1U Server Chassis SR1300

Technical Product Specification

Revision 1.2

June, 2003

Enterprise Platforms and Services Marketing

intel ®

Revision History

Date	Revision Number	Modifications
January, 2002	0.2	Initial creation
April, 2002	0.5	Minor updates and preliminary release
August, 2002	1.0	Minor updates and release
January, 2003	1.1	Added server board SE7501WV2. Corrections made to page 5 & 12 voltage range; 49-P64-B Speed.
June, 2003	1.2	Made corrections to section 6 – Hot Swap SCSI Backplane – remove reference to dul-mode SE device support.

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1.   SR1300 Feature Summary

The server chassis SR1300 is a 1U server chassis designed to support the Intel® server boards SE7500WV2 and SR7501WV2. Both board and chassis have a feature set that is designed to support the high-density server market. This specification details the specific feature set of the Intel server chassis SR1300.

1.1   Chassis Views
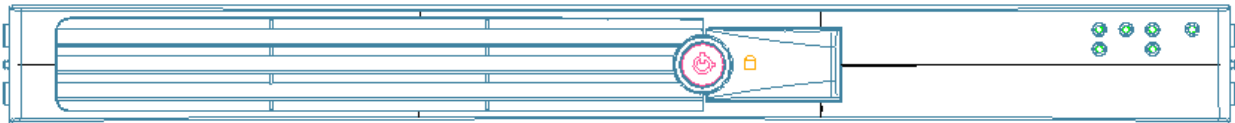
Front view with bezel

Front view without bezel

Rear view

Figure 1. Front and Rear Chassis Views

1.2   Chassis Dimensions

Table 1. Chassis Dimensions

Height	43 mm	1.693 Inches
Width	430 mm	16.93 Inches
Depth	609.2 mm	23.89 Inches

1.3   System Components
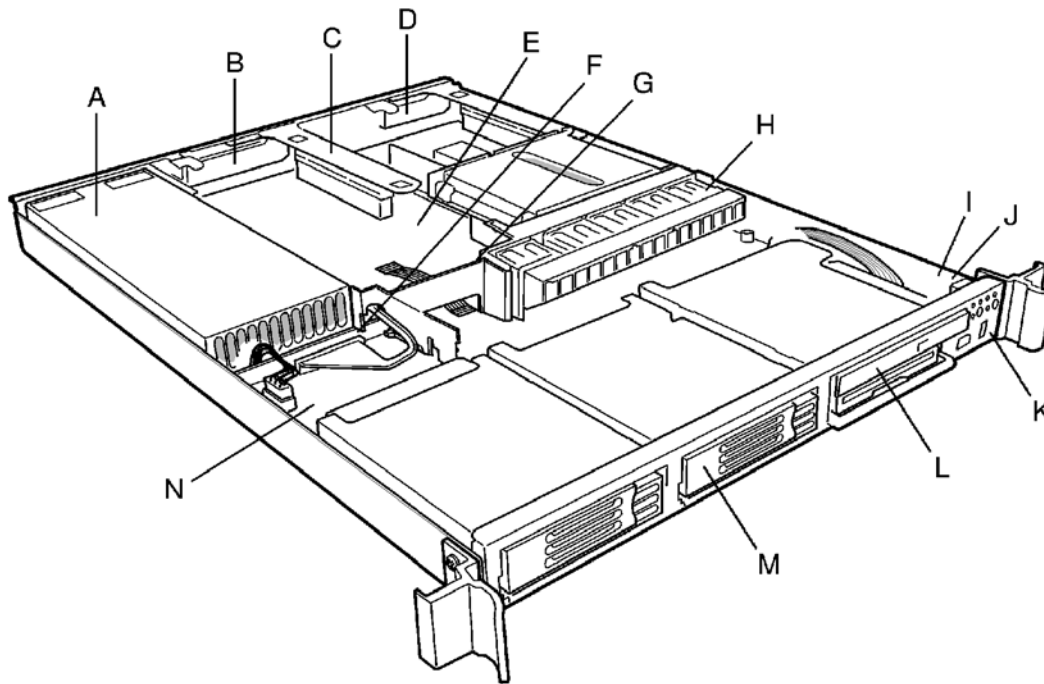
OM14146

A	Power supply	H	Fan module
B	PCI card bracket (full-length)	I	Front panel board
C	Riser card assembly	J	Intrusion switch
D	PCI card bracket (low-profile)	K	Control panel
E	Server board (accessory to system)	L	Flex bay, optional CD (or DVD) drive/FDD module shown
F	Power distribution board	M	Hard drive bay (one of two)
G	Air baffle	N	Backplane board

Figure 2. System Components

1.4   Chassis Back I/O Ports and Features

On the back of the chassis are cutouts for all external I/O connectors found on the server boards SE7500WV2 and SE7501WV2. The I/O connector locations are pre-cut, so the use of an I/O shield is not required.
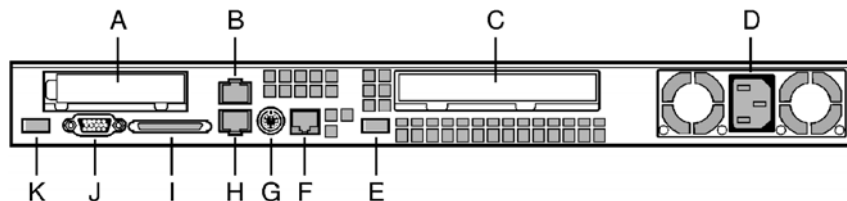
A	PCI card bracket (low profile)	G	PS2 mouse/keyboard connector
B	RJ45 NIC 2 connector	H	RJ45 NIC 1 connector
C	PCI card bracket (full-height)	I	SCSI connector (SCSI version only)
D	Power supply	J	Video connector
E	USB connector	K	USB connector
F	RJ45 serial port		

Figure 3. Chassis Back

1.5   Chassis Front Panel and Peripheral Bays

Two external I/O connectors are located on the front panel assembly; one video connector and one Universal Serial Bus (USB) connector.
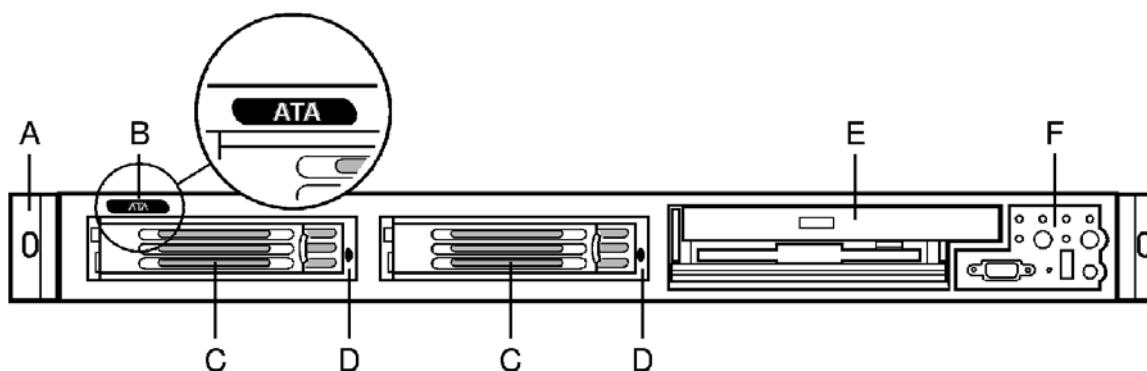
A   Chassis handles (2)

B   Drive-type designator (If product is configured as ATA)

C   Drive bay (1-inch)

D   HDD activity/fault Indicator

E   Flex bay (optional CD[or DVD] drive/FDD module shown)

F   Front panel

Figure 4. Chassis Front

1.5.1   Front Panel Controls and Indicators

The front panel controls and indicators are shown below with an optional CDROM (or DVD) drive/floppy disk drive installed.
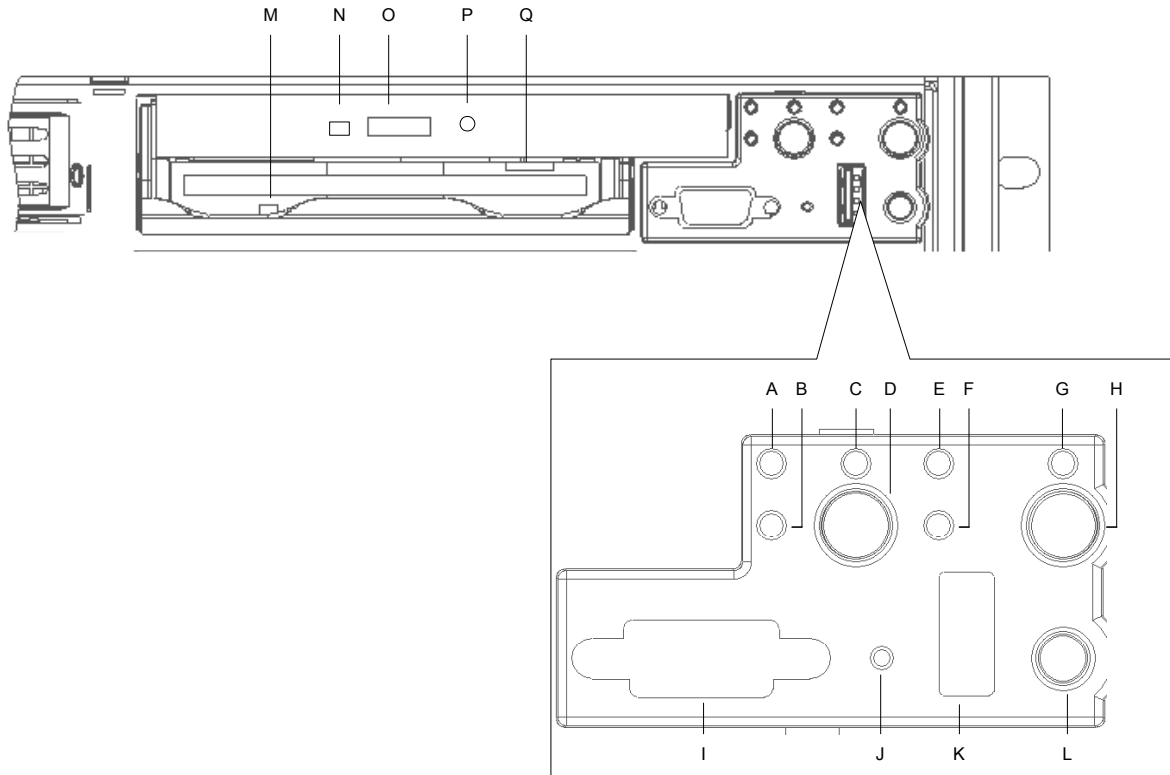
A	NIC 1 activity LED	J	NMI button (tool assisted)
B	NIC 2 activity LED	K	USB Port
C	Power/sleep LED	L	Reset button
D	Power button	M	Floppy activity LED
E	System status LED	N	CDROM/DVD activity LED
F	Fixed disk drive status LED	O	CD-ROM drive eject button
G	ID LED	P	Manual CD-ROM drive eject button (Tool assisted)
H	ID button	Q	FDD eject button
I	Front Accessible Video (Switched video with rear video connector)		

Figure 5. Controls and Indicators

1.5.2   Peripheral Bays
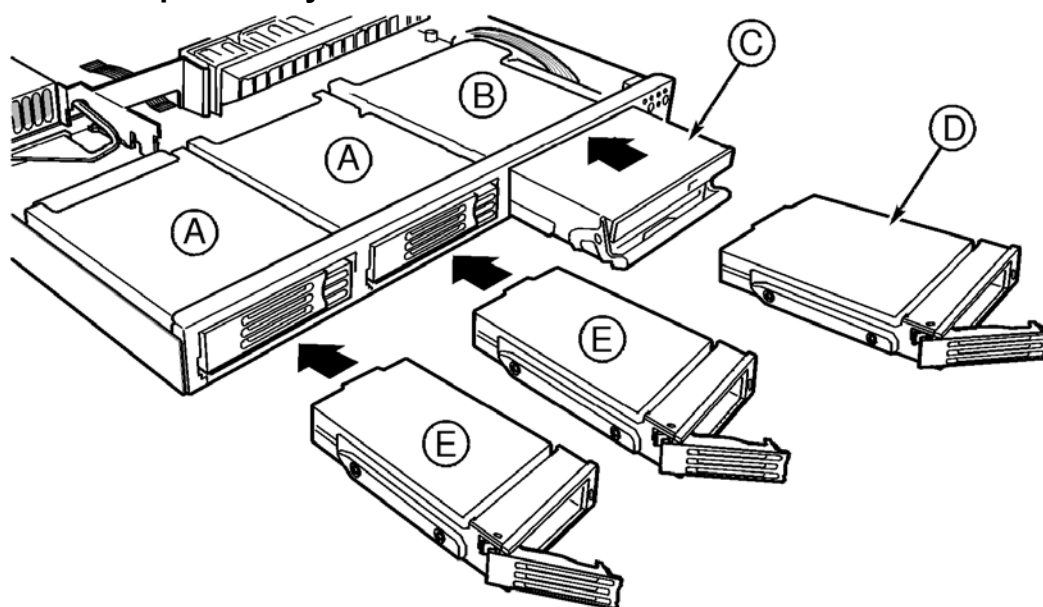
OM14150

A   Hard drive bays
B   Flex bay
C   Slimline CD-ROM drive/floppy or DVD/floppy drive module
D   Hard disk drive (Only in SCSI Backplane configuration)
E   Hard disk drive

Figure 6. Optional Peripherals

1.6   Power Supply

The power supply is rated for 350 watts of power at the following voltages:

- 90-132VAC (V) ~ at 50/60 Hertz (Hz); 4.96 Ampere (A) maximum (max)
- 180-264VAC~ at 50/60 Hz; 2.48 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.

1.7   System Cooling

The chassis includes a non-hot-swappable fan module with five fans for cooling the processor(s), hard drives, and PCI cards. The fan pack is located in the middle of the chassis, to pull cooling air through the chassis. The power supply contains two built-in fans for cooling.

1.8   Chassis Security

To help prevent unauthorized access to the system's peripherals and control panel, an optional key-locked front bezel can be used. The chassis also includes a preinstalled intrusion switch that can be monitored by server management software. When the cover is opened, the switch, located on the front panel board, transmits a signal to the Baseboard Management Controller (BMC) 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.

1.9   Rack and Cabinet Mounting Options

The server chassis SR1300 was designed to support 19" wide and up to 30" deep server cabinets. The chassis comes equipped with a relay rack or cabinet mount kit that can be configured to support front-mount or mid-mount 2-post racks and 4-post cabinets. Intel also provides 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.

For mounting in a regular server 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 end of the cabinet. This allows the weight of the server to be distributed evenly to prevent the mounting rails on the cabinet from bending. Caution should be taken when selecting the 2-post, front-mount only option. Even though the rail mount kit hardware was designed to support the weight of the system, some 2-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 2-post, front-mount-only chassis.

