Policy Management

PP-5100 Series Hardware Installation Guide

910-6368-001 Revision A

September 2011

Table of Contents

Chapter 1: About this Guide.....6

Introduction.....7

Conventions.....7

How This Guide is Organized.....7

Intended Audience.....7

Documentation Admonishments.....7

Customer Care Center.....8

Emergency Response.....10

Related Documentation.....11

Locate Product Documentation on the Customer Support Site.....11

Chapter 2: System Components.....12

Input/Output Components.....13

Server Options.....13

Server Components.....13

Chapter 3: Install the Hardware.....16

Site Requirements.....17

Shipment Check.....17

Required Equipment.....17

Tools.....17

Cables.....18

Terminal or PC.....18

Rack Mount the Server.....18

Four-post Rack Mount.....18

Two-post Rack Mount.....22

Connect the Server.....26

Power Connection.....27

AC Power Connection.....27

DC Power Connection.....28

Connect to a Terminal or PC.....29

Connect Remotely.....29

Appendix A: Technical Specifications.....30

Physical Characteristics....31
Environmental Characteristics....31
Thermal Air Flow....31
Power Characteristics....31
AC Power Characteristics....31
DC Power Characteristics....32

Appendix B: LEDs and Control Buttons....33
AC and DC Power Supplies....34
AC Characteristics....34
DC Characteristics....34
Server Control Buttons and LED Displays....35
Server Power Features....35
Front Panel Buttons and LEDs....35

Appendix C: Regulatory Specifications....37
Product Regulatory Compliance....38
Safety Compliance....38
NEBS Compliance....38
ETSI Standards Compliance (DC Input Only)....38
Electromagnetic Compatibility Notices....38
FCC Verification Statement (USA)....38
ICES-003 (Canada)....39
European Union (CE Declaration of Conformity)....39
VCCI (Japan)....39
BSMI (Taiwan)....39

List of Figures

Figure 1: PP-5100 Series Server Front View Without Bezel....13
Figure 2: PP-5100 Series Server Rear View —AC Power Supplies....14
Figure 3: PP-5100 Series Server Rear View —DC Power Supplies....14
Figure 4: Attach Front Mounting Bracket to Chassis....19
Figure 5: Attach L-brackets....20
Figure 6: Insert Server into Rack....21
Figure 7: Instal SEMS Screws....22
Figure 8: Two-post Rack Mount....23
Figure 9: Attach L-brackets....24
Figure 10: Install Two Outer Rail Subassemblies....25
Figure 11: Install SEMS Screws....26
Figure 12: PP-5100 Series Server Connection and Port Locations....27
Figure 13: DC Power Connection....28
Figure 14: PP-5100 Series Server Front Panel....35
Figure 15: VCCI (Japan)....39
Figure 16: BSMI (Taiwan)....40

List of Tables

Table 1: Admonishments.....8

Chapter 1

About this Guide

Topics:

- *Introduction.....7*
- *How This Guide is Organized.....7*
- *Intended Audience.....7*
- *Documentation Admonishments.....7*
- *Customer Care Center.....8*
- *Emergency Response.....10*
- *Related Documentation.....11*
- *Locate Product Documentation on the Customer Support Site.....11*

This chapter contains general information about this guide, the organization of this guide, and how to get technical assistance.

Introduction

This guide describes how to install Policy Management PP-5100 Series hardware. For detailed software configuration information, refer to the guides listed in *Related Documentation*.

Conventions

The following conventions are used throughout this guide:

- **Bold text** in procedures indicates icons, buttons, links, or menu items that you click on.
- *Italic text* indicates variables.
- `Monospace text` indicates text displayed on screen.
- **Monospace bold text** indicates text that you enter exactly as shown.

How This Guide is Organized

The information in this guide is presented in the following order:

- *About this Guide* contains general information about this guide, the organization of this guide, and how to get technical assistance.
- *System Components* provides information regarding the PP-5100 Series hardware components.
- *Install the Hardware* describes the hardware installation process for PP-5100 Series servers.
- *Technical Specifications* lists the physical, environmental, and power characteristics of the PP-5100 Series servers.
- *LEDs and Control Buttons* describes control buttons, LEDs, and LED troubleshooting information for the PP-5100 Series servers.
- *Regulatory Specifications* lists regulatory specifications for the for the PP-5100 Series servers.

Intended Audience

This guide is intended for system integrators and other qualified service personnel responsible for installing Tekelec products.

Documentation Admonishments

Admonishments are icons and text throughout this manual that alert the reader to assure personal safety, to minimize possible service interruptions, and to warn of the potential for equipment damage.

Table 1: Admonishments

	**DANGER**: (This icon and text indicate the possibility of *personal injury*.)
	**WARNING**: (This icon and text indicate the possibility of *equipment damage*.)
	**CAUTION**: (This icon and text indicate the possibility of *service interruption*.)

Customer Care Center

The Tekelec Customer Care Center is your initial point of contact for all product support needs. A representative takes your call or email, creates a Customer Service Request (CSR) and directs your requests to the Tekelec Technical Assistance Center (TAC). Each CSR includes an individual tracking number. Together with TAC Engineers, the representative will help you resolve your request.

The Customer Care Center is available 24 hours a day, 7 days a week, 365 days a year, and is linked to TAC Engineers around the globe.

Tekelec TAC Engineers are available to provide solutions to your technical questions and issues 7 days a week, 24 hours a day. After a CSR is issued, the TAC Engineer determines the classification of the trouble. If a critical problem exists, emergency procedures are initiated. If the problem is not critical, normal support procedures apply. A primary Technical Engineer is assigned to work on the CSR and provide a solution to the problem. The CSR is closed when the problem is resolved.

Tekelec Technical Assistance Centers are located around the globe in the following locations:

Tekelec - Global

Email (All Regions): support@tekelec.com

- **USA and Canada**

  Phone:

  1-888-FOR-TKLC or 1-888-367-8552 (toll-free, within continental USA and Canada)

  1-919-460-2150 (outside continental USA and Canada)

  TAC Regional Support Office Hours:

  8:00 a.m. through 5:00 p.m. (GMT minus 5 hours), Monday through Friday, excluding holidays

- **Caribbean and Latin America (CALA)**

  Phone:

  USA access code +1-800-658-5454, then 1-888-FOR-TKLC or 1-888-367-8552 (toll-free)

TAC Regional Support Office Hours (except Brazil):

10:00 a.m. through 7:00 p.m. (GMT minus 6 hours), Monday through Friday, excluding holidays

- **Argentina**

  Phone:

  0-800-555-5246 (toll-free)

- **Brazil**

  Phone:

  0-800-891-4341 (toll-free)

  TAC Regional Support Office Hours:

  8:30 a.m. through 6:30 p.m. (GMT minus 3 hours), Monday through Friday, excluding holidays

- **Chile**

  Phone:

  1230-020-555-5468

- **Colombia**

  Phone:

  01-800-912-0537

- **Dominican Republic**

  Phone:

  1-888-367-8552

- **Mexico**

  Phone:

  001-888-367-8552

- **Peru**

  Phone:

  0800-53-087

- **Puerto Rico**

  Phone:

  1-888-367-8552 (1-888-FOR-TKLC)

- **Venezuela**

  Phone:

  0800-176-6497

- **Europe, Middle East, and Africa**

  Regional Office Hours:

  8:30 a.m. through 5:00 p.m. (GMT), Monday through Friday, excluding holidays

  - **Signaling**

Phone:

+44 1784 467 804 (within UK)

- **Software Solutions**

  Phone:

  +33 3 89 33 54 00

- **Asia**
  - **India**

    Phone:

    +91 124 436 8552 or +91 124 436 8553

    TAC Regional Support Office Hours:

    10:00 a.m. through 7:00 p.m. (GMT plus 5 1/2 hours), Monday through Saturday, excluding holidays
  - **Singapore**

    Phone:

    +65 6796 2288

    TAC Regional Support Office Hours:

    9:00 a.m. through 6:00 p.m. (GMT plus 8 hours), Monday through Friday, excluding holidays

Emergency Response

In the event of a critical service situation, emergency response is offered by the Tekelec Customer Care Center 24 hours a day, 7 days a week. The emergency response provides immediate coverage, automatic escalation, and other features to ensure that the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability
- Significant reduction in system capacity or traffic handling capability
- Loss of the system's ability to perform automatic system reconfiguration
- Inability to restart a processor or the system
- Corruption of system databases that requires service affecting corrective actions
- Loss of access for maintenance or recovery operations
- Loss of the system ability to provide any required critical or major trouble notification

Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with the Tekelec Customer Care Center.

