SR2200 2U Server Chassis

Technical Product Specification

Intel Order Number A77951-002

Revision 2.0

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Enterprise Platforms and Services Marketing

Revision History

Date	Revision Number	Modifications
10/8/01	1.0	First Production Release
8/27/02	2.0	Minor updates corrections made throughout 1.0 doc, added items to Appendix A, added Appedix B: Errata

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Table of Contents

List of Figures

List of Tables

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1. Overview

The SR2200 is a 2U server chassis that is designed to support the Intel® Server Board SCB2. Both the board and the chassis have a feature set that is designed to support the high-density server market. This chapter provides a high-level overview of the chassis features. Greater detail is provided in the following chapters.

1.1 Chassis Views

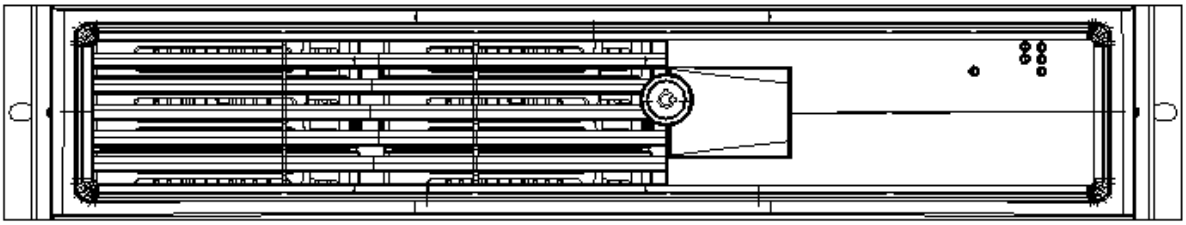


Figure 1. Chassis Front View with optional Bezel

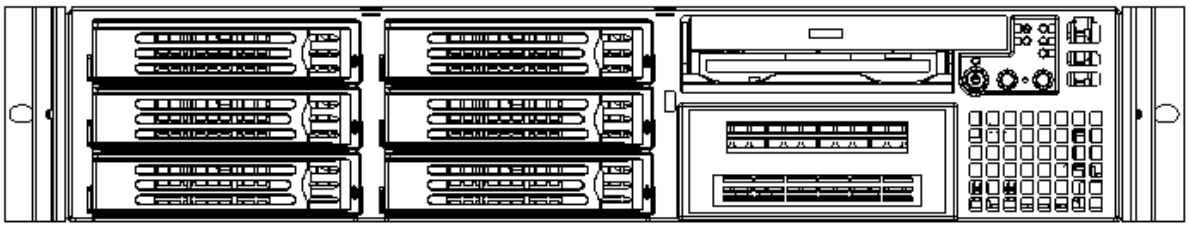


Figure 2. Chassis Front View without Bezel

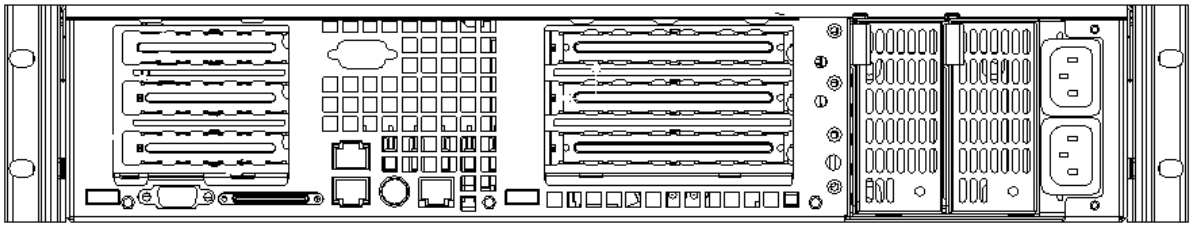


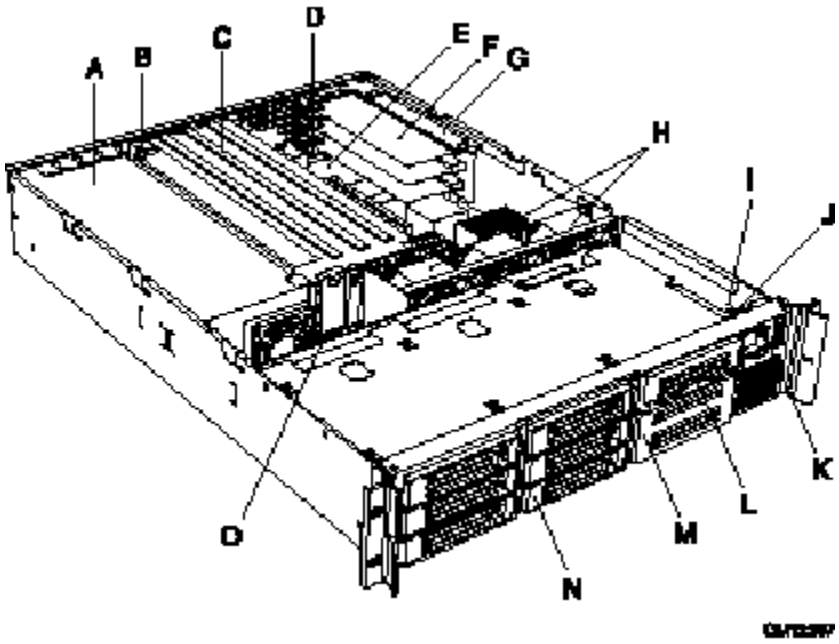
Figure 3. Chassis Back View

1.2 Chassis Dimensions

Table 1. Chassis Dimensions

Height	89 mm	3.504”
Width	430 mm	16.93”
Depth	648 mm	25.51”

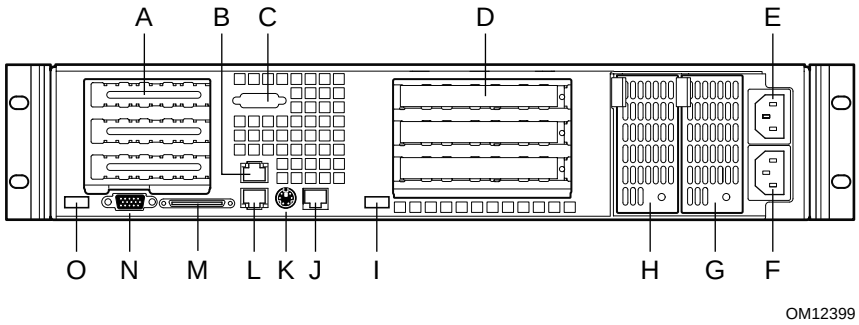
1.3 System Components



A. Power supply
B. PCI card bracket (full-length)
C. Riser card assembly (full-length)
D. PCI card bracket (low-profile)
E. Server board (accessory to system)
F. PCI add-in card (accessory to system)
G. Riser card assembly (low-profile)
H. System fans
I. Front panel board
J. Intrusion switch
K. Control panel
L. Flex bay (optional CD-ROM drive/FDD module available)
M. Tape drive bay (tape drive available from others)
N. Hard drive bay (one of six, accessory to system)
O. Backplane board