1.10 Front Bezel Features

The optional front bezel is made of molded plastic and uses a snap-on design. When installed, its design allows for maximum airflow. Light pipes in the front bezel allow the system status LEDs to be monitored with the bezel installed.
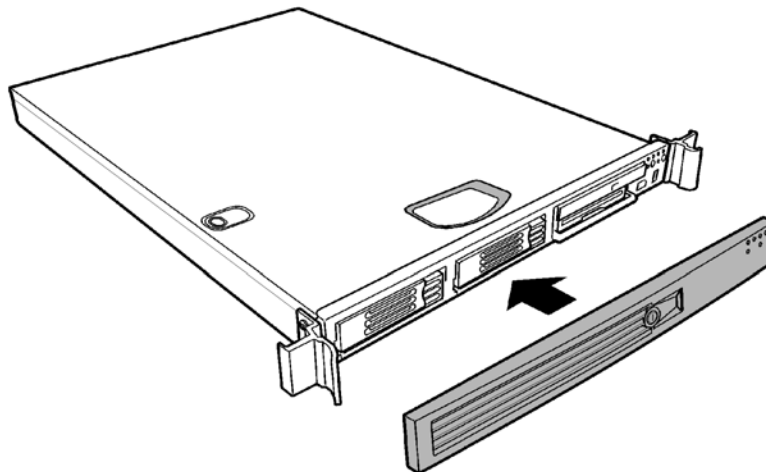
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Figure 7. Optional Front Bezel

2.   Power Sub-system

2.1   Power Distribution Board (PDB)

The server chassis SR1300 provides a power distribution board, eliminating the use of cables for power distribution to various system components. The power distribution board provides connectors to allow both the power supply and the baseboard to be plugged directly into it. In addition, it provides a 6-pin power cable for power distribution to the multifunctional backplane board, a 5-pin cable used to provide power management signals to the baseboard, and an 8-pin (4-wire) connector to provide power to the baseboard for the processor subsystem.
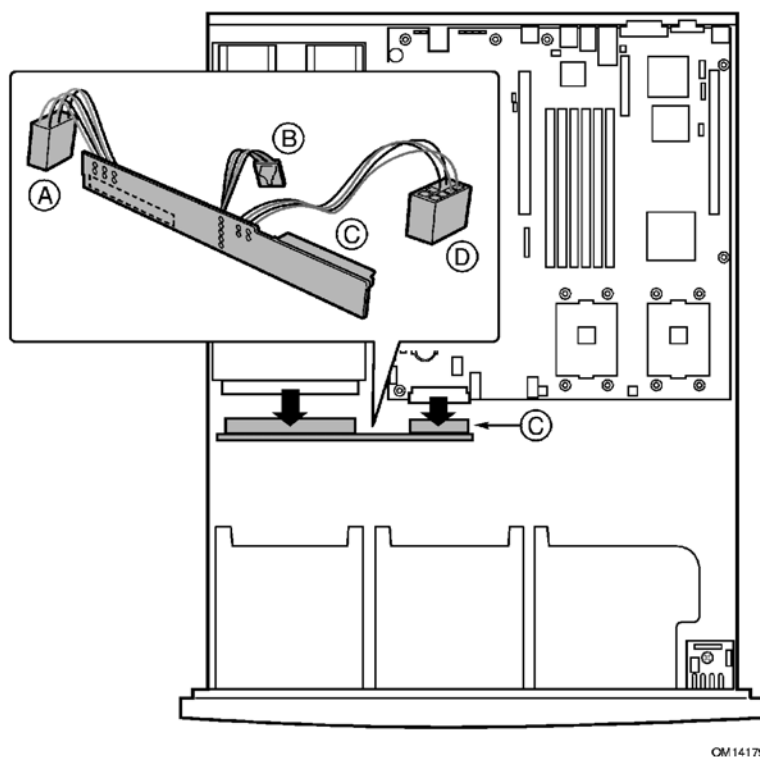
Figure 8. Power Distribution Board Drawing

2.1.1   Power Supply Edge Connector Slot

An AMP* 1364999-1, or equivalent type of slot connector, is used to plug a blind mating edge connector from the power supply. The following table provides the pin-out for the slot connector.

Table 2. Power Supply Edge Connector Slot Pinout

Pin	Signal	Description	Signal direction with respect to connector on PDB
B1	-12V	Voltage of 12V input from power supply	Input to PDB
A1	PS_ON#	Logic signal to enable main power supply outputs	Output from PDB
B2	PwrOk	Indicates that all outputs are within regulation	Input to PDB
A2	SDA	IPMB I2C Data	Bidirectional
B3	Res	Reserved	
A3	SCL	IPMB I2C Clock	Bidirectional
B4	AC Warn	Warning to system that power supply has lost its AC input. No use.	Input to PDB
A4	PSAlert#	Indicates power supply is operating beyond limits and has failed/may fail soon	Input to PDB
B5	5VSB	5V Stand-by voltage	Input to PDB
A5	ReturnS	Regulate out ground drops for all output voltages	Output from PDB
B6	(Removed pin)	Keying pin. No connect	
A6	Res	Reserved.	
A7	Res	Reserved	
B8	Res	Reserved	
A8	3.3VS	Regulate out drops for in system for 3.3V output	Output from PDB
9	Res	Reserved	
10	Res	Reserved	
11	12V2		Input to PDB
12	12V2		Input to PDB
13	12V2		Input to PDB
14	12V1		Input to PDB
15	12V1		Input to PDB
16	12V1		Input to PDB
17	Gnd	Ground	
18	Gnd	Ground	
19	Gnd	Ground	
20	Gnd	Ground	
21	Gnd	Ground	
22	Gnd	Ground	
23	Gnd	Ground	
24	Gnd	Ground	

Pin	Signal	Description	Signal direction with respect to connector on PDB
25	Gnd	Ground	
26	5V		Input to PDB
27	5V		Input to PDB
28	5V		Input to PDB
29	3.3V		Input to PDB
30	3.3V		Input to PDB
31	3.3V		Input to PDB

2.1.2   Baseboard Connector (1)

A 24-pin Molex* 15-24-7241 connector on the power distribution board allows for the server boards SE7500WV2 and SE7501WV2 to be plugged directly into it. The following table provides the connector pin-out.

Table 3. 24-pin Baseboard Power Connector Pinout

Pin	Signal
1	+3.3V
2	+3.3V
3	COMMON
4	+5V
5	COMMON
6	+5V
7	COMMON
8	PWR_OK
9	5VSB
10	+12V_IO
11	+12V_IO
12	+3.3V
13	+3.3V
14	−12V
15	COMMON
16	PS_ON#
17	COMMON
18	COMMON
19	COMMON
20	RESERVED_(-5V)
21	+5V
22	+5V
23	+5V
24	COMMON

2.1.3 Baseboard Connector (2)

An 8-pin Molex 39-01-2080 connector connected to a cable from the power distribution board connects to the server boards SE7500WV2 and SE7501WV2 to provide power to the processor subsystem. The following table provides the connector pin-out.

Table 4. 8-pin Baseboard Power Connector Pinout

Pin	Signal
1	Common
2	Common
3	NC
4	NC
5	+12V VRM
6	+12V VRM
7	NC
8	NC

2.1.4 Peripheral Power Connector

A soldered 6-wire cable, with a Molex 39-01-2065 male housing connector attached, is used to provide power to the HDD backplane / peripheral board.

Table 5. Peripheral Power Connector Pinout

Pin	Signal
1	Common
2	Common
3	+5V
4	+12V
5	+12V
6	+3.3V

Note: The peripheral power connector cable can be used with either the SCSI backplane or the ATA backplane.

2.1.5 Power Management Signal Cable

A soldered 5-wire cable, with a Molex 50-57-9405 female housing connector, is used to direct power management signals to the server boards SE7500WV2 and SE7501WV2. The following table shows the cable pin-out.

Table 6. Power Management Signal Cable Pinout

Pin	Signal	Description
1	SMBus-SCL	Serial Clock
2	SMBus-SDA	Serial Data. Information from the power supply
3	Reserved	Reserved
4	ReturnS	Return remote sense
5	3.3VS	3.3V sense

2.2   Power Supply

The server chassis SR1300 supports one 350W SSI EPS power supply.

The 350W 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. Refer to the 3*50W SSI Power Supply Technical Product Specification* for additional details.
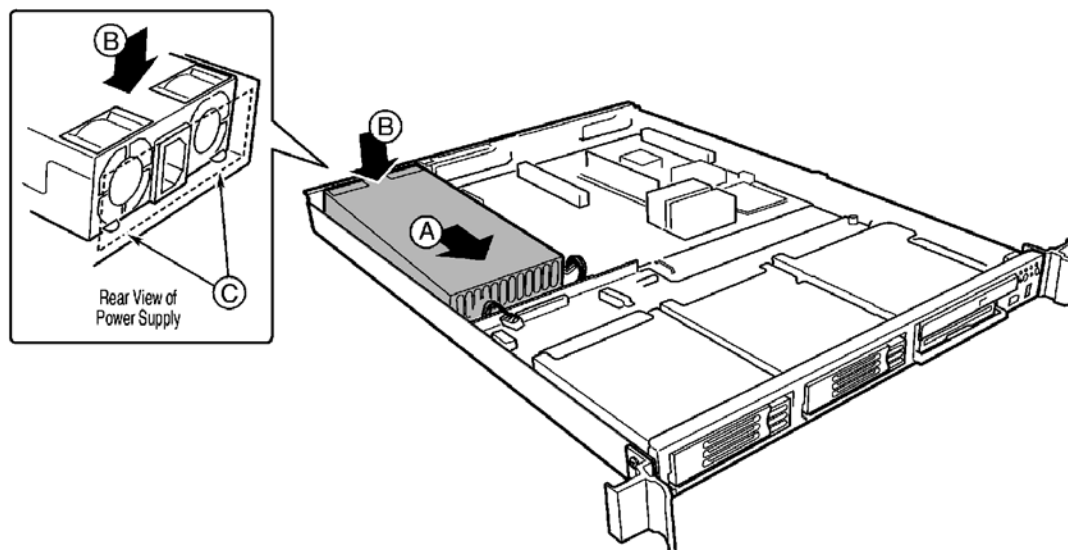
Figure 9. Power Supply Insertion

Table 7. Power Supply Input/Output Summary

Voltage	Current Rating
+3.3 VDC Output	16.0A Max
+5 VDC Output	12.0A Max
+12 V1DC Output	16.0A Max[1] (18.0A peak[2])
+12 V2DC Output	16.0A Max[1] (18.0A peak[2])
-12 VDC Output	0.5A
+5 VDC Standby	2.0A
Output balancing	Total combined output power of all output shall not exceed 350 W
AC Line Voltage	Auto-ranging for either 90-132 VAC or 180-264 VAC
AC Line Frequency	50/60 Hz
AC Input Current	4.96 Amp at 115 VAC. 2.48 Amp at 220 VAC

Notes:
1. Maximum continuous load on the combined 12V output shall not exceed 28A
2. Peak power and peak current loading shall be supported for a minimum of 12 seconds

2.2.1 Power Supply Mechanical Specifications

The approximate power supply dimensions are 40.0mm high X 106mm wide X 300.0mm deep.

The mechanical outline and dimensions are shown in the following figure.
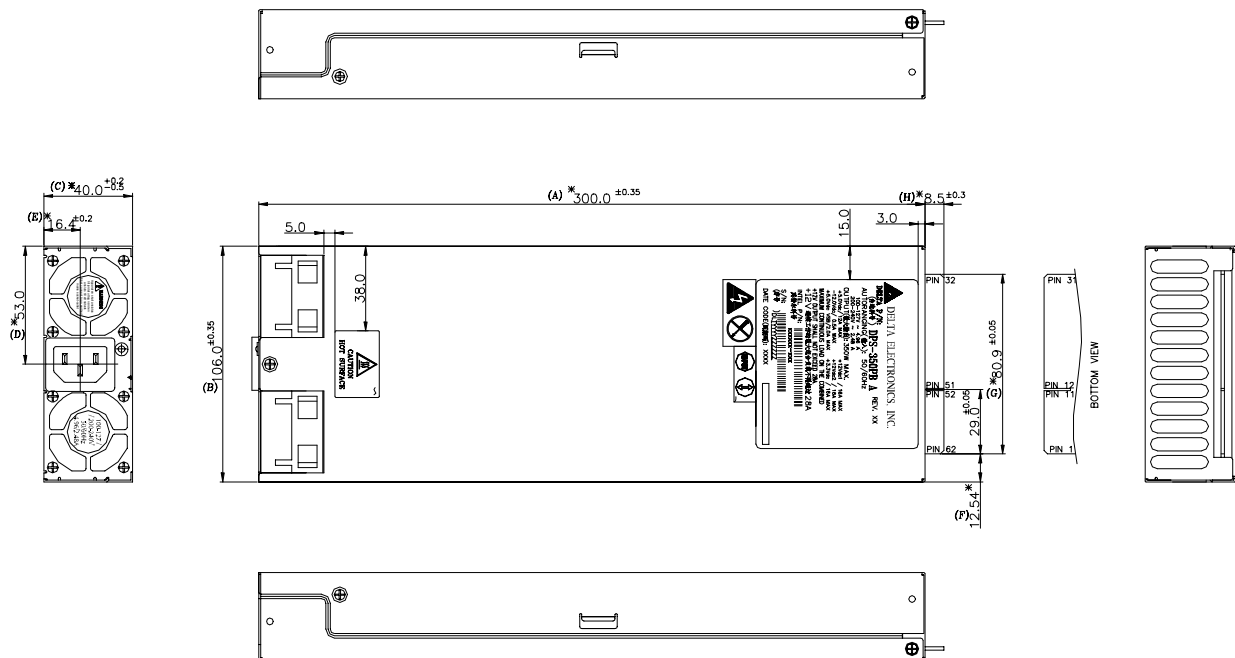
Figure 10. Outline Drawing Power System Enclosure 70-pin

The power supply has no power cable harness to distribute power to the system. Instead, the power supply is plugged directly into a power distribution board by means of an edge connector. The following table provides the pinout for the edge connector.

Table 8. Edge Connector Pinout

Description	Pin#		Pin#	Description
-12V	1		62	PSON#
PWOK	2		61	SDA
Reserved	3		60	SCL
Reserved	4		59	Reserved
5VSB	5		58	ReturnS
Removed keying pin (NC)	6		57	Reserved
Reserved	7		56	*Reserved*
Reserved	8		55	3.3VS
Reserved	9		54	*Reserved*
Reserved	10		53	*Reserved*
12V2	11	Keying Position	52	12V2
12V2	12	◄─►	51	12V2
12V2	13		50	12V2
12V1	14		49	12V1
12V1	15		48	12V1
12V1	16		47	12V1
Ground	17		46	Ground
Ground	18		45	Ground
Ground	19		44	Ground
Ground	20		43	Ground
Ground	21		42	Ground
Ground	22		41	Ground
Ground	23		40	Ground
Ground	24		39	Ground
Ground	25		38	Ground
5V	26		37	5V
5V	27		36	5V
5V	28		35	5V
3.3V	29		34	3.3V
3.3V	30		33	3.3V
3.3V	31		32	3.3V

2.2.2   Over Temperature Protection

The power supply will be protected against over temperature conditions caused by loss of fan cooling or excessive ambient temperature. In an OTP condition the PSU will shutdown. When the power supply temperature drops to within specified limits, the power supply shall restore power automatically, while the 5V StandBy remains always on. 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.

2.2.3   Over Voltage Protection

The power supply Over Voltage Protection (OVP) 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. The following table contains the over-voltage limits. The values are measured at the output of the power supply's connectors. 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.