Related Documentation

The following documents provide additional installation and configuration information for the Tekelec PP-5100 Series servers:

- *Software Installation Guide*
- *Service User Interface User's Guide*
- *Camiant Management Platform User's Guide*
- *Release Notes*

Locate Product Documentation on the Customer Support Site

Access to Tekelec's Customer Support site is restricted to current Tekelec customers only. This section describes how to log into the Tekelec Customer Support site and locate a document. Viewing the document requires Adobe Acrobat Reader, which can be downloaded at www.adobe.com.

1. Log into the *Tekelec Customer Support* site.

   Note: If you have not registered for this new site, click the **Register Here** link. Have your customer number available. The response time for registration requests is 24 to 48 hours.

2. Click the **Product Support** tab.
3. Use the Search field to locate a document by its part number, release number, document name, or document type. The Search field accepts both full and partial entries.
4. Click a subject folder to browse through a list of related files.
5. To download a file to your location, right-click the file name and select **Save Target As**.

Chapter 2

System Components

Topics:

- *Input/Output Components.....13*
- *Server Options.....13*
- *Server Components.....13*

This chapter provides information regarding the PP-5100 Series hardware components.

Input/Output Components

The PP-5100 Series servers provide the following I/O components:

- Dual PS/2 ports for keyboard and mouse
- Three USB 2.0 ports (one front and two rear)
- Six GbE ports
- Video port

Server Options

The following table provides the server configurations.

Item	PP-5148	PP-5154
Processor	Xeon	Xeon
Clock Speed	2.33 GHz	2.33 GHz
RAM	4GB	24GB
RAM Speed	DDR2-667/PC2-5300	DDR2-667/PC2-5300
Hard Drives	3 x 73GB	3 x 300GB
Available Storage	Approximately 146GB	Approximately 600GB

Server Components

PP-5100 Series servers are front-rack mountable in a standard 19- inch rack. The following figures display front and rear views of theserver.

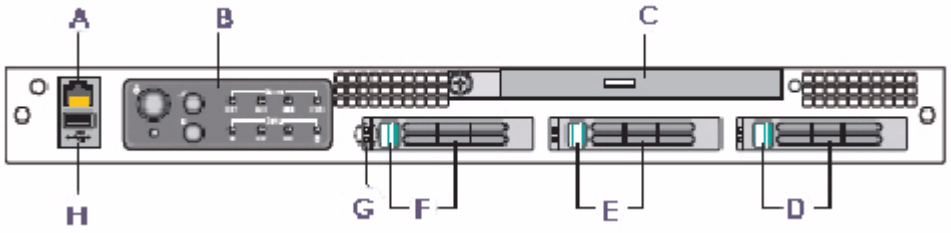

Figure 1: PP-5100 Series Server Front View Without Bezel

Key	Description	Key	Description
A	Front panel serial B port (RJ-45) *	**E**	Drive bay 1 and handle

Key	Description	Key	Description
B	Front panel control switches and status LEDs	**F**	Drive bay 2 and handle
C	Optical drive	**G**	HDD activity (green) and fault (amber) LEDs
D	Drive bay 0 and handle	**H**	USB 2.0 port 2

* Both the front and rear serial port connectors connect to COM2 and mirror each other. Therefore, only ONE of these ports can be used at any time, with the port not used becoming inactive for input.

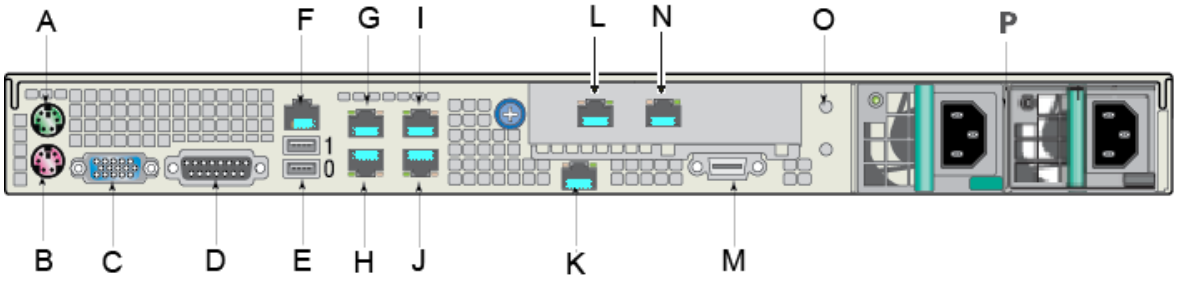

Figure 2: PP-5100 Series Server Rear View —AC Power Supplies

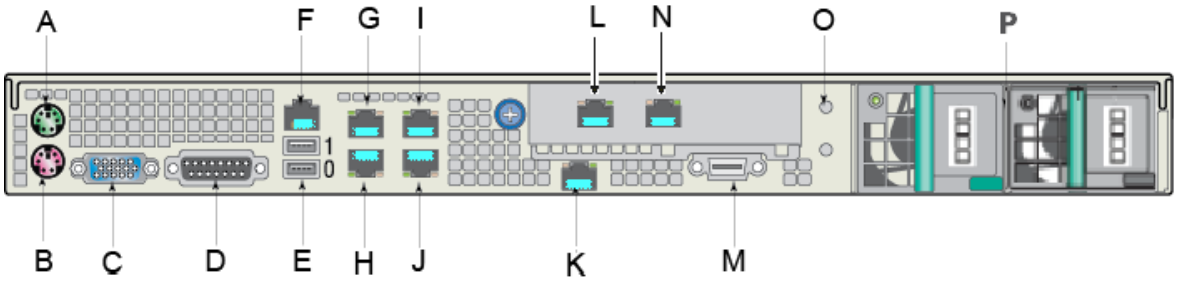

Figure 3: PP-5100 Series Server Rear View —DC Power Supplies

Key	Description	Key	Description
A, B	PS/2 mouse and keyboard connectors	**K**	Remote Management Module NIC — Not Used
C	Video connector	**L**	PCI (2) connector B (App IF 2)
D	Telco alarms connector (DB15) — Not Used	**M**	External 4x SAS connector — Not Used
E	USB connectors, ports 0 (bottom) and 1 (top)	**N**	PCI (1) connector A (Management IF)

Key	Description	Key	Description
F	Serial port connector (RJ-45)[1]	**O**	DC ground studs
G, H	GbE NIC port 3 and 4 connectors (RJ-45), bonded Mainboard 3 and 4 (App IF 1)	**P**	Dual power supplies and connectors[2]
I, J	GbE NIC port 1 and 2 connectors (RJ-45), bonded Mainboard 1 and 2 (Redundant HA)		

[1] Both the front and rear serial port connectors connect to COM2 and mirror each other. Therefore, only ONE of these ports can be used at any one given time, with the port not used becoming inactive for input.

