



Intel[®] Entry Server Platform SR1325TP1E

Technical Product Specification

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Enterprise Platforms and Services Marketing

Revision History

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March 3, 2004	1.0	Technical Review Completed.
April20th, 2004	1.1	MTBF Corrections.

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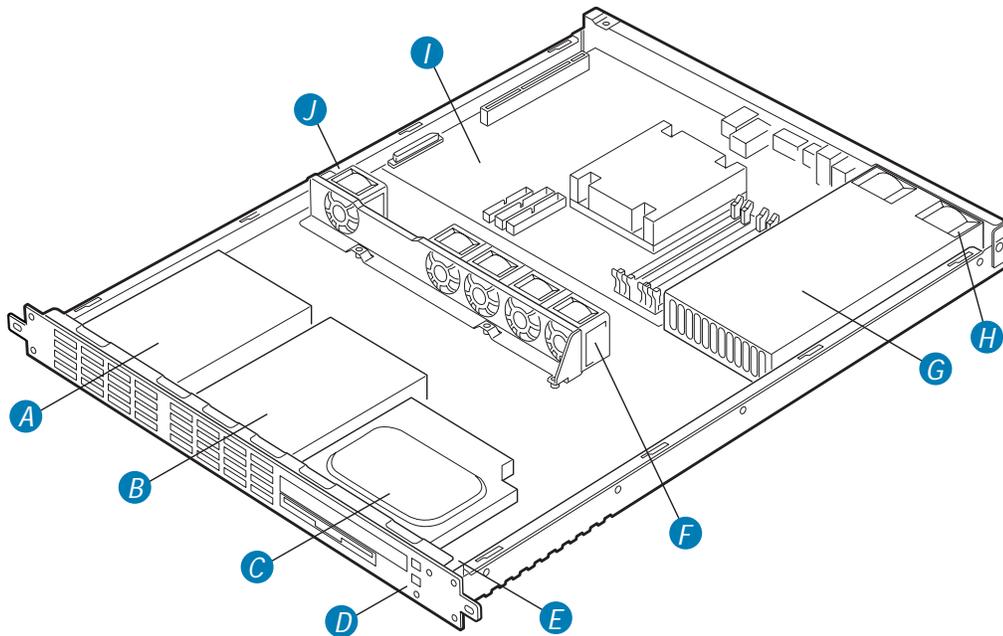
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1. Feature Summary

The Intel® Entry Server Platform SR1325TP1E includes a 1U server chassis and the Intel® Server Board SE7210TP1E. Intel-based server boards and chassis have feature sets designed to support the high-density server market.

The server board SE7210TP1-E installed in the chassis is a monolithic printed circuit board with features that were designed to support the general-purpose server market. The architecture is based on the Intel® 827210 chipset and is capable of supporting one Intel® Pentium® 4 processor and up to 8GB of memory.

The components available with this server platform are diagrammed below. The server platform is offered only in the black color.



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- | | |
|--|-----------------------------|
| A. Hard Disk Drive 1 (drive purchased separately) | F. Front Fan Module |
| B. Hard Disk Drive 2 (drive purchased separately) | G. Power Supply |
| C. Floppy / CD-ROM / DVD-ROM Drive Module
(drive(s) purchased separately) | H. Power Supply Fans |
| D. Front Panel Controls and Indicators | I. Server Board SE7210TP1-E |
| E. Front Panel Board | J. Chassis Intrusion Switch |

Figure 1. System Components

1.1 Server Board Feature Set

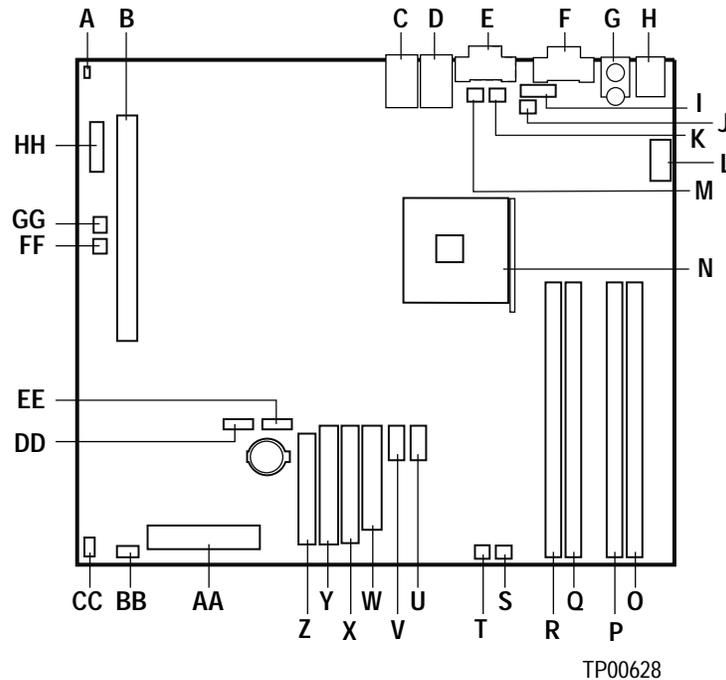
The server board provides the following feature set:

Table 1. Server Board Features

Feature	Description
Processors	Support for one Intel® Pentium® 4 processor or one Intel® Celeron® processor in an mPGA478 package with a 800/533/400 MHz system bus
Memory	<ul style="list-style-type: none"> ▪ Four 184-pin DDR SDRAM Dual Inline Memory Module (DIMM) sockets ▪ Support for up to 4 GB Unbuffered ECC system memory ▪ Support for single-sided or double-sided DIMMs (DDR266/333/400) <ul style="list-style-type: none"> ○ To run DDR400 memory at full speed requires an Intel Pentium 4 processor with 800 MHz system bus frequency. ○ To run DDR333 memory at full speed requires an Intel Pentium 4 processor with 533 MHz system bus frequency. ○ Note: DDR333 memory will run at 320 MHz frequency when using an Intel Pentium 4 processor with system bus frequency of 800 MHz. ○ DDR266 memory may only be used with an Intel Pentium 4 processor with 400 MHz or 533 MHz system bus frequency.
Chipset	Intel® 827210 chipset, consisting of: <ul style="list-style-type: none"> ▪ Intel® 827210 Memory Controller Hub (MCH) ▪ Intel® 6300ESB I/O Controller Hub ▪ Intel® 82802AC 8 Megabit Firmware Hub (FWH)
I/O Control	Winbond* W83627HF-AW LPC Bus I/O controller chip that provides all PC-compatible I/O (floppy, serial, keyboard and mouse)
Peripheral Interfaces	<ul style="list-style-type: none"> ▪ Three external USB 2.0 ports on the back panel with an additional internal header ▪ One serial port and one serial header ▪ Two IDE interfaces with Ultra33, 66 and 100 DMA mode ▪ Two Serial ATA connectors with support for RAID 0 and 1 ▪ One floppy drive interface with support for one drive ▪ PS/2* keyboard and mouse ports
LAN	One Intel® 82547EI Platform LAN Connect (PLC) device for 10/100/1000 Mb/s Ethernet LAN connectivity One Intel® 82551QM device for 10/100 Mb/s Ethernet LAN connectivity
Expansion Capabilities	One low profile PCI-X 64-bit PCI slot
Integrated Capabilities	Integrated 2D/3D graphics controller: ATI Rage* XL Video Controller with 8 MB of SDRAM
Fans	Support for up to five system fans in the Server Platform SR1325TP1E configuration.
BIOS	Intel/AMI* BIOS with support for: <ul style="list-style-type: none"> ▪ Advanced Configuration and Power Interface (ACPI) ▪ 8 megabit symmetrical flash memory ▪ Support for SMBIOS
Power Management	Support for ACPI: <ul style="list-style-type: none"> ▪ Suspend to RAM (STR) ▪ Wake on USB, PCI, RS-232, PS/2, LAN, and front panel
Server Management	Intel® Server Management 5.8 support via the mini Baseboard Management Controller (mBMC)

Feature	Description
SSI interface support	Server System Infrastructure (SSI)-compliant connectors for SSI interface support: front panel, power connector.

The figure below shows the functional blocks of the server board and the plug-in modules that it supports.