Table 9. Over Voltage (OVP) Limits

Output Voltage	MIN (V)	MAX (V)
+3.3 V	3.9	4.5
+5 V	5.7	6.2
+12 V1,2	13.3	14.5
-12V	-13.3	-14.5
+5VSB	5.7	6.5

2.2.4   Power Supply LED Indicator

There will be a single GREEN LED to indicate power supply status. When AC is applied to the PSU and standby voltages are available the LED shall BLINK GREEN. The LED shall turn ON GREEN to indicate that all the power outputs are available. Refer to the table below for conditions of the LED.

Table 10. LED Indicator Modes

Power Supply Condition	Power Supply LED
No AC power to PSU	OFF
AC present / Only Standby Outputs On	BLINK GREEN
Power supply DC outputs ON and OK	GREEN

3.   Chassis Cooling

A five-fan module and the two power supply fans provide the necessary airflow to cool the system. A fan on the processor heat sink is not necessary in this chassis.

Note: Certain processor kits may come with a Processor Wind Tunnel (PWT) cooling fan and duct for each processor. This cannot be used in the server chassis SR1300 and is not necessary.

In order to maintain the necessary airflow within the system, the air baffle must be installed between the power supply and the fan module.
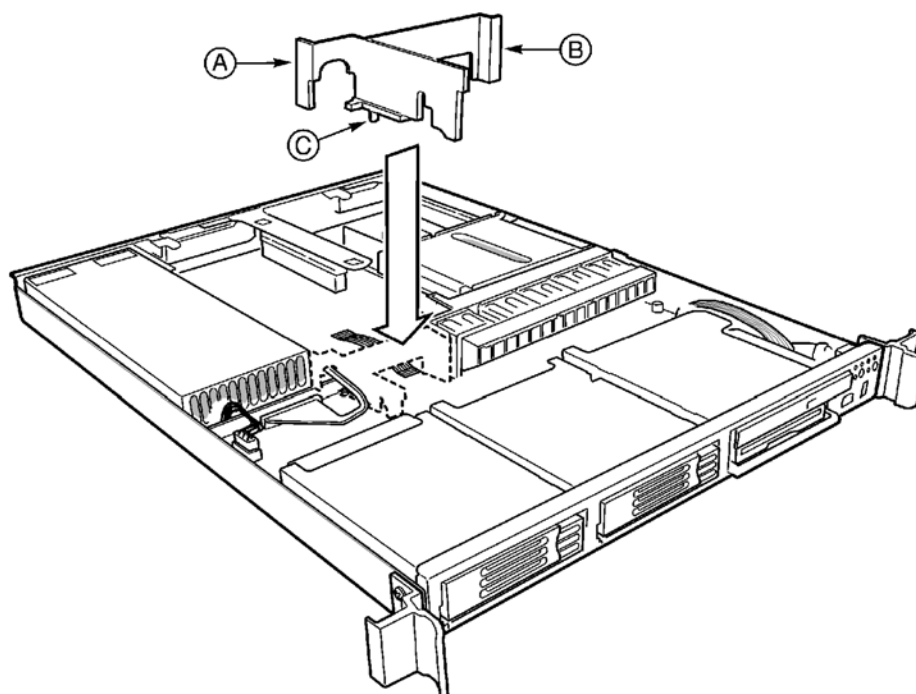
Figure 11. Air Baffle Installation

3.1   Five-Fan Module

A module consisting of five 40mm, multi-speed fans provides the primary airflow for the system.

A 12-wire cable/connector provides the fan module with power and tach lines, allowing each fan to be monitored independently by server management software. The power cable is connected to a 12-pin header located on the server boards SE7500WV2 and SE7501WV2. The following table provides the pinout for the 12-wire cable/connector.

Table 11. Fan Module Power Cable Pinout

Pin	Signal Name	Type	Description
1	Common	Power	Ground connection between fanboard and serverboard
2	Common	Power	Ground connection between fanboard and serverboard
3	Common	Power	Ground connection between fanboard and serverboard
4	PWM_Power	Power	Power connection between fanboard and serverboard
5	PWM_Power	Power	Power connection between fanboard and serverboard
6	PWM_Power	Power	Power connection between fanboard and serverboard
7	PWM_Power	Power	Power connection between fanboard and serverboard
8	Tach1	In	Tachometer for fan1 (innermost fan)
9	Tach2	In	Tachometer for fan2
10	Tach3	In	Tachometer for fan3
11	Tach4	In	Tachometer for fan4
12	Tach5	In	Tachometer for fan5 (outermost fan – close to wall of chassis)

Each fan within the module is capable of supporting multiple speeds. If the internal ambient temperature of the system exceeds the value programmed into the thermal sensor data record (SDR), the Baseboard Management Controller (BMC) firmware will increase the rotational speed for all the fans within fan module.

The fan module is a single component. The individual fans that make up the module are not swappable or individually replaceable. Should a fan fail, the entire module will need to be replaced. A tab on the side of the fan module makes replacement of the module tool-less and very simple. The fan module is not hot swappable. The server must be turned off before the fan module can be replaced.
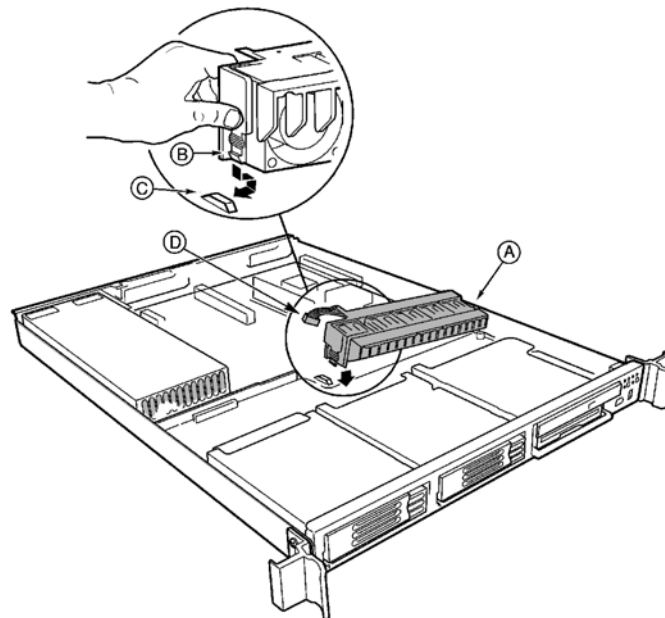
Figure 12. Fan Module Extraction

4.   Chassis Peripheral Bays

The server chassis SR1300 provides two drive bays and one flex bay at the front of the chassis.

In SCSI configurations, all three drive bays may be populated with a tray-mounted 3.5" Single Connector Attachment (SCA) SCSI hard disk drive. If a configuration requires the use of a floppy disk drive and CDROM or DVDROM drive, an optional Floppy/CDROM or Floppy/DVDROM module may be used in place of the third hard drive in the flex bay.

In ATA configurations, the chassis will support up to two tray-mounted 3.5" ATA drives in the first two bays, and the optional Floppy/CDROM or Floppy/DVDROM module in the flex bay.
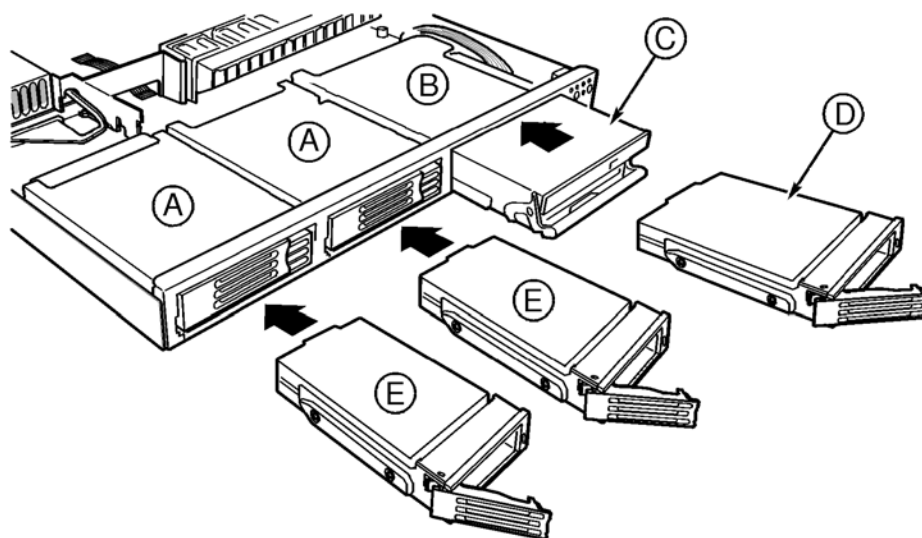
OM14150

A   Hard drive bays
B   Flex bay
C   Slimline DVD/CD-ROM drive/FDD module
D   Hard disk drive (Only in SCSI Backplane configurations)
E   Hard disk drive

Figure 13. SR1300 Peripheral Bay Configuration Options

4.1   Flex Bay Options

The third drive bay, or flex bay, is a multi-purpose drive bay. In SCSI configurations, the flex bay may be used for either a third hot-swappable SCSI drive or an optional floppy/CDROM or floppy/DVD module.

For ATA-100 configurations, the flex bay is only used to support these optional modules.

The Floppy/CDROM module is a 3.5" floppy drive and a 0.5" (12.7mm) slim line CD-ROM drive mounted as a single unit in the flex bay. The Floppy/DVDROM module includes a DVDROM instead of a CDROM drive. **This module cannot be hot swapped**. The system must be powered down before the module can be inserted or removed.
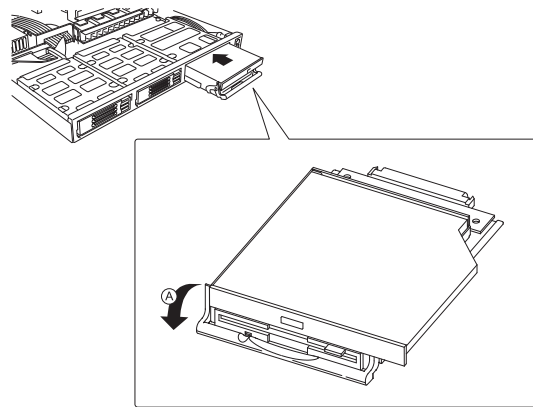
Figure 14. Optional DVD/CD-ROM Drive / FDD Module

4.2   Hard Disk Drive Bays

Depending on which backplane is used, SCSI or ATA, the server chassis SR1300 can support two or three hard disk drives.

For a SCSI configuration, the chassis will support up to three tray mounted SCA2, 3.5" x 1", Ultra2/Ultra160/Ultra 320 hard drives. With proper operating system (OS) or Redundant Array of Inexpensive Drives (RAID) configuration, SCSI drives may be hot swapped while the system is running.

For ATA configurations, the chassis will support up to two 3.5" x 1", ATA-100 hard disk drives. The third drive bay may be used for an optional floppy/CDROM or floppy/DVD module. **ATA hard drives cannot be hot swapped.** Attempting to hot swap an ATA drive may cause damage to the hard drive and/or cause loss of data.

Note: ATA drives from both Western Digital* and Maxtor* have been found to have their interface connectors placed in a location that is mechanically not compatible for use with the ATA backplane of the server chassis SR1300.

4.3   Drive Trays

Each hard drive used in the system must be mounted to a drive tray, making insertion and extraction of the drive from the chassis very simple. Each drive tray has its own dual purpose latching mechanism which is used to both insert/extract drives from the chassis and lock the tray in place. Each drive tray supports a light pipe providing a drive status indicator, located on the backplane, to be viewable from the front of the chassis.

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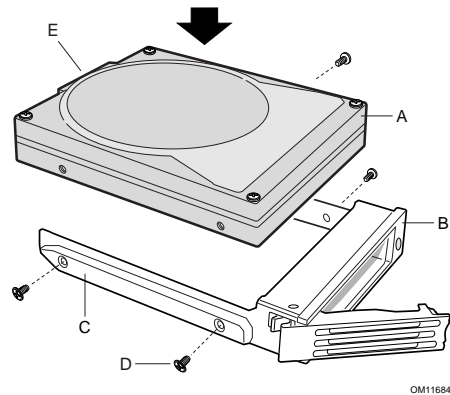
A   Front of Drive
B   Front of Carrier
C   Drive Rail
D   Screw
E   SCA Connector

Figure 15. Drive Tray Assembly

5. Front Panel Assembly

5.1 Front Panel Buttons and Intrusion Switch

The server chassis SR1300 front panel assembly houses several system control buttons and a chassis intrusion switch. Each of their functions is listed in the following table.
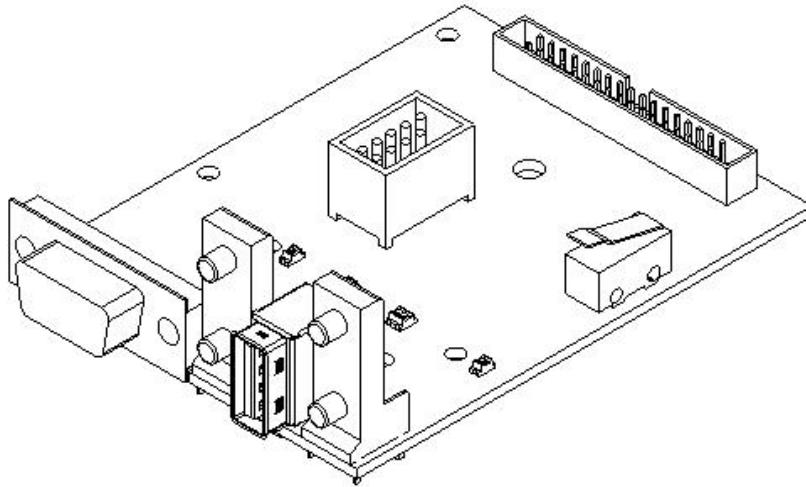
Figure 16. Front Panel Assembly

Table 12. Control Button and Intrusion Switch Functions

Feature	Function
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
Reset button	Reboots and initializes the system
NMI button	Pressing the recessed button with a paper clip or pin puts the server in a halt state for diagnostic purposes and allows the system to issue a non-maskable interrupt. After issuing the interrupt, a memory download can be performed to determine the cause of the problem
ID button	Toggles the front panel ID LED and the baseboard ID LED on/off. The baseboard ID LED is visible through the rear of the chassis and allows you to locate the server you're working on from behind a rack of servers
Chassis Intrusion Switch	A chassis intrusion switch is located on the front panel board
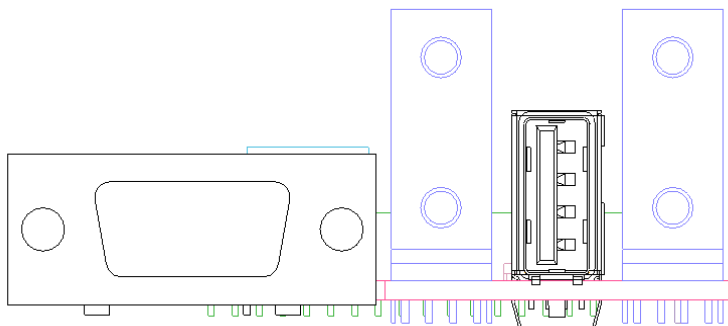
Figure 17. Front Panel Assembly Interface Board, Front View

5.2   Front Panel Assembly Connectors

The front panel assembly has two external I/O connectors:

- One USB
- One video

The following tables provide the pinouts for both types of connectors.