[2] Item P, in *Figure 2: PP-5100 Series Server Rear View —AC Power Supplies* and *Figure 3: PP-5100 Series Server Rear View —DC Power Supplies*, represents dual AC and DC input configurations. It should be noted that the power supplies used must be either AC or DC and cannot be a mixture of each.

Chapter 3

Install the Hardware

Topics:

- *Site Requirements.....17*
- *Shipment Check.....17*
- *Required Equipment.....17*
- *Rack Mount the Server.....18*
- *Connect the Server.....26*
- *Power Connection.....27*
- *Connect to a Terminal or PC.....29*
- *Connect Remotely.....29*

This chapter describes the hardware installation process for PP-5100 Series servers.

Before installing your server, make sure that the site's environmental and space requirements allow optimal chassis access and operation. Also, verify that you have the equipment and tools necessary to complete this installation.

Site Requirements

The server installation site should meet the following requirements:

Requirement	Description
Operating Temperature	Server on: +5°C to +40°C (41°F to 104°F) Server off: -40°C to 70°C (-104°F to 158°F)
Relative Humidity	95%, non-condensing at temperatures of 23°C (73°F) to 40°C (104°F)
Minimum Ventilation	6 inches (15.2 mm) at the front, back, and sides of the chassis
Service Clearance	2 inches (76 mm) at the front of the chassis 1 inch (25 mm) at the side of the chassis 3.6 inches (92 mm) at the rear of the chassis
Power Sources	**AC** : 100 to 240 VAC outlets, with grounding and power surge protection **DC** : - 48 Vdc, with proper grounding and power surge protection
Rack	Standard 19-inch rack with grounding

Shipment Check

Refer to the packing slip and inspect the package contents for missing or damaged items. If there is a problem, call your Support Representative.

Note: Save the shipping containers in the event that you need to return one or more components.

Required Equipment

The following subsections describe the tools and hardware required to install a PP-5100 Series server.

Tools

To install the server in a standard rack you need, at a minimum, a #2 Phillips screwdriver.

Cables

Cabling requirements are installation-specific. Prior to installation you should know:

- The kind and number of cables required for each type of interface.
- The distance limitations for each signal type.

The following table provides approximate cable distance limitations.

Cable Description	Distance Limitation
Serial port	15.24 meters (50 ft.)
Copper Ethernet Link Ports: 10/100/1000	100 meters (328 ft.)

The following table lists the equipment needed for proper server operation.

Equipment	Description
Power cord	Standard AC power cable
Ethernet cable	Two, 6-foot (.30 and 1.83 mm) straight-through Ethernet cables

Terminal or PC

A KVM (Keyboard, Video, Mouse) or serial cable is required for first-time installation, to monitor start-up diagnostics, and configure the system for remote access.

Note: Both the front and rear serial port connectors connect to COM2 and mirror each other. Therefore, only ONE of these ports can be used at any time, with the port not used becoming inactive for input.

Rack Mount the Server

The following instructions describe how to rack mount the PP-5100 Series server in a 19-inch rail rack using the brackets, clips, and screws provided.

Note: The four-post, rack mount installation procedure described in this chapter has the following limitation. The PP-5100 Series server rack mount kits, supplied with the server, only fit in four-post racks that are a distance of 24 inches or less, between the front and rear posts. If the server is to be mounted in a four-post rack, with a depth greater than 24 inches, please contact Technical Support for guidance on the appropriate rail kits or shelf accessories for that installation.

Four-post Rack Mount

To attach the server using a four-post rack mount:

1. Attach the two inner rails (marked left and right) to the chassis, each with three 8-32x1/4" SEMS screws.
2. Attach the universal front mounting bracket to the chassis, each with two 8-32x1/4” SEMS screws.

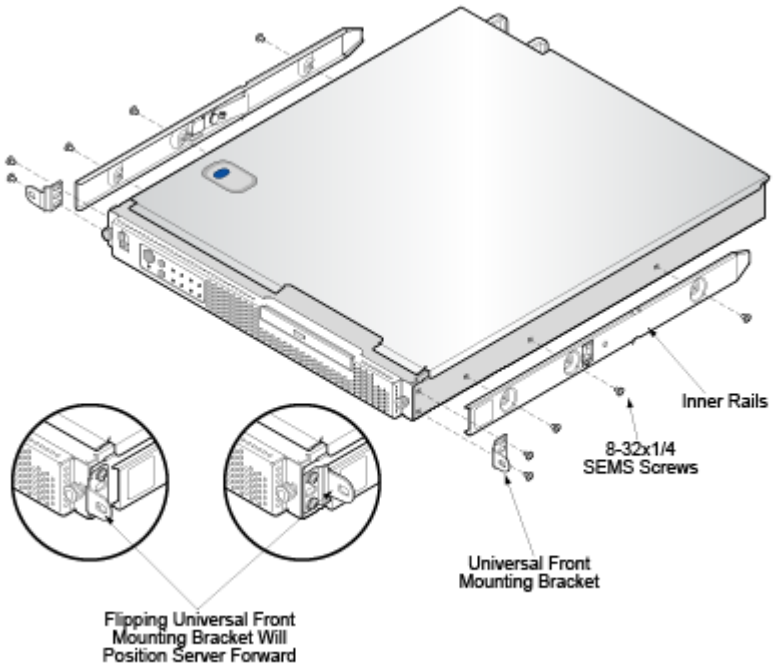

Figure 4: Attach Front Mounting Bracket to Chassis

Note: You can also flip around the universal front mounting bracket to position the server further forward in the rack.