- | | |
|----------------------------------|----------------------------------|
| A. Chassis Intrusion Header | R. DIMM Socket 1A |
| B. PCI Slot | S. System Fan 2 Header |
| C. NIC 2 (10/100Mb) | T. System Fan 1 Header |
| D. NIC 1 (1Gb) | U. Front Panel USB Header |
| E. VGA Connector | V. Auxiliary Power Connector |
| F. Serial Port A Connector | W. Main Power Connector |
| G. PS/2 Keyboard/Mouse Connector | X. Secondary IDE Connector |
| H. USB Back Panel Connector | Y. Primary IDE Connector |
| I. Serial Port B Connector | Z. Floppy Connector |
| J. Processor Fan Header | AA. Front Panel Connector |
| K. System Fan 3 Header | BB. Hot Swap Backplane Connector |
| L. 12V CPU Power Connector | CC. SCSI LED Header |
| M. System Fan 4 Header | DD. SATA 1 Connector |
| N. Processor Socket | EE. SATA 2 Connector |
| O. DIMM Socket 2B | FF. System Fan 6 Header |
| P. DIMM Socket 2A | GG. System Fan 5 Header |
| Q. DIMM Socket 1B | HH. Jumper Block |

Figure 16. Intel® Server Board SE7210TP1-E Diagram

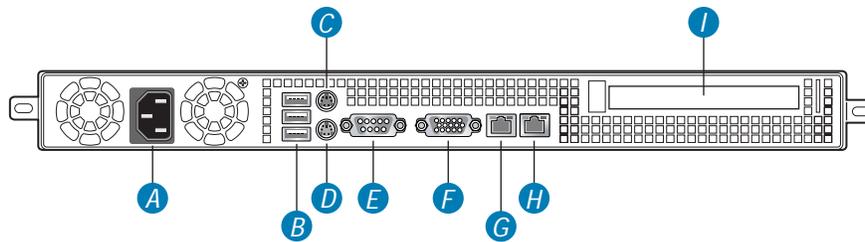
1.2 Chassis Dimensions

Table 2. Chassis Dimensions

Height	42.8 mm	1.685 Inches
Width	430 mm	16.93 Inches
Depth	609.2 mm	23.89 Inches

1.4 Platform Back I/O Ports and Features

The I/O connector cutouts are integrated to the back panel to optimize cooling. The figure below shows the rear of the server platform.

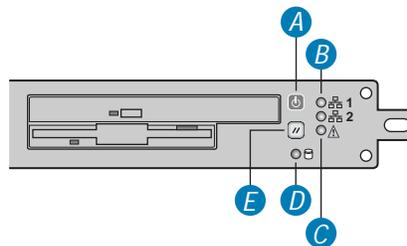


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- A. AC Power Connector
- B. USB Ports 1, 2, 3
- C. Mouse Connector
- D. Keyboard Connector
- E. Serial Port A
- F. Video Connector
- G. NIC1 Connector (1 Gbit)
- H. NIC2 Connector (10/100 Mbit)
- I. PCI Card Bracket (full height)

Figure 2. Chassis Rear

1.5 Platform Front Panel



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- A Power button and power LED
- B Network activity LEDs (NIC1 top, NIC2 bottom)
- C System fault LED
- D Hard drive activity LED
- E Reset button

Figure 3. Chassis Front Panel

1.5.1 Front Panel Controls and Indicators

The front panel controls and indicators are defined below:

Table 3. Control Button Functions

Power/Sleep button	Toggles the system power on/off. Sleep button for ACPI-compatible operating systems.
Reset button	Reboots and initializes the system.

Table 4. LED Indicator Status

NIC 1 Activity LED	Continuous green light indicates a link between the system and the network to which it is connected. Blinking green light indicates network activity.
NIC 2 Activity LED	Continuous green light indicates a link between the system and the network to which it is connected. Blinking green light indicates network activity.
Power/Sleep LED	Continuous green light indicates the system has power applied to it. Blinking green light (Note 1) indicates the system is sleeping. No light indicates the system does not have power applied to it (other than 5 V standby power).
Hard Disk Drive Activity LED	Random blinking green light indicates hard disk drive activity (SCSI or IDE). Continuous amber light (Note 3) indicates hard disk drive fault (SCSI or IDE). No light indicates no hard disk drive activity.
System Fault LED	LED illuminates if a system fault is detected.

Notes:

1. The amber status takes precedence over the green status. When the amber LED is on or blinking, the green LED is off.
2. The power LED sleep indication is maintained on standby by the chipset. If the system is powered down without going through BIOS, the LED state in effect at the time of power off will be restored when the system is powered on until the BIOS clears it. If the system is not powered down normally, it is possible that the power LED will be blinking at the same time that the system status LED is off due to a failure or configuration change that prevents the BIOS from running.
3. In order for a hard disk fault indication to occur, an Intelligent Platform Management Interface (IPMI)-based satellite management controller must send a Set Fault Indication command to the Baseboard Management Controller (BMC).

1.6 Power Supply

The power supply is rated for 250 watts of power at the following voltages:

- 100–127 volts (V) ~ at 50/60 Hertz (Hz); 5.67 amperes (A) maximum (max)
- 200–240 V ~ at 50/60 Hz; 2.89 A maximum

The power subsystem supports implementation of remote management features including remote enable that permits power to be activated from a variety of sources.

The power supply is rated for 250 watts of power at the following voltages:

Table 5. AC Input Rating

Parameter	Minimum	Rates	Maximum	Max Input AC Current
Voltage (115)	90 V	100-127 V	140 V	5.67 A1
Voltage (220)	180 V	200-240 V	264 V	2.89 A2
Frequency	47 Hz	50/60	63 Hz	

Notes:

- Maximum input current at low input voltage range was measured at 90Vac, at max load.
- Maximum input current at high input voltage range was measured at 180VAC, at max load.

1.7 System Cooling

The server platform includes five fans for cooling the processor(s), hard drives, and PCI cards. These fans are located in a fan module at the center of the chassis. See Figure 4.

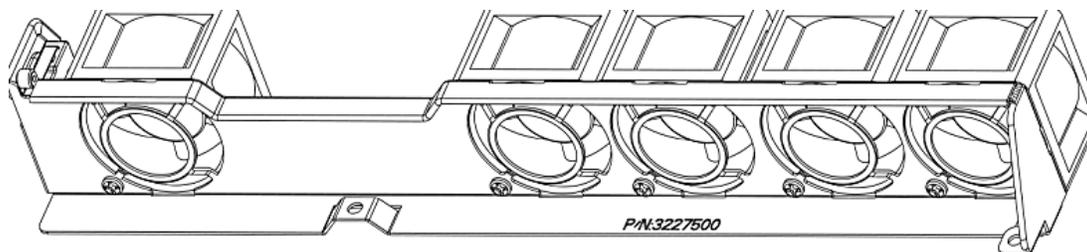


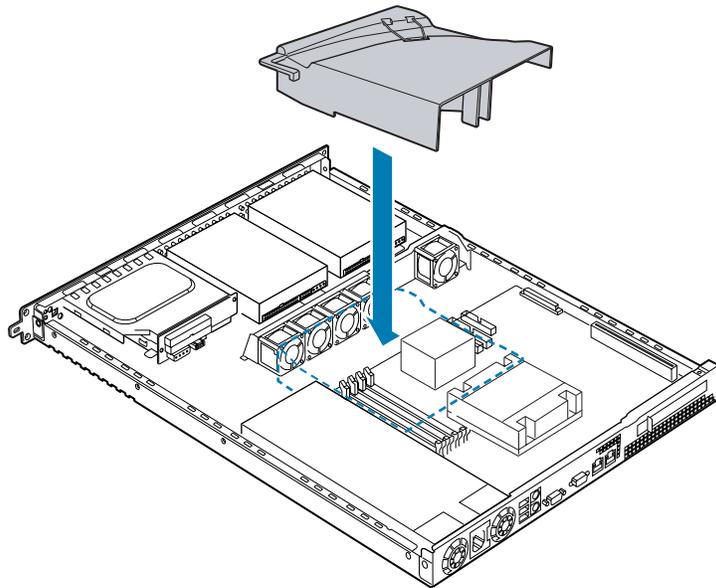
Figure 4. Fan Module

These fans are not hot-swappable. To replace the fans, you must first remove the system from service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet.

The power supply contains two built-in fans. These fans cannot be replaced without replacing the power supply.

The chassis is designed to provide sufficient cooling for all internal components of the server including the power subsystem, server board, processors, memory, add-in PCI cards, and installed hard drives and removable media drives.

The cooling subsystem is dependent upon proper airflow. The designated cooling vents on both the front and back of the chassis must be left open and must not be blocked. Internal cables must be routed in a manner that does not impede airflow. Air flows through the system from front to back.