Table 13. External USB Connector

Pin #	I/O	Description
1	USBPWR	VREG_FP_USBPWR3
2	I/O	USB_DM3_FP
3	I/O	USB_DP3_FP
4	PWR	GND

The DB15 video connector located on the front panel is designed to access the video of the system from the front panel of the system. Both the front and rear Video ports share the same video signals. By default, the rear video port is enabled when there is no monitor connected to the front video port. When a monitor is connected to the front video port, logic on the baseboard will disable the rear video port and direct the video signal to the monitor connected to the front panel.

Table 14. Video Connector

Pin #	I/O	Description
1	O	Red
2	O	Green
3	O	Blue
4	O	No Connect
5	Pwr	GND
6	Pwr	GND
7	I	Video Switch
8	Pwr	GND
9		No Connect
10	Pwr	GND
11		No Connect
12		No Connect
13	O	Hsync
14	O	Vsync
15		No Connect

If a monitor is connected to the front panel video connector, the rear video port (on the server boards SE7500WV2 and SE7501WV2) will be disabled and the front panel video will be enabled. The video source is the same for both connectors and is switched between the two, with the front panel having priority over the rear video. This provides for easy front accessibility to the server.

In addition, the front panel assembly interface board has two internal connectors:

- A 34-pin header provides control and status information to/from the baseboard through the HDD backplane board

- A 10-pin USB header provides control for one USB port from the baseboard

A 34-pin flat cable is used to connect the front panel to the selected hard drive backplane. The backplane provides a signal path to a 100-pin connector, which is then cabled to the server boards SE7500WV2 and SE7501WV2.

Table 15. Internal USB Header

Pin #	I/O	Description
1	PWR	USB Power 3
2	PWR	USB Power 2
3	I/O	USB_P2_L
4	I/O	USB_P3_L
5	I/O	USB_P2
6	I/O	USB_P3
7	PWR	GND
8	PWR	GND
9	NC	NC
10	NC	NC

Table 16. Front Panel to HDD Backplane Connector

Pin #	I/O	Description
1	NC	ZZ_V_SWITCH_L
2	NC	TP_FP34_P33
3	I	GND
4	O	V_IO_RED_CONN_FP
5	PWR	GND
6	I	V_IO_GREEN_CONN_FP
7	PWR	GND
8	I	V_IO_BLUE_CONN_FP
9	I	V_IO_HSYNC_BUFF_FP_L
10	I	V_IO_VSYNC_BUFF_FP_L
11	O	NIC2_LED_ON_ACTIVITY
12	I	FP_NMI_BTN_L
13	NC	NC_FP_RSV2
14	NC	NC_FP_KEY
15	O	NIC2_LED_3V_LINK_L
16	PWR	GND
17	I	CHASSIS_INTRUSION_L
18	I	ID_SW_ACTIVE_L
19	I/O	I2C_CLK
20	O	CLIFTON/GIFFORD_LED_CATHOD_L
21	I/O	I2C_DATA
22	I	RST_SW_ACTIVE_L
23	O	NIC1_LED_ON_ACTIVITY
24	O	HDD_LED_FAULT_L
25	O	NIC1_LED_3V_LINK_L
26	I	PWR_SW_ACTIVE_L
27	O	ID_LED_ON_L
28	O	HDD_LED_ON_L
29	PWR	SB5V
30	PWR	VCC
31	O	FP_SYS_FLT_LED2_L
32	O	POWER_LED_ON_L
33	I	FP_SYS_FLT_LED1_L
34	I	LED Anode for another Model

5.3   Front Panel System Status LED Indicators

The front panel houses six LEDs, which are viewable with or without the front bezel to display the system's operating state. The LEDs provide a status for the following system states:

- Power/Sleep
- NIC1 / NIC2 Activity
- System State
- Disk Activity
- System Identification

Table 17. Front Panel LED Functions

LED	Color	State	Description
Power/Sleep[1]	Green	ON	Legacy Power On / ACPI S0 state
		Blink	Sleep / ACPI S1 state
	Off	OFF	Power Off / ACPI S4 or S5 state
System Status on standby power	Green	ON	Running. BIOS Initialization complete, boot started / normal operation
		Blink	Degraded condition
	Amber	ON	Critical or Non-Recoverable condition
		Blink	Non-Critical condition
	Off	OFF	POST / System Stop
Fixed Disk Activity	Green	Random blink	Hard disk activity. This is an 'OR' of the activity for the onboard SCSI and IDE controllers
	Amber	ON	Hard disk fault. Cleared when powered off
	Off	OFF	No hard disk activity nor fault
Identify	Blue	ON	Identify Active via button. The button has precedence over the command
	Blue	Blink	Identify Active via command
	Off	OFF	No Identification
NIC1 / NIC2 Activity Identify	Green	On	Link
	Green	Blink	Network Activity

Note:

BIOS controls Power/Sleep LED

The current limiting resistors for the LED's are located on the server boards SE7500WV2 and SE7501WV2.

5.3.1   Power / Sleep LED

The BIOS controls the front panel Power LED as described in the following table.

Table 18. SSI Power LED Operation

State	Power Mode	LED	Description
Power Off	Non-ACPI	OFF	System power is off, and the BIOS has not initialized the chipset
Power On	Non-ACPI	ON	System power is on, but the BIOS has not yet initialized the chipset
S5	ACPI	OFF	Mechanical Off, and the OS has not saved any context to the hard disk
S4	ACPI	OFF	Mechanical Off. The OS has saved context to the hard disk
S3-S1	ACPI	Slow Blink 1	DC Power is still on. The OS has saved context and gone into some level of low-power state
S0	ACPI	Steady On	System and the OS are up and running

Note:

Blink rate is ~1 Hz with at 50% duty cycle

5.3.2   System Status LED

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). A hot-swap backplane would use the *Set Fault Indication* command to indicate when one or more of the drive fault status LEDs are asserted on the hot-swap backplane

- 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

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

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

5.3.3 Drive Activity LED

The Drive Activity LED on the front panel is used to indicate drive activity for either the SCSI drives (SCSI configured system) or the ATA drives (ATA configured system). The server boards SE7500WV2 and SE7501WV2 also provides a header giving access to this LED for add-in IDE or SCSI controllers.

5.3.4 System Identification LED

The blue System Identification LED is used to help identify a system for servicing when it is installed within a high-density rack or cabinet that is populated with several other similar systems. The System ID LED is illuminated when the system ID button, located on the front panel, is pressed.

6.   Hot-Swap SCSI Backplane

The server chassis SR1300 can support a multifunctional SCSI backplane, supporting the following features:

- Three SCA2 compatible hot-swap SCSI connectors
- Floppy/CDROM module interface connector
- Support for the following SCSI bus specifications: Ultra-2, Ultra-160, and Ultra-320
- Active SCSI termination (SPI-4 compatible)
- Support for dual mode LVD operations
- Per-drive power control, including automatic slot power down upon drive removal
- SAF-TE 1.0-compliant enclosure management and monitoring functions
- Drive Activity/Fault LEDs
- A pathway for signals from the 100-pin floppy/front panel (FP)/IDE connector to the 60-pin floppy/CDROM module connector in the flex bay

6.1   Hot-Swap SCSI Backplane Layout

The hot-swap SCSI backplane , resides in the drive bay of the server chassis SR1300. Drive bays 1 and 2 each have a SCA2 type SCSI connector. The flex bay, (the third peripheral bay on the right side on the front of the chassis) has two separate stacked connectors providing support for either a third SCSI hard drive or an optional floppy/CDROM module. All three drive bays have a Drive Activity/Fault LED. Additional connectors include a 100-pin floppy/FP/IDE connector, which is cabled to the baseboard; a 34-pin connector, which is cabled to the front panel; and a 6-pin power connector, which is connected to the power distribution board.

The following diagram shows the board layout of the backplane.
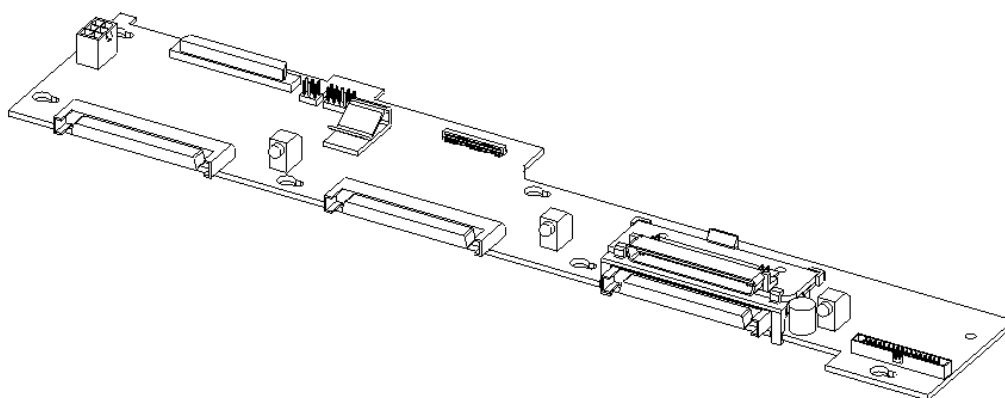
Figure 18. Hot-Swap SCSI Backplane Layout

6.2 SCSI Backplane Configuration Jumpers

The following table describes the settings and functionality of the jumper block used on the SR1300 hot-swap SCSI backplane.

Table 19. Hot-Swap Backplane Configuration Jumpers

Option	Location	Description
Firmware Update	J4	Placing this jumper in the "FORCE UPDATE" position forces external firmware update of the program code stored in Flash memory. Placing this jumper in the "NORMAL OPERATION" position allows normal operation
Flash Boot Block Write	J4	This jumper allows the boot block of the program flash to be updated. "NORMAL OPERTATION" (default) does not allow the boot block to be written to. "WRITE" allows updating of the boot block

6.3 SCSI Backplane Functional Architecture

Functionality of the SCSI backplane begins at power-up. The microprocessor boots up via code residing in the flash boot block. The SCSI backplane is capable of downloading firmware via the IMB in-order to update the flash executable code.

The following figure shows the functional blocks of the hot-swap SCSI backplane.

CD-ROM & DVD /FDD

From SE7500WV2 or
SE7501WV2 Base Board

FRONT PANEL INTERFACE

To FDD/CD Daughter
Board connector

To Front Panel Board

Wide SCSI Connector

Drive 0

Drive 1

LVD/SE Multi-
Mode Terminators

SE Terminator

53C80 SCSI
Interface

Drive 2

3860 LVD
to SE
Bridge

System
Memory
(RAM / ROM)

Drive
Power
Control

80C652 SAF-TE Micro-
Controller

Local I^{2}C*
EEPROM
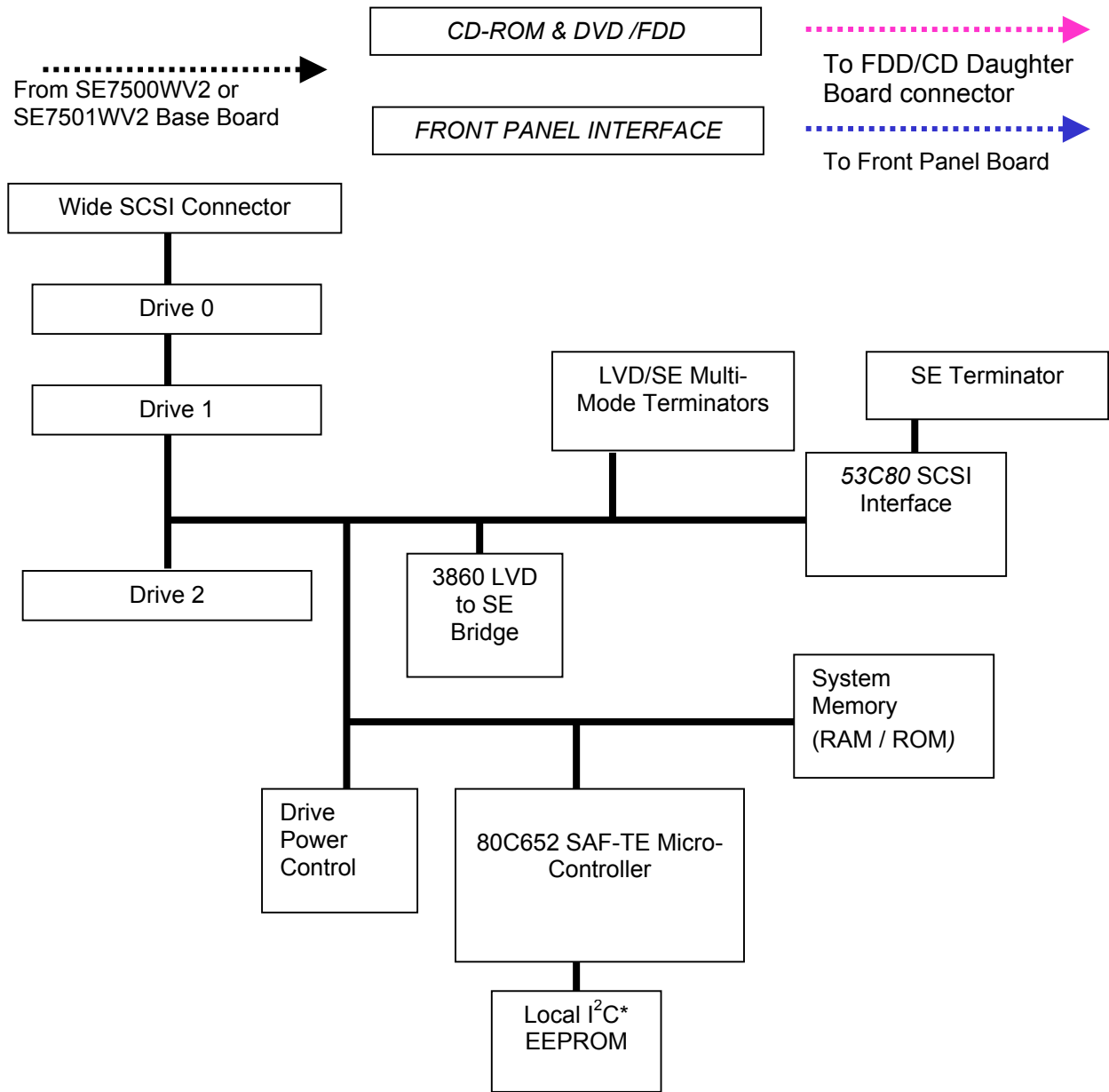
Figure 19. Hot-Swap SCSI Backplane Functional Diagram

6.3.1   Resets

The SCSI backplane is capable of supporting two types of resets; a cold reset, which occurs
when system power is cycled, and a SCSI bus reset, which occurs when the micro-controller
receives a *Reset SAF-TE* command.

6.3.2   Phillips* P80C652EBB Micro-Controller

The SCSI backplane supports the SAF-TE 1.0 specification and utilizes the Philips*
P80C652EBB micro-controller for all SAF-TE functions. If necessary, the backplane can
function without the SAF-TE micro-controller as a simple interconnection for the SCSI drives
and termination in LVD or single-ended (SE) mode.