3. Using two 8-32 KEPS nuts per L-bracket, attach the L-brackets to the outer rail's four outermost threaded studs.

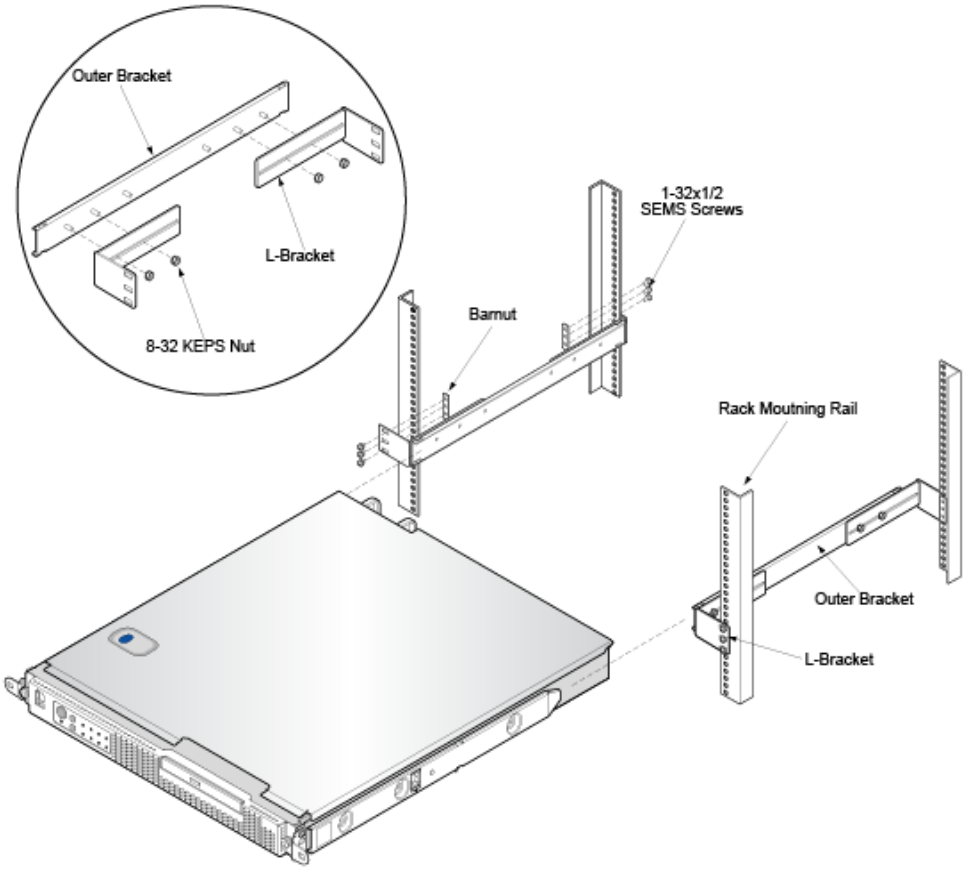

Figure 5: Attach L-brackets

4. Adjust the L-brackets front-to-back to fit the rack depth.

   The distance between the front and rear equipment mounting rails cannot exceed 24 inches.

   Note: If your racks require depths greater than 24 inches, please contact Technical Support for rack mount kit extensions ordering information.

5. Slide the server into the rack making sure the outer rails capture the inner rails.

   Support the weight of the server until the locks on the inner and outer rails engage; you will hear an audible *click*.

   Note: To remove the server from the rack, release the locks by depressing the two latches with the blue arrows (one on either side) downward. While depressing the locks, support the server weight while pulling it out. You can release pressure once the locks disengage from the outer rail.

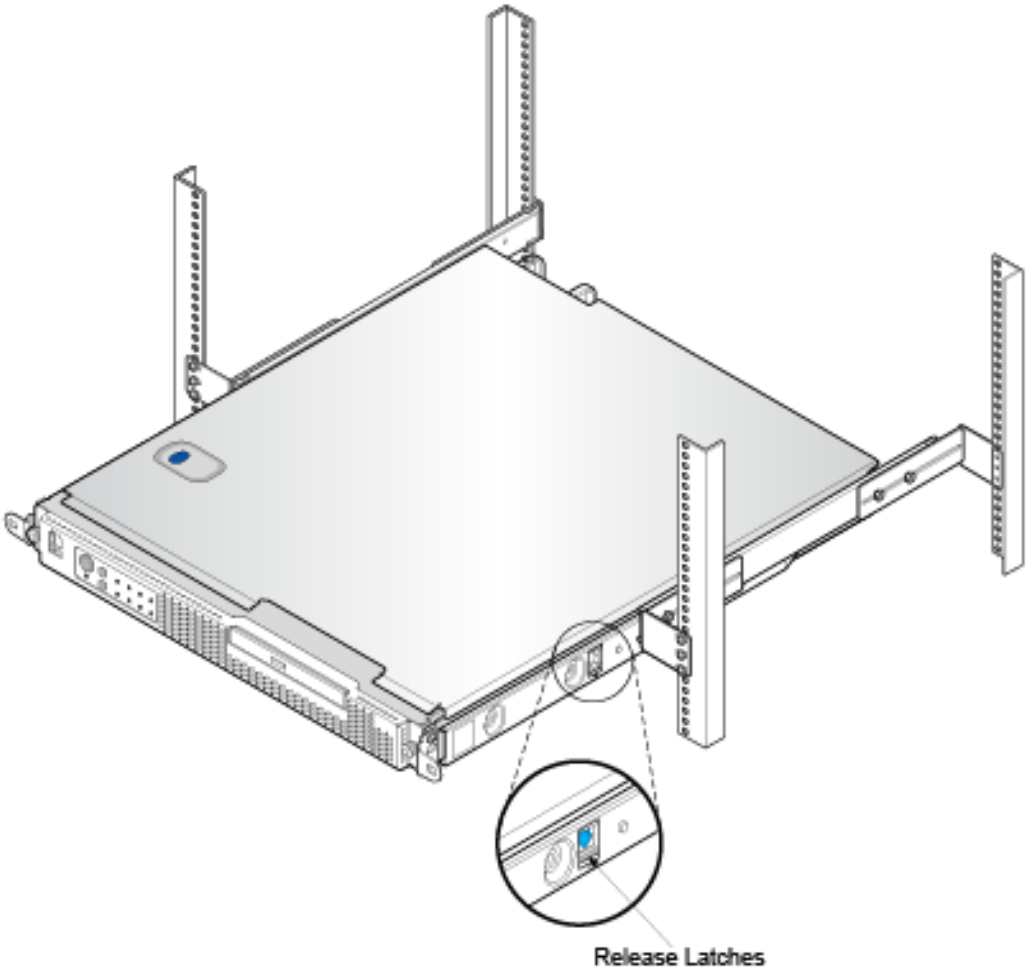

Figure 6: Insert Server into Rack

6. Install two 10-32X1/2″ SEMS screws to hold the universal front mounting brackets to the rack's equipment mounting rails.