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Figure 7. Passive Heatsinks and Processor Air Duct

1.8 Fan Monitoring

The fans provided in the Server Platform SR1325TP1E contain a tachometer signal that can be monitored by the server management subsystem for the Server Board SE7210TP1-E. See the *Intel® Server Board SE7210TP1-E Technical Product Specification* for details about the tachometer signal and the server management subsystem.

1.9 Platform Security

The platform includes a preinstalled intrusion switch located on the left side of the chassis. This switch can be monitored by server management software. When the cover is opened, the switch transmits a signal to the Mini Baseboard Management Controller (mBMC) on the server board. Through server management software, the system can be programmed to respond to an intrusion by powering down or by locking the keyboard.

1.10 Rack and Cabinet Mounting Options

The chassis was designed to support server cabinets that are 19" wide by up to 30" deep. The chassis comes equipped with a relay rack or cabinet mount kit that can be configured to support front-mount or mid-mount two-post racks and four-post cabinets. Intel sells an optional sliding rail kit that is used to mount the chassis into a standard (19" x up to 30" deep) EIA-310D compatible server cabinet.

When mounting the server into a cabinet, the front mount brackets are attached to the front of the chassis, and a set of rear support brackets are attached to the back of the cabinet. This allows the weight of the server to be evenly distributed to prevent the mounting rails on the cabinet from bending.

Caution should be used when selecting the two-post, front-mount only option. Even though the rail mount kit hardware was designed to support the weight of the system, some two-post relay racks may not support the weight, causing the racks to fail. Only use relay racks that were specifically designed to support the weight and stresses of a two-post, front-mount-only chassis.

2. Power Sub-System

2.1 Power Supply

The 250W power supply supports Power Factor Correction (PFC) and accepts AC input directly from the power source. The power sub-system includes a remote enable feature, which permits the power to be activated from a variety of sources and allows the implementation of other remote management features.

2.2 Power Supply Cable Connectors

2.2.1 Server Board Power Connector

The following table provides the pin-out for the server board power cable connector.

- Connector housing: 20-pin Molex* Mini-Fit Jr. 39-01-2200 or equivalent
- Contact: Molex Mini-Fit, Female, Crimp 44476 or equivalent

Table 6. P1 Baseboard Power Connector

Pin	Signal	18 AWG Color	Pin	Signal	18 AWG Color
1*	+3.3VDC	Orange	11	+3.3VDC	Orange
	+3.3VRS	Orange/White (22AWG)	12	-12VDC	Blue
2	+3.3VDC	Orange	13	COM	Black
3	COM	Black	14	PSO#	Green
4	+5VDC	Red	15 ¹	COM	Black
5	COM	Black		COM VS (+3.3V)	Black (22AWG)
6	+5VDC	Red	16	COM	Black
7	COM	Black	17 ¹	COM	Black
8	PWR OK	Gray		COM VS (+5V)	Black (22AWG)
9	5 Vsb	Purple	18	Reserved	N.C.
10 ¹	+12VDC	Yellow	19	+5VDC	Red
	+12VS	Yellow/White (22AWG)	20 ¹	+5VDC	Red
				+5VVS	Red/White (22AWG)

Note:

1. Remote sense wire double crimped

2.2.2 Processor Power Connector (P2)

- Connector housing: 4-pin Molex Mini-fit Jr.39-01-3042 or equivalent
- Contact: Molex 44476-1111 or equivalent

Table 7. P2 Processor Power Connector

Pin	Signal	18 AWG color	Pin	Signal	18 AWG Color
1	COM	Black	3	+12VDC	Yellow
2	COM	Black	4	+12VDC	Yellow

2.2.3 Peripheral Power Connector (P3, P4 and P5)

- Connector housing: Amp* 1-480424-0 or equivalent;
- Contact: Amp 61314-1 contact or equivalent

Table 8. P3, P4, and P5 Peripheral Power Connector

Pin	Signal	18 AWG Color
1	+12VDC	Yellow
2	COM	Black
3	COM	Black
4	+5VDC	Red

2.2.4 Airflow and Acoustic Requirements

The power supply must provide cooling to both the supply and partially to the system. To meet the minimum system requirements, the power supply shall limit its acoustic sound pressure level to not exceed a noise level of 42-dBA measured at one meter on all faces at 35°C ambient temperature and 80% maximum output load.

A two-speed fan control or an analog fan control is a requirement for this specification. The power supply shall incorporate two 40mm fans for self-cooling and system cooling located. The fans will provide no less than 10 CFM airflow through the power supply when installed in the system. The cooling air will enter the power module from the non-AC side

2.2.5 Temperature Requirements

The power supply shall operate within all specified limits over the T_{op} temperature range. All airflow shall pass through the power supply and not over the exterior surfaces of the power supply.

Table 9. Thermal Requirements

Item	Description	Minimum	Maximum	Units
------	-------------	---------	---------	-------

Top	Operating temperature range.	0	45	°C
Tnon-op	Non-operating temperature range.	-40	70	°C
Altitude	Maximum operating altitude.		1800	meter

The power supply must meet UL enclosure requirements for temperature rise limits. All sides of the power supply except for the air exhaust side must be classified as “Handle, knobs, grips, etc. held for short periods of time only”.

2.3 Output Power / Currents

The following tables define two power and current ratings for this 250W power supply. The combined output power of all outputs shall not exceed the rated output power. The power supply must meet both static and dynamic voltage regulation requirements for the minimum loading conditions.

Table 10. Load Ratings, Load Range 1

Voltage	Minimum Continuous Load	Maximum Continuous Load1	Peak Load2, 3
+3.3V4	1.5 A	14 A	
+5V4	1.0 A	18 A	
+12V	1.0 A	15 A	16.5 A
-12V	0 A	0.3 A	
+5VSB	0.1 A	2.0 A	2.5 A

Table 11. Load Ratings, Load Range 2

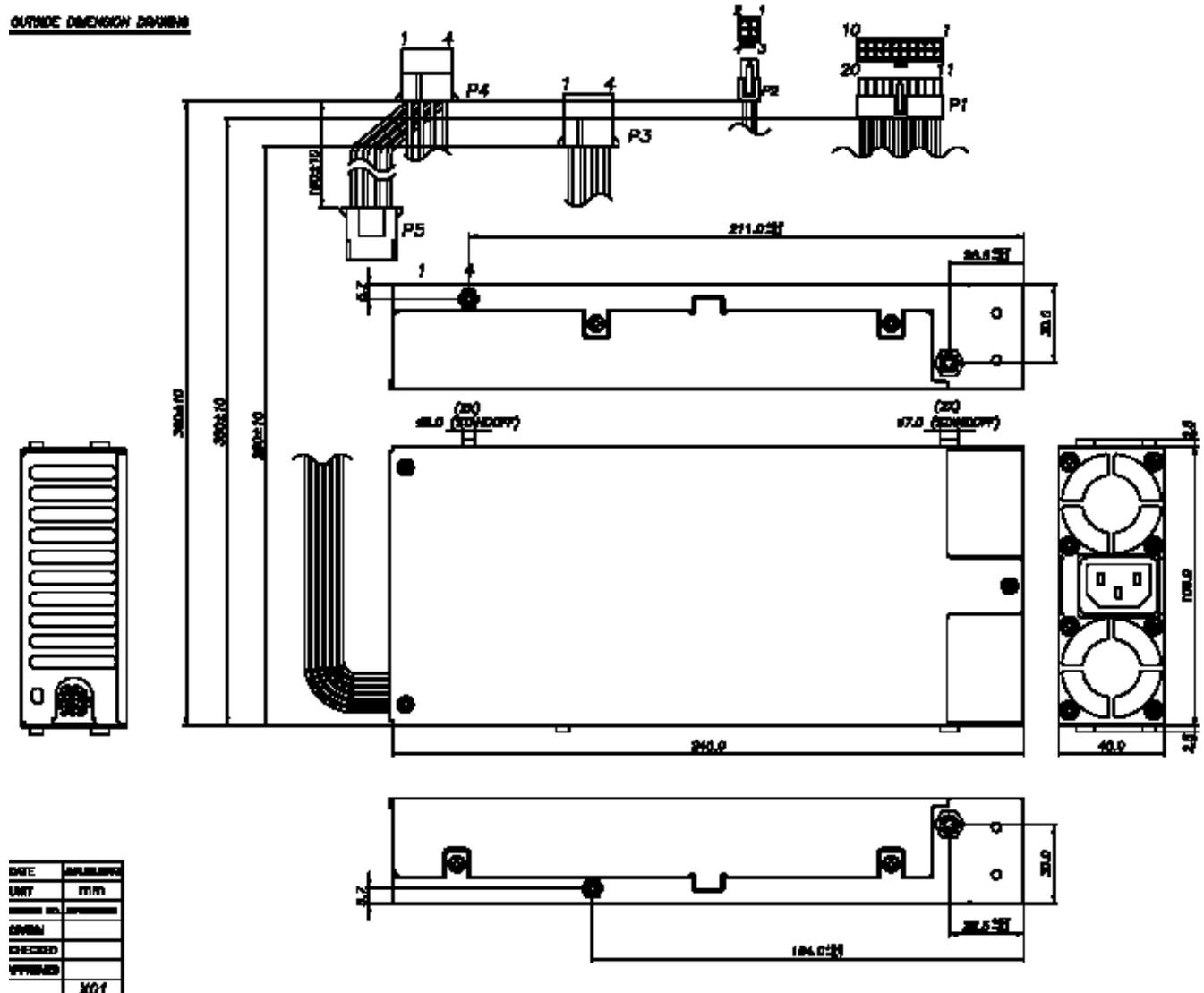
Voltage	Minimum Continuous Load	Maximum Continuous Load1	Peak Load2, 3
+3.3V4	0.2 A	5.0 A	
+5V4	0.2 A	5.0 A	
+12V	0.2 A	8.0 A	
-12V	0 A	0.3 A	
+5VSB	0.1 A	2.0 A	

