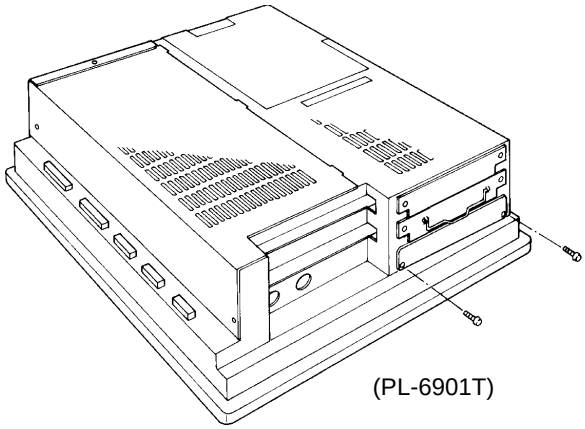
6) Replace the rear maintenance cover and the half cover and secure them in place with the attachment screws.

◆To Remove the DIM Module

When removing the module from the socket, press down on the socket's ejector tabs to release the module.

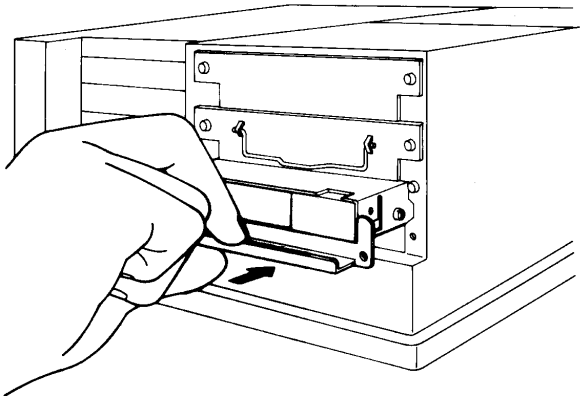


3 Installing the FDD Unit (PL-FD200)



(PL-6901T)

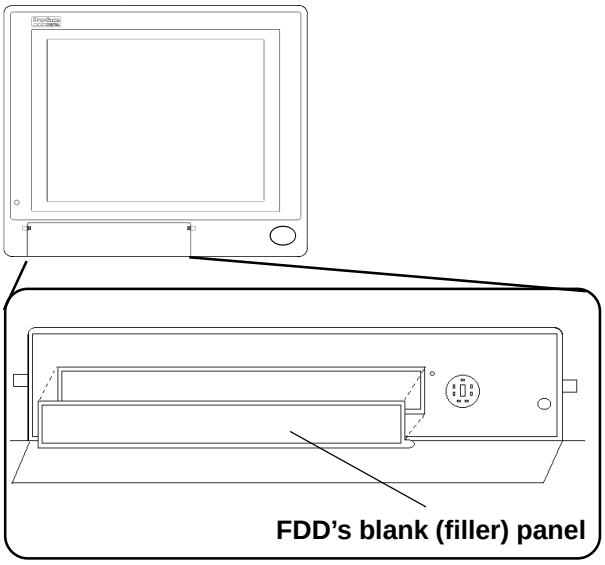
1) Remove the two(2) attachment screws from the lowermost Expansion Slot Cover, and remove the cover.



2) Insert the FDD unit so that its guide grooves fit the chassis guide ways. Push the unit in until its rear connector is connected securely.

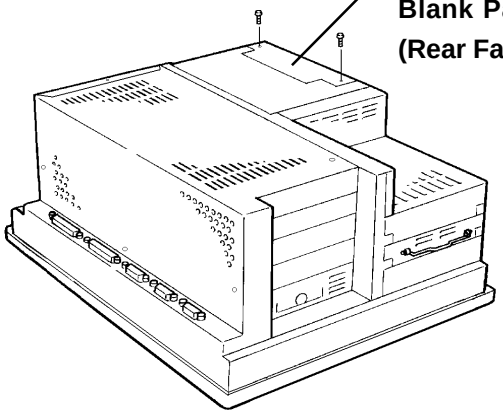
3) Fix the unit in place with its two(2) attachment screws.

4 Installing the FDD Unit (PL-FD210)

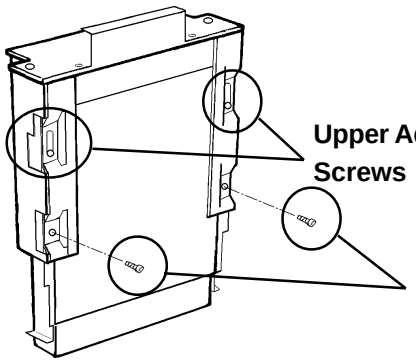


1) Open the front maintenance cover and remove the FDD's blank (filler) panel.

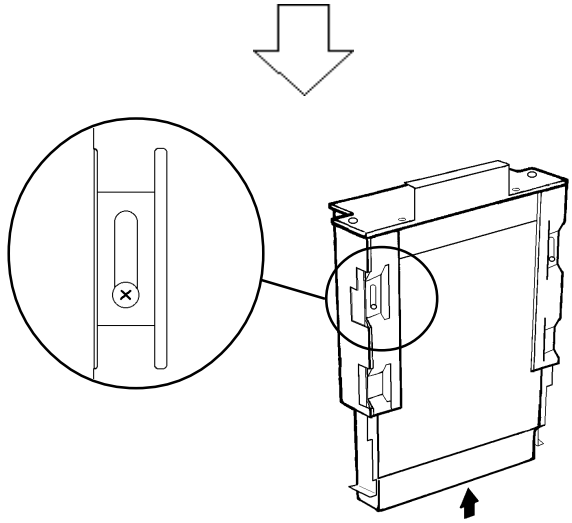
2) Close the front maintenance cover.



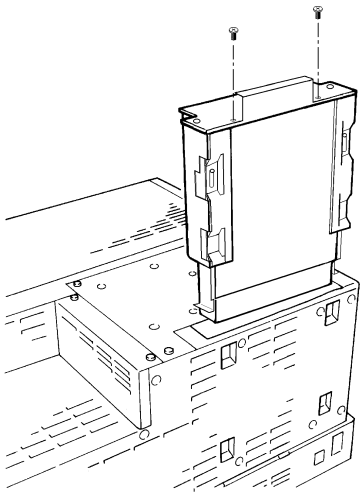
3) Unscrew the two(2) attachment screws from the PL-FD210's Blank Panel, and remove the blank panel.



4) Loosen the FDD unit chassis two (2) upper adjustment screws, and remove the unit's two (2) lower set screws to allow the FDD unit to slide forward.



5) Push on either end of the FDD unit to compress the unit to its shortest length. Then, re-tighten the two attachment screws to secure the unit in place.



6) Insert the FDD unit so that its guide grooves align with the chassis holder guideways. Push the unit into the PL holder until its connector (middle of unit) is connected securely.

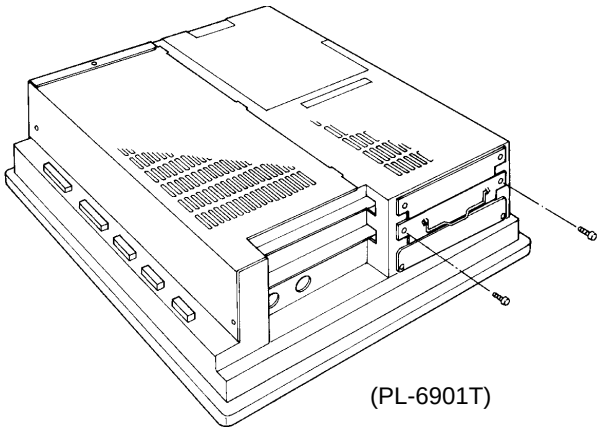
CAUTION! **When installing the PL-FD210, insert it slowly into the PL's installation opening and be sure it is securely attached.**

7) Fix the unit in place with its two(2) attachment screws.

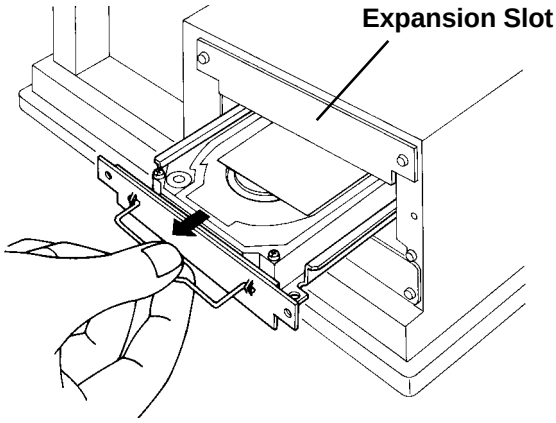
8) Last, replace the Blank Panel (removed in step 3).

5 Removing/ Installing the HDD Unit (PL-HD220)

NOTE The following procedure is applicable also to the FFD unit(PL-FF200) and HDD (IDE) expansion slot.



(PL-6901T)



CAUTION! **Since the PL-HD220 units are precision instruments, be sure not to jar or shake them unnecessarily.**

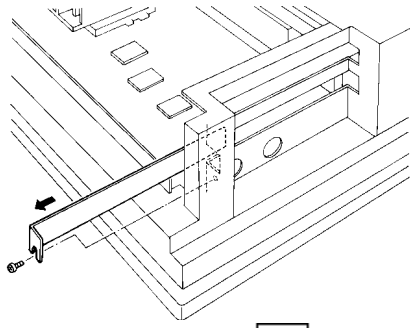
1) Remove the two(2) attachment screws from the middle Expansion Slot Cover.

2) Grasp the HDD unit's handle and pull the unit slowly out of the PL. Be sure you do not damage the unit.

3) Insert the HDD unit you selected inside the guideways of the PL and push it in until its rear connector is securely connected.

4) Fix the unit in place with its two(2) attachment screws.

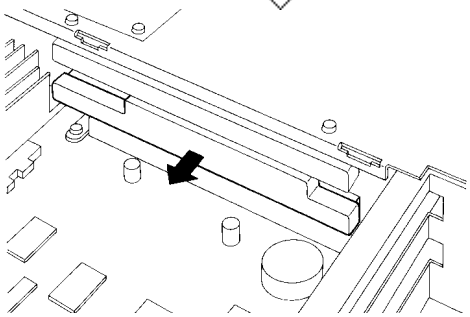
6 Installing an Expansion Board



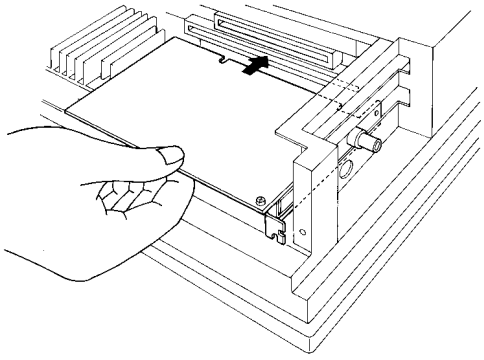
1) Remove the PL's rear maintenance cover and the half cover.

3-1-1 Removing the rear maintenance cover

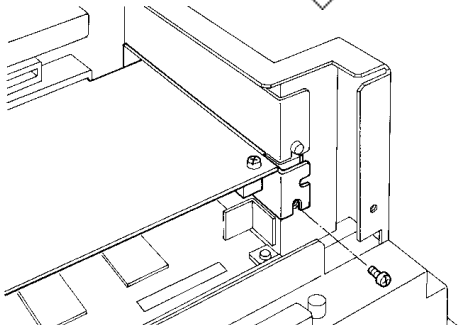
2) Unscrew the attachment screw from the expansion slot cover, and remove the cover.



3) Remove the duster cover.



4) Insert the expansion board into the expansion slot.

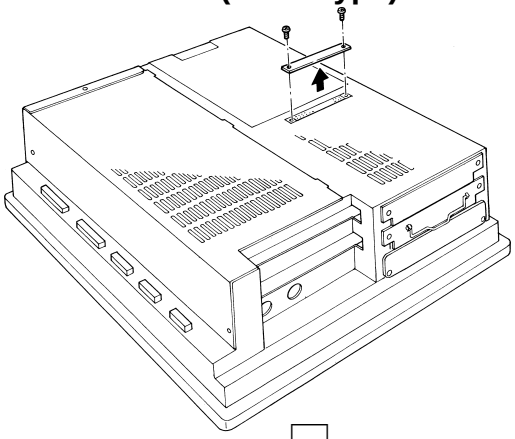


5) Fix the expansion board's metal positioning strip in place with its attachment screw.

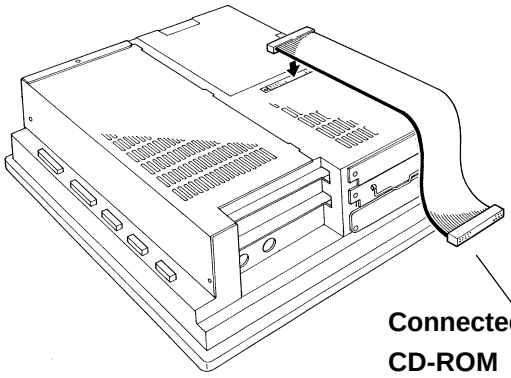
6) Last, secure the rear maintenance and half covers in place with their attachment screws.

7 Connecting the CD-ROM Unit (PL-DK200)

■ **PL-6901T (2 slot type)**



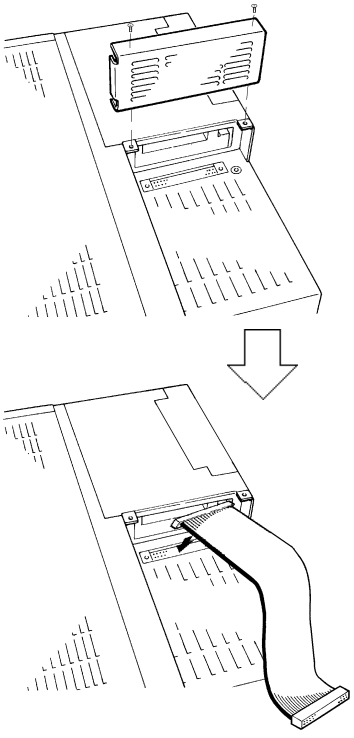
1) Unscrew the two(2) attachment screws on the IDE I/F cover, then remove the cover.



2) Connect the CD-ROM unit's cable to the IDE I/F.

CAUTION! **Be sure that the cable is securely connected before turning ON the power switch.**

■ **PL-6900T (4 slot type)**



1) Unscrew the two(2) attachment screws on the IDE I/F cover, and remove the cover.

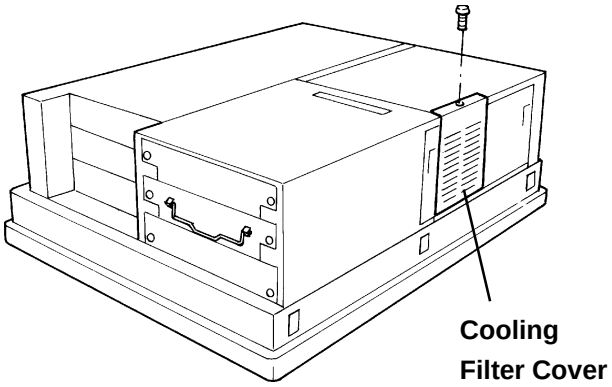
2) Connect the CD-ROM unit's cable to the IDE I/F.

CAUTION! **Be sure that the cable is securely connected before turning ON the power switch.**

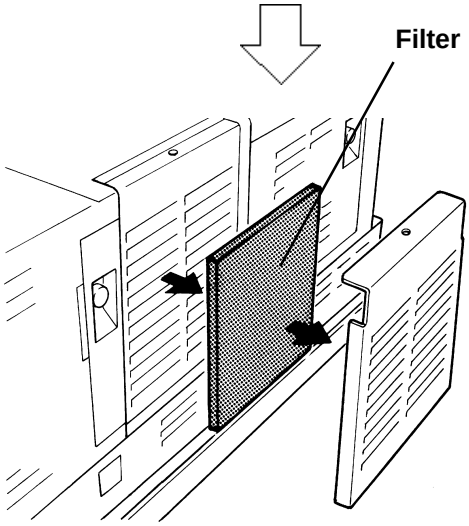
8 Removing the Cooling Fan Unit

The PL can be operated without the bottom face cooling fan unit. The user should, however, be aware that doing so (i.e. removing the fan unit) will cause the PL's ambient temperature to rise. See "*2-1-2 Environment Specifications*"

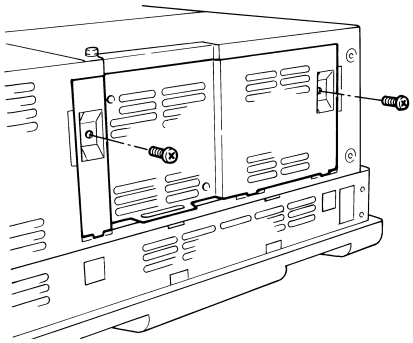
■ **PL-6901T (2 slot type)**



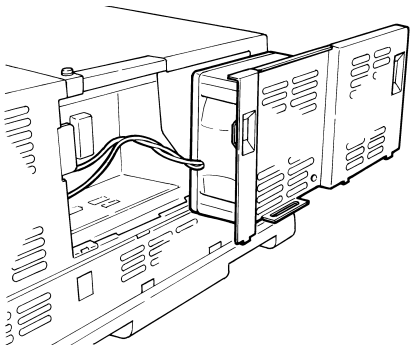
1) Remove the attachment screw on the cooling filter cover, and remove the cover.