Figure 4. System Components

1.4 Chassis Back I/O Ports and Features

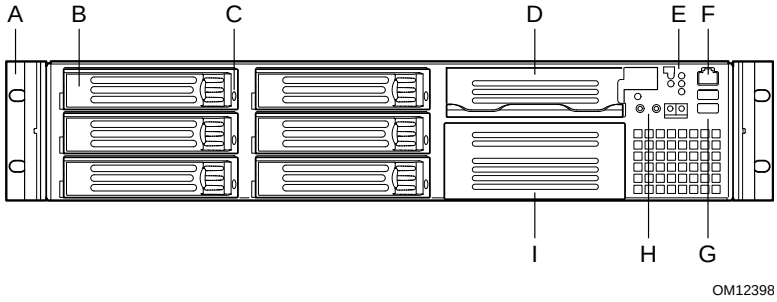


A. PCI card bracket (low profile)
B. RJ45 NIC 2 connector
Green Status LED / Yellow Status LED
C. Serial 1 port mounting hole (cable provided and installed by others)
D. PCI card bracket (full-height)
E. AC power input (primary)
F. AC power input (redundant)
G. Power supply module, redundant (system accessory)
H. Power supply module, primary
I. USB connector 2
J. RJ45 serial 2 port
K. PS/2* mouse/keyboard connector
L. RJ45 NIC 1 connector
M. SCSI connector (If available)
N. Video connector
O. USB connector 1

Figure 5. Chassis Back

The I/O connector locations on the back of the chassis are pre-cut, so the use of an ATX style I/O shield is not required. The supplied EMI gasket must be installed to maintain Electromagnetic Interference (EMI) compliance levels.

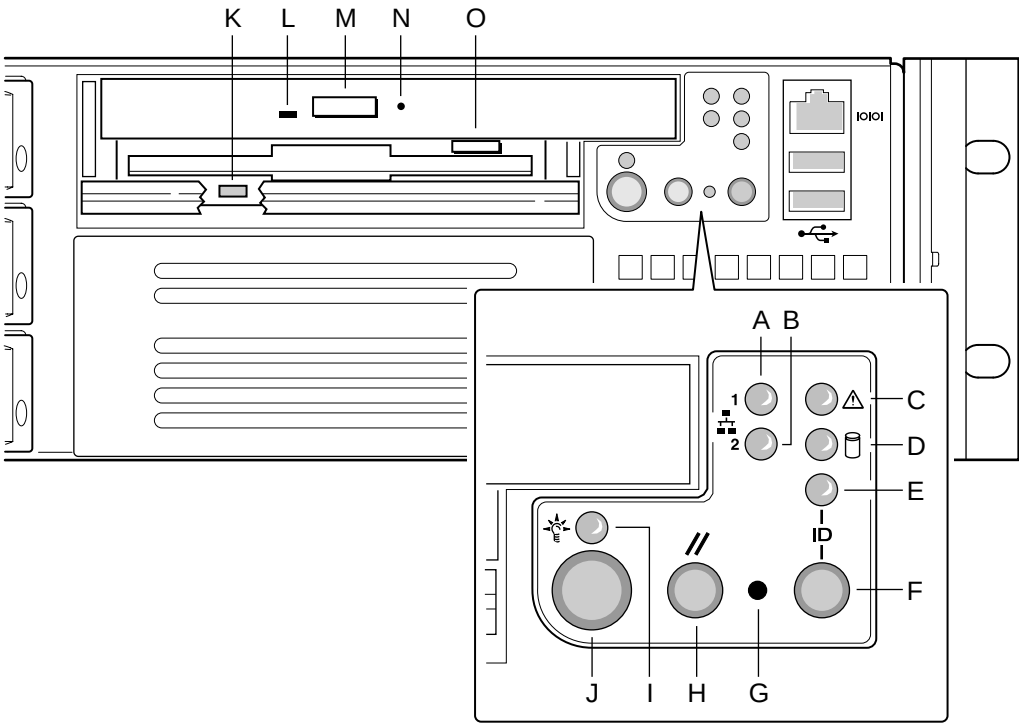
1.5 Chassis Front Panel and Peripheral Bays



A. Chassis handles (2)
B. Drive bay (1-inch)
C. HDD activity/fault indicator
D. Flex bay (seventh HDD or optional CD-ROM drive/FDD module)
E. Front panel indicator lights
F. RJ-45 serial port (PC-to-PC)
G. USB connectors 3 and 4
H. System controls
I. Tape drive bay (tape drive available from others)