Table 10 and Table 11 Notes:

1. Maximum continuous total DC output power should not exceed **250W**.
2. Peak total DC output power should not exceed **275W**.
3. Peak power and peak current loading shall be supported for a minimum of **12 seconds**.
4. Combined 3.3V/5V power shall not exceed **90W**.

2.3.1 Power Supply Mechanical Specifications

The physical size of the power supply enclosure is intended to accommodate power ranges from 250 watts. The power supply size is 40mm x 106mm x 240mm and has a wire harness for DC outputs. See the following drawing.



Notes:

1. All dimensions are in MM
2. All tolerances are +15-0MM
3. Install one tie wrap within 12MM of PSU case
4. Mark reference designator on each connector
5. Tie-wrap each harness at approximately mid-point or at point shown.

Figure 5. Enclosure and Wire Harnesses

2.3.2 Over-temperature Protection (OTP)

The power supply is protected against over-temperature conditions caused by the loss of fan cooling or excessive ambient temperature. In an OTP condition the power supply unit will shut down. The 5VSB remains on.

When the power supply temperature drops to within specified limits, the power supply will restore power automatically. The OTP circuit must have built in hysteresis such that the power supply will not oscillate on and off due to temperature recovering condition. The OTP trip level shall have a minimum of 4°C of ambient temperature hysteresis.

2.3.3 Over-voltage Protection (OVP)

The power supply over-voltage protection is locally sensed. The power supply shall shutdown and latch off after an over-voltage condition occurs. This latch shall be cleared by toggling the PSON[#] signal or by an AC power interruption. Table 12 contains the over-voltage limits. The values are measured at the output of the power supply's pins. The voltage shall never exceed the maximum levels when measured at the power pins of the power supply connector during any single point of fail. The voltage shall never trip any lower than the minimum levels when measured at the power pins of the power supply connector. 5Vsb will be auto-recovered after removing OVP limit.

Table 12. Over-voltage Protection (OVP) Limits

Output Voltage	Minimum (V)	Maximum (V)
+3.3V	3.9	4.5
+5V	5.7	6.5
+12V	13.3	15
-12V	-13.3	-15
+5VSB	5.7	6.5

2.3.4 Over-current Protection (OCP)

The power supply shall have current limit to prevent the +3.3V, +5V, and +12V outputs from exceeding the values shown in Table 13. If the current limits are exceeded, the power supply will shutdown and latch off. The latch will be cleared by toggling the PSON[#] signal or by an AC power interruption. The power supply shall not be damaged from repeated power cycling in this condition. -12V and 5VSB shall be protected under over-current or shorted conditions so that no damage can occur to the power supply. 5VSB will be auto-recovered after removing OCP limit.

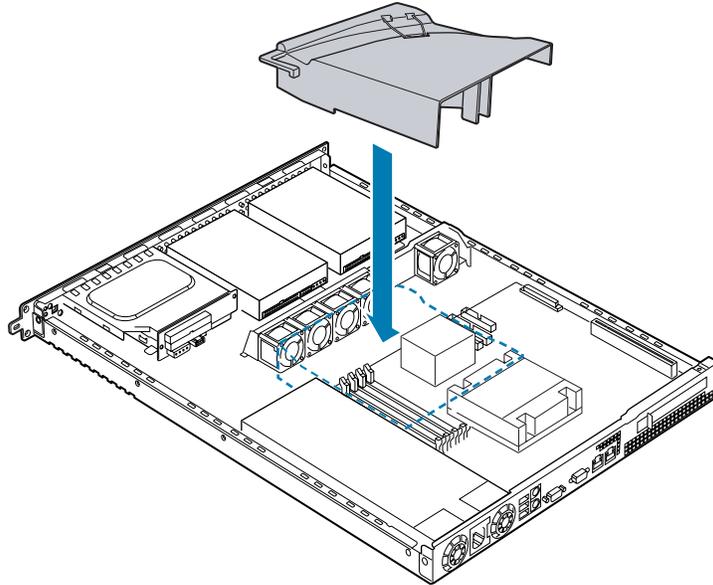
Table 13. Over-current Protection (OCP)

Voltage	Over Current Limit	
	Minimum	Maximum
+3.3V	16A	25A
+5V	19A	30A
+12V	18A	20A
-12V	0.6A	2A
5VSB	2.5A	5A

3. Chassis Cooling

3.1 Processor Cooling

The air duct must be installed to maintain necessary airflow and cooling for the processor subsystem. The processor subsystem must include the passive heatsink installed on top of the processor.



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Figure 6. Processor Air Duct Installation

3.2 Five-Fan Module

A 3-wire cable/connector provides each fan with power and tachometer lines, allowing server management software to independently monitor each fan. The cable/connectors attach to 3-pin headers on the server board for each fan.

The fans in the Server Platform SR1325TP-E will slow down based on the ambient temperature external to the system. A sensor on the leading edge of the server board measures the air temperature coming into the system. If this temperature indicates that the external ambient temperature is low (<23C), the system fan speed will be set to low.

For each degree of increase in the incoming air temperature, up to an approximate temperature of 35C, the fan speed will increase until the fans run. This ensures adequate cooling of all system components.

Table 14. Fan Module Numbering

Fan	Signal Name	Description
Fan 1	SysFan5	System fan header
Fan 2	SysFan6	System fan header
Fan 3	SysFan1	System fan header
Fan 4	SysFan2	System fan header
Fan 5	SysFan3	System fan header

If any fan within the module fails, the mBMC will report failure with the fan.

The fan module is not hot swappable. However, if a fan fails, the individual fans can be replaced within the module after powering the server off and unplugging the server platform from the AC power source.