P80C652XEBB features:

- Operating frequency is 12 MHz
- 80C51-based architecture
- Four 8-bit I/O ports
- Two 16-bit timer/counters
- Full-duplex Universal Asynchronous Receiver Transmitter (UART) facilities
- I^{2}C serial interface
- Two power control modes - idle mode and power-down mode
- Operating temperature range: 0$°$C to +70$°$C

6.3.2.1   I^{2}C Serial Communication-SI01

The I^{2}C pins are alternate functions to port pins P1.6 and P1.7. Because of this, P1.6 and P1.7,
on these parts, do not have a pull-up structure as found of the 80C51. Therefore P1.6 and P1.7
have open drain outputs on the 80C652.

6.3.2.2   I^{2}C Electrical Input/Output Specifications

The I^{2}C bus allows communication between devices made in different technologies, which might
also use different supply voltages.

For devices with fixed input levels, operating on a supply voltage of +5V $\pm$10%, the following
levels have been defined:

- V_{ILmax} = 1.5 V (maximum input low voltage)
- V_{IHmin} = 3 V (minimum input high voltage)

Devices operating on a fixed supply voltage different from +5 V (e.g., I^{2}L), must also have these
input levels of 1.5 V and 3 V for V_{IL} and V_{IH}, respectively.

For devices operating over a wide rage of supply voltages (e.g.,Complementary Metal Oxide
Silicon {CMOS}), the following levels have been defined:

- V_{ILmax} = 0.3 V_{DD} (maximum input Low voltage)
- V_{IHmin} = 0.7 V_{DD} (minimum input High voltage)

For both groups of devices, the maximum output low value has been defined:

- V_{OLmax} = 0.4 V (max. output voltage Low) at 3mA sink current

The maximum low-level input current at V_{OImax}, of both the SDA pin and the SCL pin of an I^{2}C
device is, -10uA, including the leakage current of a possible output stage.

The maximum high-level input current at $0.9V_{DD}$, of both the SDA pin and SCL pin of an I^{2}C device, is 10uA, including the leakage current of a possible output stage.

The maximum capacitance, of both the SDA pin and the SCL pin of an I^{2}C device, is 10pf.

6.3.2.3   Noise Margin

- Noise margin minimum on the low level is 0.1 V_{DD}.
- Noise margin minimum on the high level is 0.2 V_{DD}.

6.3.3   Symbios* SYM53C80S SCSI Controller

The SCSI backplane uses a Symbios SYM53C80S controller to perform all SCSI functions. Device selection is memory mapped at address FB00-FC00. It is reset on power-up and, when reset, is asserted to the backplane. SYM53C80S access slows down the bus; it is recommended to pulse SAF-TE infrequently. SAF_TE command processing is 2-10ms.

The SYM53C80S supports the following features:

- Supports the American National Standards Institute (ANSI) X3.131-1994 standard
- Parity generation with optional checking
- No external clock required
- On-chip 48mA single-ended drivers and receivers
- Functions in both the target and initiator roles
- Direct control of all SCSI signals
- Asynchronous data transfers of up to 5.0 Mbytes/second
- Variety of packaging options
- SCSI protocol efficiency is directly proportional to the speed of the microprocessor
- CMOS parts provide additional grounding and controlled fall times that reduce noise generated by SCSI bus switching
- SCAM Level 1 and 2 compatibility

6.3.4   SCSI Interface

The SCSI interface on the SR1300 hot-swap SCSI backplane provides the required circuitry between the SCSI bus and the 80C652 micro-controller. This allows the micro-controller to respond as a SCSI target. The interface consists of a Symbios* 53C80S SCSI interface chip, which functions as translator between the SCSI bus and the micro-controller. The 53C80S is a single-ended, narrow device.

6.3.5   LVD to SE Bridge

Since the 53C80S is a single-ended, narrow device, an Adaptec* AIC-3860 LVD-to-SE transceiver (bridge) is used to create a single-ended extension of the LVD bus. This allows the 53C80S to communicate with the LVD bus.

6.3.6 SCSI Termination

Passive SE termination is used for the single-ended extension of the SCSI bus on which the 53C80S resides.

LVD/SE multi-mode terminators provide SPI-4 compliant active termination for the backplane end of the SCSI bus. It is assumed that the other end of the SCSI segment is properly terminated as required by the SPI-4 specification. Multi-mode termination is implemented on the SR1300 hot-swap SCSI backplane using two Unitrode* UCC5638 multi-mode SCSI 15-line terminators.

6.3.7 Power Control

Power control on the SR1300 hot-swap SCSI backplane supports the following features:

- Power-down of a drive when a failure is detected and reported (using enclosure services messages) via the SCSI bus. This decreases the likelihood that the drive, which may be under warranty, is damaged during removal from the hot-swap drive bay. When a new drive is inserted, the power control waits a small amount of time for the drive to be fully seated, and then applies power to the drive in preparation for operation.

- If system power is on, the hot-swap SCSI backplane immediately powers off a drive slot when it detects that a drive has been removed. This prevents possible damage to the drive when it is partially removed and re-inserted while full power is available, and disruption of the entire SCSI array from possible sags in supply voltage and resultant current spikes.

- Hot-spare drive support. Spare drives are kept in the hot-swap bay, but are left un-powered until a drive is determined to have failed. In this case, the hot spare can be powered up and put into service automatically without requiring immediate operator intervention to replace the drive.

- The hot-swap SCSI backplane will automatically bypass the power control circuitry if a shorted drive is inserted or if a drive develops a short during operation. This prevents the hot-swap SCSI backplane from being damaged by a drive that draws excessive current.

6.3.8 Drive Activity/Fault LEDs

Next to each hard drive connector is an Activity/Fault LED. The LEDs are activated by the micro-controller and indicate either drive activity or a drive failure. The LEDs can be seen from the front of the chassis by means of a light pipe mounted inside each hard drive carrier. During initialization the micro-controller flashes the LEDs for one second as part of POST.

6.3.9 Internal Management Bus (IMB)

The IMB bus is a system-wide server management bus, based on the Phillips I^2C bus specification. It provides a way for various system components to communicate independently with the standard system interfaces (e.g., PCI bus or processor/memory bus). The I^2C bus controller is integrated into the micro-controller. IMB connectivity is provided to the SCSI backplane via the front panel connector.

6.3.10   Local I^{2}C* EEPROM and Temperature Sensor

An I^{2}C bus temperature sensor is connected to the micro-controller on a private I^{2}C bus. Micro-controller programming implements the private I^{2}C connection by explicitly setting and clearing appropriate clock and data signals, to emulate an I^{2}C-like interface to the sensor. Temperature information is made available to other devices in the chassis using Enclosure Services messages. A Dallas* DS1624 Serial EEPROM/Temperature Sensor implements this function. The EEPROM stores the Field Replaceable Unit (FRU) information for the backplane.

6.3.11   Power Connector

The SCSI backplane provides power to the three drive bays, supporting up to three hard disk drives or two hard disk drives, and the optional floppy/CDROM module. A 6-pin power cable is routed from the power distribution board and plugs into a 2 x 3 shrouded plastic PC power connector (Molex: 39-29-9066) on the SCSI backplane. The following table shows the power connector pinout.

Table 20. SCSI Backplane Power Connector Pinout

Pin	Name	Pin	Name
1	GND	4	+12V
2	GND	5	+12V
3	+5V	6	Reserved

6.3.12   Server Baseboards SE7500WV2 and SE7501WV2 to SCSI Devices

A 68-pin SCSI cable is used to interface the SCSI backplane with either the on-board SCSI channel of the server boards SE7500WV2 and SE7501WV2, or an add-in PCI SCSI controller installed on the PCI riser card.

(AMP: 6-316173-7)
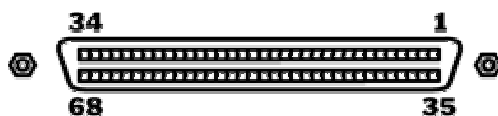
Figure 20. 68-Pin SCSI Cable Connector

Table 21. UltraWide (SE) and Ultra2 (LVD) SCSI Connector Pinout

Pin	Name	Pin	Name	Pin	Name	Pin	Name
1	+DB (12)	18	TERMPWR	35	-DB (12)	52	TERMPWR
2	+DB (13)	19	RESERVED	36	-DB (13)	53	RESERVED
3	+DB (14)	20	GROUND	37	-DB (14)	54	GROUND
4	+DB (15)	21	+ATN	38	-DB (15)	55	-ATN
5	+DB (P1)	22	GROUND	39	-DB (P1)	56	GROUND
6	+DB (0)	23	+BSY	40	-D B(0)	57	-BSY
7	+DB (1)	24	+ACK	41	-DB (1)	58	-ACK
8	+DB (2)	25	+RST	42	-DB (2)	59	-RST
9	+DB (3)	26	+MSG	43	-DB (3)	60	-MSG
10	+DB (4)	27	+SEL	44	-DB (4)	61	-SEL
11	+DB (5)	28	+C/D	45	-DB (5)	62	-C/D
12	+DB (6)	29	+REQ	46	-DB (6)	63	-REQ
13	+DB (7)	30	+I/O	47	-DB (7)	64	-I/O
14	+DB (P)	31	+DB (8)	48	-DB (P)	65	-DB (8)
15	GROUND	32	+DB (9)	49	GROUND	66	-DB (9)
16	DIFFSENS	33	+DB (10)	50	GROUND	67	-DB (10)
17	TERMPWR	34	+DB (11)	51	TERMPWR	68	-DB (11)

6.3.13 Server Baseboards SE7500WV2 and SE7501WV2 to CD(DVD)/FDD/FP Interface

The SCSI backplane provides a pathway for the floppy/FP/IDE signals from the server baseboardsSE7500WV2 and SE7501WV2 to the floppy/CDROM module interface board and the front panel. The following table provides the pinout for the 100-pin (JAEE*: WR-100S-VF-1 or equivalent) connector.

Table 22. Floppy/FP/IDE Connector Pinout

Pin	Name	Pin	Name
A1	GND	B1	V_RED
A2	GND	B2	V_GREEN
A3	GND	B3	V_BLUE
A4	V_HSYNC_L	B4	V_VSYNC_L
A5	NIC2_LED_ON_ACTIVITY	B5	FP_NMI_BTN_L
A6	NIC2_LED_3V_LINK_L	B6	GND
A7	CHASSIS_INTRUSION	B7	ID_SW_ACTIVE_L
A8	I2C_CLK	B8	+5V STANDBY
A9	I2C_DATA	B9	RST_SW_ACTIVE_L
A10	NIC1_LED_ON_ACTIVITY	B10	HDD_LED_FAULT_L
A11	NIC1_LED_3V_LINK_L	B11	PWR_SW_ACTIVE_L
A12	ID_LED_ON_L	B12	HDD_LED_ON_L
A13	+5V STANDBY	B13	VCC

Pin	Name	Pin	Name
A14	FP_SYS_FLT__LED2_L	B14	POWER_LED_ON_L
A15	FP_SYS_FLT_LED1_L	B15	+5V STANDBY
A16	IPMB_5VSB_SCL	B16	RST_P6_PWR_GOOD
A17	GND	B17	IPMB_5VSB_SDA
A18	FDD_HDSEL_L	B18	GND
A19	GND	B19	FDD_DSKCHG_L
A20	FDD_RDATA_L	B20	FDD_WPROT_L
A21	GND	B21	FDD_TRK0_L
A22	FDD_WDATA_L	B22	GND
A23	GND	B23	FDD_WGATE_L
A24	FDD_STEP_L	B24	FDD_DIR_L
A25	GND	B25	FDD_DS0_L
A26	FDD_MTR0_L	B26	GND
A27	GND	B27	FDD_INDEX_L
A28	V_SWITCH_L	B28	GND
A29	GND	B29	FDD_DENSEL0
A30	CHP3_CDRST_L	B30	GND
A31	GND	B31	CDR_D7
A32	CDR_D8	B32	CDR_D6
A33	CDR_D9	B33	GND
A34	GND	B34	CDR_D5
A35	CDR_D10	B35	CDR_D4
A36	CDR_D11	B36	GND
A37	GND	B37	CDR_D3
A38	CDR_D12	B38	CDR_D2
A39	CDR_D13	B39	GND
A40	GND	B40	CDR_D1
A41	CDR_D14	B41	CDR_D0
A42	CDR_D15	B42	GND
A43	GND	B43	CDR_DREQ
A44	CDR_IOW_L	B44	GND
A45	CDR_IOR_L	B45	CDR_DACK_L
A46	CDR_IRDY	B46	GND
A47	CDR_IRQ	B47	CDR_ADDR1
A48	CDR_ADDR2	B48	CDR_ADDR0
A49	GND	B49	CDR_CS1_L
A50	CDR_CS3_L	B50	

6.3.14   FDD/CDROM Daughter Board Connector

The SCSI backplane provides a pathway for floppy and IDE33 signals from the 100-pin floppy/FP/IDE connector to the high density FDD/CDROM daughter board connector. See Chapter 8 for additional details on the FDD/CDROM interface assembly.

6.3.15   Front Panel Interface Connector

The SCSI backplane provides a pathway for front panel signals from the 100-pin floppy/FP/IDE connector to the FP connector (WY*:BHS-33A-2.0D-SM) . The pinout for the FP connector is shown in the following table.