Figure 6. Chassis Front

1.5.1 Front Panel Controls and Indicators

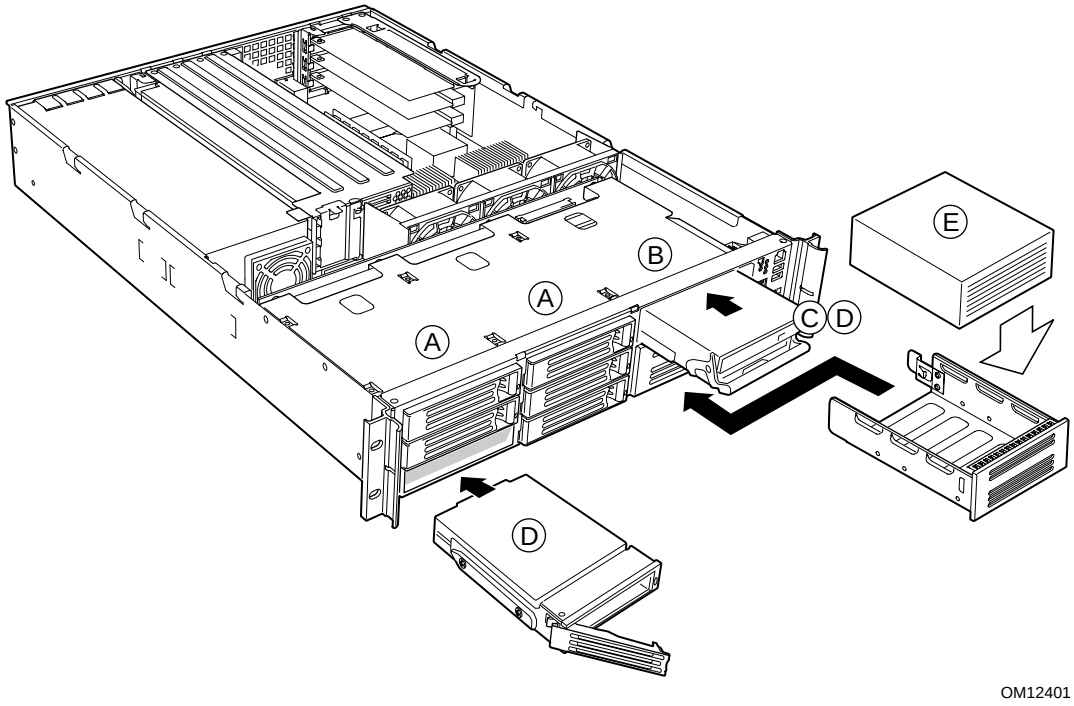


- A. NIC 1 activity LED
- B. NIC 2 activity LED
- C. System status LED
- D. Fixed disk drive activity LED
- E. ID LED
- F. ID button
- G. NMI button (tool assisted)
- H. Reset button
- Power/sleep LED
- Power button
- FDD activity LED
- CD-ROM activity LED
- CD-ROM drive eject button
- (Tool assisted) Manual CD-ROM drive eject button
- FDD eject button

Figure 7. Controls and Indicators

Note: The figure above is shown with an optional CD-ROM drive / floppy disk drive installed.

1.5.2 Peripheral Bays



A. Hard drive bays (6)
B. Flex bay (1)
C. CD-ROM drive / floppy disk drive module
D. Hard disk drive
E. Tape drive (available from others)

Figure 8. Peripheral Bays

1.6 Power Supply

The power supply consists of the power supply bay and one power supply module. A second power supply module can be purchased to provide a redundant, 1+1 system. With either configuration, the power supply provides 350 watts of power and is designed to minimize EMI. The power supply is rated and operates within voltage ranges as follows:

- 100 - 120 V~ at 50/60 Hertz (Hz); 6.3A maximum
- 200 - 240 V~ at 50/60 Hz; 2.5A maximum

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

A –48V DC power supply bay is available for solutions requiring this configuration.

1.7 System Cooling

The chassis includes two 80-mm non-hot-swappable system fans for cooling the processor(s), hard drives, and add-in cards. A third fan may be added in the center position to provide cooling redundancy for system components. The system fans are mounted in a fan assembly located in the middle of the chassis to pull cooling air through the chassis. The power supply contains a single fan for cooling.

Note: The third system fan may be required for some maximized system configurations. System integrators should perform their own thermal testing on system configurations that they suspect may exceed the system's thermal limitations.

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, a 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. At the chassis level a variety of security options are provided.

1.9 Rack and Cabinet Mounting Options

The SR2200 chassis was designed to support 19" wide by 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 (Intel order code AXX1U2URAIL) that is used to mount the chassis into a standard (19" by up to 30" deep) EIS 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 evenly distributes the server to prevent the mounting rails on the cabinet from bending. Caution should be used in using the front mount-only option.

Caution: **Even though the rail mount kit hardware was designed to support the weight of the system, some 2-post relay racks may not, causing the racks to fail. Only use relay racks that are 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 (Intel Order Code ASNBEZBEIGE or ASNBEZBLACK) is made of molded plastic and uses a snap-on design. When installed, this design provides for maximum airflow. By using light pipes, system status LEDs can be monitored with the front bezel in the closed position.

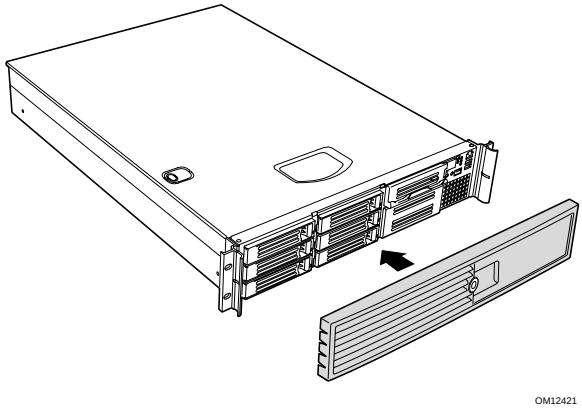


Figure 9. Optional Front Bezel

2. Power Sub-system

This section provides an overview of the SR2200 power supply sub-system. For additional details, refer to the *SR2200 Power Supply Technical Specification*.

The SR2200 power supply is comprised of two separate components: the power supply cage and the power supply module.

2.1 Power Supply Cage

The SR2200 chassis power supply cage can support up to two 350W SSI TPS power supply modules in a 1+1 configuration or a non-redundant single module configuration. The cage incorporates dual AC inputs with two EMI filters.

A mechanical drawing for the power supply cage is provided on the following page.