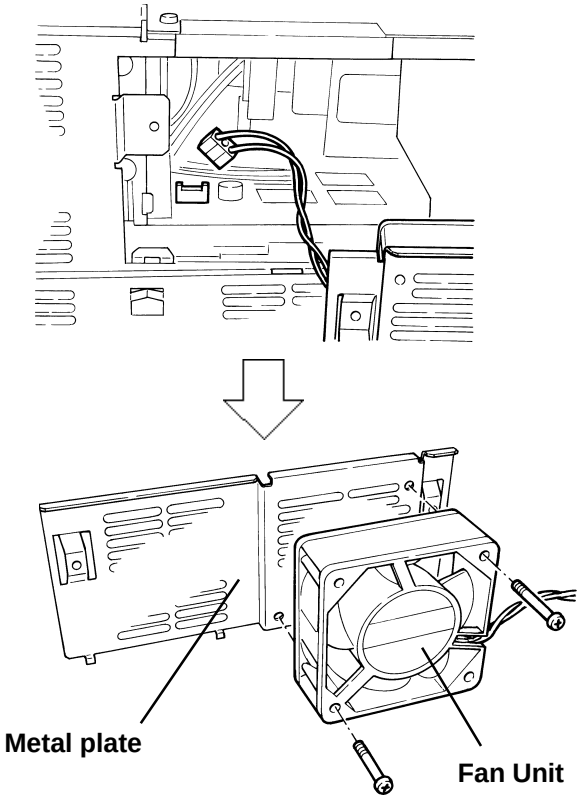


2) Remove the filter.



3) Remove the two(2) attachment screws on the fan unit, and take out the fan unit.



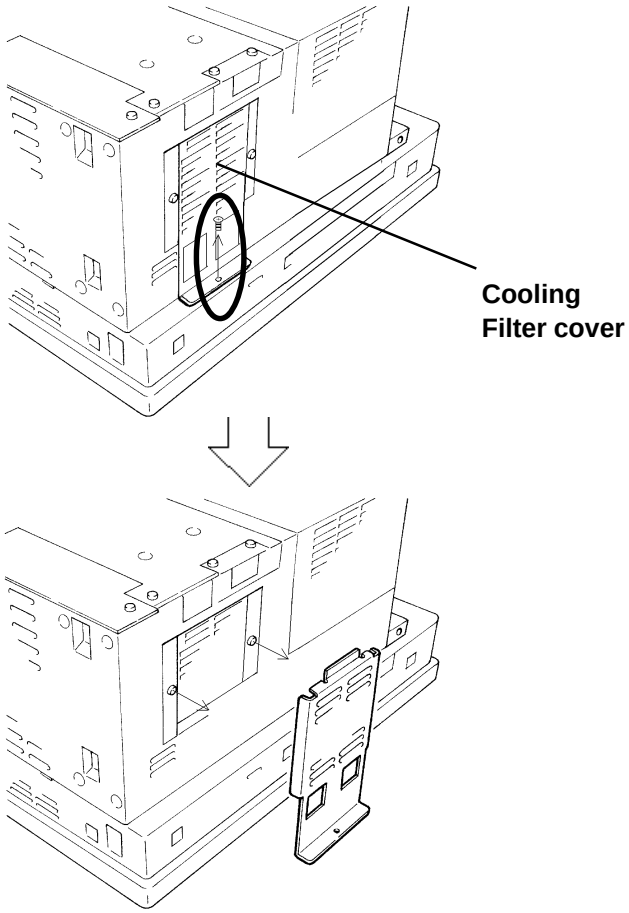


4) Unplug the power cable connector from the cooling fan unit.

5) Unscrew the fan's two(2) attachment screws, then remove the fan unit from its metal attachment plate.

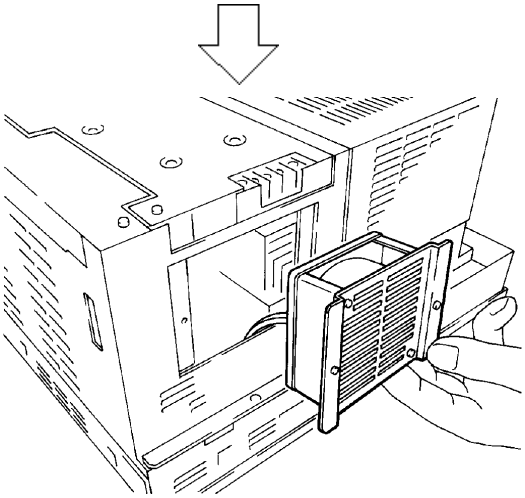
6) Reattach the metal plate and the filter cover to the PL.

■ **PL-6900T (4 slot type)**

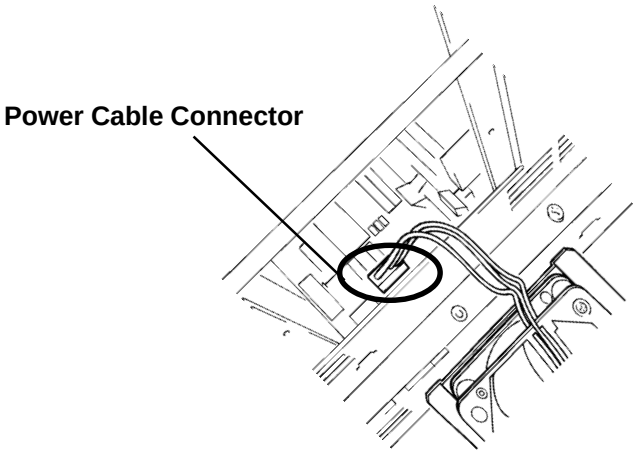


1) Remove the cooling filter cover's attachment screw.

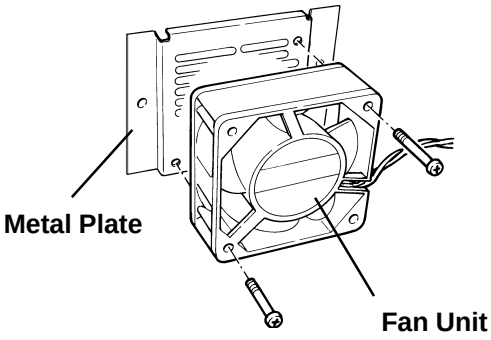
2) Remove the cooling filter cover from the fan unit, and then remove the fan unit's two(2) attachment screws.



3) Remove the fan unit from the PL.



4) Disconnect the fan unit's power cable connector from the PL.



5) Unscrew the two(2) fan unit's attachment screws and then remove the fan unit from the metal plate holding the fan unit.

6) Re-attach the metal plate and the cooling filter cover to the PL.

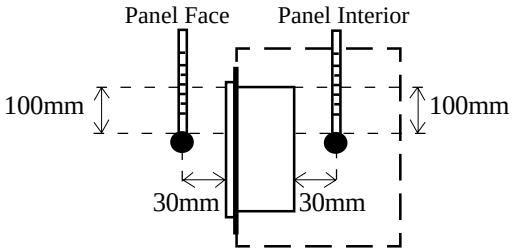
MEMO

Chapter 4

Installation and Wiring

This chapter explains how to install and wire the PL-6900 Series, as well as the cautions required both before and during installation.

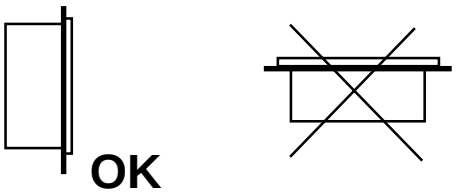
4-1 Installation Cautions



1) Temperature Related Cautions

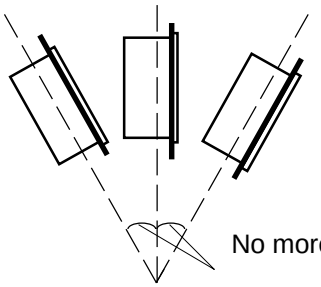
- The PL should be installed in a vertical position, and forced air cooling should be used, instead of natural air circulation.
- To prevent a machine breakdown, be sure to use the PL within the allowable temperature range as below-listed. Please check "Ambient Operating Temperature" in the position drawn on the left. ("Ambient Operating Temperature" indicates both the panel interior and panel face temperature.)

	Ambient Operating Temperature
W/ PL Fan	5°C to 50°C
W/OUT PL Fan	5°C to 40°C

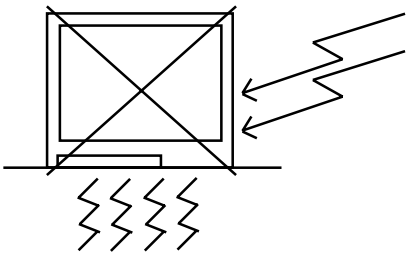


2) Installation Positioning Cautions

Be sure to install the panel in an upright (vertical) position.



Also, be sure that the panel's viewing angle is tilted no more than 30 degrees from parallel to the operator (i.e. directly in front).



3) Vibration Related Cautions

Be sure to protect the PL from excessive vibration or jolting. These kinds of shocks can cause the PL to malfunction.

PL Unit	Shock Resistance
When using the HDD	Up to 4.9m/s^2
When using the FDD	Up to 9.8m/s^2
When using no drives	Up to 19.6m/s^2

- **Be sure not to move the PL unit while the HDD is starting up. This can lead to a machine breakdown (Even a slight movement of the PL should not be performed).**
- **When using a fan to cool the PL unit, be sure that the fan does not point directly at any of the PL's disk drive units.**

4-2 Installing the PL

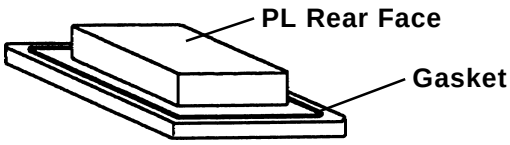
1 Installation Procedures

Follow the steps given below when installing the PL.

Attaching the Moisture Resistant Gasket

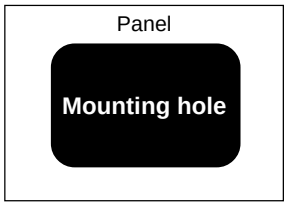
Even if the your PL's Moisture Resistant Gasket is not needed to prevent water from entering the unit, the gasket also acts as a vibration absorber and should always be attached. To install it, place the PL face down on a soft surface and attach the gasket to the rear side of the display face, in the plastic bezel's groove (see picture below).

CAUTION! **Before mounting the PL into a cabinet or panel, check that the moisture resistant gasket is attached to the unit.**



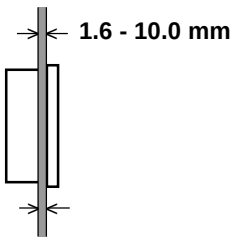
Create an Installation Slot

Create a hole for mounting the PL, like that pictured here. Two additional items, the moisture resistant gasket and the mounting brackets are also required when installing the PL. *2-5 PL Dimensions*

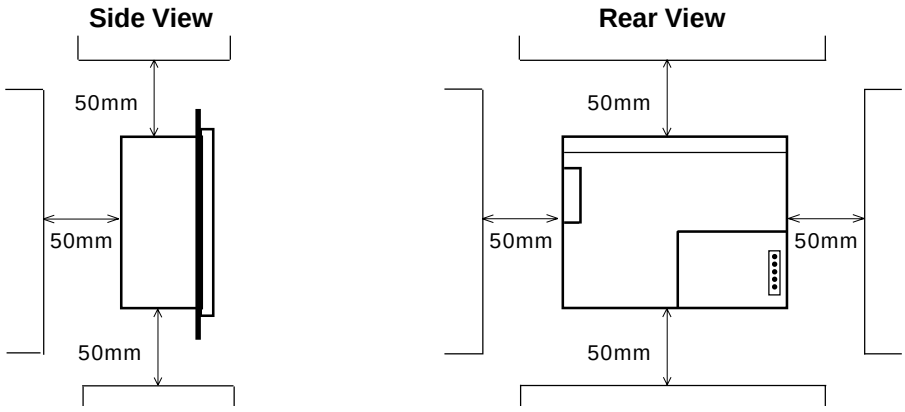


NOTE
- To obtain the maximum degree of moisture resistance, be sure to mount the PL on a smooth, flat surface.
- The panel itself can be from 1.6 to 10.0 mm thick.

CAUTION! **Strengthening may be required for the panel. Be sure to consider the weight of the PL when designing the panel.**

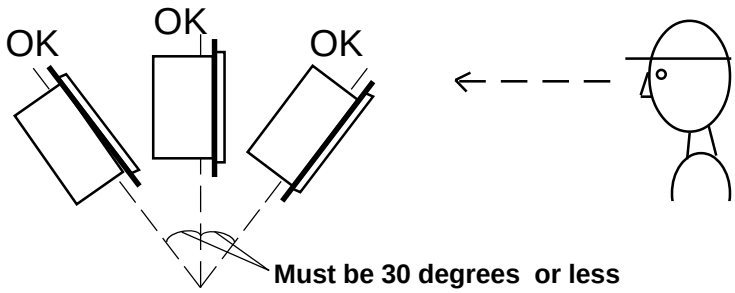


NOTE To enhance the PL's maintainability, operability and ventilation, allow at least 50mm or more clearance between the PL and any other objects. (The clearance must be large enough to allow you to insert or remove expansion boards and to attach connectors.)



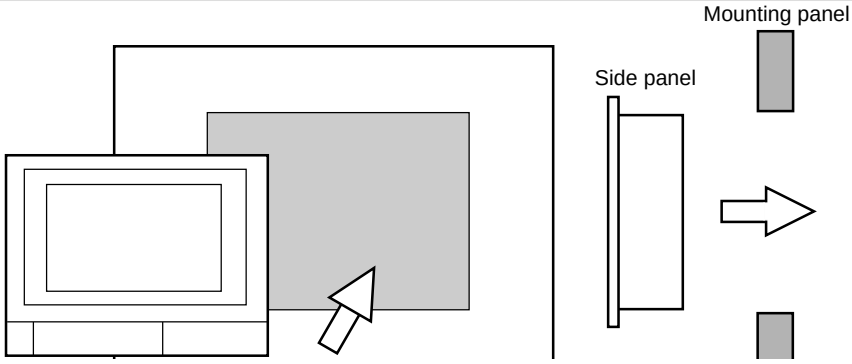
PL Viewing Angle

- Be sure that the panel's viewing angle is tilted no more than 30 degrees from parallel to the operator (i.e. operator is directly in front).



- Avoid placing the PL next to other devices that might cause overheating.
- Avoid using the PL where the ambient temperature will exceed 40°C (50°C when using a cooling fan).
- Keep the PL away from arc-generating devices such as magnetic switches and non-fuse breakers.
- Avoid using the PL in environments where corrosive gases are present.