Table 23. SCSI Backplane FP Connector Pinout

Pin #	I/O	Description
1	I	LED Anode for another Model
2	I	FP_SYS_FLT_LED1_L
3	O	POWER_LED_ON_L
4	O	FP_SYS_FLT_LED2_L
5	PWR	VCC
6	PWR	SB5V
7	O	HDD_LED_ON_L
8	O	ID_LED_ON_L
9	I	PWR_SW_ACTIVE_L
10	O	NIC1_LED_3V_LINK_L
11	O	HDD_LED_FAULT_L
12	O	NIC1_LED_ON_ACTIVITY
13	I	RST_SW_ACTIVE_L
14	I/O	I2C_DATA
15	O	CLIFTON/GIFFORD_LED_CATHOD_L
16	I/O	I2C_CLK
17	I	ID_SW_ACTIVE_L
18	I	CHASSIS_INTRUSION_L
19	PWR	GND
20	O	NIC2_LED_3V_LINK_L
21	NC	NC_FP_KEY
22	NC	NC_FP_RSV2
23	I	FP_NMI_BTN_L
24	O	NIC2_LED_ON_ACTIVITY
25	I	V_IO_VSYNC_BUFF_FP_L
26	I	V_IO_HSYNC_BUFF_FP_L
27	I	V_IO_BLUE_CONN_FP
28	PWR	GND
29	I	V_IO_GREEN_CONN_FP
30	PWR	GND
31	O	V_IO_RED_CONN_FP
32	I	GND
33	NC	TP_FP34_P33
34	NC	ZZ_V_SWITCH_L

6.3.16 SCA2 Hot-Swap SCSI Drive Connectors

The SCSI backplane provides three hot-swap SCA2 connectors (Foxconn*: LS24403-J34) , which provide power and SCSI signals using a single connector. Each SCA drive attaches to the backplane using one of these connectors.
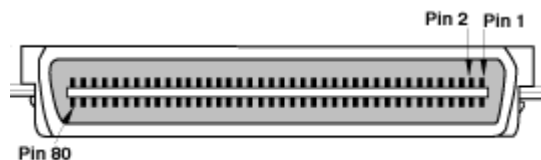
Figure 21. 80-pin SCA2 SCSI Interface

Table 24. 80-pin SCA2 SCSI Interface Pinout

Pin	Signal Name	Signal Name	Pin
1	12V PreCharge	12V Ground	41
2	12V	12V Ground	42
3	12V	12V Ground	43
4	12V	Mated 1	44
5	3.3V	3.3V PreCharge	45
6	3.3V	DIFFSNS	46
7	-DB (11)	+DB (11)	47
8	-DB (10)	+DB (10)	48
9	-DB (9)	+DB (9)	49
10	-DB (8)	+DB (8)	50
11	-I/O	+I/O	51
12	-REQ	+REQ	52
13	-C/D	+C/D	53
14	-SEL	+SEL	54
15	-MSG	+MSG	55
16	-RST	+RST	56
17	-ACK	+ACK	57
18	-BSY	+BSY	58
19	-ATN	+ATN	59
20	-DB (P)	+DB (P)	60
21	-DB (7)	+DB (7)	61
22	-DB (6)	+DB (6)	62
23	-DB (5)	+DB (5)	63
24	-DB (4)	+DB (4)	64
25	-DB (3)	+DB (3)	65
26	-DB (2)	+DB (2)	66
27	-DB (1)	+DB (1)	67
28	-DB (0)	+DB (0)	68

Pin	Signal Name	Signal Name	Pin
29	-DB (P1)	+DB (P1)	69
30	-DB (15)	+DB (15)	70
31	-DB (14)	+DB (14)	71
32	-DB (13)	+DB (13)	72
33	-DB (12)	+DB (12)	73
34	5V	Mated 2	74
35	5V	5V Ground	75
36	5V PreCharge	5V Ground	76
37	Spindle Sync	Active LED Out	77
38	RMT_START	DLYD_START	78
39	SCSI ID (0)	SCSI ID (1)	79
40	SCSI ID (2)	SCSI ID (3)	80

7. ATA Backplane

The server chassis SR1300 can support a multifunctional ATA backplane, supporting the following features:

- Two cold swappable ATA hard drive connectors
- One floppy/CDROM or floppy/DVDROM module interface connector
- Hard drive power-up control logic
- Pathway for signals from the 100-pin floppy/FP/IDE connector to the 60-pin floppy/CDROM and floppy/DVDROM module connector in the flex bay
- Pathway for signals from the 100-pin floppy/FP/IDE connector to the front panel connector
- Drive Activity LEDs

Notes:
The ATA HDDI board does NOT support hot-swapping hard drives. Doing so may cause data loss.

ATA drives from both Western Digital* and Maxtor* have been found to have their interface connectors placed in a location that is mechanically not compatible for use with the ATA backplane of the server chassis SR1300.

7.1 ATA Backplane Layout

The ATA backplane resides in the drive bay of the server chassis SR1300. Drive bays 1 and 2 each have a cold-swappable ATA drive connector and a 4-pin power connector. The flex bay, (the third peripheral bay on the right side on the front of the chassis) has a raised connector providing support for an optional Floppy/CDROM or Floppy/DVDROM module. Additional connectors include a 100-pin floppy/FP/IDE connector, which is cabled to the baseboard; two 40-pin ATA 100 connectors, which are cabled to the baseboard; a 34-pin connector, which is cabled to the front panel; and a 6-pin power connector, which is connected to the power jumper board.

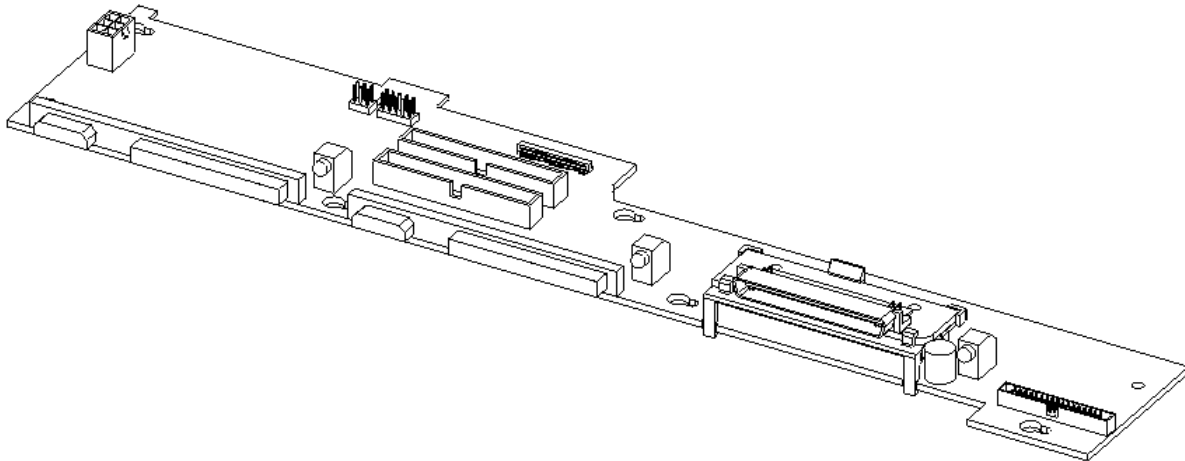The following diagram shows the board layout of the backplane.

Figure 22. ATA Backplane Layout

7.2   ATA Backplane Functional Architecture

The ATA backplane is made up of the following functional blocks:

- ATA100 bus with IDE connectors, which are combined with 4-pin power connectors
- ATA drive power control
- Peripheral/front panel interfaces

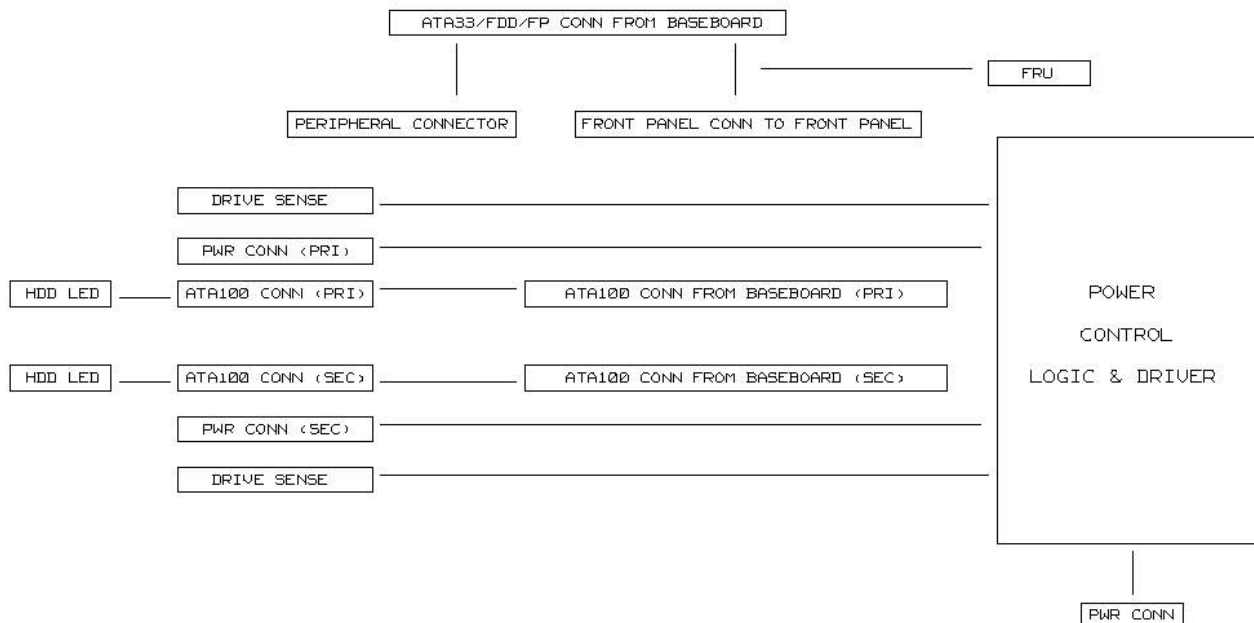The figure below shows the functional blocks of the ATA backplane.

```
        ┌──────────────────────────────────────┐
        │   ATA33/FDD/FP CONN FROM BASEBOARD     │
        └──────────────────────────────────────┘
              │                    │      ┌──────────────┐   ┌──────┐
              │                    │      │              │   │ FRU  │
      ┌───────────────────┐  ┌──────────────────────────┐   └──────┘
      │ PERIPHERAL CONNECTOR│  │ FRONT PANEL CONN TO FRONT PANEL │
      └───────────────────┘  └──────────────────────────┘
                                                         ┌──────────────┐
      ┌──────────────┐                                   │              │
      │  DRIVE SENSE │───────────────────────────────────│              │
      └──────────────┘                                   │              │
      ┌──────────────┐                                   │              │
      │ PWR CONN (PRI)│──────────────────────────────────│              │
      └──────────────┘                                   │    POWER     │
 ┌─────────┐ ┌──────────────────┐ ┌─────────────────────────┐          │
 │ HDD LED │─│ ATA100 CONN (PRI) │─│ ATA100 CONN FROM BASEBOARD (PRI)  │ CONTROL │
 └─────────┘ └──────────────────┘ └─────────────────────────┘          │
                                                          │ LOGIC & DRIVER│
 ┌─────────┐ ┌──────────────────┐ ┌─────────────────────────┐          │
 │ HDD LED │─│ ATA100 CONN (SEC) │─│ ATA100 CONN FROM BASEBOARD (SEC)  │          │
 └─────────┘ └──────────────────┘ └─────────────────────────┘          │
      ┌──────────────┐                                   │              │
      │ PWR CONN (SEC)│──────────────────────────────────│              │
      └──────────────┘                                   │              │
      ┌──────────────┐                                   │              │
      │  DRIVE SENSE │───────────────────────────────────│              │
      └──────────────┘                                   └──────────────┘
                                                               │
                                                         ┌──────────┐
                                                         │ PWR CONN │
                                                         └──────────┘
```

Figure 23. ATA Backplane Functional Block Diagram

7.2.1 Field Replaceable Unit (FRU)

The ATA backplane uses a Dallas* DS1624 to save board specific data, including serial number. This is attached to the I^2C bus of the front panel.

7.2.2 Power Control Logic and Driver

Although the ATA backplane does not support hot swapping of hard drives, the backplane provides power control logic that reduces the chance of damage to a hard drive, should someone attempt to remove or insert a drive while the system is powered on.

Only cold swapping of drives, (i.e., system must be powered off before the ATA drives or the floppy/CDROM module can be inserted or extracted from the system) will be supported in the server chassis SR1300.

7.2.3 Server Boards SE7500WV2 and SE7501WV2 to CD/FDD/FP Interface

The ATA backplane provides a pathway for signals from the 100-pin floppy/FP/IDE connector to the high-density FDD/CD daughter board connector and the FP connector. The following table provides the pinout for the 100-pin (JAEE*: WR-100S-VF-1) connector.

Table 25. Floppy/FP/IDE Connector Pinout

Pin	Name	Pin	Name
A1	GND	B1	V_IO_RED_CONN_FP_R
A2	GND	B2	V_IO_GREEN_CONN_FP_R
A3	GND	B3	V_IO_BLUE_CONN_FP_R
A4	V_IO_HSYNC_BUFF_FP_R_L	B4	V_IO_VSYNC_BUFF_FP_R
A5	NIC2_LED_ON_ACTIVITY	B5	FP_NMI_BTN_L
A6	NIC2_LED_3V_LINK_L	B6	GND
A7	CHASSIS_INTRUSION	B7	ID_SW_ACTIVE_L
A8	I2C_CLK	B8	+5V STANDBY
A9	I2C_DATA	B9	RST_SW_ACTIVE_L
A10	NIC1_LED_ON_ACTIVITY	B10	HDD_LED_FAULT_L
A11	NIC1_LED_3V_LINK_L	B11	PWR_SW_ACTIVE_L
A12	ID_LED_ON_L	B12	HDD_LED_ON_L
A13	+5V STANDBY	B13	+5V
A14	FP_SYS_FLT__LED2_L	B14	POWER_LED_ON_L
A15	FP_SYS_FLT_LED1_L	B15	+5V STANDBY
A16	IPMB_5VSB_SCL	B16	RST_P6_PWR_GOOD
A17	GND	B17	IPMB_5VSB_SDA
A18	FDD_HDSEL_L	B18	GND
A19	GND	B19	FDD_DSKCHG_L
A20	FDD_RDATA_L	B20	FDD_WPROT_L
A21	GND	B21	FDD_TRK0_L
A22	FDD_WDATA_L	B22	GND
A23	GND	B23	FDD_WGATE_L
A24	FDD_STEP_L	B24	FDD_DIR_L
A25	GND	B25	FDD_DS0_L
A26	FDD_MTR0_L	B26	GND
A27	GND	B27	FDD_INDEX_L
A28	V_SWITCH_L	B28	GND
A29	GND	B29	FDD_DENSEL0
A30	CHP3_CDRST_L	B30	GND
A31	GND	B31	CDR_D7
A32	CDR_D8	B32	CDR_D6
A33	CDR_D9	B33	GND
A34	GND	B34	CDR_D5
A35	CDR_D10	B35	CDR_D4
A36	CDR_D11	B36	GND
A37	GND	B37	CDR_D3
A38	CDR_D12	B38	CDR_D2
A39	CDR_D13	B39	GND
A40	GND	B40	CDR_D1
A41	CDR_D14	B41	CDR_D0
A42	CDR_D15	B42	GND

Pin	Name	Pin	Name
A43	GND	B43	CDR_DREQ
A44	CDR_IOW_L	B44	GND
A45	CDR_IOR_L	B45	CDR_DACK_L
A46	CDR_IRDY	B46	GND
A47	CDR_IRQ	B47	CDR_ADDR1
A48	CDR_ADDR2	B48	CDR_ADDR0
A49	GND	B49	CDR_CS1_L
A50	CDR_CS3_L	B50	

7.2.4 FDD/CD Daughter Board Connector

The ATA backplane provides a pathway for floppy and IDE33 signals from the 100-pin floppy/FP/IDE connector to the high-density FDD/CDROM daughter board connector. See Chapter 8 for additional details on the FDD/CDROM interface assembly.

7.2.5 Front Panel Interface Connector

The ATA backplane provides a pathway for front panel signals from the 100-pin floppy/FP/IDE connector to the front panel (FP) connector. The pinout for the FP (WY*:BHS-33A-2.0D-SM) connector is shown in the following table.