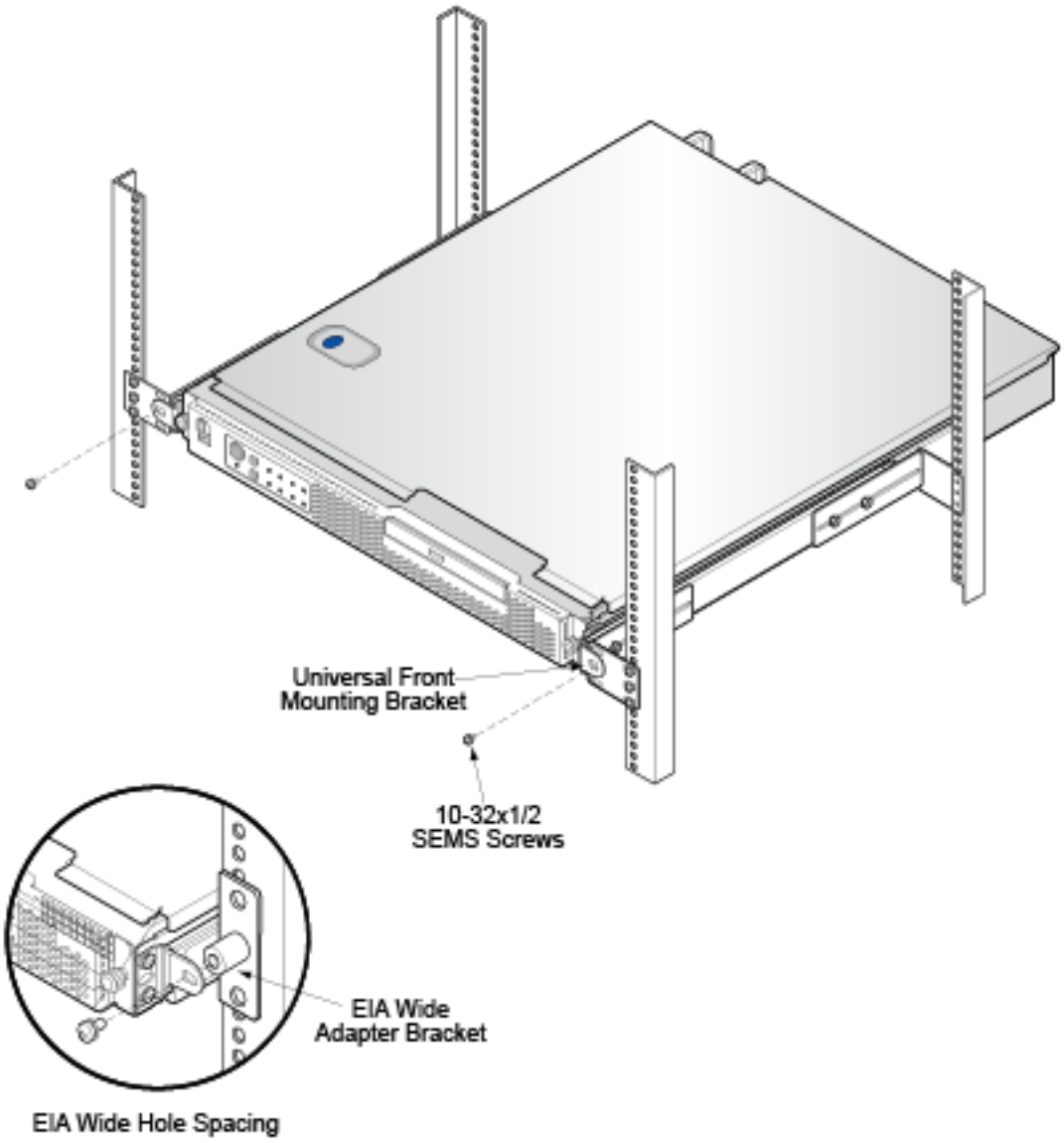

Figure 7: Instal SEMS Screws

Note: If installing into a 19-inch four-post rack that has EIA wide hole spacing, you must use the EIA wide adapter bracket. Install this bracket onto the face of the L-brackets using the same 10-32x1/2" SEMS screws that fasten the L-brackets to the rack's front mounting rails.

Two-post Rack Mount

To attach the server using a two-post rack mount:

1. Attach the two inner rails (marked left and right) to the chassis, each with three 8-32x1/4" SEMS screws.
2. Attach the universal front mounting bracket to the chassis, each with two 8-32x1/4" SEMS screws.

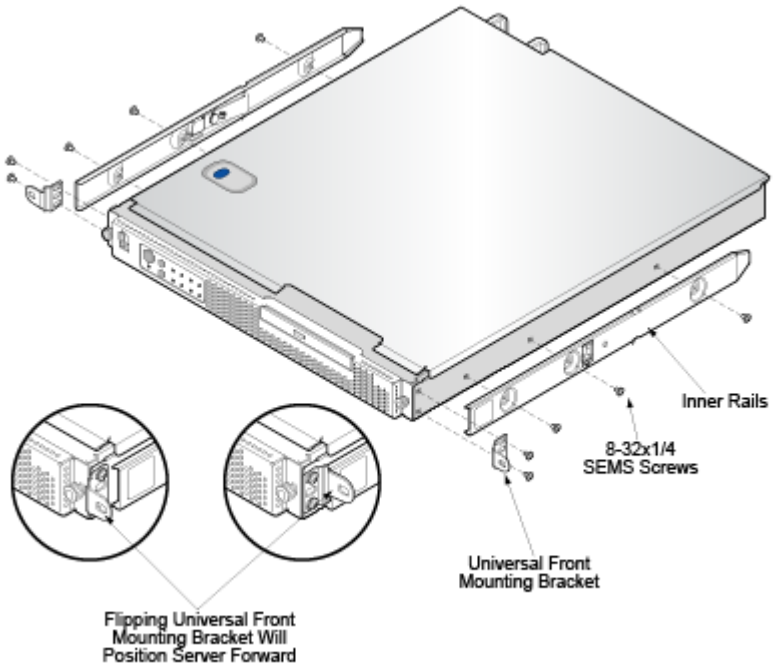

Figure 8: Two-post Rack Mount

Note: You can also flip around the universal front mounting bracket to position the server further forward in the rack.

3. Using 8-32 KEPS nuts, attach the L-brackets to the outer rails and the two-post mounting bracket to the outer rail.

   The two-post mounting bracket is attached to the two front-most studs, overlapping the front L-bracket and sharing the two threaded studs.

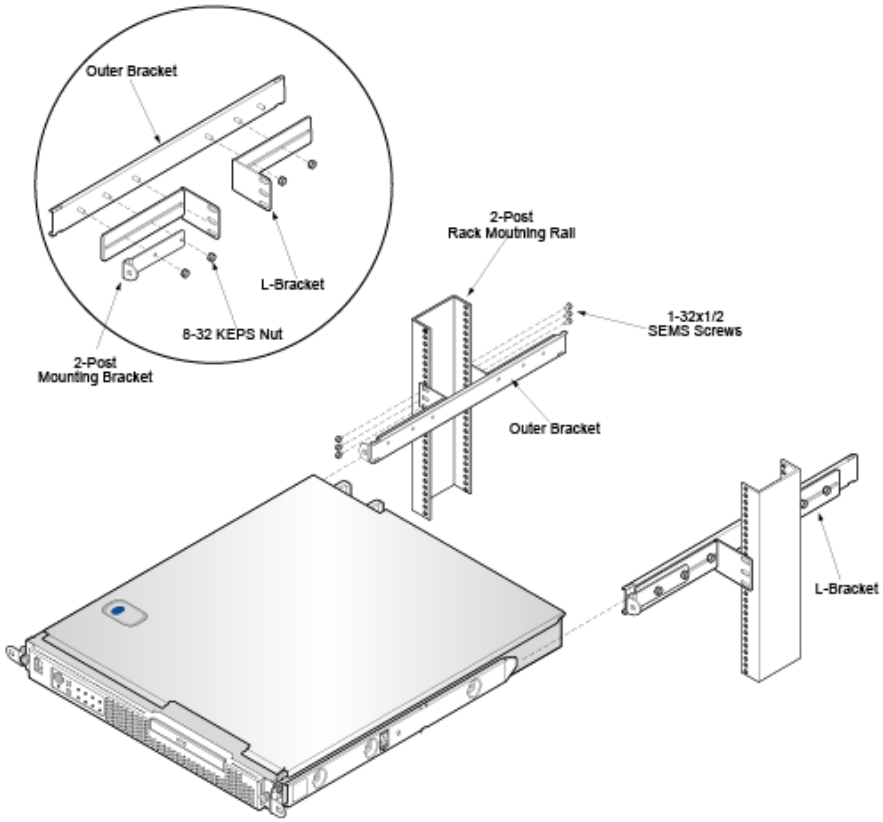

Figure 9: Attach L-brackets

4. Install the two outer rail subassemblies in the rack using 10-32x1/2" SEMS screws or other appropriate fasteners.

   If bar-nuts are used, install them such that all threads are aligned vertically, ensuring the center hole is not skewed with respect to the holes on the rack rail.

   Note: Adjust the L-brackets front-to-back to fit the rack channel depth.

5. Slide the server into the rack making sure the outer rails capture the inner rails.

   Support the weight of the server until the locks on the inner and outer rails engage; you will hear an audible *click*.

   Note: To remove the server from the rack, release the locks by depressing the two latches with the blue arrows (one on either side) downward. While depressing the locks, support the server weight while pulling it out. You can release pressure once the locks disengage from the outer rail.