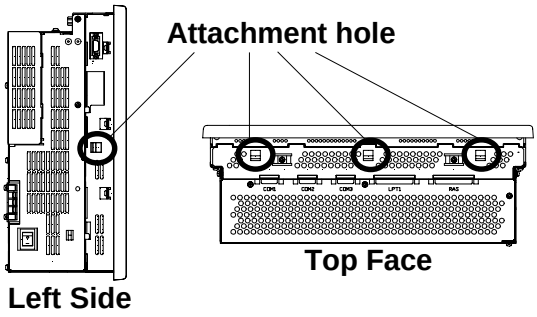
Insert the PL into the installation slot



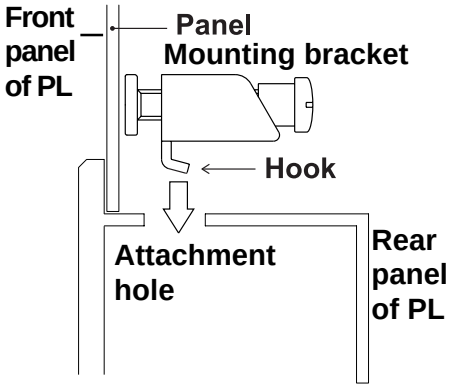
CAUTION! **Be sure the installation panel's actual measurements are the same as those given here, otherwise the PL may slip or fall out of the panel.**

Attach and Secure the Rear Attachment Brackets

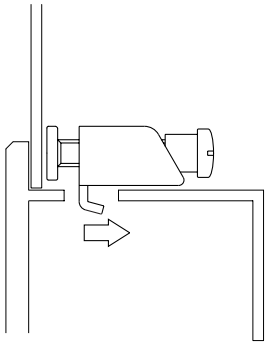
1) Locate the PL's eight (8) attachment holes, located on the top, bottom, and sides of the PL.



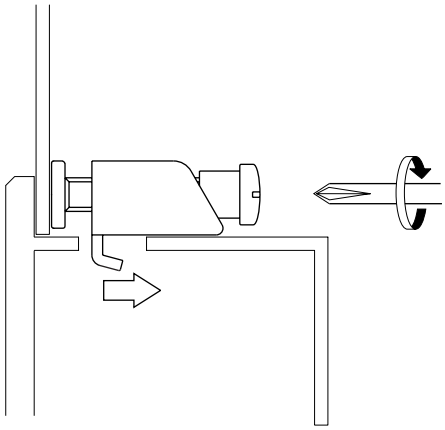
2) Insert each bracket into its attachment hole.



3) Insert each mounting bracket into an attachment hole, and slide the bracket backwards until it stops.



4) Use a screwdriver to tighten the bracket's adjustment screw. To ensure a high degree of moisture resistance, the torque should be 0.5N•m.

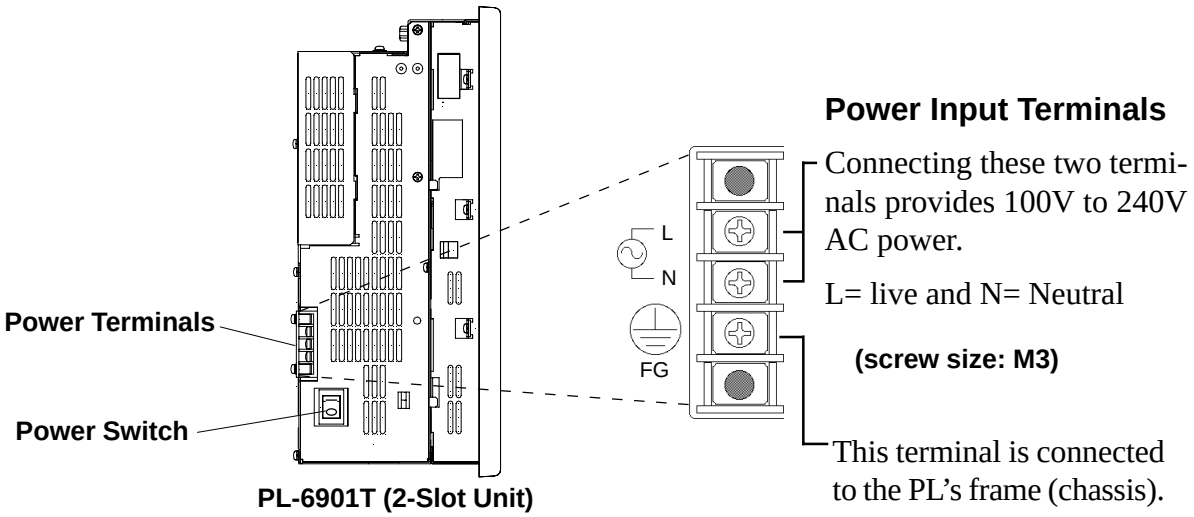


CAUTION! **Excessive torque may damage the panel or bracket.**

4-3 Wiring the PL

1 Connecting the Power Cord

(Rear of PL)

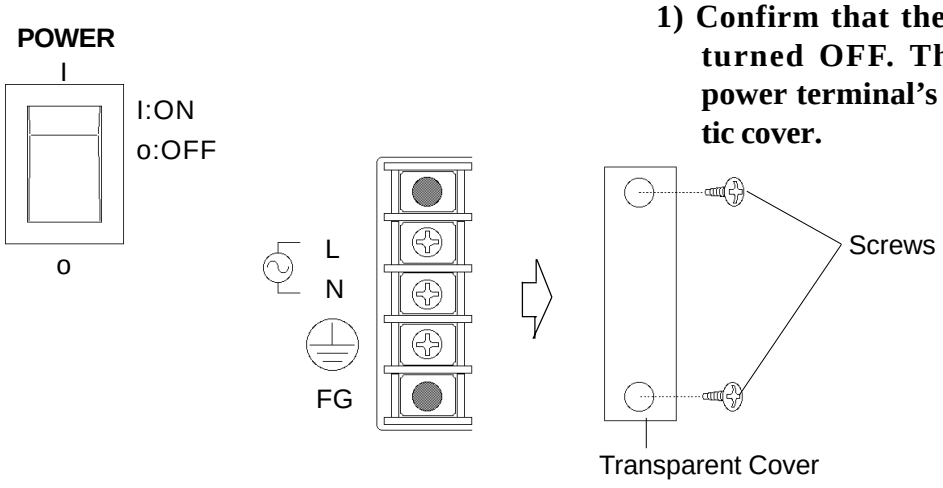


PL-6901T (2-Slot Unit)

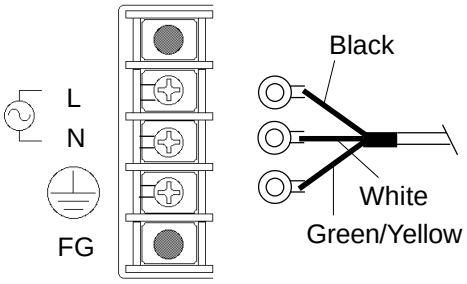
WARNING

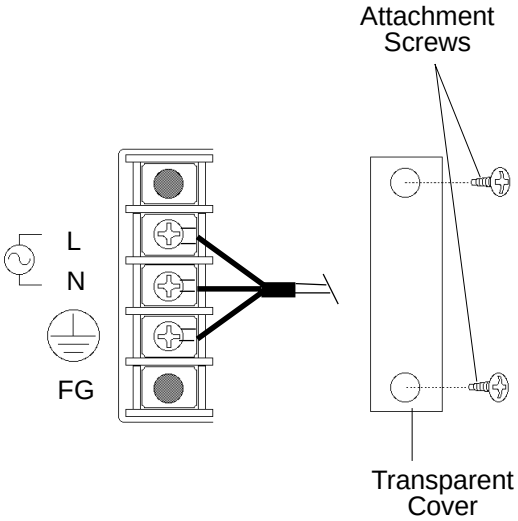
- **To prevent electric shocks, be sure to turn the PL OFF before connecting the power cord.**
- **To avoid the dangers of fire, electric hazards and equipment damage, be sure to use only the specified power supply voltage when operating the PL.**

Use the following steps when connecting the power cord to the PL's power terminals.



1) Confirm that the power switch is turned OFF. Then, remove the power terminal's transparent plastic cover.

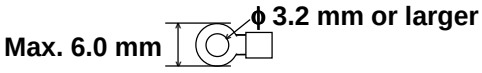




2) Loosen and remove the middle three(3) screws from the terminal strip. Align the crimp terminals with each screw hole, and tighten the screws.

NOTE

- Crimp Terminal Types : V1.25-3, by J.S.T. or equivalent (JIS standard part number : **RAV1.25-3**)
- Crimp terminals must be the same as shown below.



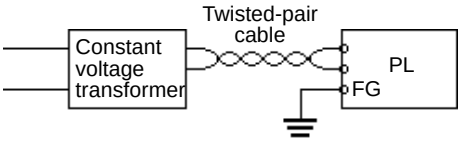
CAUTION!

- **The colors in the figure above are for the cable which came with the PL.**
- **This power cable is designed only for AC100/115V use. Be sure to use a different cable when using other than AC100/ 115V power.**

3) Reattach the terminal strip's transparent cover with the attachment screws.

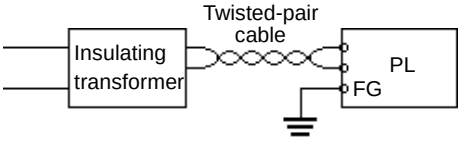
2 Power Supply Cautions

When connecting the PL unit's AC power terminals, please be aware of the following:



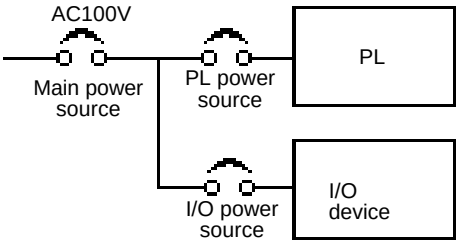
- If voltage fluctuations are expected to vary beyond the specified range, connect a constant voltage transformer.

For information about the specified voltage, refer to "**2-1 General Specifications**"

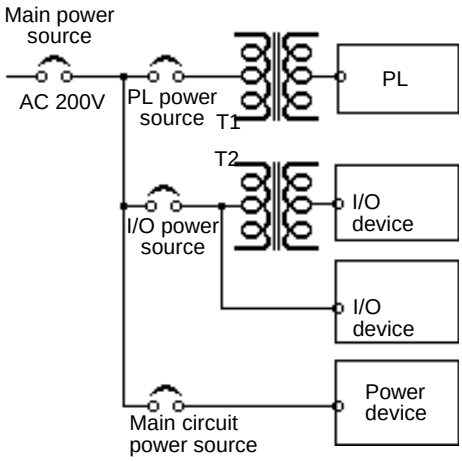


- Use a low-noise power supply both between the lines and between the PL and its ground. If there is still excess noise, connect an insulating transformer (noise-prevention type) .

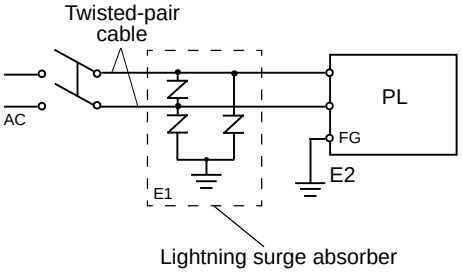
NOTE Be sure any constant or insulating transformer used has a capacity of 200VA or more.



- Wire the power cords of the PL, I/O devices, and power supply devices separately.



- To improve noise immunity, it is recommended to attach a ferrite core to the power cord.
- Isolate the main circuit (high voltage, large current) line, I/O signal lines, and power cord, and do not bind or group them together.



- To prevent damage from lightning, connect a lightning surge absorber.

CAUTION!

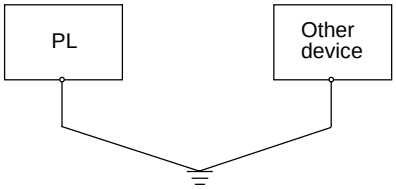
- **Ground the lightning surge absorber (E1) and the PL (E2) separately.**
- **Select a lightning surge absorber which will not exceed the allowable circuit voltage, even when the voltage rises to the maximum.**

3 Grounding Cautions

(a) Dedicated Ground *1

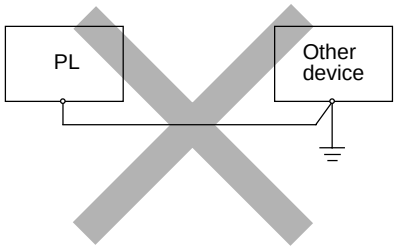
- **Set up a dedicated ground when using the rear panel's FG terminal.**

(b) Shared Ground - allowed *1



- **If a dedicated ground is not possible, use a shared ground, as shown in figure (b).**
- **The grounding point must be as close to the PL as possible, and the grounding wires must be as short as possible. If the wires must be long, use thick, insulated wires and run them through conduits.**

(c) Shared ground - <u>not</u> allowed



4 Cautions When Connecting I/O Signal Lines

- I/O signal lines must be wired separately from the power circuit cable. If the power circuit cable needs to be wired together with the input/output (I/O) signal lines for any reason, use shielded cables and ground one end of the shield to the PL's FG terminal.
- To improve noise immunity, it is recommended to attach a ferrite core to the power cord.

1 Use a grounding resistance of 100Ω or less, and a $2mm^2$ or thicker wire, or your country's applicable standard. For details, contact your local PL distributor.

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MEMO

Chapter 5

System Setup

This chapter explains how to enter a PL-6900 Series unit's system settings, as well as the cautions required both before and during set up.

5-1 Setup Procedures

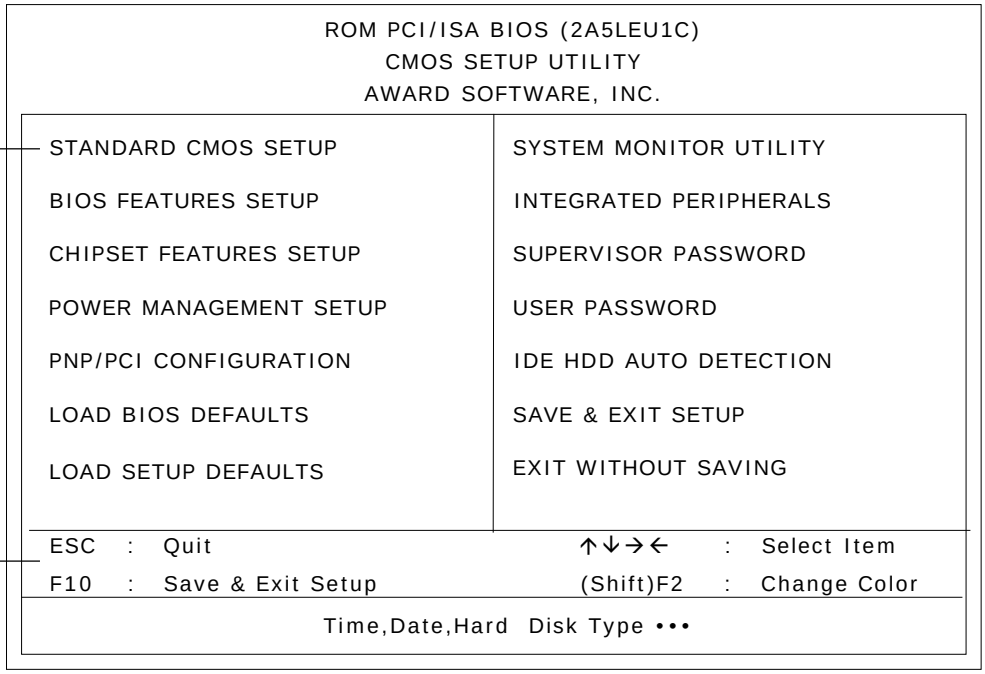
CAUTION! **Normally, use only the factory (default) settings.**

NOTE The following settings are those pre-set at the factory.

1) Connect a keyboard to the PL.

2) Turn the PL's power ON.

3) After the message "Press <DEL> to Enter SETUP" appears, press the [DEL] key until the following screen appears.



KEYBOARD ACTION KEYS
Provides a summary of the keyboard keys used to carry out the set up.