Table 26. ATA Backplane FP Connector Pinout

Pin #	I/O	Description
1	I	LED Anode for another model
2	I	FP_SYS_FLT_LED1_L
3	O	POWER_LED_ON_L
4	O	FP_SYS_FLT_LED2_L
5	PWR	VCC
6	PWR	SB5V
7	O	HDD_LED_ON_L
8	O	ID_LED_ON_L
9	I	PWR_SW_ACTIVE_L
10	O	NIC1_LED_3V_LINK_L
11	O	HDD_LED_FAULT_L
12	O	NIC1_LED_ON_ACTIVITY
13	I	RST_SW_ACTIVE_L
14	I/O	I2C_DATA
15	O	CLIFTON/GIFFORD_LED_CATHOD_L
16	I/O	I2C_CLK
17	I	ID_SW_ACTIVE_L
18	I	CHASSIS_INTRUSION_L
19	PWR	GND
20	O	NIC2_LED_3V_LINK_L
21	NC	NC_FP_KEY

Pin #	I/O	Description
22	NC	NC_FP_RSV2
23	I	FP_NMI_BTN_L
24	O	NIC2_LED_ON_ACTIVITY
25	I	V_IO_VSYNC_BUFF_FP_L
26	I	V_IO_HSYNC_BUFF_FP_L
27	I	V_IO_BLUE_CONN_FP
28	PWR	GND
29	I	V_IO_GREEN_CONN_FP
30	PWR	GND
31	O	V_IO_RED_CONN_FP
32	I	GND
33	NC	TP_FP34_P33
34	NC	ZZ_V_SWITCH_L

7.2.6 ATA100 Connectors

The ATA backplane has two 40-pin ATA100 connectors. These connectors relay ATA100 signals from the baseboard to the ATA drives. Each connector is used for a separate ATA channel. Each channel is configured as a bus master. The following table provides the pinout for both 40-pin ATA100 connectors.

Table 27. 40-Pin ATA 100 Connector Pinout

Pin	Name	Pin	Name
1	RESET_L	21	IDEDRQ
2	GND	22	GND
3	DD7	23	DIOW_L
4	DD8	24	GND
5	DD6	25	DIOR_L
6	DD9	26	GND
7	DD5	27	IORDY
8	DD10	28	CSEL
9	DD4	29	IDEDAK_L
10	DD11	30	GND
11	DD3	31	IDEIRQ
12	DD12	32	Reserved (nc)
13	DD2	33	IDESA1
14	DD13	34	PDIAG_L
15	DD1	35	IDESA0
16	DD14	36	IDESA2
17	DD0	37	IDECS1_L
18	DD15	38	IDECS3_L
19	GND	39	IDEHDACT_L
20	Keyed	40	GND

7.2.7   Power Connector

The ATA backplane provides power for up to two ATA drives and one floppy/CD-ROM module.
A 6-line power cable is routed from the power distribution board and plugs into a connector on
the backplane.

Table 28. 6-Pin ATA Backplane Power Connector Pinout

Pin	Name	Pin	Name
1	GND	4	+12V
2	GND	5	+12V
3	+5V	6	Reserved

7.2.8   ATA100 Interface to Drive

The ATA drive interface combines both ATA and power signals into a single connector. The
pinout of the drive interface connector is the same as a standard ATA and power connector.

8.   Floppy/CDROM and Floppy/DVDROM Module Interface Assemblies

Two modules are available for use in the server chassis SR1300. Both support a floppy disk drive, while one contains a CDROM drive and the other a DVDROM drive. The interface assembly will be referred to as FDD/CDROM (though it supports DVDROM drives also).

The FDD/CDROM interface assembly consists of two pieces: a 60-pin high-density connector located on both the SCSI and ATA backplanes, and a raised FDD/CD daughter board.

In the SCSI configuration, this assembly allows the daughter board to sit directly over the third SCA2 SCSI connector, allowing for either a third SCSI hard drive or a floppy/CDROM or floppy/DVD module to be used in the flex bay.

Both the SCSI and ATA backplanes provide a pathway for FDD/CD signals from the 100-pin floppy/FP/IDE connector to the high-density 60-pin (Molex: 52760-0608) daughter board connector. The following table provides the connector pinout.

Table 29. 60-Pin Daughter Card Connector Pinout

Pin	Name	Pin	Name
1	CDR_D1	2	CDR_D0
3	CDR_D13	4	CDR_D14
5	CDR_D2	6	CDR_D15
7	CDR_D12	8	CDR_IOW_L
9	CDR_D3	10	CDR_IOR_L
11	CDR_D11	12	CDR_IRDY
13	CDR_D4	14	CDR_IRQ
15	CDR_D10	16	CDR_ADDR1
17	CDR_D5	18	CDR_DACK_L
19	CDR_D9	20	CDR_ADDR0
21	CDR_D6	22	CDR_ADDR2
23	CDR_D8	24	CDR_CS1_L
25	CDR_D7	26	CDR_CS3_L
27	CHP3_CDRST_L	28	CDR_DREQ
29	GND	30	GND
31	GND	32	GND
33	GND	34	GND
*35	PWRCNTR1_FOR_IDE_HSBP	36	GND
*37	PWRCNTR2_FOR_IDE_HSBP	38	CD_FDD_PRSN_L
39	ACTIVE_L	40	FDD_HDSEL_L
41	FDD_INDEX_L	42	FDD_WPROT_L
43	FDD_DSKCHG_L	44	FDD_WGATE_L
45	FDD_DIR_L	46	FDD_STEP_L
47	FDD_WDATA_L	48	FDD_MTR0_L

Pin	Name	Pin	Name
49	FDD_DENSEL0	50	FDD_DS0_L
51	FDD_TRK0_L	52	FDD_RDATA_L
53	VCC**	54	VCC**
55	VCC**	56	VCC**
57	VCC**	58	VCC**
59	VCC**	60	VCC**

Notes:

* This signal is used only on the ATA backplane.

** VCC means +5 V

The floppy/CDROM daughter board has two connectors, one on the bottom side of the board which mates with the high density connector on the backplane, and an 80-pin SCA type interface connector on the top side of the board, which is used as the interface for the floppy/CDROM drive module.
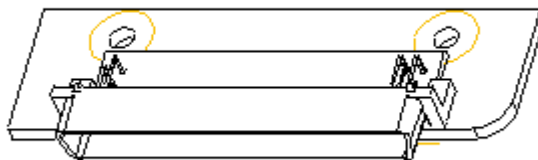
Figure 24. Floppy/CDROM Daughter Board

The following table provides the pinout for the 80-pin (Molex:71661-2380) SCA connector.

Table 30. 80-Pin SCA Interface Pinout

Pin	Signal Name	Signal Name	Pin
1	NC	GND	41
2	NC	GND	42
3	NC	GND	43
4	NC	GND (DRIVE PSESENT SIGNAL ON)	44
5	NC	CDR_DREQ	45
6	NC	NC	46
7	CDR_CD3_L	CDR_CS1_L	47
8	CDR_ADDR2	CDR_ADDR0	48
9	CDR_DACK_L	CDR_ADDR1	49
10	CDR_IRQ	CDR_IRDY	50
11	CDR_IOR_L	CDR_IOW_L	51

Pin	Signal Name	Signal Name	Pin
12	CDR_D (15)	CDR_D (0)	52
13	CDR_D (14)	CDR_D (1)	53
14	CDR_D (13)	CDR_D (2)	54
15	CDR_D (12)	CDR_D (3)	55
16	CDR_D (11)	CDR_D (4)	56
17	CDR_D (10)	CDR_D (5)	57
18	CDR_D (9)	CDR_D (6)	58
19	CDR_D (8)	CDR_D (7)	59
20	CHP3_CDRST_L	FDD_INDEX_L	60
21	FDD_DSKCHG_L	FDD_DIR_L	61
22	FDD_WDATA_L	FDD_DENSEL0	62
23	FDD_TRK0_L	FDD_DS0_L	63
24	FDD_RDATA_L	FDD_MTR0_L	64
25	FDD_STEP_L	FDD_WGATE_L	65
26	FDD_WPROT_L	FDD_HDSEL_L	66
27	PWRCNTR1_FOR_IDE HSBP	NC	67
28	PWRCNTR2_FOR_IDE HSBP	NC	68
29	NC	NC	69
30	NC	NC	70
31	NC	NC	71
32	NC	NC	72
33	NC	NC	73
34	VCC	GND	
(DRIVE PSESENT SIGNAL ON)	74		
35	VCC	GND	75
35	VCC	GND	75
36	VCC	GND	76
37	NC	10K Pull-up	
(Disable DISK ACT LED)	77		
38	NC	NC	78
39	NC	NC	79
40	NC	CD/FDD Enable (GND)	80

9.   PCI Riser Cards

The SR1300 1U server chassis supports the use of two single-slot PCI riser cards.

Each riser card is capable of supporting a 3.3 V, 64-bit add-in card. For the SCSI SKU, the board supports 66 MHZ PCI in the low profile slot and up to 100MHZ PCI-X in the full height slot. If the onboard 7899 SCSI device is disabled in BIOS setup, the low profile slot can support 100Mhz PCI-X. For the ATA SKU both low profile and full height slots support 100MHZ PCI-X.

Table 31. Max Conditions for PCI Riser Cards

Configuration	Bus B with Anvik Dual NIC down and 1 Slot Riser	Bus C with AIC7899 SCSI down and 1 Slot Riser	Bus C with AIC7902 SCSI down and 1 Slot Riser
0 Adapter Cards installed and on board device enabled	PCI-X 64/100	PCI-X 64/66	PCI-X 64/100
1 Adapter Cards installed and on board device enabled	PCI-X 64/100	PCI-X 64/66	PCI-X 64/100
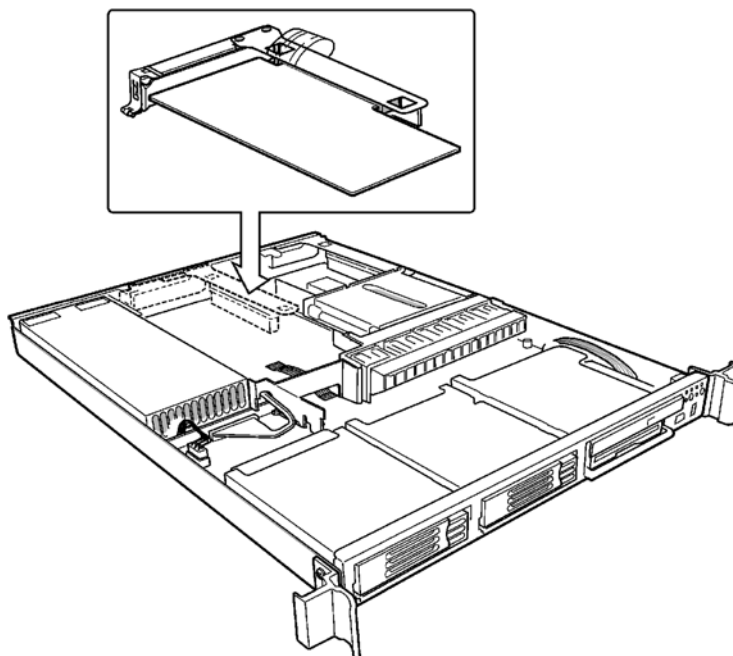
Figure 25. PCI Riser Card Diagram

The PCI riser card in the riser slot located closest to the edge of the baseboard will only support low profile add-in cards. The second riser card is capable of supporting both full-height/full-length and low-profile PCI cards (low profile PCI cards in this slot require full height PCI brackets).
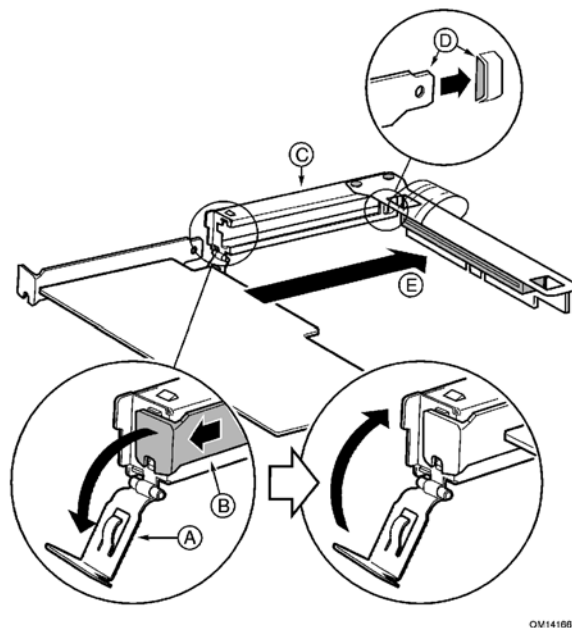
Figure 26. PCI Riser Assembly Diagram

The following table provides the pinout of the 64-bit PCI connector.

Table 32. 3-Volt 64-Bit PCI Connector Pinout

Pin	Side B	Side A		Pin	Side B	Side A
1	-12V	TRST#		49	M66EN	AD [09]
2	TCK	+12V		50	Ground	Ground
3	Ground	TMS		51	Ground	Ground
4	TDO	TDI		52	AD [08]	C/BE [0]#
5	+5V	+5V		53	AD [07]	+3.3V
6	+5V	INTA#		54	+3.3V	AD [06]
7	INTB#	INTC#		55	AD [05]	AD [04]
8	INTD#	+5V		56	AD [03]	Ground
9	PRSNT1#	Reserved		57	Ground	AD [02]
10	Reserved	+3.3V (I/O)		58	AD [01]	AD [00]
11	PRSNT2#	Reserved		59	+3.3V (I/O)	+3.3V (I/O)
12	CONNECTOR KEY	CONNECTOR KEY		60	ACK64#	REQ64#
13	CONNECTOR KEY	CONNECTOR KEY		61	+5V	+5V
14	Reserved	Reserved		62	+5V	+5V