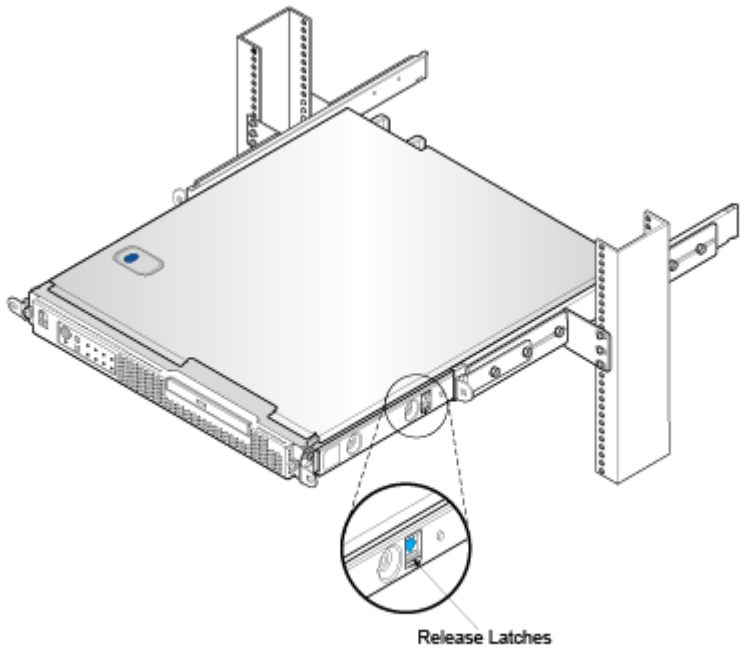

Figure 10: Install Two Outer Rail Subassemblies

6. Install two 10-32X1/2″ SEMS screws to hold the universal front mounting brackets to the rack's equipment mounting rails.

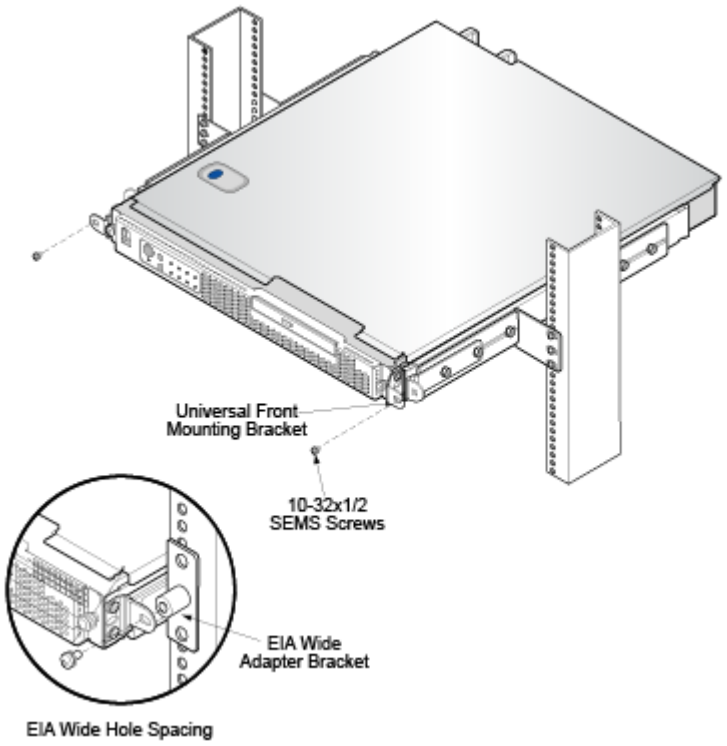

Figure 11: Install SEMS Screws

Connect the Server

This section describes connections for first time installation. *Figure 12: PP-5100 Series Server Connection and Port Locations* shows the location of connections and ports. Attach a computer to the server using a monitor, keyboard, and mouse (KVM).

Note:

1. Depending on your network topology, your Ethernet interfaces may vary.
2. The RJ-45 port located above the USB ports is a System Management port and is not used as a network connection.

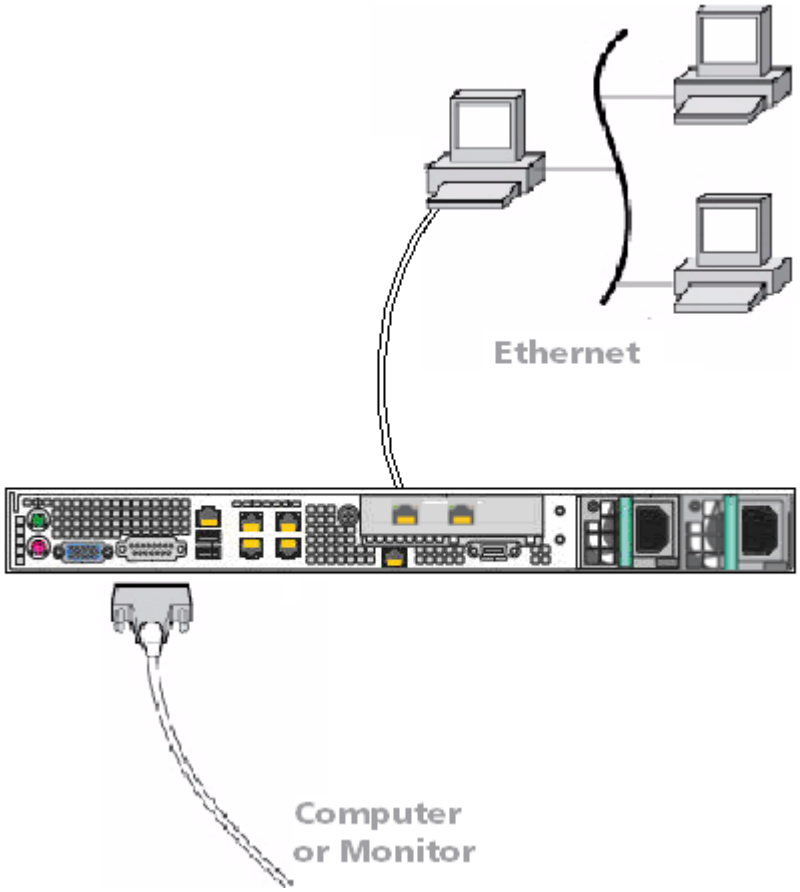

Figure 12: PP-5100 Series Server Connection and Port Locations

Power Connection

Note: When using redundant power sources, be sure the power is supplied from two separate circuits.

The PP-5100 Series server is supplied with redundant AC or DC power supplies. For power, environmental, LED characteristics, and descriptions, refer to Appendix A and B.

AC Power Connection

To connect power cabling on the PP-5100 Series server:

1. Insert the female end of the power cable into the power supply connector located on the back of the server.

   Refer to *Figure 2: PP-5100 Series Server Rear View —AC Power Supplies* for the exact location.

2. Connect the male end of the power cable to an AC power source.

DC Power Connection

The power subsystem, with DC power supply module, is NEBS hardened and uses a Molex 4-pin DC connector to provide the DC-input power connection. The required mating connector is Molex 54927-0420 or equivalent, shipped with the PP-5100 Series server. Tekelec recommends using appropriately sized power wire and a DC main.

Connect the DC power supplies, as shown in *Figure 13: DC Power Connection*. Be sure to use the DC Power Supply Grounding Studs to ground the DC Power Supply properly.