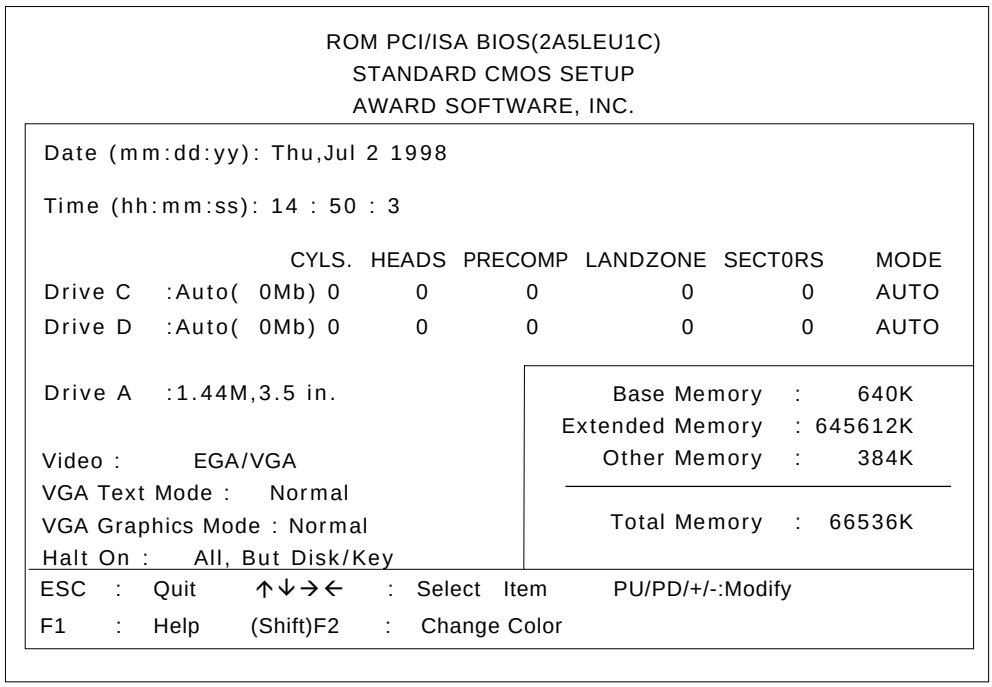
SYSTEM SETTING SELECTION AREA
Each of the titles (areas) listed here contains system setting items.

4) Use the arrow keys to move the cursor to the desired selection.

5-2 System Parameters

1 STANDARD CMOS SETUP

Selecting the STANDARD CMOS SETUP menu item produces the following screen.



■ Date/Time

This data sets the PL's internal time and date.

Hours :00 - 23
Minutes :00 - 59
Seconds :00 - 59

■ Drive C

This data sets the IDE hard disk's parameters. When this setting is set to [AUTO], the hard disk's parameters are automatically read in. Also, if the "IDE HDD AUTO DETECTION" is in use, the value entered there is automatically set. The three options are [User],[Auto], and [None]. The [Auto] setting is factory set and recommended for most users.

■ Drive D

The three options are [User],[None]and [Auto].

■ Drive A

This setting determines the format used by the PL's internal floppy disk drive. The[1.44M - 3.5in] selection is factory set and recommended for most users. The other available settings are [720K - 3.5in], [1.2M - 5.25in], [360K - 5.25in], [2.88M - 3.5in.], and [None].

■ Video

The selections for the screen (video) mode. The [EGA/VGA] selection is factory set and recommended for most users. The other available settings are [CGA40], [CGA80] and [Mono].

■ VGA Text Mode

This mode changes the screen (video) mode from [Normal](VGA mode) to [Expansion](800×600). The[Normal] selection is factory set and recommended for most users.

■ VGA Graphics Mode

This mode changes the screen (Graphics) mode from [Normal](VGA mode) to [Expansion](800×600). The[Normal] selection is factory set and recommended for most users.

■ Halt On

Designates the type of processing that will be performed when an error occurs during the Initial Start-Up's Self Test. The [All But Disk /Key] selection is factory set and recommended for most users.

[All Errors]	:	Displays all errors and stops the unit.
[No Errors]	:	Displays all errors and does not stop the unit.
[All,But Keyboard]	:	Displays all errors, except for those related to the keyboard, and stops the unit. If the User has no keyboard connected, please use this setting.
[All,But Diskette]	:	Displays all errors, except for those related to the disk drive (FDD), and stops the unit.
[All,But Disk/Key]	:	Displays all errors, except for those related to the disk drive (FDD) and keyboard, and then stops the unit.

2 BIOS FEATURES SETUP

Selecting the BIOS FEATURES SETUP menu item calls up the following screen.

```
                ROM PCI/ISA BIOS(2A5LEU1C)
                BIOS FEATURES SETUP
                AWARD SOFTWARE, INC.

Virus Warning                 :Disabled
CPU Internal Cache            :Enabled
External Cache                :Enabled
Quick Power On Self Test      :Enabled
Boot Sequence                 :A,C,SCSI
Boot Up Floppy Seek           :Enabled
Boot Up NumLock Status        :On
Boot Up System Speed          :High
Gate A20 Option               :Fast
Memory Parity/ECC Check       :Enabled
Typematic Rate Setting        :Disabled
Typematic Rate(Chars/Sec)     :6
Typematic Delay (Msec)        :250
Security Option               :Setup

PCI/VGA Palette Snoop         :Disabled
OS Select For DRAM > 64MB     :Non-OS2

Video BIOS    Shadow  :  Enabled
C8000-CBFFF Shadow    :  Disabled
CC000-CFFFF Shadow    :  Disabled
D0000-D3FFF Shadow    :  Disabled
D4000-D7FFF Shadow    :  Disabled
D8000-DBFFF Shadow    :  Disabled
DC000-DFFFF Shadow    :  Disabled

ESC :Quit          ↑↓→←  : Select Item
F1  : Help         PU/PD/+/- : Modify
F5  : Old Values   (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

■ **Virus Warning**

Designates whether a warning message appears when an error occurs during a write to the Hard Disk's Boot Sector. The two selections are[Disabled] and [Enabled]. The [Disabled] selection is factory set and recommended for most users.

■ **CPU Internal Cache**

Designates if the CPU's Internal Cache Memory is used or not. The two selections available are [Disabled] and [Enabled]. The [Enabled] selection is factory set and recommended for most users.

■ **External Cache**

Designates if the CPU's External Cache Memory (L2) is used or not. The two selections available are [Disabled] and [Enabled]. The [Enabled] selection is factory set and recommended for most users.

■ **Quick Power On Self Test**

Designates if a simplified Self Test is used after the power is turned ON. The two selections available are [Disabled] and [Enabled]. The [Enabled] selection is factory set and recommended for most users.

■ **Boot Sequence**

Designates the drive order used by the OS during start up.

The [A,C,SCSI] is factory set and recommended for most users. The other available settings are [A,C,SCSI], [C,A,SCSI], [C,CDROM,A], [CDROM,C,A], [D,A,SCSI], [SCSI, A,C,], [SCSI,C,A] and [C Only].

■ **Boot Up Floppy Seek**

Designates if the floppy disk drive installation check is used or not. The available selections are [Disabled] and [Enabled]. [Enabled] is factory set and recommended for most users.

■ **Boot Up NumLock Status**

Designates the condition of the NumLock key at startup. The two selections are either [On] or [Off]. The [On] selection is factory set and recommended for most users.

■ **Boot Up System Speed**

Designates the speed of CPU. [High] is factory set and recommended for most users. The other available selection is [Low].

■ **Gate A20 Option**

The two selections available are [Fast] and [Normal]. When [Normal] is selected, Keyboard Control is used for Gate A20 control. When [Fast] is selected, the Chipset is used. The [Fast] selection is factory set and recommended for most users.

■ **Memory Parity / ECC Check**

Designates if a Parity Check is used for Parity Memory. The two selections available are [Disabled] and [Enabled]. The [Enabled] selection is factory set and recommended for most users.

■ **Typematic Rate Setting**

Designates the repeat mode for characters on the keyboard. The selections [Disabled] and [Enabled] are available. [Disabled] is factory set and recommended for most users.

■ **Typematic Rate (Chars/Sec)**

When [Enabled] is selected on [Typematic Rate Setting], it designates the actual rate (the number of repeating characters per second). [6],[8],[10],[12],[15], [20],[24] and [30] are the available selections.[6] is factory set.

■ **Typematic Delay (Msec)**

When [Enabled] is selected on [Typematic Rate Setting], it designates the time until repetition of a character starts. The unit is mili-second (msec). The available selections are [250],[500],[750]and [1000]. [250] is factory set.

■ **Security Option**

Designates the location of the Password Entry. The selection [Setup] is for BIOS setup,and the other selection [System] is for both BIOS setup and Start up.When the [Supervisor Password] or [User Password] has not been designated, this setting is disabled. [Setup] is factory set and recommended for most users.

■ **PCI/VGA Palette Snoop**

When the PCI/VGA and the MPEG ISA/VESA VAG cards are both used, this setting is set to [Enabled]. In all other cases, this should be set to [Disabled]. The [Disabled] selection is factory set and recommended for most users.

■ **OS Select For DRAM >64MB**

Select either [Non-OS2] or [OS2]. The [Non-OS2] selection is factory set and recommended for most users.

■ **Video BIOS Shadow**

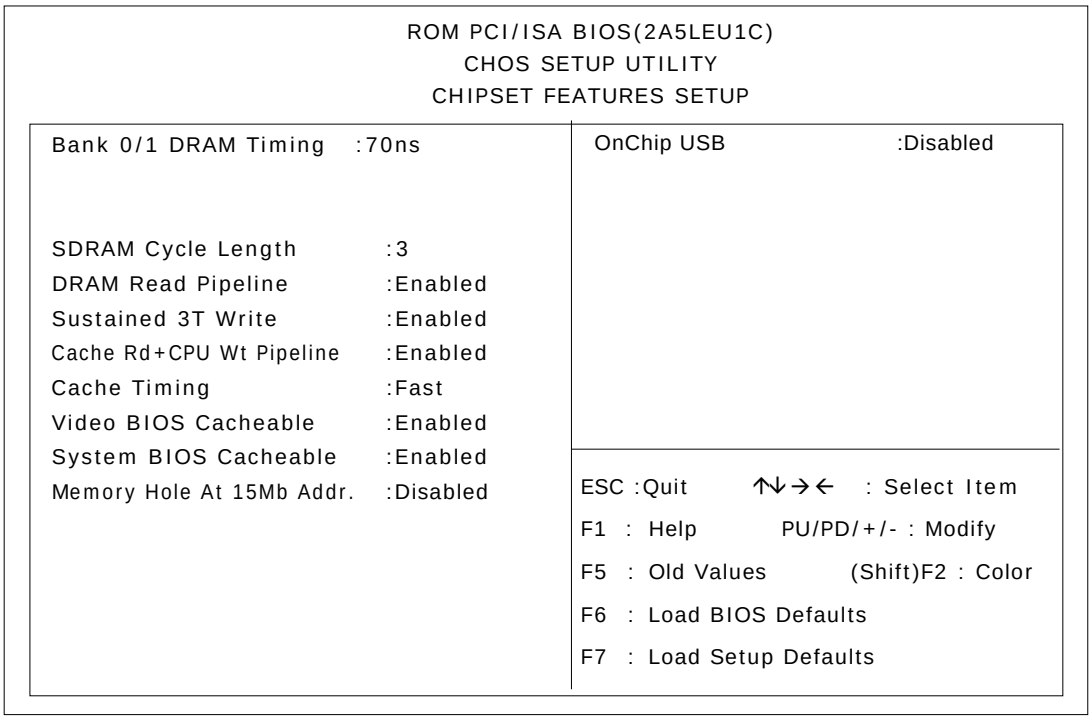
Designates whether Video BIOS ROM is expanded into RAM and used from there (C0000-C7FFF). The two selections available are [Disabled] and [Enabled]. The [Enabled] selection is factory set and recommended for most users.

■ **C8000-CBFFF Shadow to DC000-DFFFF Shadow**

When the Expansion Board's ROM is placed in this area, this setting designates if the ROM expands into the RAM area. The two available selections are [Disabled] and [Enabled]. The [Disabled] selection is factory set and recommended for most users.

3 CHIPSET FEATURES SETUP

Selecting the CHIPSET FEATURES SETUP menu item calls up the following screen.



■ **Bank 0/1 DRAM Timing**

Designates the length of time of accessing to the memory set up on the memory slot 0/1. The available selections are [70ns], [60ns], [Normal], [Medium], [Fast] and [Turbo]. [70ns] is factory set and recommended for most users.

■ **SDRAM Cycle Length**

Designates the length of the cycle time of SDRAM. The available selections are [3] and[2], [3] is factory set and recommended for most users.

■ **DRAM Read Pipeline**

Designates if the DRAM performs the pipeline read. The available selections are [Enabled] and [Disabled], [Enabled] is factory set and recommended for most users.

■ **Sustained 3T Write**

Designates if the DRAM performs the write back and the write through in the secondary cache.The available selections are [Enabled] and [Disabled]. [Enabled] is factory set and recommended for most users.

■ **Cache Rd+CPU Wt Pipeline**

Designates the length of time of waiting for the cache performance. The available selections are [Enabled] and [Disabled], [Enabled] is factory set and recommended for most users.

■ **Cache Timing**

Designates the access speed of the cache. The available selections are [Fast] and [Fastest]. [Fast] is factory set and recommended for most users.

■ **Video BIOS Cacheable**

Designates if the cache performs on the Video BIOS. The available selections are [Enabled] and [Disabled], [Enabled] is factory set and recommended for most users.

■ **System BIOS Cacheable**

Designates if the cache performs on the System BIOS. Using System BIOS speeds up the program operation. The available selections are [Enabled] and [Disabled], [Enabled] is factory set and recommended for most users.

■ **Memory Hole At 15Mb Addr.**

Designates if the memory hole 15MB to 16MB is allocated to the buffer memory for the ISA bus card. The available selections are [15M-16M] and [Disabled], [Disabled] is factory set and recommended for most users.

■ **On Chip USB**

Used for USB type peripheral equipment. The available selections are [Enabled] and [Disabled], [Disabled] is factory set and recommended for most users.

4 POWER MANAGEMENT SETUP

Selecting the POWER MANAGEMENT SETUP menu item calls up the following screen.

```
ROM PCI/ISA BIOS(2A5LEU1C)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management    : User Define
PM Control by APM   : No
Video Off Option    : Suspend→Off
Video Off method    : V/H SYNC+Blank
MODEM Use IRQ       : NA

        **PM Timers**
HDD Power Down      : 10Min
Doze Mode           : Disable
Suspend Mode        : Disable
        **PM Events**
VGA                 : OFF
LPT & COM           : LPT/COM
HDD & FDD           : ON
DMA/master          : OFF

Primary INTR        : ON
IRQ3  (COM 2)       : Primary
IRQ4  (COM 1)       : Primary
IRQ5  (LPT 2)       : Primary
IRQ6  (Floppy Disk) : Primary
IRQ7  (LPT 1)       : Primary
IRQ8  (RTC Alarm)   : Primary
IRQ9  (IRQ2 Redir)  : Primary
IRQ10 (Reserved)    : Primary
IRQ11 (Reserved)    : Primary
IRQ12 (PS/2 Mouse)  : Primary
IRQ13 (Coprocessor) : Primary
IRQ14 (Hard Disk)   : Primary
IRQ15 (Reserved)    : Primary

ESC :Quit      ↑↓→←  : Select Item
F1  : Help     PU/PD/+/- : Modify
F5  : Old Values   (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

■ Power Management

You can choose from three power management options. These are [User Define], [Min Saving] or [Max Saving]. The [User Define] selection is factory set and recommended for most users.

■ PM Control by APM

Designates if the power management is controlled by the APM. The two selections available are [Yes] and [No]. The [No] selection is factory set and recommended for most users.

■ Video Off Option

Turns the display off. The selections are [Always On], [Suspend→Off],[All Modes→Off]. [Suspend→Off] is factory set and recommended for most users.

■ Video Off Method

Designates the method of turning the display off. The available selections are [V/H SYNC+Blank], [Blank Screen] and [DPMS Support]. To turn off both the display and the Vertical / Horizontal synchronous signal, select [V/H SYNC+Blank]. To turn off the display only, select [Blank Screen]. Select [DPMS support] when the CRT display is supported by DPMS. [V/H SYNC+Blank] is factory set and recommended for most users.

■ **MODEM Use IRQ**

Selections for this feature include [NA],[3],[4],[5],[7],[9][10],[11]. The [NA] selection is factory set and recommended for most users.

■ **HDD Power Down**

Designates the length of time until the motor of the hard disk stops. The available selections are[1Min]→[15Min] and [Disabled]. [10Min] is factory set and recommended for most users.

■ **Doze Mode**

When there is no reply from the system within designated time, by using this mode the CPU operation will be automatically stopped. [Disable] is factory set and recommended for most users.

■ **Suspend Mode**

When there is no reply from the system within designated time, by using this mode all peripheral equipment operation will be stopped. [Disable] is factory set and recommended for most users.

■ **VGA**

Designates if the system is turned on when any event is driven in the VGA port. The available selections are [ON] and [OFF]. [OFF] is factory set and recommended for most users.