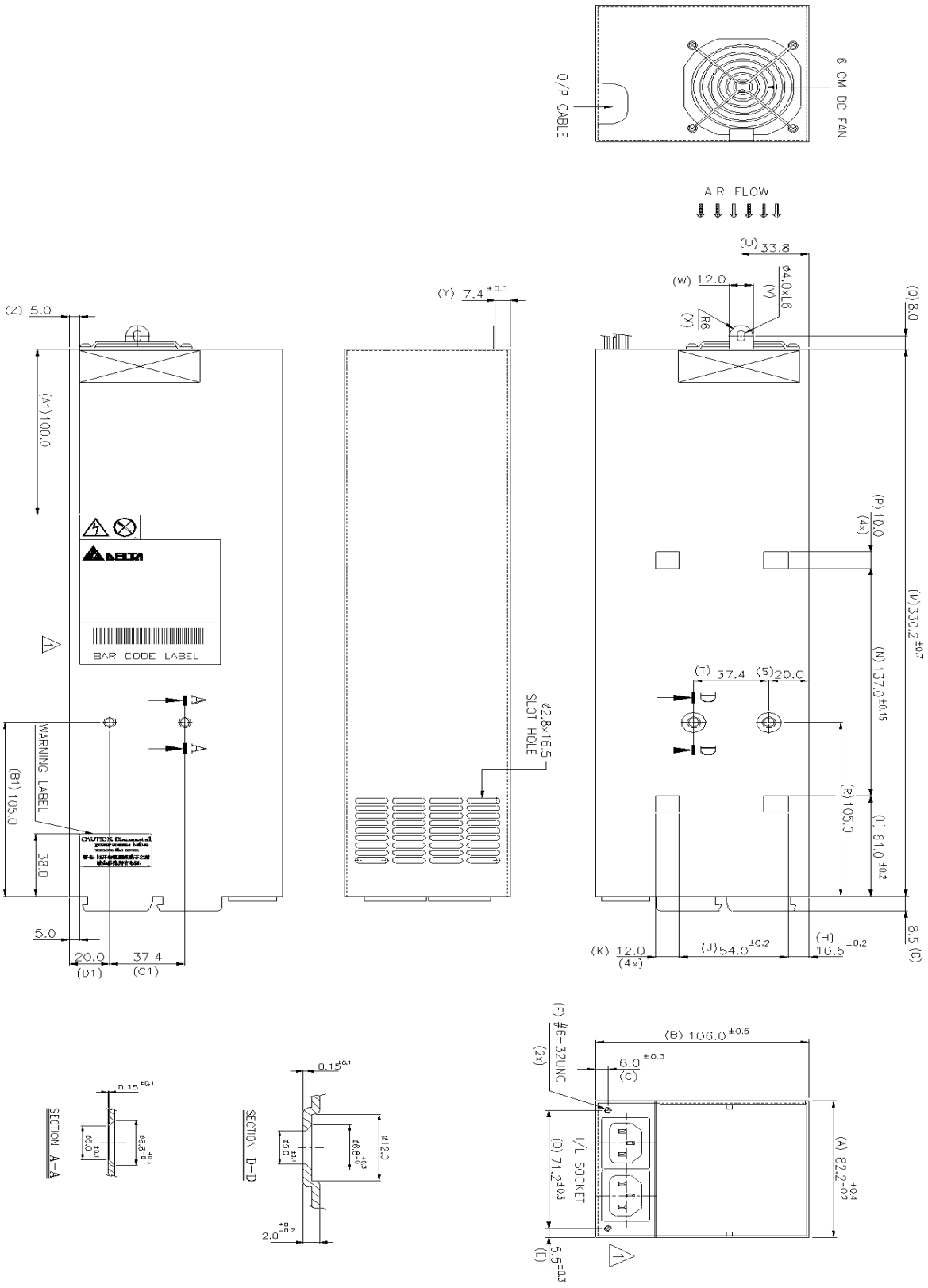


Figure 10. Power Supply Cage Mechanical Drawing

2.1.1 Power Supply Edge Connector Slot

See Section 2.2 for details.

2.1.2 Power Supply Harness

The figure below shows the harness lengths and designators. The DC output harness connectors are UL1007 rated: 90°C, 300V or an Intel-approved equivalent. Each connector is described in detail in the following sections.

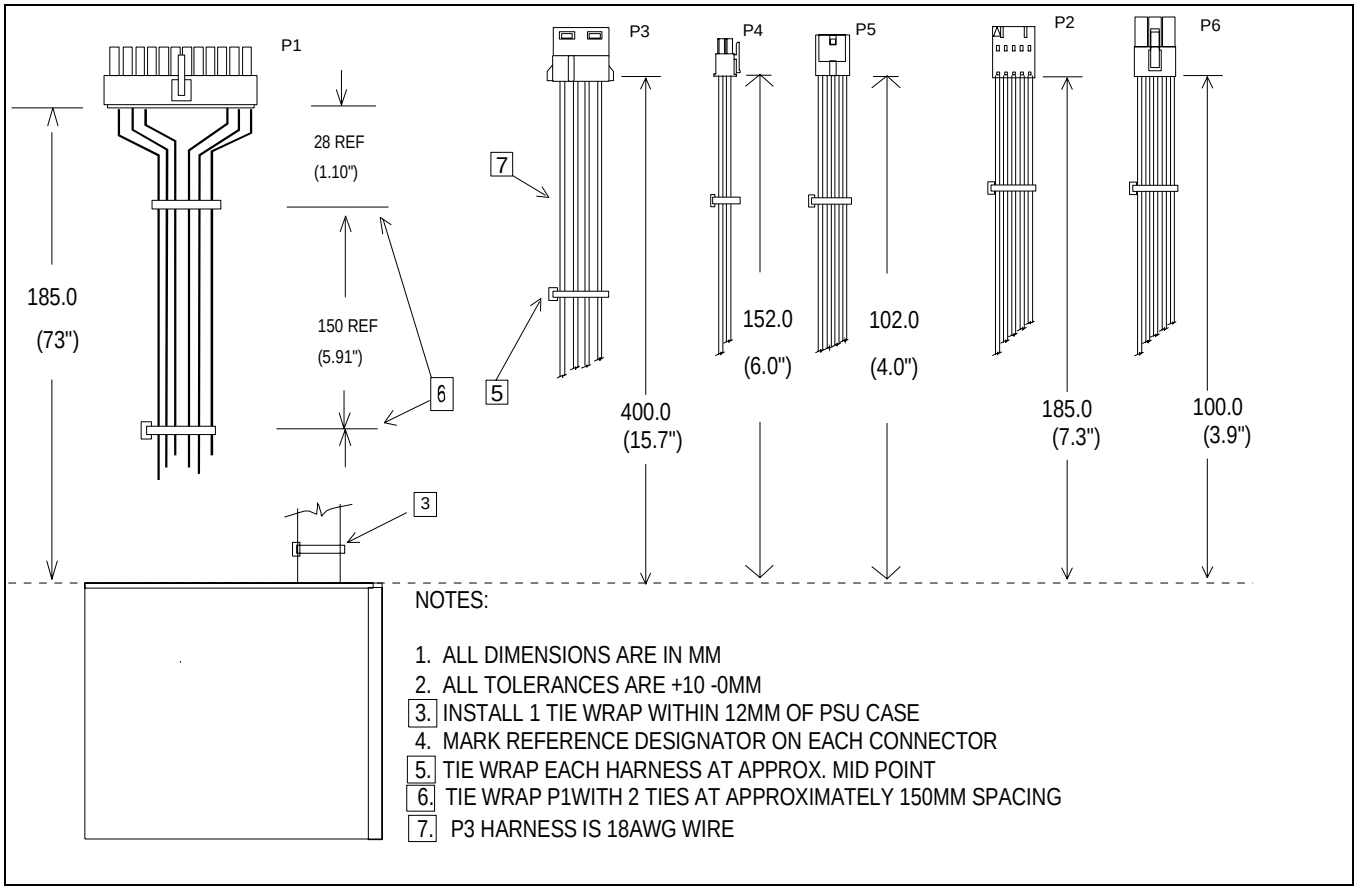


Figure 11. Power Supply Harness Detail

2.1.2.1 P1 Baseboard Connector

A 24-pin Molex* 39-01-2245 connector and harness from the power supply cage provides the SCB2 server board with the required voltages and interface signals. The following table provides the connector pin-out.