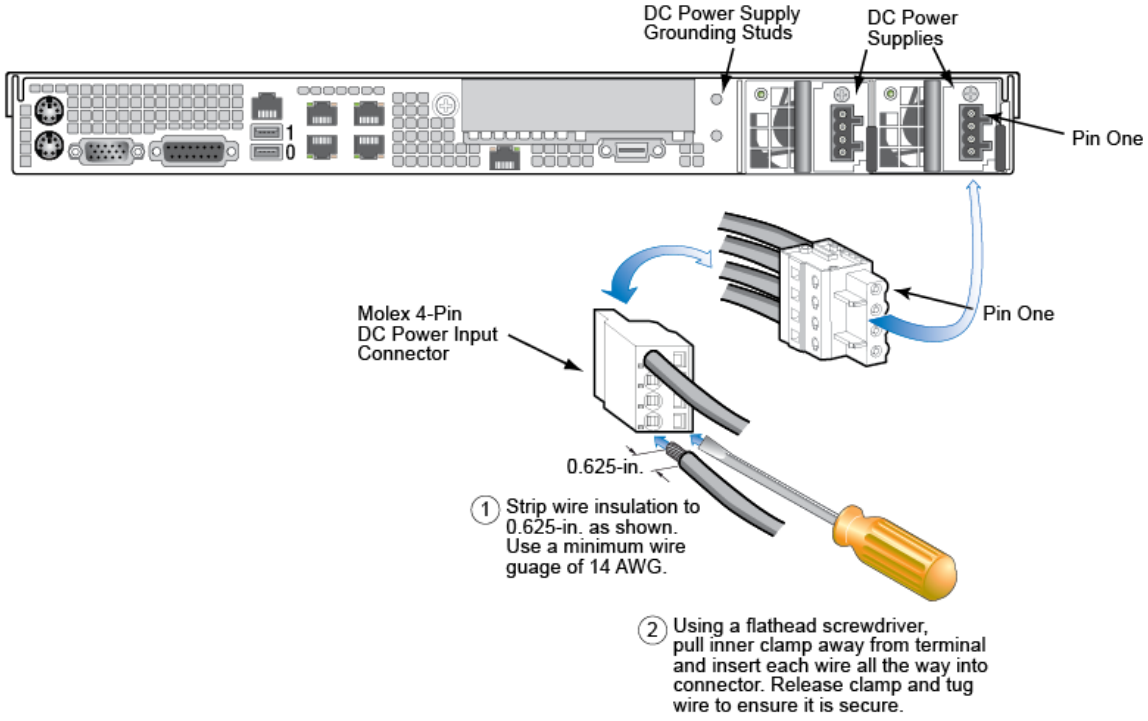

Figure 13: DC Power Connection

The following table provides the pinouts for the DC power connector.

Pin Number	Description
1	RTN
2	RTN
3	-48V
4	-48V

Note: When using multiple power sources, the DC power connector pins should be paired, 1 to 3 and 2 to 4.

Connect to a Terminal or PC

You can connect to the console by attaching to either serial port by connecting a KVM to the USB and video ports, or PS/2.

Note: Both the front and rear serial port connectors connect to COM2 and mirror each other. Therefore, only ONE of these ports can be used at any time, with the port not used becoming inactive for input.

To connect a terminal or PC to a PP-5100 Series server:

1. Connect one end of a serial cable to the terminal or PC.
2. Connect the other end to the server's serial port.
3. Set to VT-100 terminal emulation mode (*19200 baud, 8 data bits, 1 stop bit, no parity*).

Connect Remotely

If you intend to access the server remotely, you need to *first* configure an IP address and use Secure Shell (SSH) to connect to the system. This access method is possible only *after* you install the software as described in the *Software Installation Guide*. The network cable attachments are the same as those pictured in *Figure 12: PP-5100 Series Server Connection and Port Locations*.

Appendix A

Technical Specifications

Topics:

- *Physical Characteristics.....31*
- *Environmental Characteristics.....31*
- *Thermal Air Flow.....31*
- *Power Characteristics.....31*

This appendix lists the physical, environmental, and power characteristics of the PP-5100 Series servers.

Physical Characteristics

The PP-5100 Series server physical dimensions are:

- Height — 1.70 inches (43.2 mm)
- Width — 16.93 inches (430.0 mm)
- Depth — 20.0 inches (508 mm)

Environmental Characteristics

The environment specifications for the PP-5100 Series servers are:

- Temperature, operating +5°C to +40°C (41°F to 104°F)
- Temperature, non-operating -40°C to 70°C (-104°F to 158°F)
- Altitude 0 to 900m (2,950 ft.) @ 35°C, temperature derated by 1°C for each additional 300m (985 ft.)
- Humidity, non-operating 95%, non-condensing at temperatures of 23°C (73°F) to 40°C (104°F)
- System Cooling Requirement:
  - 1200 BTU/hr with single power supply unit
  - 1250 BTU/hr with dual power supply units

Thermal Air Flow

Both the AC and DC power supply modules incorporate fans for self-cooling, which also contribute to the overall server cooling. The cooling air enters the power module from the power supply side (pre-heated air from the system). The fan's variable speed is based on output load and ambient temperature. Under standby mode, the fans run at minimum RPM and provide 3.5 CFM of airflow per power supply module.

The heat dissipation for the MPE devices with dual power supplies is 3200 BTUs.

Power Characteristics

AC Power Characteristics

The AC power supply is hot swappable. The AC power features include:

- +12V Maximum Load: 16 Amps
- Minimum Static / Dynamic Load: 0 Amps
- Peak load (12 seconds): 18 Amps

- Maximum Output Power 12 Volts x 16 Amps = 192 Watts

  Note:

  1. The combined total power limit for all outputs is 450W maximum.
  2. +12Volts 1/2/3/4 combined output limit = 46.2A/63A peak maximum.

DC Power Characteristics

The DC power supply is hot swappable. The DC power features include:

- Operating Voltage: -38 to -75 Volts
- Normal Operating Voltage: -48 Volts
- Normal Operating Current: 9.4 Amps
- Output Power: 450 Watts

Appendix B

LEDs and Control Buttons

Topics:

- *AC and DC Power Supplies.....34*
- *Server Control Buttons and LED Displays.....35*

This appendix describes control buttons, LEDs, and LED troubleshooting information for the PP-5100 Series servers.

During power up and normal operation, you can observe start-up activity by checking LED behavior.

AC and DC Power Supplies

AC Characteristics

AC Characteristics During Server Power Up

When you connect the server to AC power, the power supply fans turn on immediately. Pressing the power-control button lets you turn on the server and start the operating system. In the event of a power failure, the server restarts automatically when power is restored.

AC Characteristics During Server Power Down

When you turn off the server and leave it connected to AC power, the power supply fans continue to run. To remove all power from the server, you must disconnect it from the power source. You may turn off the server by briefly pressing the power button once, sending a shutdown command to the operating system and powering down in an orderly fashion. This action may take several minutes to complete.

Warning: The power control button on the server and the power switch on the power supply do not turn off the electrical current supplied to the server. The server also might have more than one power cord. To remove all electrical current from the server, ensure that all power cords are disconnected from the power source.

The PP-5100 Series server can be turned off in either of the following ways:

- Press the power-control button to start an orderly shutdown of the operating system and turn off the server.
- If the operating system stops functioning, you can press and hold the power-control button for more than four (4) seconds to turn off the server.

DC Characteristics

The DC power supplies provide two outputs, +12V and +5V standby voltage. The status of these power supplies is presented by a single, external, bi-color LED. The following table describes the LED color and corresponding status.

LED Status	Power Supply Condition
Off	No DC power to the power supplies.
Solid Green	All power outputs are available.
Blinking Green	DC power is applied to the server and standby voltages are available.
Solid Amber	Critical power supply event causing a power supply shutdown due to over current or over-temperature.

LED Status	Power Supply Condition
Blinking Amber	Warning power supply event where the power supply continues to operate, however an over current or over-temperature event has occurred.

Server Control Buttons and LED Displays

This section describes the buttons and LEDs located on the front panel of a PP-5100 Series server.