■ **LPT & COM**

Designates if the system is turned on when any event is driven in the serial port or the printerport. The available selections are [None], [LPT], [COM] and [LPT /COM]. [LPT/COM] is factory set and recommended for most users.

■ **HDD & FDD**

Designates if the system is turned on when any event is driven in the hard disk or floppy disk. The available selections are [ON] and [OFF]. [ON] is factory set and recommended for most users.

■ **DMA / master**

Designates if the system is turned on when any event is driven in the DMA controller. The available selections are [ON] and [OFF]. [OFF] is factory set and recommended for most users.

■ **Primary INTR**

Designates if the system is turned on when any event is driven in the Primary Interrupt Controller. The available selections are [ON] and [OFF]. [ON] is factory set and recommended for most users.

■ **IRQ3-IRQ15**

Designates if the COM Port is monitored or not. The available selections are [Disabled], [Primary] and [Secondary].

5 PNP/PCI CONFIGURATION SETUP

Selecting the PNP/PCI CONFIGURATION SETUP menu item displays the following screen.

ROM PCI/ISA BIOS(2A5LEU1C)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed	: No	CPU to PCI Write Buffer	: Enabled
Resources Controlled By	: Manual	PCI Dynamic Bursting	: Enabled
Reset Configuration Data	: Disabled	PCI Master 0 WS Write	: Enabled
ACPI I/O Device Node	: Enabled	PCI Delay Transaction	: Enabled
IRQ-3 assigned to	: Legacy ISA	PCI Master Read Prefetch	: Enabled
IRQ-4 assigned to	: Legacy ISA	PCI#2 Access #1 Retry	: Disabled
IRQ-5 assigned to	: PCI/ISA PnP		
IRQ-7 assigned to	: Legacy ISA		
IRQ-9 assigned to	: Legacy ISA		
IRQ-10 assigned to	: Legacy ISA	PCI IRQ Actived By	:Level
IRQ-11 assigned to	: PCI/ISA PnP	Assign IRQ For USB	: Disabled
IRQ-12 assigned to	: Legacy ISA		
IRQ-14 assigned to	: Legacy ISA		
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP	ESC: Quit ↑↓→← :Select Item	
DMA-1 assigned to	: PCI/ISA PnP	F1 : Help PU/PD/+/-:Modify	
DMA-3 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift)F2:Color	
DMA-5 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-6 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	
DMA-7 assigned to	: PCI/ISA PnP		

■ PNP OS Installed

Setting used when the user's OS complies with Plug-And-Play standards. The selection options are either [Yes] or [No]. The [No] setting is factory set and recommended for most users.

■ Resources Controlled By

The Plug and Play feature allows you to designate whether the allocation of I/O Port, IRQ and DMA resources is performed automatically or manually. The two selections available are [Manual] and [Auto]. The [Manual] selection is factory set and recommended for most users.

■ Reset Configuration Data

Designates whether ESCD (Extended System Configuration Data) data should be erased or not. The two selections available are [Disabled] and [Enabled]. The [Disabled] selection is factory set and recommended for most users.

■ ACPI I/O Device Node

When an I/O device is connected to the PL that is ACPI compliant, The PL's ACPI feature is enabled. The two selections available are [Enabled] and [Disabled]. The [Enabled] selection is factory set and recommended for most users.

■ **IRQ-3 assigned to - IRQ-15 assigned to**

Only after the "Resources Controlled By" setting is set to [Manual] can the following IRQ-3assigned to - IRQ-15assigned to settings be changed. These settings are used for the [PCI/ISA PnP] and [Legacy ISA] items.

[PCI/ISA PnP] :Used for PCI or ISA's PnP Card

[Legacy ISA] :Used for ISA Cards that do not comply with PnP

	INITIAL SETTING		INITIAL SETTING
IRQ-3 assigned to	Legacy ISA	IRQ-10 assigned to	Legacy ISA
IRQ-4 assigned to	Legacy ISA	IRQ-11 assigned to	PCI/ISA PnP
IRQ-5 assigned to	PCI/ISA PnP	IRQ-12 assigned to	Legacy ISA
IRQ-7 assigned to	Legacy ISA	IRQ-14 assigned to	Legacy ISA
IRQ-9 assigned to	Legacy ISA	IRQ-15 assigned to	PCI/ISA PnP

■ **DMA-0 assigned to - DMA-7 assigned to**

Only after the "Resources Controlled By" setting is set to [Manual] can the following DMA-0 assigned to - DMA-7 assigned to settings be changed. These settings are used for the [PCI/ISA PnP] and [Legacy ISA] items.

[PCI/ISA PnP] : Used for PCI or ISA's PnP Card

[Legacy ISA] : Used for ISA Cards that do not comply with PnP

	INITIAL SETTING		INITIAL SETTING
DMA-0 assigned to	PCI/ISA PnP	DMA-5 assigned to	PCI/ISA PnP
DMA-1 assigned to	PCI/ISA PnP	DMA-6 assigned to	PCI/ISA PnP
DMA-3 assigned to	PCI/ISA PnP	DMA-7 assigned to	PCI/ISA PnP

■ **CPU to PCI Write Buffer**

Setting for the PCI Write Buffer. If [Disabled] is selected, it becomes the CPU's Read Cycle [Enable] or [Disable] toggle. The [Enabled] selection is factory set and recommended for most users.

■ **PCI Dynamic Bursting**

Setting for the PCI's Burst Transmission. The available settings are [Enable] and [Disable]. [Enabled] is factory set and recommended for most users.

■ **PCI Master 0 WS Write**

Sets the duration of the wait for the writing to the PCI Bus to "0". [Enabled] and [Disabled] are available. The [Enabled] setting is factory set and recommended for most users.

■ **PCI Delay Transaction**

This feature enables or disables the Chip Set's PCI Delay Transaction Cycle's built in 32Bit Posted Buffer support. [Enabled] and [Disabled] are available. The [Enabled] setting is factory set and recommended for most users.

■ **PCI Master Read Prefetch**

Enables or disables the PCI Master Read Prefetch feature.[Enabled] and [Disabled] are available. The [Enabled] setting is factory set and recommended for most users.

■ **PCI #2 Access #1 Retry**

Enables or disables the PCI "2 Access #1 Retry feature. [Enabled] and [Disabled] are available. The [Disabled] setting is factory set and recommended for most users.

■ **PCI IRQ Actived by**

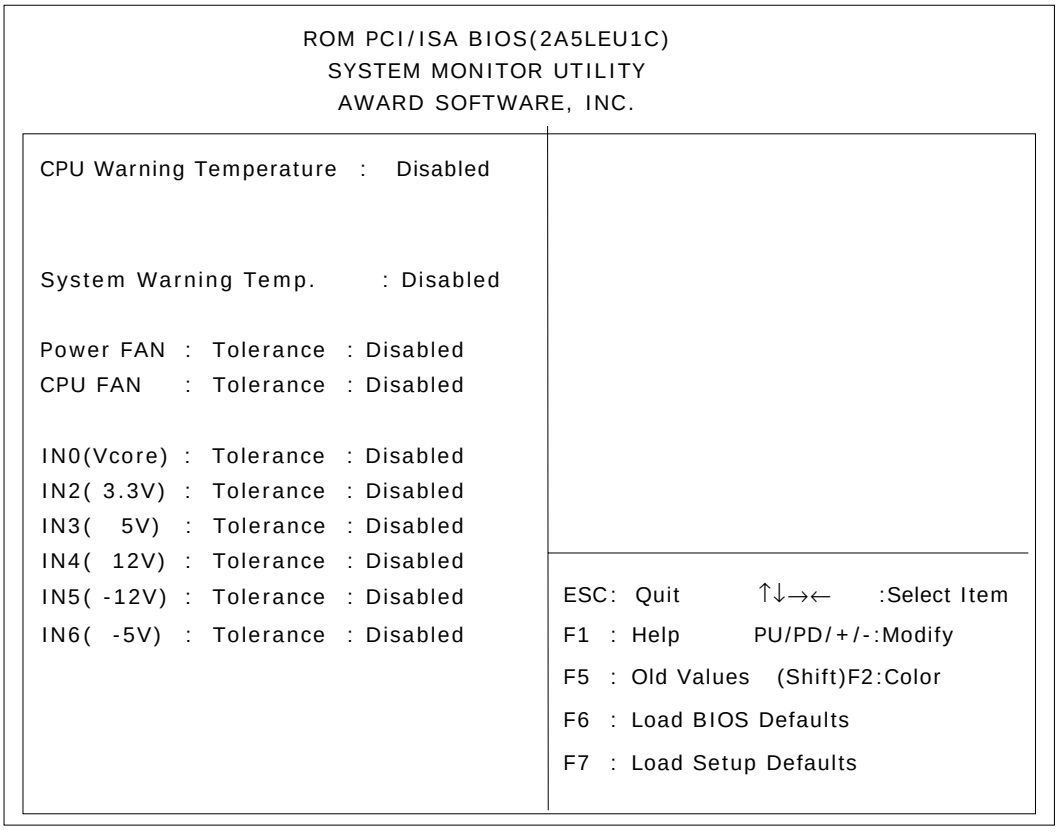
Designates the interrupt method used for the unit's PCI slots. [Level] or [Edge] can be used. [Level] is factory set and recommended for most users.

■ **Assign IRQ For USB**

Designates if the interrupt is allocated for USB equipment or not. [Enabled] and [Disabled] are available. The [Disabled] setting is factory set and recommended for most users.

6 SYSTEM MONITOR UTILITY

Selecting SYSTEM MONITOR UTILITY menu item displays the following screen.



■ **CPU Warning Temperature**

Sets the temperature level that will trigger a CPU overheating alarm. Ten selections are available - [Disabled], [40°C/104°F], [45°C/113°F], [50°C/122°F], [55°C/131°F], [60°C/140°F], [65°C/149°F], [70°C/158°F], [75°C/167°F], [80°C/176°F]. The [Disabled] selection is factory set and recommended for most users.

■ **System Warning Temp**

Sets the temperature level where a motherboard overheating alarm is triggered. Ten selections are available - [Disabled], [40°C/104°F], [45°C/113°F], [50°C/122°F], [55°C/131°F], [60°C/140°F], [65°C/149°F], [70°C/158°F], [75°C/167°F], [80°C/176°F]. The [Disabled] selection is factory set and recommended for most users.

■ **Power FAN**

Sets the allowable range for the PL's power supply fan. [Disabled] , [+/-30%] and [+/-50%] are available. The [Disabled] selection is factory set and recommended for most users.

■ **CPU FAN**

Sets the allowable range for the PL's power supply fan. [Disabled] , [+/-30%] and [+/-50%] are available. The [Disabled] selection is factory set and recommended for most users.

■ **INO(Vcore)**

Sets the allowable range for the INO(Vcore) voltage. [Disabled], [+/-4%] and [+/-6%] are available. The [Disabled] selection is factory set and recommended for most users.

■ **IN2(3.3V)**

Sets the allowable range for the IN2(3.3V) voltage. [Disabled], [+/-4%] and [+/-6%] are available. The [Disabled] selection is factory set and recommended for most users.

■ **IN3(5V)**

Sets the allowable range for the IN3(5V) voltage. [Disabled], [+/-4%] and [+/-6%] are available. The [Disabled] selection is factory set and recommended for most users.

■ **IN4(12V)**

Sets the allowable range for the IN4(12V) voltage. [Disabled], [+/-4%] and [+/-6%] are available. The [Disabled] selection is factory set and recommended for most users.

■ **IN5(-12V)**

Sets the allowable range for the IN5(-12V) voltage. [Disabled], [+/-4%] and [+/-6%] are available. The [Disabled] selection is factory set and recommended for most users.

■ **IN6(-5V)**

Sets the allowable range for the IN6(-5V) voltage. [Disabled], [+/-4%] and [+/-6%] are available. The [Disabled] selection is factory set and recommended for most users.

7 INTEGRATED PERIPHERALS

Selecting INTEGRATED PERIPHERALS SETUP menu item displays the following screen.

ROM PCI/ISA BIOS(2A5LEU1C)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

OnChip IDE First Channel	:Enabled	Onboard Serial Port 3	: 3E8H
IDE Prefetch Mode	:Disabled	Serial Port 3 Use IRQ	: IRQ9
IDE HDD Block Mode	:Disabled	Onboard Serial Port 4	: 2E8H
IDE Primary Master PIO	:Auto	Serial Port 4 Use IRQ	: IRQ10
IDE Primary Slave PIO	:Auto		
IDE Primary Master UDMA	:Auto		
IDE Primary Slave UDMA	:Auto		
Onboard FDC Controller	:Enabled	ESC: Quit	↑↓→← :Select Item
Onboard Serial Port 1	:3F8/IRQ4	F1 : Help	PU/PD/+/-:Modify
Onboard Serial Port 2	:2F8/IRQ3	F5 : Old Values	(Shift)F2:Color
UR2 Mode	:Standard	F6 : Load BIOS Defaults	
Onboard Parallel Port	:3BC/IRQ7	F7 : Load Setup Defaults	
Parallel Port Mode	:SPP		

■ OnChip IDE First Channel

Designates the internal IDE port's setting. The two selections available are [Disabled] and [Enabled]. The [Enabled] selection is factory set and recommended for most users.

■ IDE Prefetch Mode

Designates if the IDE drive's high speed access is performed by enabling the Prefetch Mode. The two selections available are [Disabled] and [Enabled]. The [Disabled] selection is factory set and recommended for most users.

■ IDE HDD Block Mode

Designates the Hard disk's Block Operation Mode. The two selections available are [Disabled] and [Enabled]. The [Disabled] selection is factory set and recommended for most users.

■ IDE Primary Master PIO

Designates the Master Drive's Operation Mode. Only after the "Internal PCI/IDE" has been set to [Primary] can these IDE Primary Master PIO settings be entered. The two selections available are [Auto], [Mode0], [Mode1], [Mode2], [Mode3], and [Mode4]. The [Auto] selection is factory set and recommended for most users.

■ IDE Primary Slave PIO

Designates the Slave Drive's Operation Mode. Only after the "Internal PCI/IDE" has been set to [Primary] can these IDE Primary Slave PIO settings be entered. The two selections available are [Auto], [Mode0], [Mode1], [Mode2], [Mode3], and [Mode4]. The [Auto] selection is factory set and recommended for most users.

■ **IDE Primary Master UDMA**

Designates the Master Drive's UDMA Operation Mode. The two selections available are [Auto] or [Disabled]. The [Auto] selection is factory set and recommended for most users.

■ **IDE Primary Slave UDMA**

Designates the Slave Drive's UDMA Operation Mode. The two selections available are [Auto] or [Disabled]. The [Auto] selection is factory set and recommended for most users.

■ **Onboard FDC Controller**

Designates whether the PL's FDD(Floppy Disk Drive) controller is used or not. The two selections available are [Disabled] or [Enabled]. The [Enabled] selection is factory set and recommended for most users.

■ **Onboard Serial Port1**

Designates the PL's Serial Port1 address setting. The selections include [Disabled], [Auto], [3F8/IRQ4], [2F8/IRQ3], [3E8/IRQ4] or [2E8/IRQ3]. The [3F8/IRQ4] selection is factory set and recommended for most users.

■ **Onboard Serial Port2**

Designates the PL's Serial Port2 address setting. The selections include [Disabled], [Auto], [3F8/IRQ4], [2F8/IRQ3], [3E8/IRQ4] or [2E8/IRQ3]. The [2F8/IRQ3] selection is factory set and recommended for most users.

■ **UR2 Mode**

Designates the IR function used by the PL's onboard I/O chip. The selections include [Standard], [Sharp IR], [IrDA SIR]. The [Standard] selection is factory set and recommended for most users. When serial port 2 is used for RS-232C communication, and the [standard] option's PL-IR100 selection is used, set this item to [IrDA/SIR].

■ **Onboard Parallel Port**

Selects the PL Parallel Port 1's I/O Address. The selections include [Disabled], [3BC/IRQ7], [378/IRQ7] or [278/IRQ5]. The [3BC/IRQ7] selection is factory set and recommended for most users.

■ **Parallel Port Mode**

Here, the parallel port's operation mode can be selected ([SPP], [EPP1.7], [EPP1.9], [ECP], or [ECP + EPP]). Normally, [SPP] is used and recommended for most users. When either [ECP] or [ECP+EPP] is selected, the [ECP Mode Use DMA] setting can be used.

■ **ECP Mode Use DMA**

Designates the ECP mode's DMA channel. [1] and [3] are available selections, however, this item can be set only when the Parallel Port Mode is set to either [ECP] or [ECP+EPP].