Table 2. 24-pin Baseboard Power Connector Pin-out

Pin	Signal	18 AWG COLOR	Pin	Signal	18 AWG COLOR
1	+3.3 Vdc	Orange	13	+3.3Vdc	Orange
2	+3.3 Vdc	Orange	14	-12Vdc	Blue
3	COM	Black	15	COM	Black
4	+5 Vdc*	Red	16	PS_ON#	Green
5	COM *	Orange	17	COM	Black
6	+5 Vdc	Red	18	COM	Black
7	COM	Black	19	COM	Black
8	PWR OK	Gray	20	Reserved	NC
9	5 VSB	Purple	21	+5VDC	Red
10	+12 Vdc	Yellow	22	+5VDC	Red
11	+12 Vdc	Yellow	23	+5VDC	Red
12	+3.3 Vdc	Orange	24	COM	Black

2.1.2.2 P2 Power Management Signal Cable

A 5-wire cable with a Molex 50-57-9405 female housing connector is used to direct power management signals to the SCB2 server board. The following table shows the pin-out.

Table 3. Power Management Signal Cable Pin-out

Pin	Signal	Description
1	SMBus-SCL	Serial Clock.
2	SMBus-SDA	Serial Data. Information from the power supply.
3	Alert#	Indicates power supply is operating beyond its limits and has failed or may fail soon.
4	COM	Return remote sense
5	3.3VS	3.3V sense

2.1.2.3 P3 Peripheral Power Connector

A 4-wire cable with an AMP* 770827-1 connector attached is used to provide power to a peripheral drive in the peripheral bay.

Table 4. Peripheral Power Cable Pin-out

Pin	Signal	18 AWG COLOR
1	+12 Vdc	Yellow
2	COM	Black
3	COM	Black
4	+5 Vdc	Red

2.1.2.4 P4 and P5 Connectors

These peripheral device connectors are unused in the SR2200 chassis.

2.1.2.5 P6 Hard Drive Interface Board Connector

A 6-wire cable with a Molex Mini-Fit Jr. PN# 39-01-2065 connector is used to provide power to the SCSI backplane for drive power.

Table 5. Hard Drive Interface Board Pin-out

Pin	Signal	22 AWG COLOR
1	Ground	Black
2	Ground	Black
3	5V	Red
4	12V	Yellow
5	12V	Yellow
6	3.3V	Orange

2.1.3 Hot Swapping Power Modules

The SR2200 power supply cage is capable of supporting hot swapping of power supply modules in a 1+1 configuration. Hot swapping a power supply module is the process of extracting and inserting a power supply module from an operating system.

2.1.4 Intelligent Cage Functions

The power supply cage contains a Microchip* PIC16C74B OTP or PIC16C74C:MASK ROM microcontroller to monitor the status of the modules and provide control functions for the cage. The microcontroller is configured as a slave device on the SMBus. The statuses of the module and cage signals are available via the SMBus interface. The SMBus is also connected to each power module. The microcontroller is powered by 5Vstby and is connected to the ground on the power share board. The microcontroller makes use of the watchdog timer to reset the device in case the controller locks up.

2.1.5 FRU Data

The power supply cage contains a 2 KB EEPROM device that contains FRU data for the cage according to the IPMI spec. Each separate output is given a different number for identification purposes.

2.2 Power Supply Module

The SR2200 power system supports one 350W SSI TPS (Thin Power Supply) module for a non redundant configuration, or two in a 1+1 redundant configuration. The power supply module provides five outputs; 3.3V, 5V, 12V, -12V, and 5V standby.

The power supply module contains no fans. However, a fan in the power supply cage provides cooling to the module. The module provides a handle to assist in insertion and extraction and can be inserted and extracted without the assistance of tools.

Table 6. Power Supply Input/Output Summary

Voltage	Current Rating
+3.3 VDC Output	20 Amp Max [1]
+5 VDC Output	20 Amp Max [1]
+12 V1DC Output	18 Amp Max [2]
+12 V2DC Output	18.0 Amp Max [2]
-12 VDC Output	0.5 Amp Max
+5 VDC Standby	2.0 Amp Max
Output balancing	Total combined output power of all output shall not exceed 350 W.
AC Line Voltage	Auto-ranging for either 100-127 VAC or 200-240 VAC
AC Line Frequency	50/60 Hz
AC Input Current	6.7 Amp at 115 VAC 3.3 Amp at 220 VAC

Notes:

1. Combined 3.3 / 5V shall not exceed 150W.
2. Maximum continuous load on the combined 12V output shall not exceed 25A. Peak load on the combined 12V output shall not exceed 30A for greater than 10 seconds.

2.2.1 Power Supply Module Mechanical

The power supply module mechanical outline and dimensions are shown in the figure below.