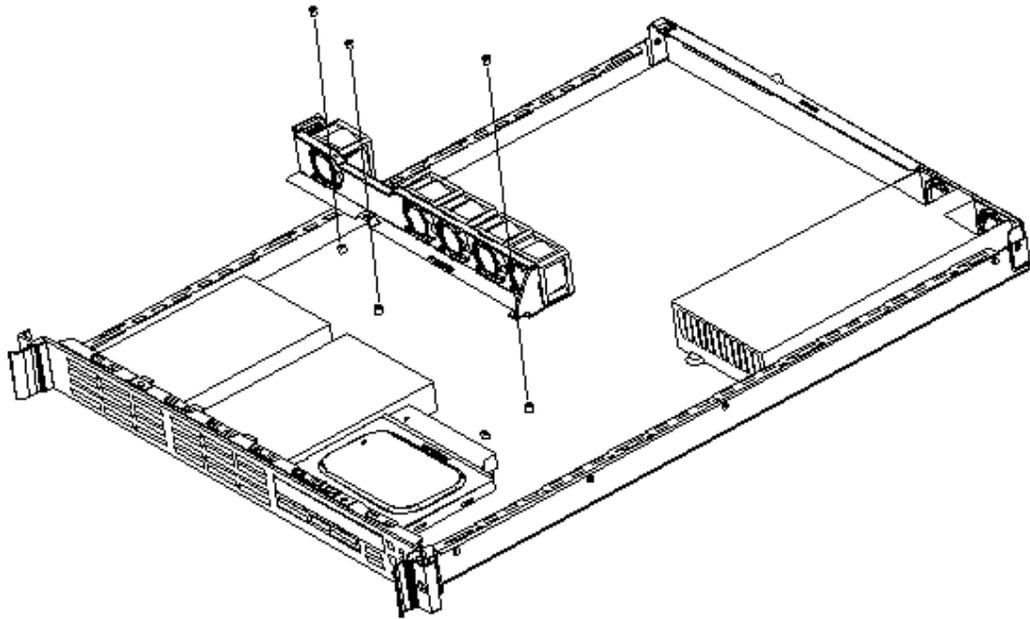
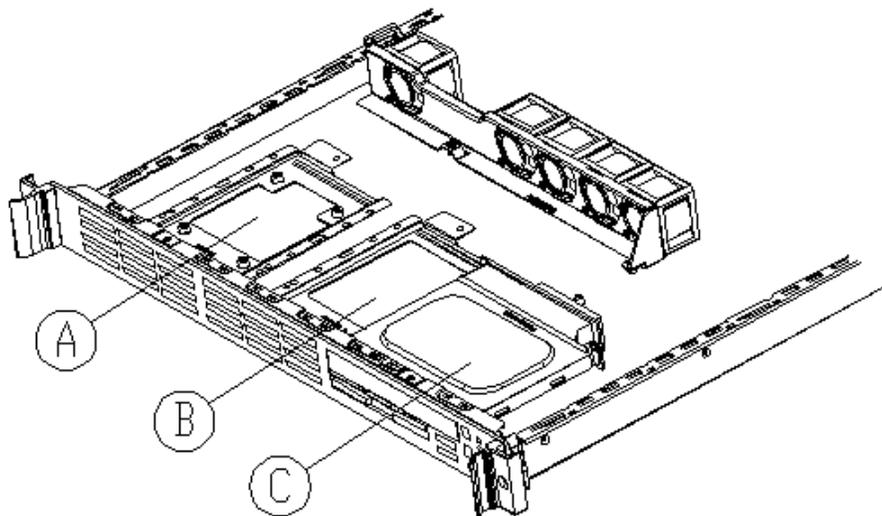


Figure 7. Fan Module Extraction

4. Chassis Peripheral Bays

The Server Platform SR1325TP1E provides two internal drive bays and one slimline floppy/CD-ROM bay at the front of the chassis. The chassis KDK includes the AKACDFLOPPY interface board and cabling for the CD-ROM/DVD-ROM drive and floppy drive.



- A. Hard drive bay (drive not included)
- B. Hard drive bay (drive not included)
- C. Slimline CD-ROM drive/floppy disk drive or third hard drive (accessories sold separately)

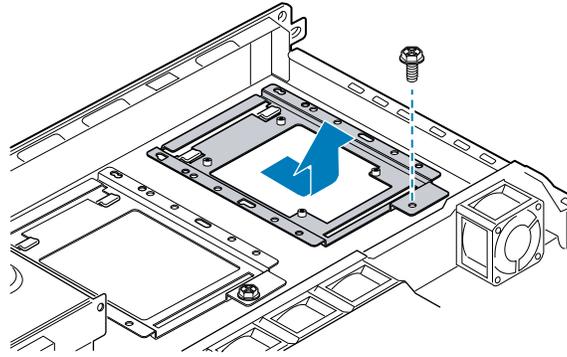
Figure 8. Peripheral Bays

4.1 Hard Disk Drive Bays

The Server Platform SR1325TP1E ships with support for two internal, 3.5-inch by 1 inch hard disk drives. These drives can be IDE, SCSI, or Serial ATA (SATA). For IDE and Serial ATA drives, the data cables are included. For SCSI support, a separate cable kit must be ordered. The SCSI cable kit (AKASCSICABLE) includes:

- One SCSI cable that supports up to two drives
- One terminator for your SCSI devices

Each hard drive must be mounted to a fixed drive bracket. The drives cannot be hot swapped. Attempting to hot swap any of the drives may cause damage to the hard drive and/or cause loss of data.



TP00428_TPS

Figure 9. Drive Bracket Assembly Removal from Chassis

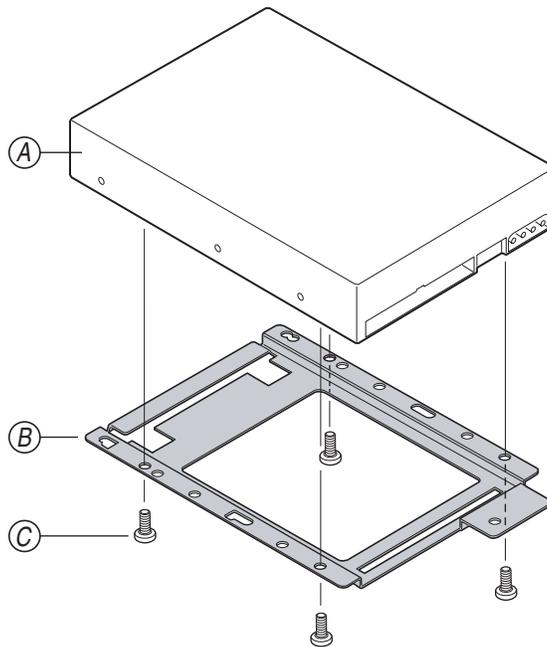


Figure 10. Drive Bracket Assembly

- A Hard disk drive (not included with system)
- B Hard disk bracket
- C Hard disk mounting screws

4.2 Floppy/CD-ROM/DVD-ROM or Third Hard Drive

A third hard drive or a floppy/CD-ROM/DVD-ROM drive can be installed into the position marked “C” in Figure 8. An additional accessory kit must be purchased to install these drives. It is not possible to install both a third hard drive and a floppy / CD-ROM drive.

4.2.1 Third Hard Drive

The third hard drive kit (ATPA3UPHDKIT) is available to support a third hard drive. This hard drive is installed at the right front of the chassis and replaces the drive cage that is used to install a floppy, DVD-ROM, or CD-ROM drive. The accessory kit for the third hard drive includes a hard drive bracket, a filler panel for the front of the chassis, and three Serial ATA cables to provide connection support for an add in SATA PCI card.

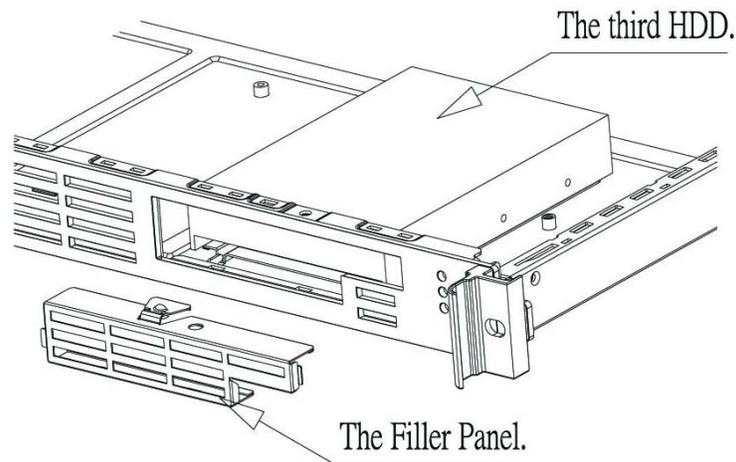


Figure 11. Third Hard Drive Installed

4.2.2 Floppy/CD-ROM/DVD-ROM Drive

The server platform comes with the backplane board and cable required to install a floppy drive, CD-ROM drive, or DVD-ROM drive, but the drives themselves must be ordered separately. The order codes are as follows:

- Slimline CD-ROM Drive: AXXSCD
- Slimline Floppy Drive: AXXSFLOPPY

One of the following drive combinations can be used:

- Floppy drive alone
- CD-ROM drive alone
- CD-ROM/DVD-ROM combo drive alone
- Floppy drive and CD-ROM drive
- Floppy drive and CD-ROM/DVD-ROM combo drive

The general installation process is as follows. For complete instructions, refer to the instruction manual that comes with the drive kit.

1. Power down the server platform and detach the AC power source.
2. Remove the chassis cover.
3. Remove the slimline drive cage.
4. Remove the top from the drive cage.
5. The flat flex cable is a short cable included in the hardware kit that came with your server platform. Attach the flat flex cable to the floppy drive.
6. Install the CD-ROM / DVD-ROM / Floppy drive(s).
7. Attach the top of the drive cage.
8. Install the backplane board.
9. Install the drive cage into the chassis.
10. Attach the power cable(s).

Note: Drives can consume up to 17 watts of power each. Drives must be specified to run at a maximum ambient temperature of 50°C.