■ **Onboard Serial Port 3**

Designates the PL's Serial port 3 address setting. The selections include [Disabled], [3F8H], [2F8H], [3E8H], or [2E8H]. The [3E8H] selection is factory set and recommended for most users.

■ **Serial Port 3 Use IRQ**

Designates the PL's Serial Port 3, which is internally connected to the touch panel, allocation numbers. The selections include [IRQ3], [IRQ4], [IRQ9], [IRQ10], or [IRQ15]. The [IRQ9] selection is factory set and recommended for most users.

■ **Onboard Serial Port 4**

Designates the PL's Serial Port 4, which is internally connected to the touch panel, address setting. The selections include [Disabled], [3F8H], [2F8H], [3E8H], or [2E8H]. The [2E8H] selection is factory set and recommended for most users.

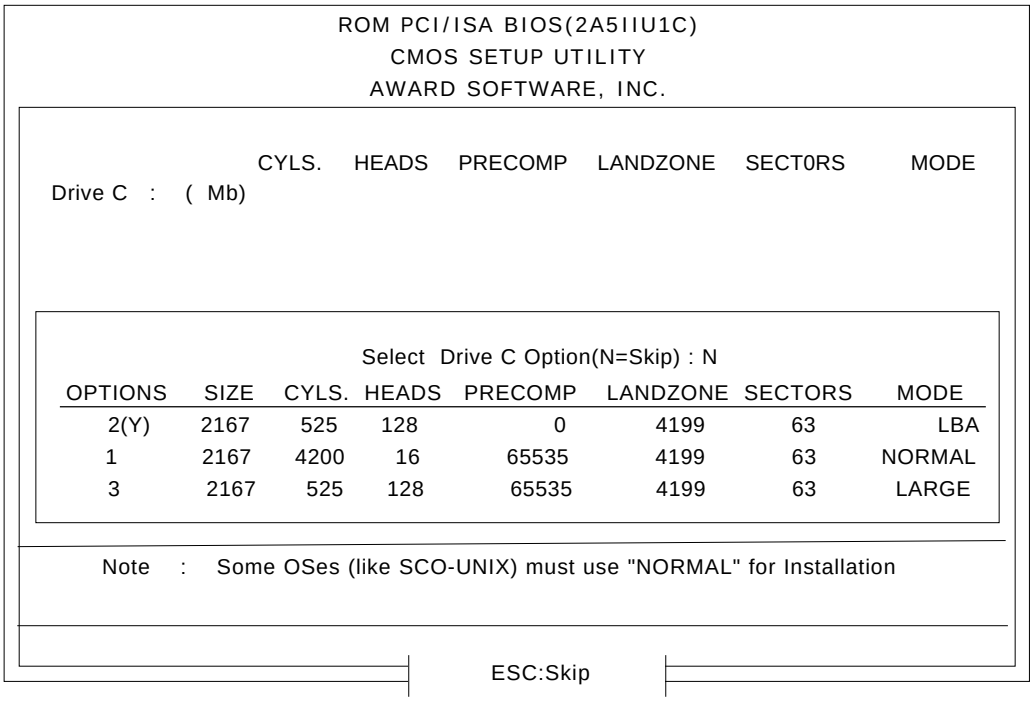
■ **Serial Port 4 Use IRQ**

Designates the PL's Serial Port 4 allocation numbers. The selections include [IRQ3], [IRQ4], [IRQ9], [IRQ10], or [IRQ15]. The [IRQ10] selection is factory set and recommended for most users.

8 IDE HDD AUTO DETECTION SETUP

Selecting the IDE HDD AUTO DETECTION menu item produces the following screen.

Provides automatic detection of any hard disk connected to the IDE. Normally unused.



Chapter 6

6-1 Settiing Up Your PL OS

OS Setup

This chapter provides information about the set up of the PL's Windows® 95 or Windows NT® operating systems (OS).

6-1 Setting Up Your PL OS

The Digital Electronics Corporation has prepared the following additional program files which are not supported by the standard versions of the Windows® 95 and Windows NT® 4.0 operating systems. These files must be installed from the additional "PL-X900 Series Driver & Utility Disk".

To set up the OS with these files, you will need to prepare one of the FDD units, the PL-FD200 or the PL-FD210 (only for the PL-6900), and a PS/2 compatible keyboard.

The software contained in the PL's accompanying "PL-X900 Series Driver & Utility Disk" is designed specifically for use with only the Windows® type of OS. If this software is used with other OS types, its performance cannot be guaranteed.

NOTE

- Be sure to read "PL-X900 Series Driver and Utility Disk" README documents prior to using the PL unit, since they contain the latest PL related information and manual updates.

The README file contains the following information.

Windows® 95 (README.95)

I. Preface

II. Cautions

III. Software Configuration

IV. Installation Method

V. Software Installation

Windows NT® 4.0 (README.NT)

1. Preface

II. Cautions

III. Software Configuration

IV. Installation Method

V. Software Installation

VI. System Automatic Log-On Settings

VII. Uninterrupted Power Supply

1 Touch Panel Device Driver Settings

When using the Touch Panel display, the following touch panel drivers will be needed.

With Windows® 95: Digital Electronics Corporation's PL-ME000

With Windows NT® 4.0: Gunze Corporation's TT-WINNT

- **The PL-ME000 software is designed exclusively by Digital for the Windows® 95 OS. The Gunze corporation's TT-WINNT software's performance is still being evaluated by Digital for the Windows NT® 4.0 system.**

When installing the Touch Panel's device driver, the following page's dialog boxes will be used. Enter the settings given here in these screens.

◆ **Hardware Controls(Serial)**

COM Port :COM 4

Configuration

Address : 2E8h

Irq : 10

Baud rate : 9600

Parity : None

Data Bits : 8

Stop Bits : 1

◆ **Button Modes**

Current Button Mode : Time/Tap

◆ **User Controls**

Miscellaneous Settings

Click time : One level slower than Fast

Double Click speed : Slow

Lift off time : Fast

Stabilization : Low

Touch Offset : Leave unselected

Sound : Select (check mark)

Button simulation : Left

◆ **Advanced Settings**

Miscellaneous

Swap X/Y : Leave unselected

Initialize : Leave unselected

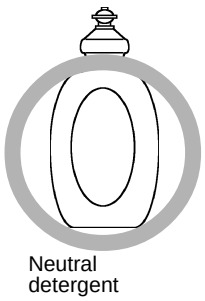
MEMO

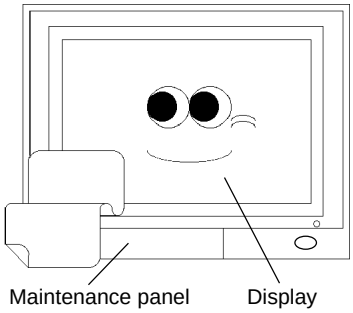
Chapter 7

Maintenance and Inspection

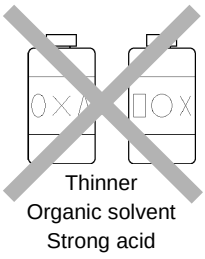
7-1 Regular Cleaning

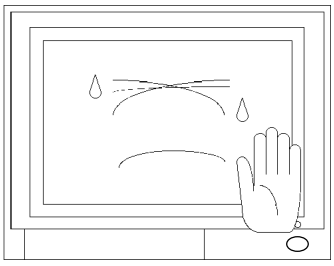
1 Cleaning the Display



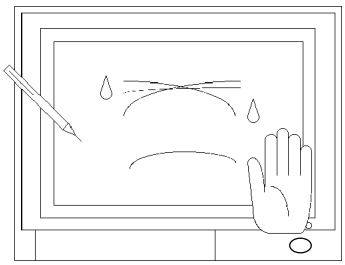


When the display surface or frame become dirty, use a soft cloth moistened with neutral detergent to wipe away any dust or stains.

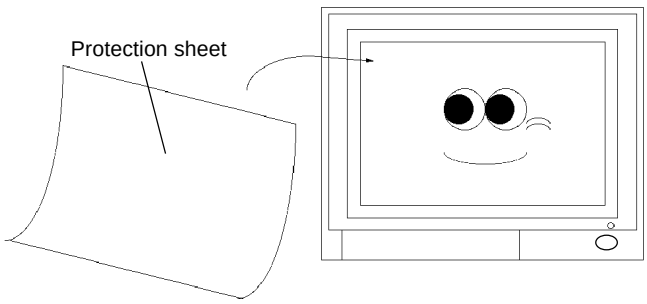




Do <u>not</u> clean the unit with thinner, organic solvents, or strong acids.



Do not use sharp or hard objects, such as a mechanical pencil or screwdriver, to push on the display. This could damage the unit.



Use the screen protection sheet when using the PL in extremely dirty or dusty areas.

2 Moisture Resistant Gasket Replacement

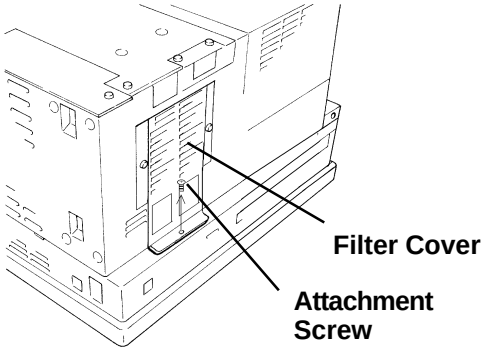
The moisture resistant gasket protects the PL and improves its water resistance. For instructions on installing the PL's gasket. *4-2 Installing the PL*

CAUTION! **A gasket which has been used for a long period of time may have scratches or dirt on it, and could have lost much of its water resistance. Be sure to change the gasket periodically (or when scratches or dirt become visible).**

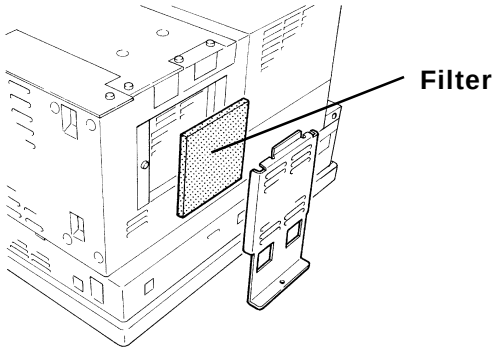
7-2 Cleaning the Filter

Since excessive dirt and dust in the filter of the PL's cooling fan can potentially affect the performance of the unit, regular inspection and cleaning of the filter is strongly recommended.

■ PL-6900T (4 slot type)



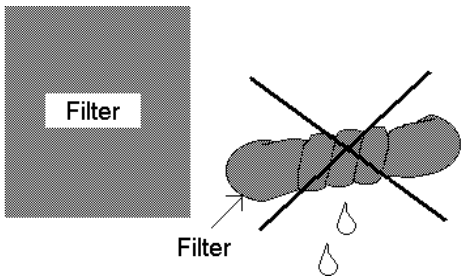
1) Unscrew the cooling fan filter cover's attachment screw and remove the filter cover.



2) Remove the filter from the fan cover.

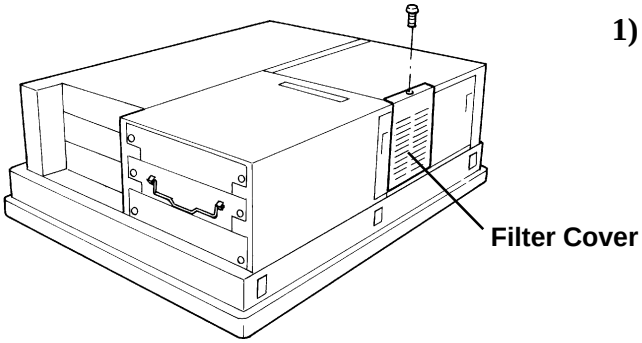
3) Clean the filter completely.
If stubborn dirt or stains are present, wash the filter with a neutral detergent.

CAUTION!
- **Do not wring the filter to dry it.**
- **When drying the filter, dry it without exposing it to direct sunlight.**
- **Allow it to air dry completely before reattaching to the PL.**

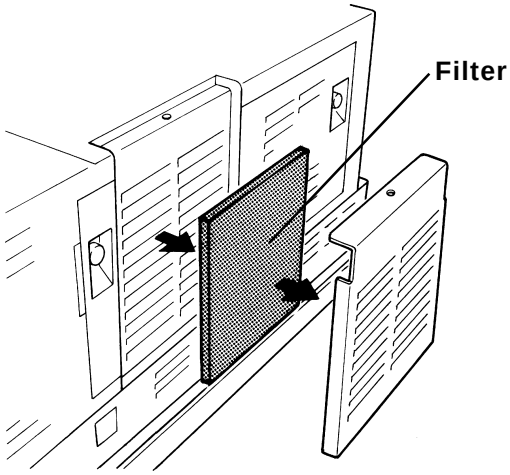


4) After reattaching the filter to the filter cover, reattach the cover to the cooling unit with its cover attachment screw.

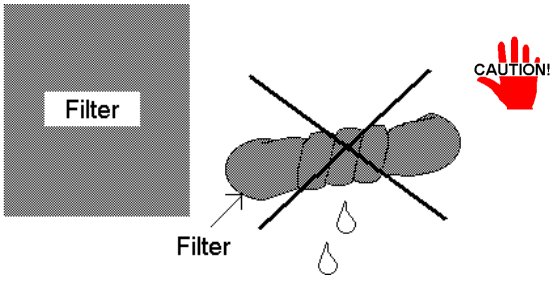
■ **PL-6901T (2 slot type)**



1) Remove the cooling fan filter cover's attachment screw.



2) Remove the filter from the fan cover.



3) Clean the filter completely.

If stubborn dirt or stains are present, wash the filter with a neutral detergent.

- **Do not wring the filter to dry it.**
- **When drying the filter, dry it without exposing it to direct sunlight.**
- **Allow it to air dry completely before reattaching to the PL.**

4) After reattaching the filter to the filter cover, reattach the cover to the cooling unit with its cover attachment screw.

7-3 Changing the PL Backlight

The PL's backlight can be changed after it wears out. The steps involved are outlined below.

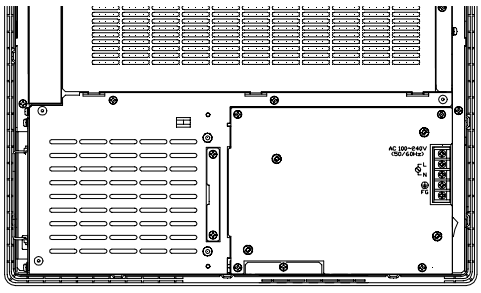
The steps for removing the Rear Maintenance Cover and the Half Cover are the same for each PL unit.
Please use the following table to identify which backlight model number to use when ordering your backlight.

PL Type	Backlight Type
PL- 6900T	GP675T-BL00-MS
PL- 6901T	

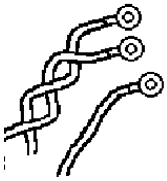
⚠ WARNING

- Whenever changing the backlight, be sure the PL's power cord has been disconnected and that the unit is cooled down.
- When the PL's power cord is connected and the PL is ON, high voltage runs through the wires in the backlight area—*do not touch them!*
- When the PL's power has just been turned OFF, the backlight area is still very hot! Be sure to wear gloves to prevent being burned.
- Do not try to replace the backlight while the PL is installed in a cabinet or panel. Remove the PL first, then begin the backlight replacement procedures.

Follow the steps given below to change the PL's backlight. Be sure to wear cotton gloves when performing this work to prevent burns. Also, remove the PL from its installation panel, and place it face down (as shown below) when performing this work.