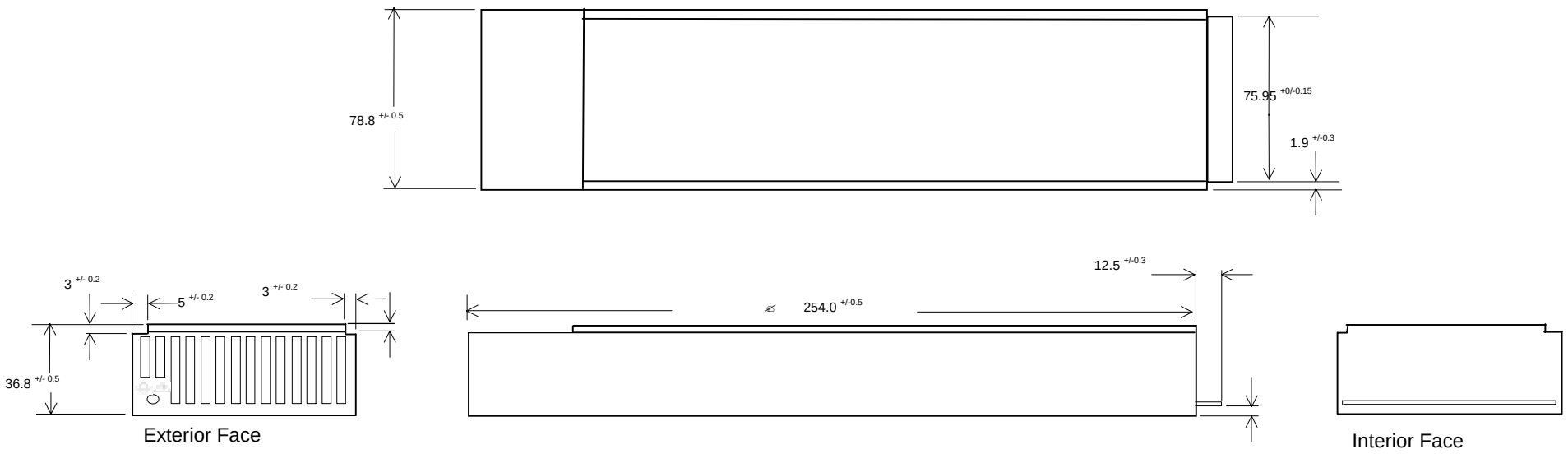


Figure 12. Outline Drawing Power System Enclosure

2.2.2 Power Supply LED Indicator

The power supply module provides a single external bi-color LED to indicate the status of the power supply. When AC is applied to the PSU and standby voltages are available, the LED will blink green. The LED will be solid on green to indicate that all the power outputs are available. The LED will be solid on amber to indicate that the power supply has failed, shutdown due to over current, shutdown due to over temperature, or is indicating a predictive failure. Refer to the following table for conditions of the LED.

Table 7. LED Indicators

Power Supply Condition	Power Supply LED
No AC power to all PSU	Off
No AC power to this PSU only	Amber
AC present / Only Standby Outputs On	Blink green
Power supply DC outputs ON and OK	Green
Power supply failure (includes over voltage, over temperature)	Amber
Current limit	Amber

2.2.3 Power Supply Module to Cage Interconnect

The power supply module provides edge fingers that mate to a connector located in the power supply cage. This is a blind mating type connector that connects the power supply's input voltage, output voltages and signals. The following diagram shows edge connector pin layout.

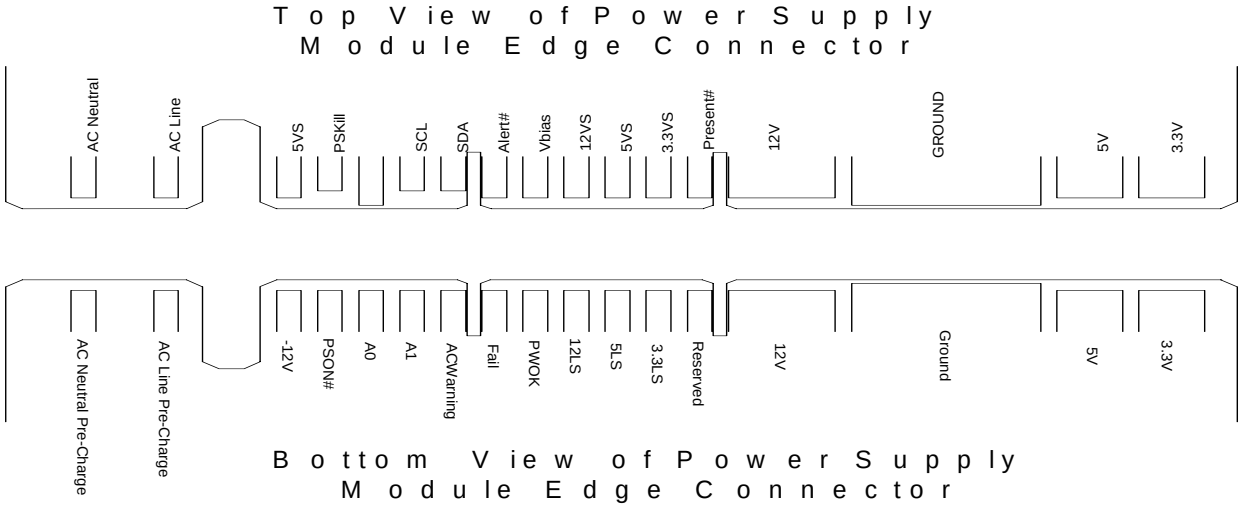


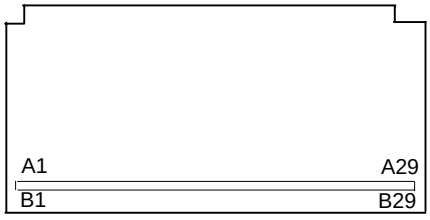
Figure 13. Edge Connector Layout

The following table provides the pin-out for the power supply edge connector.

- Signals that can be defined as low true or high true use the convention: *signal*# = low true
- Reserved pins are for future use.
- No Connect (NC) locations must be empty locations on the power supply edge card and in the mating connector to meet spacing requirements.

Table 8. Edge Connector Pin-out

Description	Pin#		Pin#	Description
NC	B1		A1	NC
AC Neutral Pre-charge	B2		A2	AC Neutral
NC	B3		A3	NC
AC Line Pre-charge	B4		A4	AC Line
NC	B5		A5	NC
NC	B6		A6	NC
-12V	B7		A7	5VSB
PSON#	B8		A8	PSKill
A0	B9		A9	**ReturnS**
A1	B10		A10	SCL
ACWarning	B11		A11	SDA
Fail	B12		A12	Alert#
PWOK	B13		A13	Vbias
12LS	B14		A14	12VS
5LS	B15		A15	5VS
3.3LS	B16		A16	3.3VS
Reserved	B17		A17	Present#
12V	B18		A18	12V
12V	B19		A19	12V
12V	B20		A20	12V
Ground	B21		A21	Ground
Ground	B22		A22	Ground
Ground	B23		A23	Ground
Ground	B24		A24	Ground
Ground	B25		A25	Ground
5V	B26		A26	5V
5V	B27		A27	5V
3.3V	B28		A28	3.3V
3.3V	B29		A29	3.3V



Interior Face

2.3 Thermal Protection

The power supply incorporates thermal protection that will cause a shut down if airflow through the power supply is insufficient. Thermal protection shall activate shutdown if the temperature of any power supply component is more than 85% (°C) of rated temperature. This shutdown shall take place before over-temperature induces damage to the power supply.