The Server Platform SR1325TP1E includes a backplane board that connects to the slimline drive(s) that you can install. This board is shown in the following diagram. This board and the installed drives cannot be hot swapped. The system must be powered down before slimline drives can be inserted or removed.

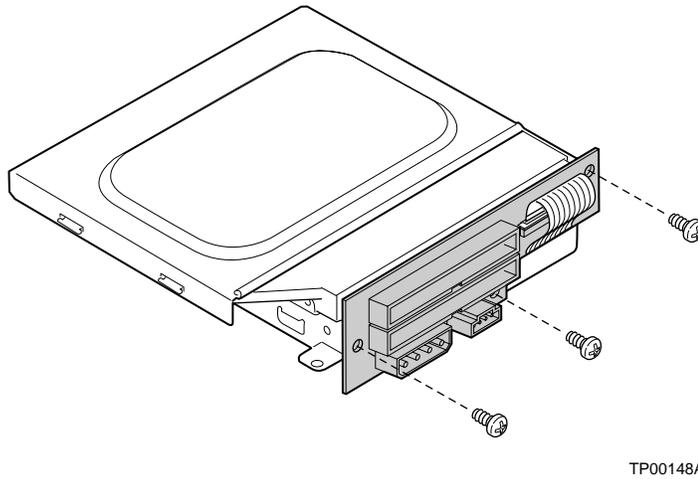


Figure 12. Optional Floppy/CDROM Drive Module

CAUTION: The Intel Server Platform SR1325TP1E does not support all slimline vendors for floppy and CD/DVD drives. To see a list of validated manufacturers and hard drive types, see: <http://support.intel.com/support/motherboards/server>

5. Front Panel Assembly

5.1 Front Panel Buttons

The front panel assembly houses two control buttons. These are listed in the following table.

Table 15. Control Button and Intrusion Switch Functions

Feature	Function
SW1 Power/Sleep Button	Toggles the system power on/off. This button is also used as a sleep button for operating systems that follow the ACPI specification.
SW2 Reset button	Reboots and initializes the system.

5.2 Front Panel Assembly Connectors

The front panel assembly is connected to the server board with a front panel cable. The front panel cable is both ATX and SSI compliant.

The front panel assembly interface board has one internal connector:

- A 15-pin header provides control and status information from the baseboard to the front panel board.

5.3 Front Panel System Status LED Indicators

The front panel houses five LEDs viewable to display the system's operating state. The LEDs provide a status for the following system states:

Table 16. Front Panel LED Functions

LED	Color	State	Description
NIC1 / NIC2 Activity	Green	Random Blink	Provides an indicator for NIC activity
System Fault (on standby power)	Amber	On	Critical or Non-Recoverable Condition.
		Blink ^{1,2}	Non-Critical condition.
	Off	Off	POST/System Stop.
Disk Activity	Green	Random Blink ¹	Provides an indicator for disk activity.
	Off	Off	No hard disk activity

Notes:

1. Blink rate is ~1 Hz with at 50% duty cycle.
2. Off when the system is powered off (S4/S5) or in a sleep state (S1).

5.3.1 System Fault LED

5.3.1.1 Critical Condition

Any critical or non-recoverable threshold crossing associated with the following events:

- Temperature, voltage, or fan critical threshold crossing.
- Power subsystem failure. The BMC asserts this failure whenever it detects a power control fault (e.g., the BMC detects that the system power is remaining on even though the BMC has deasserted the signal to turn off power to the system).
- The system is unable to power up due to incorrectly installed processor(s), or processor incompatibility.
- Satellite controller sends a critical or non-recoverable state, via the *Set Fault Indication* command to the BMC.
- “Critical Event Logging” errors, including: System Memory Uncorrectable ECC error and Fatal/Uncorrectable Bus errors, such as PCI SERR and PERR.

5.3.1.2 Non-Critical Condition

- Temperature, voltage, or fan non-critical threshold crossing.
- Chassis intrusion.
- Satellite controller sends a non-critical state, via the *Set Fault Indication* command, to the BMC.
- *Set Fault Indication* command from system BIOS. The BIOS may use the *Set Fault Indication* command to indicate additional, non-critical status such as system memory or CPU configuration changes. Refer to the *Intel Server Board BIOS External Product Specification Revision 1.0* for further details.

5.3.1.3 Degraded Condition

- One or more processors are disabled by Fault Resilient Boot (FRB) or BIOS.
- BIOS has disabled or mapped out some of the system memory.

6. PCI Riser Cards

The server platform supports one single-slot PCI riser card. The riser card supports a single 32-bit, 33MHz, 3.3V add-in card; or a single 64-bit, 100MHz, 3.3V PCI add-in card. The PCI slot on the riser card has a maximum speed of 100MHz.

Before using the riser card, verify that the BIOS is the current version available for the server board. BIOS upgrades are available at <http://support.intel.com/support/motherboards/server/>. Follow the directions included with the download to update the BIOS.

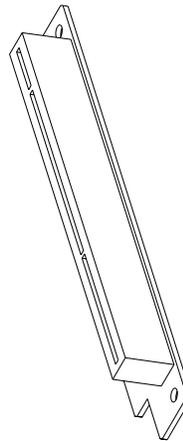


Figure 13. 1U PCI Riser Card Mechanical Drawing

7. System Interconnection

7.1 Signal Definitions

The connector pinouts for the server board are defined in the server board Technical Product Specification (TPS).

7.2 Chassis Internal Cables

The following cables are provided as part of the chassis kit:

7.2.1 Front Panel Cable

A 34-conductor ribbon cable with 34-pin IDC* connectors links the front panel and the SSI EEB Revision 3.0-compliant Server Board SE7210TP1-E.

7.2.2 Fan Connectors

The installed system fans provide 3-pin connectors designed to mate with SSI (ATX*)-compatible fan headers.

7.3 Server Board Internal Cables

Depending on the specific server board support of these features, some or all of the following cables may not be included as part of the boxed board kit:

- CD-ROM Cable: Two 40-pin, 80-conductor DMA33/66/100 IDE cable.
- SCSI Cable: One 68-pin, 68-conductor twisted-pair wide SCSI cable with terminator. Cable supports connection of up to two SCSI drives to the server board (AKASCSIKIT Accessory).
- Floppy Cable: One 34-conductor cable featuring two 34-pin IDC connectors (2x17) floppy cable board.

7.4 Accessory Cables

7.2.1 IDE HDD cable and Serial HDD cable

- IDE HDD cable: One DMA33/66/100 IDE, 80 conductor, 40pin cable with three connectors.
- HDD SATA cable: Two 7-pin,7-conductor twisted-pair length 270mm and 360mm are included with the server platform.
The third hard drive kit includes three additional SATA cables. The cables in the hard drive kit are longer than the cables included with the server platform.

7.5 I/O Panel Connectors

The specific panel used is provided in the boxed server board kit. The following are the I/O panel connections:

- PS/2 keyboard connector: Provides connection with a PS/2 keyboard.
- PS/2 mouse connector: Provides connection with a PS/2 mouse.
- 9-pin serial port(s): Provides connection with serial port devices.
- USB ports (3): Provides connection with USB devices.
- 15-pin video port: Outputs the video signal to the screen.
- RJ45 Gbit LAN connector: Provides the rate of gigabit transmission.
- RJ45 10/100 LAN connector: Provides connection at the rate of 10Mbit or 100Mbit transmission.

8. Regulatory Information

CAUTION

Integration of this subassembly is a regulated activity; you must adhere to the assembly provided in this document and product assembly documents to ensure and maintain compliance with existing product regulations. Use only the described, regulated components specified in this guide. Use of other products / components will void the UL listing of the product, will most likely void other compliance markings provided, and may result in noncompliance with product regulations in the region(s) in which the product is sold.

8.1 Regulatory Compliance

This subassembly, when correctly integrated, complies with the following safety and electromagnetic compatibility (EMC) regulations.

8.1.1 Safety Standards

- UL 1950 - CSA 950-95, Third Edition, July 28, 1995 - The Standard for Safety of Information Technology Equipment including Electrical Business Equipment (USA and Canada). This product has been evaluated and complies with UL1950 – CSA 950-95 Third Edition. However, if a UL1950 Second Edition modem telecommunications add-in card is used, the system will be deemed to comply with UL 1950 Second Edition/CSA950-93.
- EN 60 950, Second Edition, 1992 (with Amendments 1, 2, and 3) - The Standard for Safety of Information Technology Equipment including Electrical Business Equipment. (European Union).
- IEC 950, Second Edition, 1991 (with Amendments 1, 2, 3 and 4) - The Standard for Safety of Information Technology Equipment including Electrical Business Equipment. (International).
- EMKO-TSE (74-SEC) 207/94 - Summary of Nordic deviations to EN 60 950. (Norway, Sweden, Denmark, and Finland).