(PL-6901T)

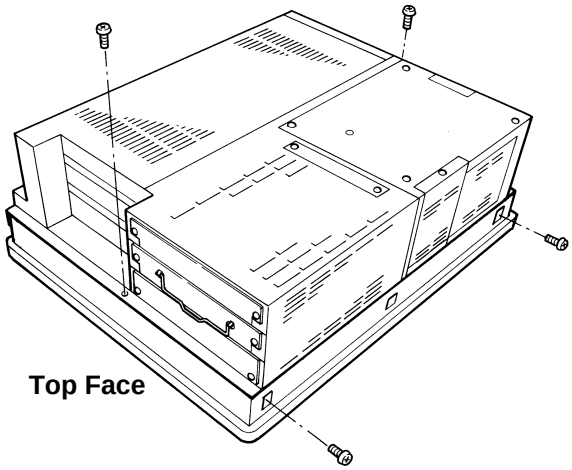


Power Cord

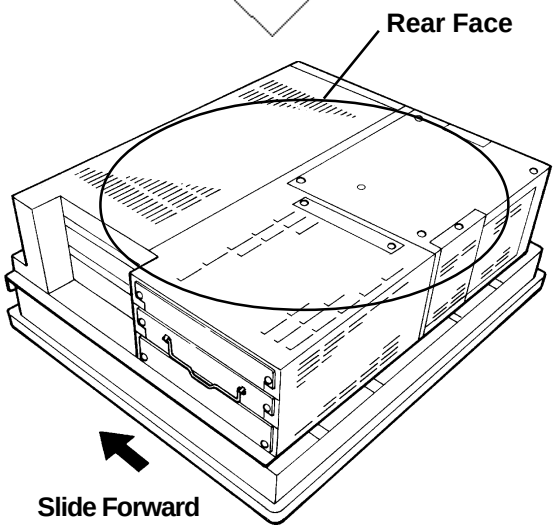
1) Unplug the PL's power cord from the main power supply and then disconnect the PL power cord terminals from the PL's power terminal block.

CAUTION!

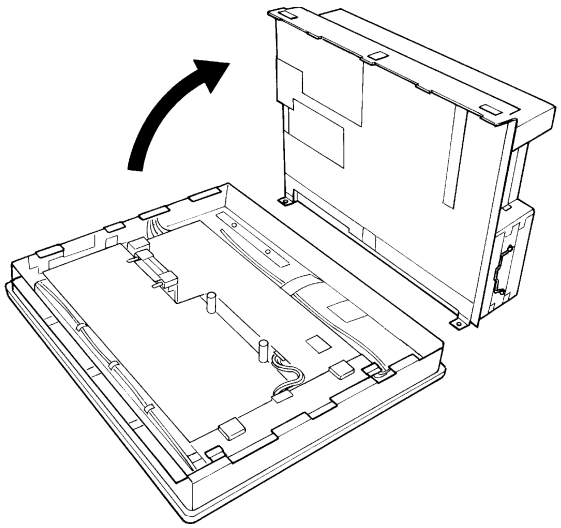
- **Be sure to perform the backlight changeover on a flat, level surface. This will prevent damage to the PL unit and the accidental cutting of any of its power cord terminals.**



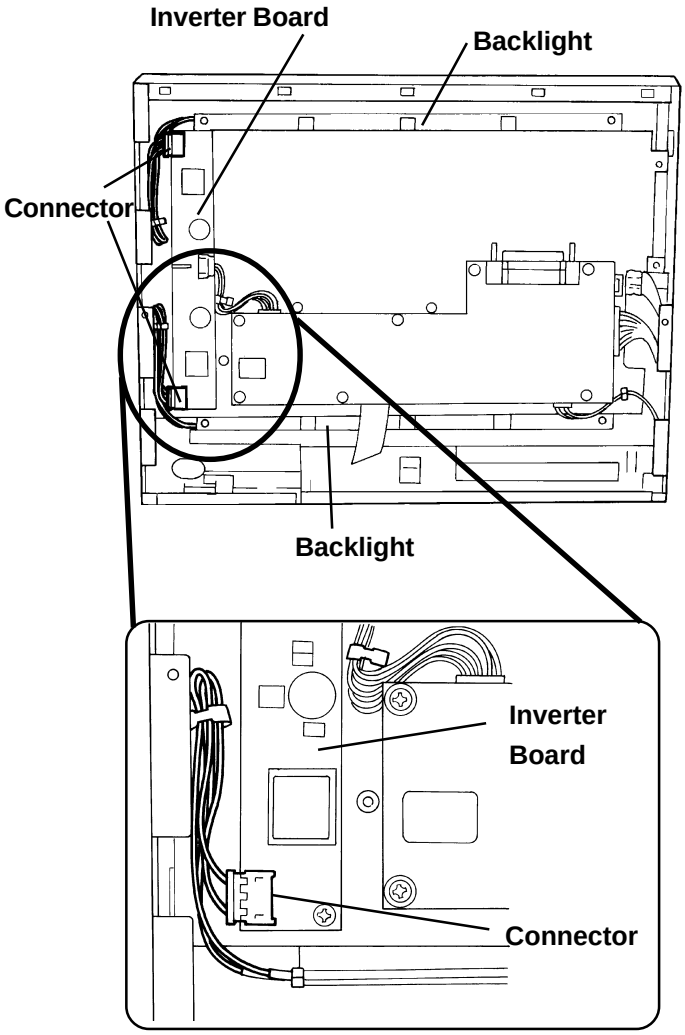
2) Remove the PL's four chassis attachment screws.



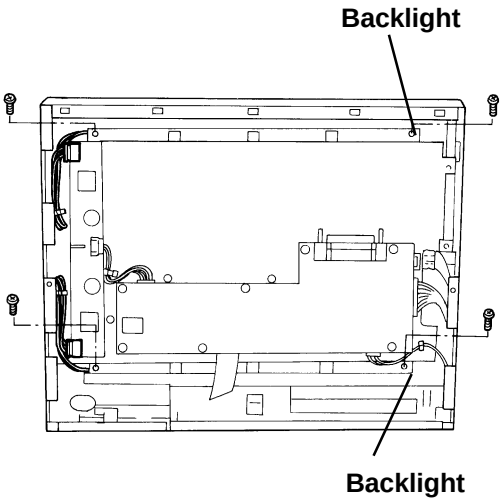
3) Hold both sides of the front panel section and use your thumbs to slide (push) the chassis forward (see figure).



4) The chassis can then be pivoted back and open.



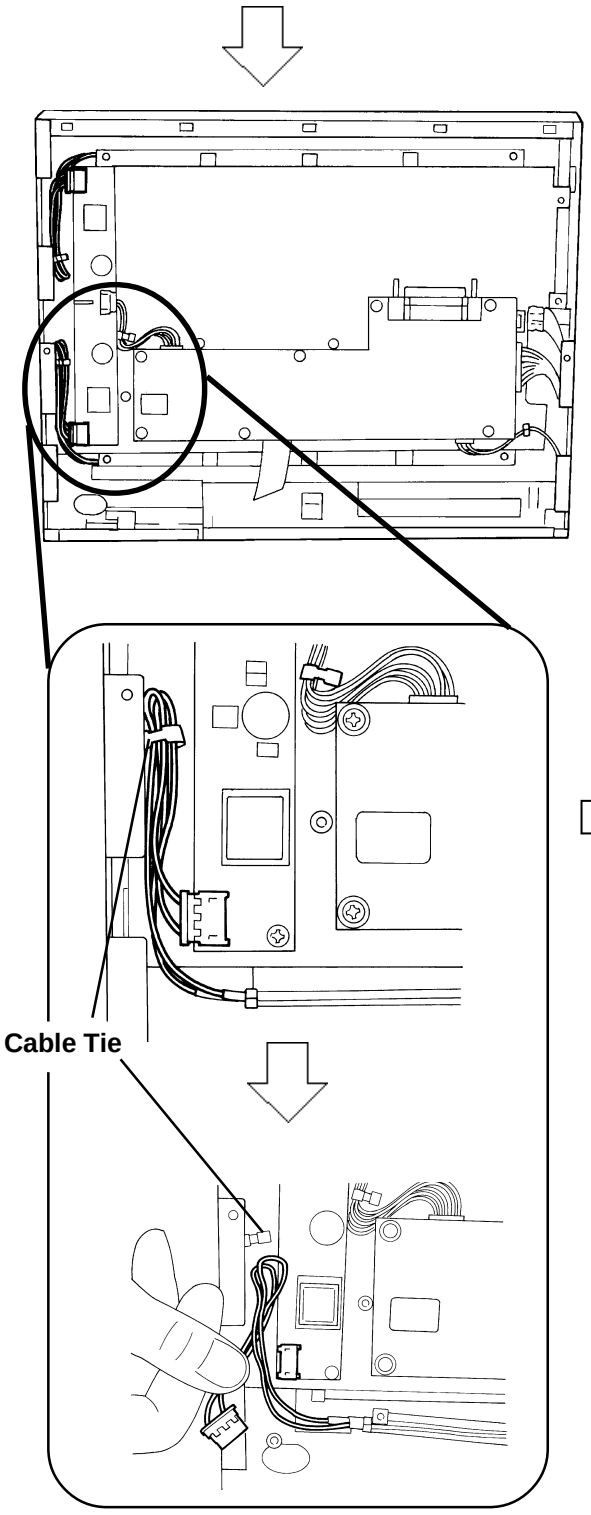
5) Disconnect the power connectors from the backlight lamps.



6) The backlights are both fixed in place on the LCD unit with attachment screws. Remove these four (4) screws.

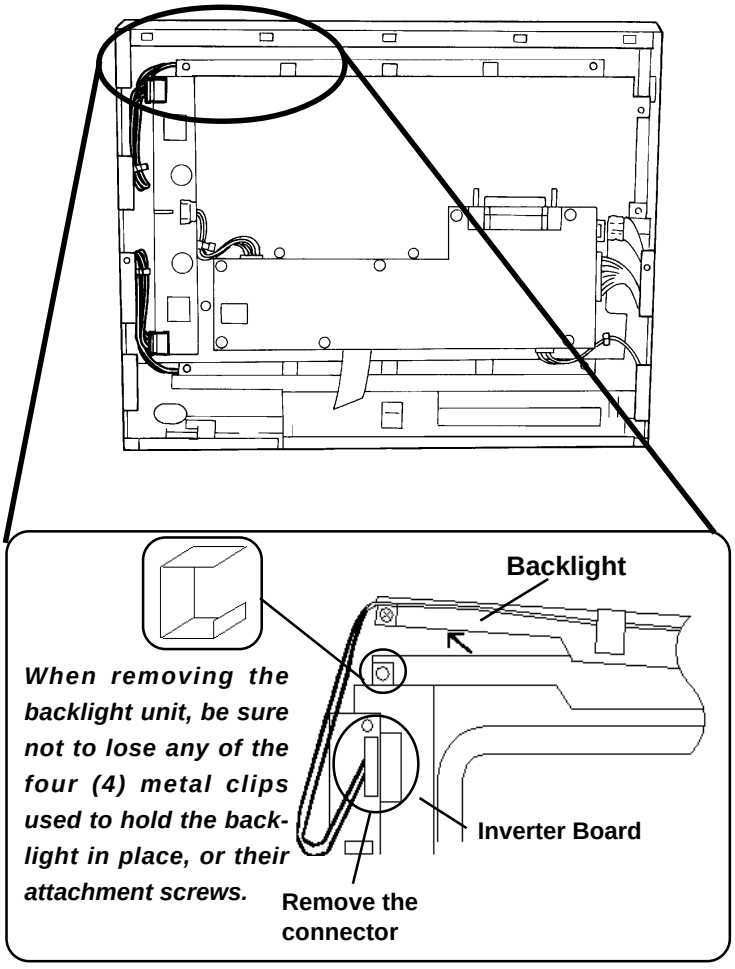
CAUTION!

- **Use an"0" sized Phillips screwdriver to remove the backlight attachment screws.**
- **Be careful not to lose any of the small attachment screws.**
- **Do not let any attachment screws fall inside the PL unit's chassis or front panel area, since it could cause an electrical short.**



7) Open/release each plastic cable tie and remove each backlight's power cord.

NOTE Be sure not to pinch or cut the backlight's power cord between the PL's chassis and front panel. Whenever the PL unit is opened, be sure that both backlight cables are securely held by their cable ties.



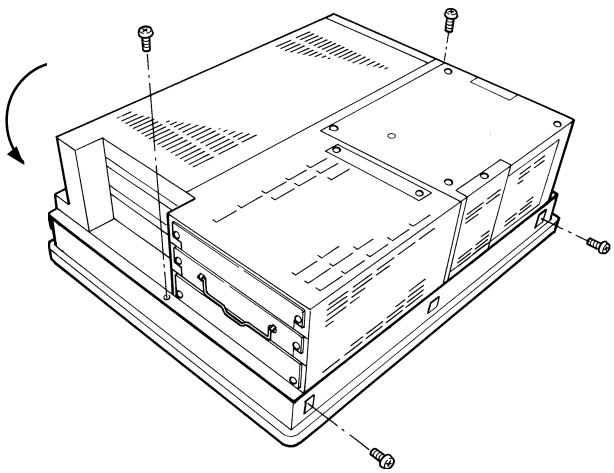
8) Remove the upper backlight unit.

9) Insert the replacement backlight, replace its two metal clips and secure them in place with their attachment screws.

10) Use the abovementioned steps 8) and 9) to replace the bottom backlight. After the backlights are secured in place, reattach their power connectors to the Inverter Board.

CAUTION!

- **Be sure to always change both of the PL backlights at the same time.**
- **Be sure that the backlight's power cord connector is inserted completely into the Inverter Board's receptacle. If not, the PL may be damaged.**



11) Reconnect the PL's front panel and chassis, being careful not to pinch any electrical wires.

12) Replace the PL's four(4) chassis attachment screws.

7-4 Periodic Check

Check the PL periodically to ensure it is in good working condition.

- Ambient environment check points

  □ Is the ambient temperature within the specified range?

	Ambient Operating Temperature
W/ PL Fan	5°C to 50°C
W/OUT PL Fan	5°C to 40°C

  □ Is the ambient humidity within the specified range (30 %RH to 85 %RH) ?

  □ Is the atmosphere free of corrosive gas ?

- Electrical specifications check

  □ Is the voltage adequate (AC85 to 265V, 50/60 Hz) ?

- Installation check points

  □ Is the connection cable firmly connected (not loose) ?

  □ Are any bolts or screws loose ?

  □ Are there any flaws or tears in the moisture resistant gasket ?

- Display check

  □ Is the display bright enough ?

When the PL's backlight needs to be replaced, please contact your nearest authorized service center for prompt service.

MEMO

Appendix

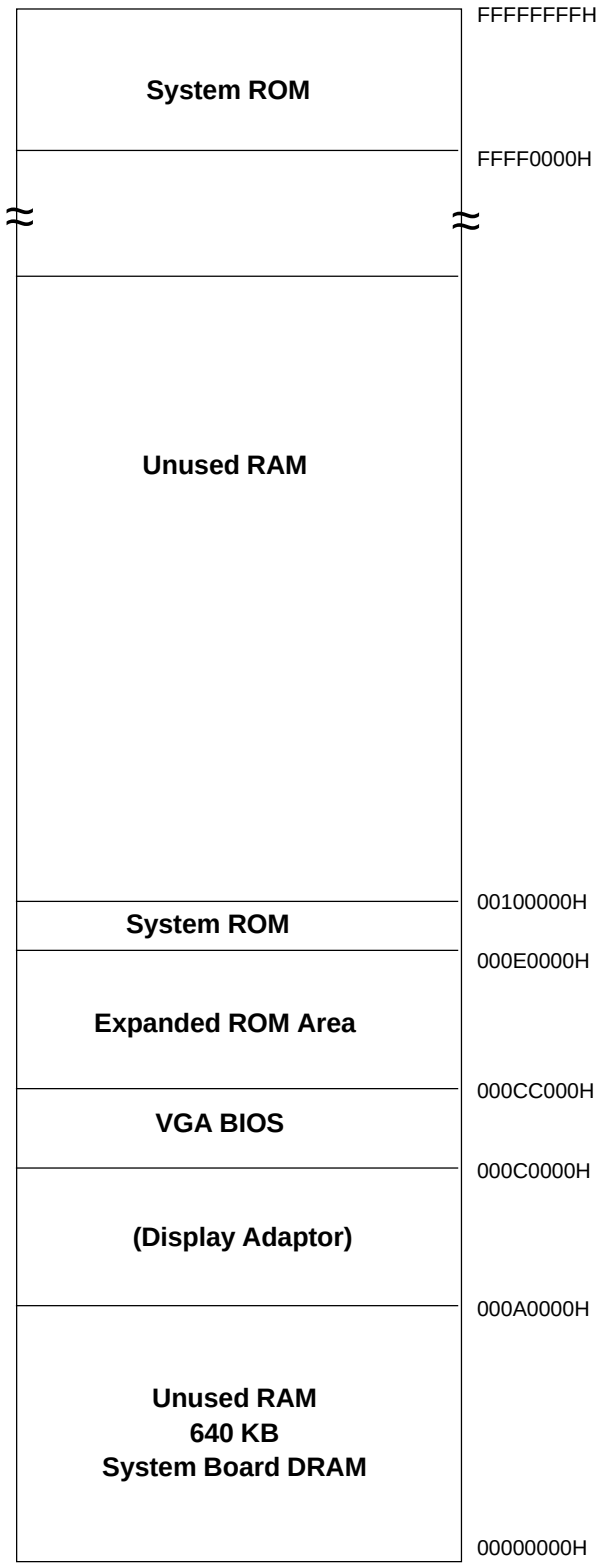
1 Hardware Configuration

1 I/O Mapping

Address	AT system device	System-specific device
0000H - 001FH	DMA controller (8237)	
0020H - 003FH	Interrupt controller (8259A)	
0040H - 005FH	System timer (8254)	
0060H - 006FH	Keyboard Controller	
0070H - 007FH	Real-time clock, NMI mask	
0080H - 009FH	DMA page register	
00A0H - 00BFH	Interrupt controller 2 (8259A)	
00C0H - 00DFH	DMA controller 2 (8237)	
00F0H - 00FFH	Numeric data processor	
01F0H - 01FFH	Hard disk (IDE)	
0200H - 0207H	Game I/O *1	
0290H - 0297H	Reserved	System Monitor
0298H - 029FH	Reserved	RAS
02E8H - 02EFH	Reserved	Touch Panel Serial Port 4 (COM4)
02F8H - 02FFH	Serial port 2 (COM2) : General Use	
03B0H - 03BBH	Video controller (VGA)	
03BCH - 03BFH	Parallel port 1 (LPT1)	
03C0H - 03DFH	Video controller (VGA)	
03E8H - 03EFH	Reserved	Serial port 3 (COM3)
03F0H - 03F7H	Floppy disk controller	
03F8H - 03FFH	Serial port 1 (COM1) :General Use	

*1 : The game I/O is not used by the PL system, but is normally reserved.