2.4 Air Flow

The power subsystem contains one 60 x 38mm fan for self-cooling. The cooling air enters the subsystem from the DC connector side, passing through the power supply. The air flowing through the power supply is pre-heated by the system. Inlet air to the power supply shall be in the range of 0 to 45°C. The cage provides 8 CFM at 45 C per module for a 350W total cage load.

3. Chassis Cooling

A three-fan module, the power supply fan, and processor heat sink fans provide the necessary airflow to cool the system.

3.1 Fan Assembly

The primary airflow for the system is provided by a removable plastic fan housing which secures up to three 80mm x 38mm multi-speed fans. The base system ships with two fans, and a blank panel to prevent air re-circulation. Adding a third fan provides airflow redundancy for most typical configurations. In a three-fan configuration, if one of the fans should fail, the remaining two will increase their rotation and maintain the thermal requirements of the system. In some maximized configurations, the third fan may be required to maintain thermal limits, providing no redundancy. System integrators should perform their own thermal testing if they suspect a configuration will exceed the thermal limits of the system using the two standard fans.

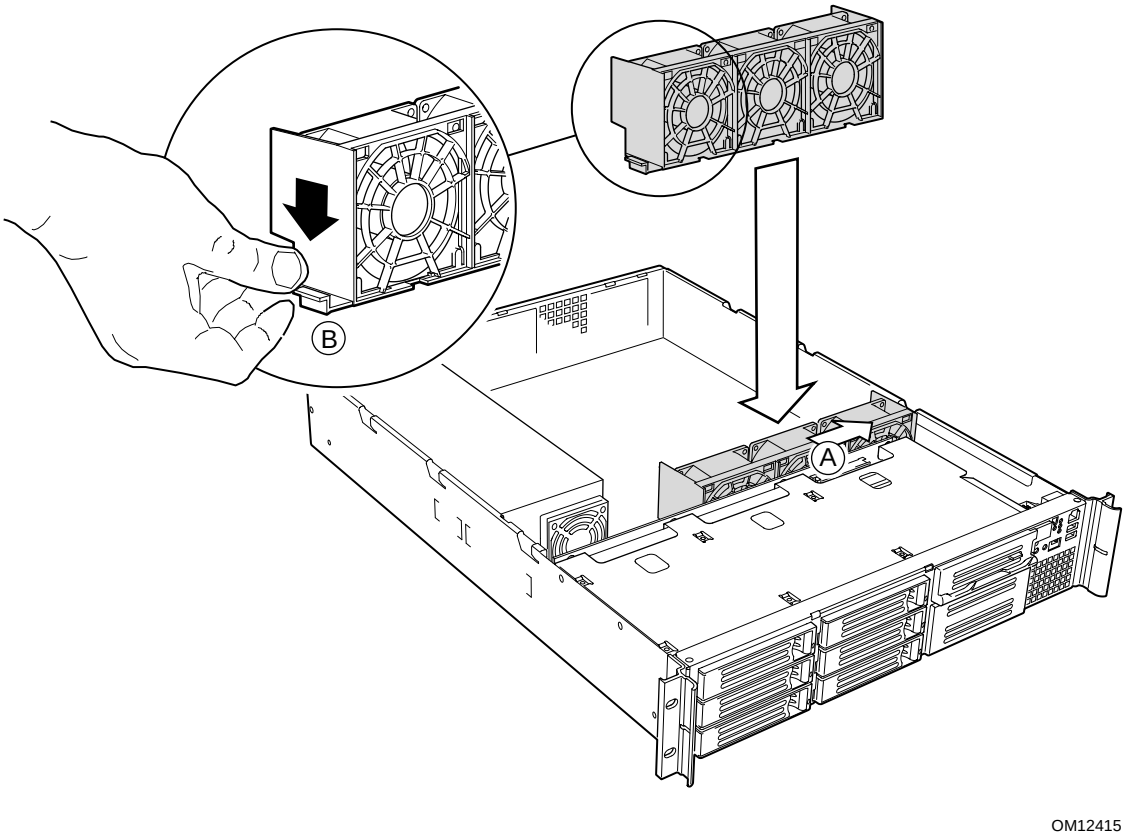


Figure 14. Fan Assembly Location

A 3-wire cable/connector provides each fan with power and tachometer output, allowing it to be monitored independently by server management software. The power cables are connected to 3-pin connectors located on the SCB2 baseboard.

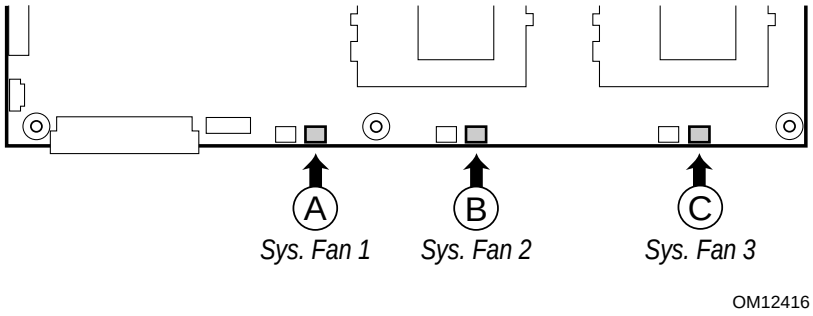


Figure 15. System Fan Connectors on SCB2 Server Board

The following table provides the pin-out for the 3-wire cable/connector.

Table 9. Fan Module Power Cable Pin-out

Pin	Signal Name	Description
1	Return	Ground return
2	12V power	VCC
3	Tachometer	Two pulse per revolution speed monitor

Each fan within the module is capable of supporting multiple speeds. At normal room ambient of 23C, the fans will run at slow speed for best acoustic performance. If the external temperature of the system increases, the SCB2 baseboard will incrementally increase the fan speed to compensate for the increased ambient. Fans are not hot swappable. The server must be turned off before a fan can be replaced.