8.1.2 EMC Regulations

- FCC Class B - Title 47 of the Code of Federal Regulations, Parts 2 and 15, Subpart B, pertaining to unintentional radiators. (USA)
- CISPR 22, Second Edition, 1993, Amendment 1, 1995 - Limits and methods of measurement of Radio Interference Characteristics of Information Technology Equipment. (International)
- EN 55 022, 1995 - Limits and methods of measurement of Radio Interference Characteristics of Information Technology Equipment. (Europe)
- EN 50 082-1, 1992 - Generic Immunity Standard. Currently, compliance is determined via testing to IEC 801-2, -3 and -4. (Europe)

- VCCI Class B (ITE) - Implementation Regulations for Voluntary Control of Radio Interference by Data Processing Equipment and Electronic Office Machines. (Japan)
- ICES-003, Issue 2 - Interference Causing Equipment Standard, Digital Apparatus. (Canada)
- Australian Communication Authority (ACA) - Australian C-tick mark, limits and methods of measurement radio interference characteristics of information technology equipment to ASNZS 3548 (Australian requirements based on CISPR 22 requirements).
- New Zealand Ministry of Commerce - Australian C-tick mark, limits and methods of measurement radio interference characteristics of information technology equipment to ASNZS 3548 (New Zealand requirements based on CISPR 22 requirements). New Zealand authorities accept ACA C-Tick Compliance Mark.

8.1.3 Regulatory Compliance Markings

This Server Platform SR1325TP1E is provided with the following Product Certification Markings.

- UL and cUL Listing Marks.
- CE Mark.
- Class A EMC marks
- C-tick Mark
- CCC Mark w-S-E
- New Nemko GS Mark
- VCCI - Class A Mark
- Russian GOST Mark with ME06
- BSMI-RPC
- FCC, Class A Markings (Declaration of Conformity).

8.2 Electromagnetic Compatibility Notice (USA)

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 B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV 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 TV reception.

Note: If a Class A device is installed within this system, the system is to be considered a Class A system. In this configuration, operation of this equipment in a residential area is likely to cause harmful interference.

8.2.1 FCC Declaration of Conformity

Product Type: ASTNIT, ASTLAN

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. For questions related to the EMC performance of this product, contact:

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124-6497
Phone: 1-800-628-8686

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le Ministre Canadien des Communications.

(English translation of the notice above) 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.

8.2.2 Electromagnetic Compatibility Notices (International)

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

(English translation of the notice above) This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI) from Information Technology Equipment. If this 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. When used near a radio or TV receiver, it may become the cause of radio interference. Read the instructions for correct handling. This equipment has been tested for radio frequency emissions and has been verified to meet CISPR 22 Class A.

9. Environmental Limits

9.1 System Office Environment

Table 17. System Office Environment Summary

Parameter	Limits
Operating Temperature	+10°C to +35°C with the maximum rate of change not to exceed 10°C per hour.
Non-Operating Temperature	-40°C to +70°C
Non-Operating Humidity	95%, non-condensing relative humidity at 35°C
Acoustic noise	6.96 BA Sound Pressure at typical office ambient temperature. (23 +/- degrees C)
Operating Shock	No errors with a half sine wave shock of 2G (with 11 millisecond duration)
Package Shock	Operational after a 30 inch free fall, although cosmetic damage may be present (chassis weight 30 lbs)
ESD	+/-15 kV per Intel® Environmental test specification
System Cooling Requirement in BTU/Hr	1180 BTU/hour

9.2 System Environmental Testing

The system has been tested per the *Environmental Standards Handbook*, Intel Doc.#662394-06. These tests include:

- Temperature Operating and Non-Operating
- Humidity Non-Operating
- Packaged and Unpackaged Shock
- Packaged and Unpackaged Vibration
- AC Voltage, Frequency and Source Interrupt
- AC Surge
- Acoustics
- ESD

9.3 System Environmental Test Limits

The following table summarizes environmental limits, both operating and non-operating.

Table 18. Operating and Non-Operating Environmental Limits

Temperature	Specification
Non-operating	-40°C to 70°C
Operating Temperature	5°C to 40°C
Thermal Map	Must not exceed maximum IC junction temperature as specified in the component data sheets (CPDs).
Thermal Shock	Specification
Non-operating	-40°C to 70°C
Humidity	Specification
Non-operating	50% to 90%, non-condensing with a maximum wet bulb of 28° C (at temperatures from 25° C to 35° C)
Vibration	Specification
Non-Operating:	Random input, 0.001 g2/Hz at 5Hz, sloping to 0.01 g2/Hz at 20Hz, and maintaining 0.01 g2/Hz from 20 Hz to 500 Hz.
Shock	Specification
Non-operating	25g, 225in/sec
ESD	Specification
Operating	Air discharge: Test to ±15 KV with limited recoverable errors. Contact Discharge: Test to ±8kV with no errors.
EMI	Specification
Operating	Required to meet EMI emission requirements.

10. Serviceability and Availability

The system is designed to be serviced by qualified technical personnel only.

The desired Mean Time To Repair (MTTR) of the system is 30 minutes, including diagnosis of the system problem. To meet this goal, the system enclosure and hardware have been designed to minimize the MTTR.

Below are the maximum times that a trained field service technician should take to perform the listed system maintenance procedures, after diagnosis of the system, and with the system powered down and unplugged. Refer to the User's Guide that came on the CD with your server platform for installation instructions.

- Remove top cover 1 minute
- Remove and replace hard disk drive 3 minutes
- Remove and replace power supply 3 minutes
- Remove and replace fan pack 8 minutes
- Remove and replace add-in cards 3 minutes
- Remove and replace front panel board 10 minutes
- Remove and replace baseboard 15 minutes

11. Calculated MTBF

The Mean Time Between Failures (MTBF) for the Server Platform SR1325TP1E is calculated at 30,000 hours operating at 35 degrees C. The following table shows the MTBF numbers for individual components within the chassis.

Table 19. Component MTBF

Subassembly	
(Server in 35°C ambient air)	MTBF(hours)
Main Board (SE7210TP1E)	150,000
250 W Power Supply	100,000
Cooling Fans (No redundancy)	80,000
CD and Floppy interposer Card	2,500,000
PCI riser card	20,000,000
Front Panel board and Intrusion Switch	5,000,000

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Appendix A: LED Diagnostics Decoder

Table 20. Boot Block POST Progress Codes

	Diagnostic LED Decoder G=Green, R=Red, A=Amber				Description
	Hi			Low	
10h	Off	Off	Off	R	The NMI is disabled. Start Power-on delay. Initialization code checksum verified.
11h	Off	Off	Off	A	Initialize the DMA controller, perform the keyboard controller BAT test, start memory refresh, and enter 4 GB flat mode.
12h	Off	Off	G	R	Get start of initialization code and check BIOS header.
13h	Off	Off	G	A	Memory sizing.
14h	Off	G	Off	R	Test base 512K of memory. Return to real mode. Execute any OEM patches and set up the stack.
15h	Off	G	Off	A	Pass control to the uncompressed code in shadow RAM. The initialization code is copied to segment 0 and control will be transferred to segment 0.
16h	Off	G	G	R	Control is in segment 0. Verify the system BIOS checksum. If the system BIOS checksum is bad, go to checkpoint code E0h. Otherwise, going to checkpoint code D7h.
17h	Off	G	G	A	Pass control to the interface module.
18h	G	Off	Off	R	Decompress of the main system BIOS failed.
19h	G	Off	Off	A	Build the BIOS stack. Disable USB controller. Disable cache.
1Ah	G	Off	G	R	Uncompress the POST code module. Pass control to the POST code module.
1Bh	A	R	Off	R	Decompress the main system BIOS runtime code.
1Ch	A	R	Off	A	Pass control to the main system BIOS in shadow RAM.
E0h	R	R	R	Off	Start of recovery BIOS. Initialize interrupt vectors, system timer, DMA controller, and interrupt controller.
E8h	A	R	R	Off	Initialize extra module if present.
E9h	A	R	R	G	Initialize floppy controller.
Eah	A	R	A	Off	Try to boot floppy diskette.
Ebh	A	R	A	G	If floppy boot fails, initialize ATAPI hardware.
Ech	A	A	R	Off	Try booting from ATAPI CD-ROM drive.
Eeh	A	A	A	Off	Jump to boot sector.
Efh	A	A	A	G	Disable ATAPI hardware.