2 Memory Mapping



3 IRQ Mapping

■ Hardware Interruption List

	Description
NMI	Parity Error or I/O Channel Check
IRQ 0	Timer (in the Chipset)
IRQ 1	Keyboard
IRQ 2	Cascade from Controller 2
IRQ 3	Serial Port 2 (COM2): General Use Port
IRQ 4	Serial Port 1 (COM1): General Use Port
IRQ 5	Available for users
IRQ 6	Floppy Disk Controller
IRQ 7	Parallel Port 1 (LPT1) : Printer Port
IRQ 8	Real Time Clock
IRQ 9	Serial Port 3 (COM3): General Use Port
IRQ 10	Serial Port 4 (COM4): Touch Panel
IRQ 11	Available for users
IRQ 12	PS/2 Mouse
IRQ 13	Numeric Data Processor
IRQ 14	Hard Disk (IDE)
IRQ 15	Available for users

■ DMA Channel List

	Description	
DMA 0		For 8-bit transmission
DMA 1		
DMA 2	Floppy disk controller	
DMA 3		
DMA 4	Cascade to controller 1	For 16-bit transmission
DMA 5		
DMA 6		
DMA 7		

2 RAS Feature

1 PL's RAS Features

RAS, which stands for Reliability, Availability and Serviceability, is a device-level monitoring function that provides a variety of features to improve the reliability of your PL system.

Though the standard set of RAS features used will vary depending on the devices used, the following features are used to provide Alarm Monitoring and External Input Signal support.

Alarm Monitoring	Power Voltage Alarm Cooling Fan Alarm Internal Temperature Alarm Watchdog Timer Time Up Mirror Disk Alarm
External Input Signal	Standard Signal Input (DIN 2 bit) Remote Reset Input

Also, when either the one of the above mentioned alarms occurs, or an external signal input is received, the following types of alarm processing output signals and features are supported.

External Output Signal	Standard Signal Output (DOUT 1 bit) Alarm Output (1 point) Lamp Output (1 point)
Types of Processing (all units)	LED Indicator (3-state display – 1 point) Pop-up Message Output Buzzer Output System Shutdown

Furthermore, using the PL's System Monitor feature (included in the PL's software utility disk), allows the easy setting and control (Enable/Disable) of the aforementioned Alarm Monitor and External Input Signals.

Last, the system monitor feature's use of an Application Link Library (API-DLL) allows it to also be used with other applications.

**1 When a Mirror Disk Alarm occurs and the standard RAS feature settings are used, the alarm output is limited to the Mirror Disk unit's LED indicator. (Alternately flashing orange and green)*

**2 The remote reset feature's input can be either enabled or disabled, the alarm output setting cannot be set to trigger a forced system reset.*

**3 For System Monitor Feature details, refer to the accompanying Driver and Utility disk.*

☞ ***Chapter 6 - OS Setup***

2 RAS Feature Details

■ Alarm Monitoring

◆ Power Voltage Alarm

Monitors the condition of the PL's internal and CPU power.

◆ Cooling Fan Alarm

Monitors the condition of the PL's internal power and CPU cooling fans.

◆ Internal Temperature Alarm

Monitors the PL's internal and CPU vicinity temperatures.

The degree of monitoring (3 levels) and the enabling or disabling of the above three items is performed via the System Setup Area's settings.

For detailed information about the monitoring level settings,

5-2 6 SYSTEM MONITOR UTILITY

This utility can also be used to enable or disable the above mentioned features, as well as designate what type of processing is to be performed.

◆ Watchdog Timer Time Up

This feature alternately writes Time Up Count values from the CPU to the RAS feature's special programmable timer and then periodically clears them, which provides a means of monitoring the CPU's performance. If the clearing of this count value is stopped, the timer will overflow and an alarm will be detected. The System Monitor utility can be used to enable or disable this feature, as well as designate what type of processing is to be performed.

◆ Mirror Disk Alarm

Whenever a disk crash, or other alarm event occurs to the optional Mirror Disk unit, this unit's LED indicator will flash (either orange or green) to indicate there is a problem.

This unit's error detection occurs independently of and cannot be set by the RAS feature.

■ External Input Signal

The PL's RAS interface connector uses the following input signals.

Standard Signal Input (DIN)

This standard digital input is used for alarm detection in external devices. The input signal uses two bits.

The System Monitor utility can be used to enable or disable this feature, as well as designate what type of processing is to be performed once a signal is received.

Remote Reset Input

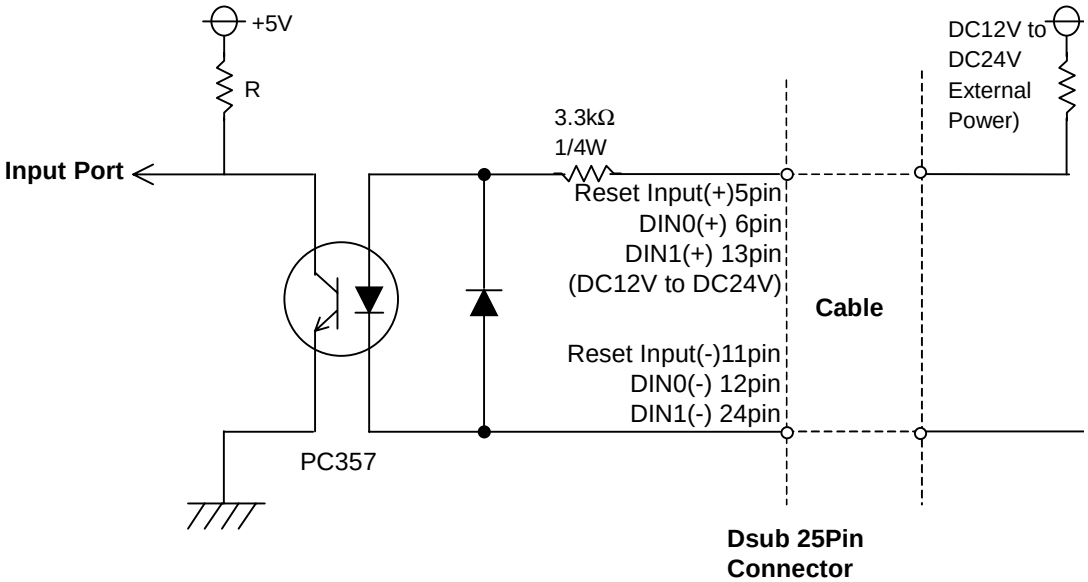
This is the reset signal sent from an external device to the PL. When this signal is enabled, a forced reset of the PL is performed.

The System Monitor utility can be used to enable or disable this feature

External Input Signal (for both DIN and Remote Reset Input)

- External Power DC12V to DC24V connections are possible
- Input Protection Protection Diode
- Isolation Used (photo-isolation)

(Interface Circuit) **(Connection Example)**



NOTE For connection pin location details,

2-3 5 RAS Interface

■ External Output Signal

The PL's RAS interface connector uses the following output signals.

General Purpose Signal Output (DOUT)

This general purpose digital output signal provides system condition information to external devices.

The System Monitor's API-DLL are used by applications to control this signal.

Alarm Output (1 point)

Lamp Output (1 point)

The above mentioned general purpose digital output signals provide system condition information to external devices.

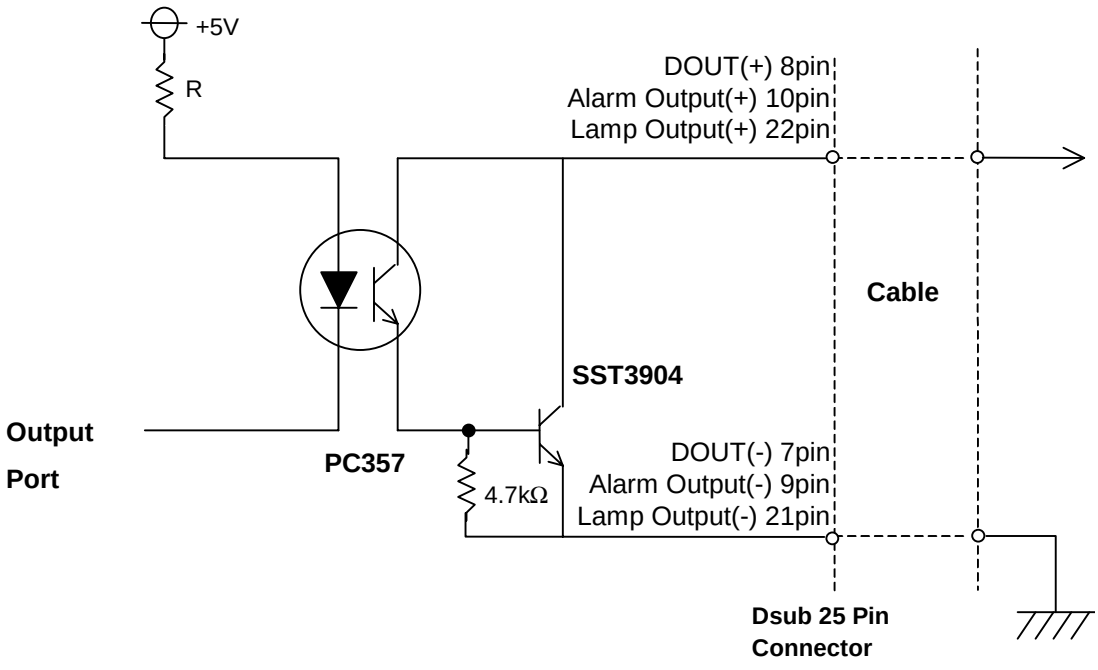
The System Monitor utility can be used to enable or disable any of these output signals.

Also, when alarm output is enabled, the orange colored LED indicator will also blink.

External Output Signal (used for DOUT, Alarm Output, Lamp Output)

- Output Specification DC24V 100mA (MAX)
- Isolation Used (photo-isolation)

(Interface Circuit) **(Connection Example)**



NOTE For connection pin location details,

2-3 5 RAS Interface

■ Types of Processing (all units)

The PL provides system condition information via the following methods.

LED Indicator (3-state display – 1 point)

In addition to indicating if the unit's power is ON or OFF, the 3-state LED indicator (power lamp) provides the following system condition information.

Color	System Condition	Output Created
Green	Normal Operation (Power ON)	None
Orange	RAS has detected a system alarm.	The alarm output set in the system monitor is enabled.
Flashing Orange/ Green	Mirror Disk Alarm has occurred	None

Pop-up Message Output

This feature uses the Windows® system's pop-up message feature to indicate that an alarm has occurred.

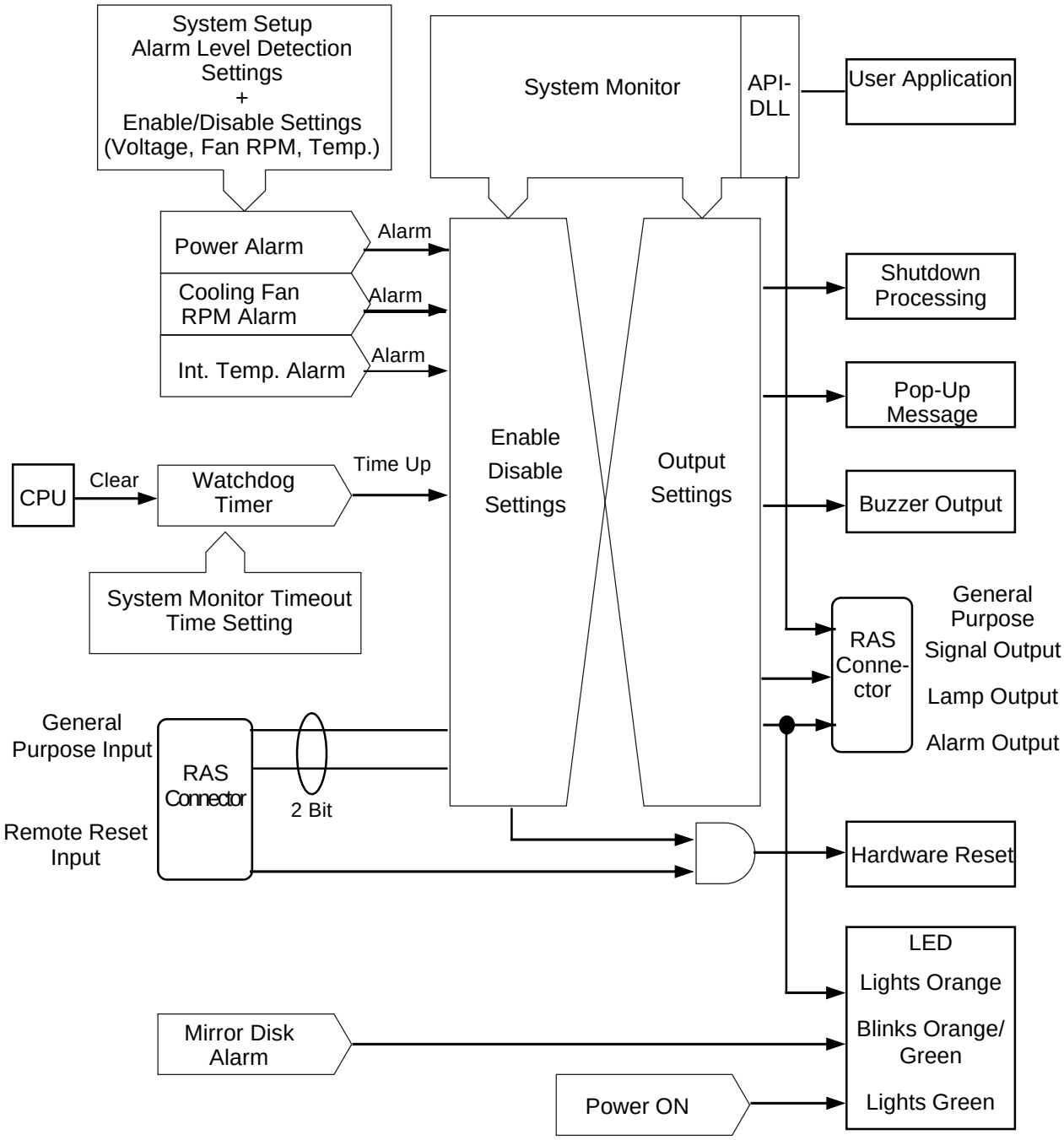
Buzzer Output

This feature uses the PL's internal speaker to indicate the system's condition.

System Shutdown

This feature shuts down the PL's OS (Windows® 95/ Windows® 98 Second Edition/ Windows® NT 4.0). The System Monitor utility can be used to enable or disable this feature.

3 RAS Feature Overview



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