Server Power Features

When the server is connected to an AC power source but not turned on, the power-on LED flashes to indicate that the server is connected to AC power but is not turned on.

Front Panel Buttons and LEDs

The following figure illustrates the PP-5100 Series server's front panel buttons and LEDs.

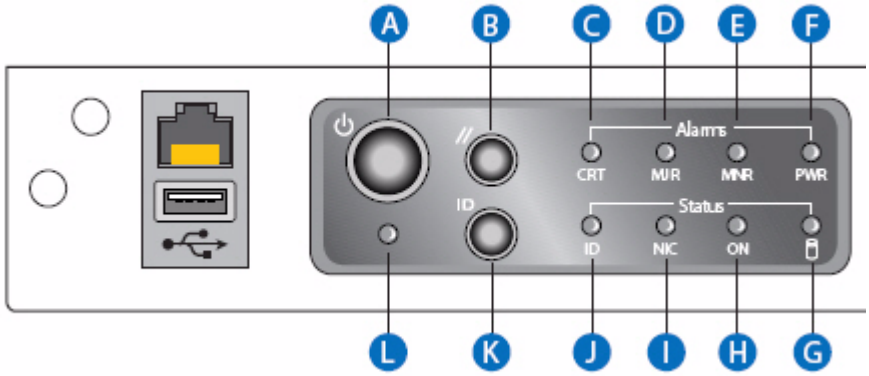

Figure 14: PP-5100 Series Server Front Panel

The following table describes the front panel switches, alarm LEDs and Relays, and Status LEDs.

Item	Feature	Description
Front Panel Switches		
A	Power switch	Toggles system power on/off. Also functions as a Sleep Button if enabled by an ACPI-compliant operating system
B	Reset switch	Resets the system when it is in the power-on state
K	ID switch	Instructs the processor to toggle the state of the system ID LED
L	NMI switch	Instructs the processor to copy system memory to hard disk
Front Panel Alarm LEDs and Relays		

Item	Feature	Description
C	Critical (yellow or red)	When continuously lit, indicates the presence of a Critical System Fault. A critical system fault is an error or event that is detected by the system with a fatal impact to the system. In this case, the system cannot continue to operate. An example could be the loss of a large section of memory, or other corruption that renders the system not operational. The front panel critical alarm relay is also engaged when the LED is lit.
D	Major (yellow or red)	When continuously lit, indicates the presence of a Major System Fault. A major system fault is an error or event that is detected by the system that has discernible impact to system operation. In this case, the system can continue to operate but in a *degraded* fashion (reduced performance or loss of non-fatal feature reduction). An example could be the loss of one of two mirrored disks. The front panel major alarm relay is also engaged when the LED is lit.
E	Minor (yellow)	When continuously lit, indicates the presence of a Minor System Fault. A minor system fault is an error or event that is detected by the system but has little impact to actual system operation. An example would be a correctable ECC error. The front panel minor alarm relay is also engaged when the LED is lit.
F	Power (yellow)	When continuously lit, indicates the presence of a Power System Fault. The front panel power alarm relay is also engaged when the LED is lit.
Front Panel Status LEDs		
G	Disk Activity/Fault LED (green/amber)	The green/amber *hard drive activity/fault* LED displays activity (green indication) or fault status (amber indication). This is a Red LED function.
H	Main power LED (green)	The green *Power On* LED indicates that system power is on when it is illuminated continuously. When it is blinking green, it indicates that the system is in ACPI sleep mode.
I	NIC activity LED (green)	The green NIC *activity* LED indicates network link presence and activity on either NIC0 or NIC1.
J	System ID LED (white)	The white ID LED identifies a particular system. The LED can be toggled remotely or with the System ID switch.

Appendix C

Regulatory Specifications

Topics:

- *Product Regulatory Compliance.....38*
- *Electromagnetic Compatibility Notices.....38*

This appendix lists regulatory specifications for the PP-5100 Series server.

CAUTION: You must adhere to the assembly instructions in this guide to ensure and maintain compliance with existing product certifications and approvals. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing and other regulatory approvals of the product and will most likely result in noncompliance with product regulations in the region(s) in which the product is sold.

Product Regulatory Compliance

This section lists the Tekelec system regulatory compliance.

Safety Compliance

- USA/Canada — UL 60950-1, 1st Edition/CSA 22.2
- Europe — Low Voltage Directive, 73/23/EEC TUV/GS to EN60950-1, 1st Edition
- International — CB Certificate and Report to IEC60950-1, 1st Edition and all international deviations

NEBS Compliance

The Tekelec system with DC input is compliant with the NEBS Level 3 criteria and the system with AC input is compliant with NEBS Level 1 criteria from the following NEBS specifications:

- NEBS GR-63-CORE, Issue 3 — Physical Protection
- NEBS GR-1089-CORE, Issue 4 — Electromagnetic Compatibility and Electrical Safety

ETSI Standards Compliance (DC Input Only)

The Tekelec system with DC input is compliant with the following ETSI specifications:

- ETSI EN 300 386 — EMC requirements for Telecom Equipment
- ETS 300-019-2-1 — Storage Tests, Class T1.2
- ETS 300-019-2-2 — Transportation Tests, Class T2.3
- ETS 300-019-2-3 — Operational Tests, Class T3.2
- ETS 753 — Acoustic Noise

Electromagnetic Compatibility Notices

FCC Verification Statement (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna

- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and television reception.

All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals that are not shielded and grounded may result in interference to radio and television reception.

ICES-003 (Canada)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled "Digital Apparatus," ICES-003 of the Canadian Department of Communications.

European Union (CE Declaration of Conformity)

This product has been tested in accordance too, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been labeled with the CE Mark to illustrate its compliance.

VCCI (Japan)

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If the product is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

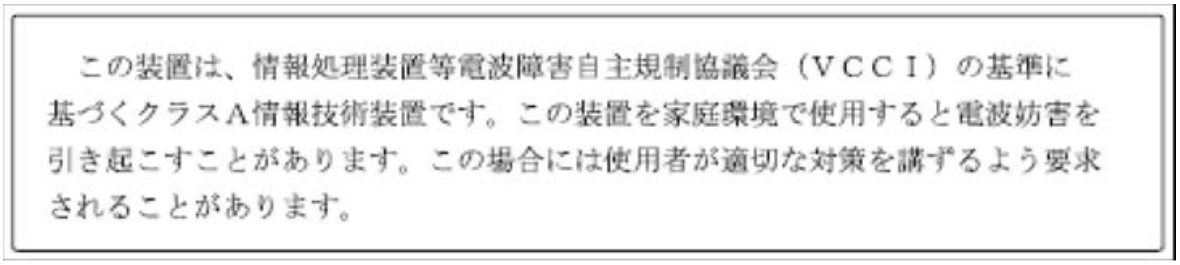

Figure 15: VCCI (Japan)

BSMI (Taiwan)

The BSMI ID certification number and EMC warning are located on the outside rear area of this product.

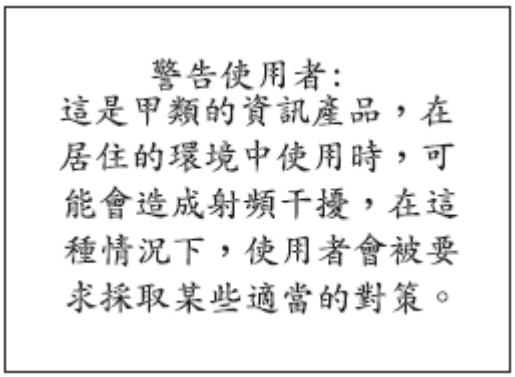

Figure 16: BSMI (Taiwan)