Table 21. POST Progress Codes

	Diagnostic LED Decoder G=Green, R=Red, A=Amber				Description
	Hi			Low	
20h	Off	Off	R	Off	Uncompress various BIOS Modules
22h	Off	Off	A	Off	Verify password Checksum
24h	Off	G	R	Off	Verify CMOS Checksum.
26h	Off	G	A	Off	Read Microcode updates from BIOS ROM.
28h	G	Off	R	Off	Initializing the processors. Set up processor registers. Select least featured processor as the BSP.
2Ah	G	Off	A	Off	Go to Big Real Mode
2Ch	G	G	R	Off	Decompress INT13 module
2Eh	G	G	A	Off	Keyboard Controller Test: The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller
30h	Off	Off	R	R	Keyboard/Mouse port swap, if needed
32h	Off	Off	A	R	Write Command Byte 8042: The initialization after the keyboard controller BAT command test is done. The keyboard command byte will be written next.
34h	Off	G	R	R	Keyboard Init: The keyboard controller command byte is written. Next, issuing the pin 23 and 24 blocking and unblocking commands
36h	Off	G	A	R	Disable and initialize 8259
38h	G	Off	R	R	Detect Configuration Mode, such as CMOS clear.
3Ah	G	Off	A	R	Chipset Initialization before CMOS initialization
3Ch	G	G	R	R	Init System Timer: The 8254 timer test is over. Starting the legacy memory refresh test next.
3Eh	G	G	A	R	Check Refresh Toggle: The memory refresh line is toggling. Checking the 15 second on/off time next
40h	Off	R	Off	Off	Calculate CPU speed
42h	Off	R	G	Off	Init interrupt Vectors: Interrupt vector initialization is done.
44h	Off	A	Off	Off	Enable USB controller in chipset
46h	Off	A	G	Off	Initialize SMM handler. Initialize USB emulation.
48h	G	R	Off	Off	Validate NVRAM areas. Restore from backup if corrupted.
4Ah	G	R	G	Off	Load defaults in CMOS RAM if bad checksum or CMOS clear jumper is detected.
4Ch	G	A	Off	Off	Validate date and time in RTC.
4Eh	G	A	G	Off	Determine number of micro code patches present
50h	Off	R	Off	R	Load Micro Code To All CPUs
52h	Off	R	G	R	Scan SMBIOS GPNV areas
54h	Off	A	Off	R	Early extended memory tests
56h	Off	A	G	R	Disable DMA
58h	G	R	Off	R	Disable video controller
5Ah	G	R	G	R	8254 Timer Test on Channel 2
5Ch	G	A	Off	R	Enable 8042. Enable timer and keyboard IRQs. Set Video Mode: Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.

	Diagnostic LED Decoder G=Green, R=Red, A=Amber				Description
	Hi			Low	
5Eh	G	A	G	R	Init PCI devices and motherboard devices. Pass control to video BIOS. Start serial console redirection.
60h	Off	R	R	Off	Initialize memory test parameters
62h	Off	R	A	Off	Initialize AMI display manager Module. Initialize support code for headless system if no video controller is detected.
64h	Off	A	R	Off	Start USB controllers in chipset
66h	Off	A	A	Off	Set up video parameters in BIOS data area.
68h	G	R	R	Off	Activate ADM: The display mode is set. Displaying the power-on message next.
6Ah	G	R	A	Off	Initialize language module. Display splash logo.
6Ch	G	A	R	Off	Display Sign on message, BIOS ID and processor information.
6Eh	G	A	A	Off	Detect USB devices
70h	Off	R	R	R	Reset IDE Controllers
72h	Off	R	A	R	Displaying bus initialization error messages.
74h	Off	A	R	R	Display Setup Message: The new cursor position has been read and saved. Displaying the Hit Setup message next.
76h	Off	A	A	R	Ensure Timer Keyboard Interrupts are on.
78h	G	R	R	R	Extended background memory test start
7Ah	G	R	A	R	Disable parity and NMI reporting.
7Ch	G	A	R	R	Test 8237 DMA Controller: The DMA page register test passed. Performing the DMA Controller 1 base register test next
7Eh	G	A	A	R	Init 8237 DMA Controller: The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
80h	R	Off	Off	Off	Enable Mouse and Keyboard: The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next
82h	R	Off	G	Off	Keyboard Interface Test: A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.
84h	R	G	Off	Off	Check Stuck Key Enable Keyboard: The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
86h	R	G	G	Off	Disable parity NMI: The command byte was written and global data initialization has completed. Checking for a locked key next
88h	A	Off	Off	Off	Display USB devices
8Ah	A	Off	G	Off	Verify RAM Size: Checking for a memory size mismatch with CMOS RAM data next
8Ch	A	G	Off	Off	Lock out PS/2 keyboard/mouse if unattended start is enabled.
8Eh	A	G	G	Off	Init Boot Devices: The adapter ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.
90h	R	Off	Off	R	Display IDE mass storage devices.
92h	R	Off	G	R	Display USB mass storage devices.
94h	R	G	Off	R	Report the first set of POST Errors To Error Manager.
96h	R	G	G	R	Boot Password Check: The password was checked. Performing any required programming before Setup next.
98h	A	Off	Off	R	Float Processor Initialize: Performing any required initialization before the coprocessor test next.

	Diagnostic LED Decoder G=Green, R=Red, A=Amber				Description
	Hi			Low	
9Ah	A	Off	G	R	Enable Interrupts 0,1,2: Checking the extended keyboard, keyboard ID, and NUM Lock key next. Issuing the keyboard ID command next
9Ch	A	G	Off	R	Init FDD Devices. Report second set of POST errors To Error messenger
9Eh	A	G	G	R	Extended background memory test end
A0h	R	Off	R	Off	Prepare And Run Setup: Error manager displays and logs POST errors. Waits for user input for certain errors. Execute setup.
A2h	R	Off	A	Off	Set Base Expansion Memory Size
A4h	R	G	R	Off	Program chipset setup options, build ACPI Tables, build INT15h E820h table
A6h	R	G	A	Off	Set Display Mode
A8h	A	Off	R	Off	Build SMBIOS table and MP tables.
Aah	A	Off	A	Off	Clear video screen.
Ach	A	G	R	Off	Prepare USB controllers for operating system
Aeh	A	G	A	Off	One Beep to indicate end of POST. No beep if silent boot is enabled.
000h	Off	Off	Off	Off	POST completed. Passing control to INT 19h boot loader next.

Appendix B: Spares and Accessories

Upgrade and Accessory Parts

Product Code	MM #	UPC	Quantity	Description
ATPA3HDUPKIT	857943	TBD	1	Three Serial ATA cables, hard drive bracket
AKACDFLOPPY	853921	7 35858 16107 7	1	Floppy cable, CD cable, mounting screws, interface board
AKASCSICABLE	853922	7 35858 16108 4	1	SCSI cable and terminator for 2 HD support
AXXSCD	856519	7 35858 16426 9	1	Slimline CD ROM drive accessory
AXXSFLOPPY	856444	7 35858 16427 6	1	Slimline Floppy Drive accessory

Replacement and Spare Parts for SC1350-E

Product Code	MM #	UPC	Qty.	Description
SC44059	855943		1	SE7210TP1E Intel® Server Board
FTPAPMKIT	856368	7 35858 16420 7	1	Front panel cable, Front panel board, two fans, intrusion switch, CD-ROM cable, floppy cable
FXXCBL250K	856361	7 35858 16418 4	1	One 250W power supply
AXXTPHS	856583	7 35858 16419 1	1	One heatsink, one heatsink mounting plate, screws

Glossary

Word / Acronym	Definition
ACA	Australian Communication Authority
ANSI	American National Standards Institute
BMC	Baseboard Management Controller
CMOS	Complementary Metal Oxide Silicon
D2D	DC-to-DC
EMP	Emergency Management Port
FP	Front Panel
FRB	Fault Resilient Boot
FRU	Field Replaceable Unit
LPC	Low-Pin Count
MTBF	Mean Time Between Failure
MTTR	Mean Time to Repair
OTP	Over-Temperature Protection
OVP	Over-Voltage Protection
PFC	Power Factor Correction
PMC	Platform Management Controller
PSU	Power Supply Unit
RI	Ring Indicate
SCA	Single Connector Attachment
SDR	Sensor Data Record
SE	Single-Ended
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus
VCCI	Voluntary Control Council for Interference