Pin	Side B	Side A		Pin	Side B	Side A
15	Ground	RST#			CONNECTOR KEY	CONNECTOR KEY
16	CLK	+3.3V (I/O)			CONNECTOR KEY	CONNECTOR KEY
17	Ground	GNT#		63	Reserved	Ground
18	REQ#	Ground		64	Ground	C/BE [7]#
19	+3.3V (I/O)	Reserved		65	C/BE [6]#	C/BE [5]#
20	AD [31]	AD [30]		66	C/BE [4]#	+3.3V (I/O)
21	AD [29]	+3.3V		67	Ground	PAR64
22	Ground	AD [28]		68	AD [63]	AD [62]
23	AD [27]	AD [26]		69	AD [61]	Ground
24	AD [25]	Ground		70	+3.3V (I/O)	AD [60]
25	+3.3V	AD [24]		71	AD [59]	AD [58]
26	C/BE [3]#	IDLES		72	AD [57]	Ground
27	AD [23]	+3.3V		73	Ground	AD [56]
28	Ground	AD [22]		74	AD [55]	AD [54]
29	AD [21]	AD [20]		75	AD [53]	+3.3V (I/O)
30	AD [19]	Ground		76	Ground	AD [52]
31	+3.3V	AD [18]		77	AD [51]	AD [50]
32	AD [17]	AD [16]		78	AD [49]	Ground
33	C/BE [2]#	+3.3V		79	+3.3V (I/O)	AD [48]
34	Ground	FRAME#		80	AD [47]	AD [46]
35	IRDY#	Ground		81	AD [45]	Ground
36	+3.3V	TRDY#		82	Ground	AD [44]
37	DEVSEL#	Ground		83	AD [43]	AD [42]
38	Ground	STOP#		84	AD [41]	+3.3V (I/O)
39	LOCK#	+3.3V		85	Ground	AD [40]
40	PERR#	SDONE		86	AD [39]	AD [38]
41	+3.3V	SBO#		87	AD [37]	Ground
42	SERR#	Ground		88	+3.3V (I/O)	AD [36]
43	+3.3V	PAR		89	AD [35]	AD [34]
44	C/BE [1]#	AD [15]		90	AD [33]	Ground
45	AD [14]	+3.3V		91	Ground	AD [32]
46	Ground	AD [13]		92	Reserved	Reserved
47	AD [12]	AD [11]		93	Reserved	Ground
48	AD [10]	Ground		94	Ground	Reserved
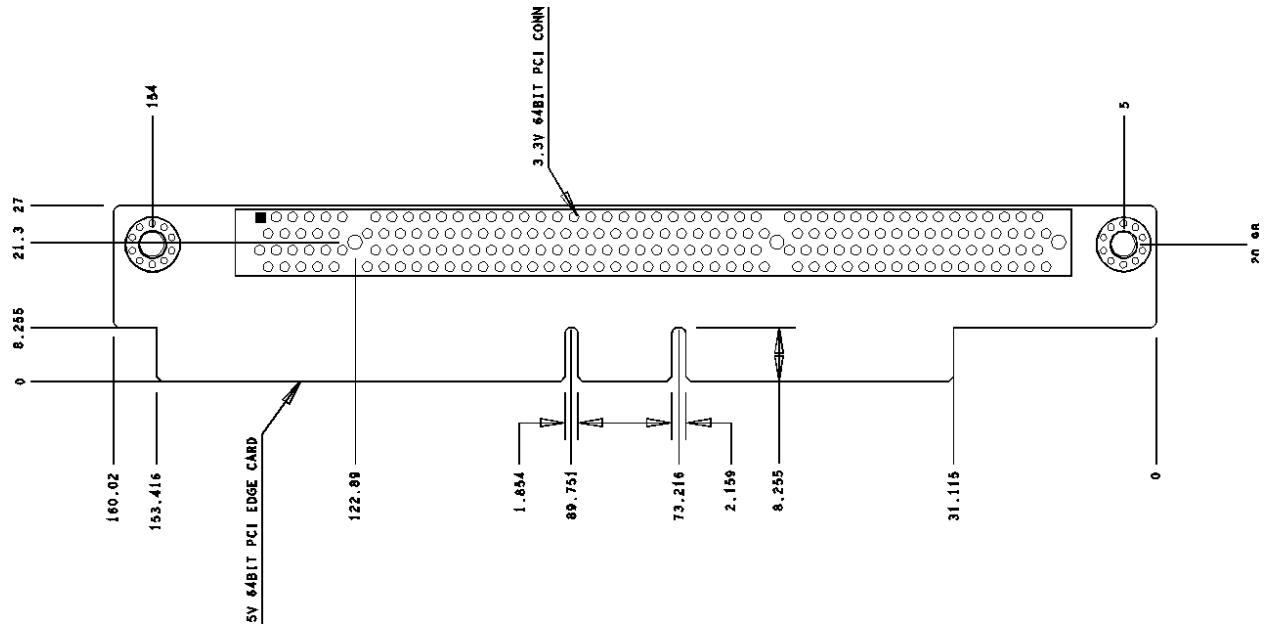
Figure 27. 1U PCI Riser Card Mechanical Drawing

10. Supported Intel® Server Boards

The SR1300 1U server chassis is designed to support the feature requirements of the Intel® server boards SE7500WV2 and SE7501WV2. Please refer to the *SE7500WV2 Technical Product Specification* and the SE7501WV2 Technical Product Specification for additional baseboard information.

Two server boards SE7500WV2 and two server boards SE7501WV2 will be made available. One of the sever board SE7500WV2 will provide an embedded Ultra-160 SCSI interface, and the other SE7500WV2 board will provide an embedded ATA-100 "Valu-Raid" interface. One of the server board SE7501WV2 will provide an embedded Ultra-320 SCSI interface, and the other SE7501WV2 board will provide an embedded ATA-100 "Valu-Raid" interface. Both boards will support the following feature set:

- Dual Intel® Xeon™ processors socket 604
- Intel® E7500 chipset or E7501 chipset
- Support for six DDR 200/266 Registered ECC memory with two-way interleaving up to 12 GBs
  Notes:
  Only low profile DIMMs are supported in the SR1300 server chassis.
  2 GB DIMM thermal performance is unproven
- The server board SE7501WV2 only supports DDR266 memory modules when using 533MHz processors
- Three separate PCI buses:
  - Segment A: 32-bit, 33 MHz, 5 V (P32-A) with four embedded devices:
    - 2D/3D graphics controller: ATI RAGE* XL video controller with 8 MB of SDRAM
    - ATA-100 controller: Promise Technology* PDC20277 *(ATA-100 SE7500WV2 and SE7501WV2 server board only)*
  - Segment B: 64-bit, up to 100MHz PCI-X (66Mhz PCI for SCSI server board SE7500WV2), 3.3 V, (P64-B) supporting the following configuration:
    - One PCI I/O riser slot capable of supporting full length PCI add-in cards
    - Two network interface controllers: Intel® 82546PM Fast Ethernet Controllers
  - Segment C: 64-bit, up to 100MHz, 3.3 V (P64-C) supporting the following devices:
    - One PCI I/O riser slot, with support for low-profile PCI add-in cards only
    - Dual-channel wide Ultra-160 SCSI controller on the server board SE7500WV2 and Ultra- 320 SCSI controller on the server board SE7501WV2 providing one internal and one high density external channel support: Adaptec* AIC-7899W SCSI Controller (SCSI server board SE7500WV2 only) or Adaptec* AIC-7902 SCSI Controller (SCSI server board SE7501WV2 only).
- LPC (Low Pin Count) bus segment with two embedded devices:
  - Platform Management Controller (PMC) providing monitoring, alerting, and logging of critical system information obtained from embedded sensors on server board
  - Super I/O controller chip providing all PC-compatible I/O (floppy, serial, keyboard, mouse)
- X-Bus segment with one embedded device:
  - Flash ROM device for system BIOS: Intel® 32-megabit 28F320C3 Flash ROM

- Two external Universal Serial Bus (USB) ports on the rear of the board with an additional internal header that provides one optional USB port for front panel support
- One external low-profile RJ45 Serial B port on the back of the board.
- Support for up to 5 multi-speed fans (via single 12pin fan header) and 2 fixed speed fans
- SSI compliant connectors for SSI interface support.
- Multifunctional high-density connector for use in server chassis SR1300: front panel, floppy, and IDE.

11. Serial Port Usage

The SR1300 server chassis, when integrated with a server board SE7500WV2 or SE7501WV2, provides one external RJ45 serial port (Serial B) .

The use of RJ45 connectors for the serial interface is widely becoming a standard for use in the high-density server market. The intended usage model for the RJ45 serial connector is for use as an interface to a serial port concentrator allowing for remote access to the server's Emergency Management Port (EMP). See the *SE7500WV2 or SE7501WV2 Hardware Technical Product Specifications* for more information concerning server management and EMP usage.

The intended use for the RJ45 serial port, located in the back of the system, is for remote EMP communication by connecting the port to a serial terminal concentrator. With the optional RJ45-to-DB9 adapter, the serial port can also be configured for use with a modem or other serial device requiring a DB9 connection to the serial port.

12. Regulatory and Integration Information

12.1 Product Regulatory Compliance

12.1.1   Product Safety Compliance

The server board SE7500WV2 and SE7501WV2 complies with the following safety requirements:

- UL 1950 - CSA 950 (US/Canada)
- EN 60 950 (European Union)
- IEC60 950 (International)
- CE – Low Voltage Directive (73/23/EEC) (European Union)
- EMKO-TSE (74-SEC) 207/94 (Nordics)

12.1.2   Product EMC Compliance

The server boards SE7500WV2 and SE7501WV2 have tested and verified to comply with the following electromagnetic compatibility (EMC) regulations when installed a compatible Intel host system. For information on compatible host system(s) refer to Intel's Server Builder website or contact your local Intel representative.

- FCC (Class A Verification) – Radiated & Conducted Emissions (USA)
- ICES-003 (Class A) – Radiated & Conducted Emissions (Canada)
- CISPR 22 (Class A) – Radiated & Conducted Emissions (International)
- EN55022 (Class A) – Radiated & Conducted Emissions (European Union)
- EN55024 (Immunity) (European Union)
- EN61000-3-2 & -3 (Power Harmonics & Fluctuation and Flicker)
- CE – EMC Directive (89/336/EEC) (European Union)
- VCCI (Class A) – Radiated & Conducted Emissions (Japan)
- AS/NZS 3548 (Class A) – Radiated & Conducted Emissions (Australia / New Zealand)
- RRL (Class A) Radiated & Conducted Emissions (Korea)
- BSMI (Class A) Radiated & Conducted Emissions (Taiwan)

12.1.3 Product Regulatory Compliance Markings

This product is provided with the following Product Certification Markings.

- UL / cUL Listing Mark
- CE Mark
- German GS Mark
- Russian GOST Mark
- FCC, Class A Verification Marking
- ICES-003 (Canada EMC Compliance Marking)
- VCCI, Class A Mark
- Australian C-Tick Mark
- Taiwan BSMI Certification Number and Class A Warning

12.2 Electromagnetic Compatibility Notices

12.2.1 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.

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

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

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 to an outlet on a circuit other than the one 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.

12.2.2   FCC Verification Statement

Product Type: SR1300

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)-INTEL4U or 1 (800) 628-8686

12.2.3   ICES-003 (Canada)

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 Canadian 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.

12.2.4   Europe (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 marked with the CE Mark to illustrate its compliance.

12.2.5   Japan EMC Compatibility

Electromagnetic Compatibility Notices (International)

この装置は、情報処理装置等電波障害白主規制協議会（ＶＣＣＩ）の基準
に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波
妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ず
るよう要求されることがあります。

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.

12.2.6   BSMI (Taiwan)

The BSMI Certification number and the following warning is located on the product safety label which is located on the bottom side (pedestal orientation) or side (rack mount configuration).

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，
可能會造成射頻干擾，在這種情況下，使用者會
被要求採取某些適當的對策。

12.3 Replacing the Back up Battery

The lithium battery on the server board powers the real time clock (RTC) for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings stored in CMOS RAM in the RTC (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved devices.

⚠   WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

⚠️   **ADVARSEL!**

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

⚠️   **ADVARSEL**

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

⚠️   **VARNING**

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

⚠️   **VAROITUS**

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

13. Environmental Limits

13.1 System Level Environmental Limits

The table below defines the system level operating and non-operating environmental limits (Office or Computer room Environment).

Table 33. 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	90%, non-condensing @ 35°C
Acoustic noise	Sound Pressure: 55 dBA (Rackmount) in an idle state at typical office ambient temperature. (23 +/- degrees C) Sound Power: 7.0 BA in an idle state at typical office ambient temperature. (23 +/- 2 degrees C)
Operating Shock	No errors with a half sine wave shock of 2G (with 11 millisecond duration)
Package Shock	Operational after a 24-inch free fall, although cosmetic damage may be present (Chassis Weight 40-80 lbs)
ESD	+/-15kV per Intel Environmental test specification
System Cooling Requirement in BTU/Hr	1826 BTU/hour

13.2 System Environmental Testing

The system will be tested per the Environmental Standards Handbook, Intel Doc.#662394-05. These tests shall include:

- Temperature Operating and Non-Operating
- Humidity Non-Operating
- Packaged and Unpackaged Shock
- Packaged and Unpackaged Vibration
- AC Voltage, Freq. & Source Interrupt
- AC Surge
- Acoustics
- ESD
- EMC Radiated and Conducted Emissions Certifications

13.3 System Environmental Testing

The system will be tested per the *Environmental Standards Handbook*, Intel Doc.#662394-03. 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 (Sound Power and Sound Pressure)
- ESD

14. 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.

Remove top cover	0.5 Minutes
Remove and replace hard disk drive[1]	0.5 Minutes
Remove and replace power supply	2 Minutes
Remove and replace fan pack	2 Minutes
Remove and replace add-in cards	3 Minutes
Remove and replace front panel board	5 Minutes
Remove and replace baseboard	5 Minutes

Note:

1.   Assumes a new hard drive is installed in a new hard drive carrier.

15. Calculated MTBF

The Mean Time Between Failures (MTBF) for the SR1300 server chassis, integrated with a server board SE7500WV2 and SE7501WV2, 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 34. SR1300/SE7500WV2 Component MTBF Numbers

Subassembly		
(Server in 35C ambient air)	**MTBF**	**FIT**
	(hours)	(flrs/10^9 hrs)
Westville Motherboard	100,000	10,000
HDDI Board	1,500,000	667
PCI riser card	4,000,000	250
PCI riser card	4,000,000	250
Front Panel board	2,500,000	400
1U Power jumper board	3,500,000	286

Table 35. SR1300/SE7501WV2 Component MTBF Numbers

Subassembly		
(Server in 35C ambient air)	**MTBF**	**FIT**
	(hours)	(flrs/10^9 hrs)
Westville Motherboard	TBD	TBD
HDDI Board	TBD	TBD
PCI riser card	TBD	TBD
PCI riser card	TBD	TBD
Front Panel board	TBD	TBD
1U Power jumper board	TBD	TBD

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Appendix A: SR1300 Integration and Usage Tips

This section provides a list of useful information that is unique to the server chassis SR1300 and should be kept in mind while integrating and configuring your server board SE7500WV2 or SE7501WV2.

Only low-profile (1.2 in or 30.48 mm) DIMMs can be used in the SR1300 server chassis.

Only low-profile PCI add-in cards can be used in the PCI riser located closest to the edge of the chassis.

Processor fans are not supported and are not needed in the server chassis SR1300. The fan pack and power supply fan provide the necessary cooling needed for the system. Using a processor fan in this chassis may cause server management to incorrectly monitor the system fans.

IDE drives from Western Digital* and Maxtor* are not compatible for use with the SR1300 ATA backplane. Drives from these vendors have the drive interface connectors located in a place that is mechanically not compatible for use on this backplane.

When an IDE-based server is configured, the IDE drives are NOT hot-swappable. The system must be powered down before the drive is inserted or removed from the backplane.

When the optional floppy/CDROM module or floppy/DVD modules is used, it is NOT hot-swappable. The system must be powered down before the module is inserted or removed.

Before installing the server board SE7500WV2 or SE7501WV2 into the chassis, verify the sheet of mylar, that sits between the server board and the sheet metal of the chassis, is in place.

When installing the server board SE7500WV2 or SE7501WV2 into the chassis, verify that the back edge of the server board is sitting securely below the board retention stud protruding from the back wall of the chassis. This helps to keep the server board laying flat and prevents the board from flexing when removing the full-length riser card.

Verify that the SCSI or ATA cables, FDD/FP/CD flex cable, and front panel USB cable are all routed underneath the blue air baffle. This ensures proper airflow through the system.

When installing the front panel cable, verify that both cable connectors are seated securely and lay flat to the connectors located on the baseboard and backplane.

The Blue System ID LEDs, on both the server board SE7500WV2 or SE7501WV2 and the server chassis SR1300 front panel, are used to help locate a system for servicing when the server is installed in a rack with multiple servers installed. Both LEDs are illuminated when the ID button on the front panel is pushed, or in some cases may be illuminated remotely with a user-defined server management interface.

Refer to the latest server chassis *SR1300 Specification Update* for a list of the latest specification changes, updates, and errata associated with the server chassis SR1300. Specification updates are released on a monthly basis and can be downloaded from the Intel Customer Support Web site. http://support.intel.com

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
PWT	Processor Wind Tunnel
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

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