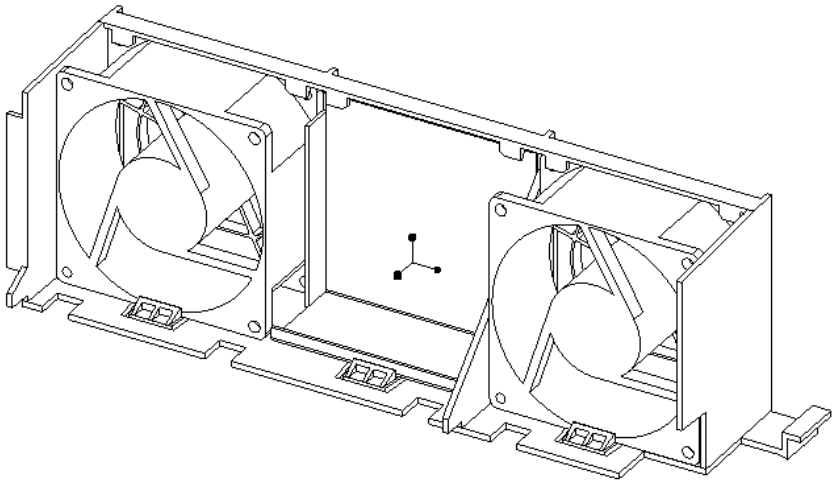
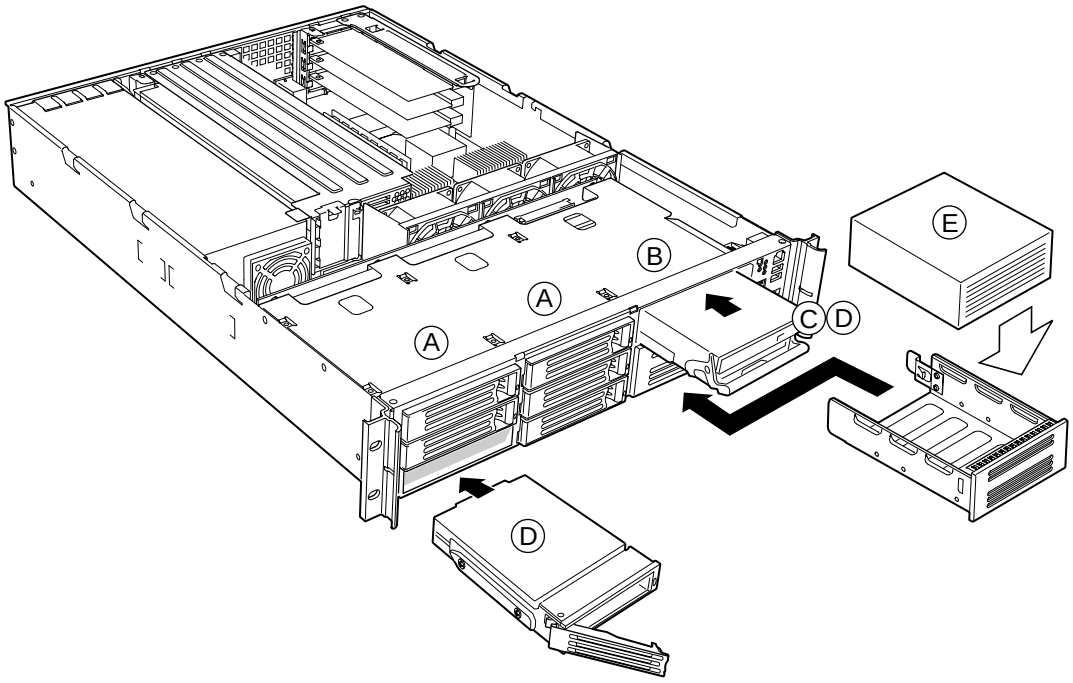


Figure 16. Fan Module Assembly

4. Chassis Peripheral Bays

The SR2200 server chassis provides six hard drive bays at the front of the chassis. An optional seventh drive may be used in the flex bay. All hard drive bays may be populated with a tray-mounted 3.5” hard disk drive. If a configuration requires the use of a floppy disk drive and CD-ROM drive, an optional Floppy/CDROM module (Intel Order Code: AXXCDFLOPPY) may be used in place of the seventh hard drive in the flex bay. A tape drive bay is located below the flex bay.



A. Hard drive bays (6)
B. Flex bay (1)
C. CD-ROM drive/floppy disk drive module
D. Hard disk drive
E. Tape drive (available from others

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.

4.1 Flex Bay

For those configurations that require a floppy drive and CD-ROM drive, the seventh drive bay or “Flex Bay” can be configured as a peripheral bay by inserting an optional Floppy/CDROM Module (Intel Order Code: AXXCDFLOPPY) . 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 peripheral bay. A release latch allows for tool-less removal from the front of the server, however, the Floppy/CDROM Module is not hot swappable. The system must be powered down before the module is inserted or removed from the flex bay.

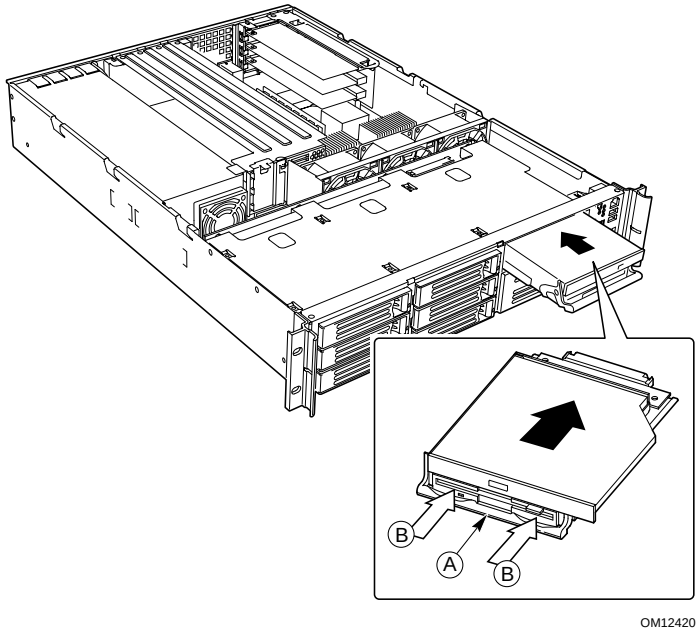


Figure 17. Floppy/CDROM Module

4.2 Hard Disk Drive Bays

The SR2200 server chassis can support up to seven tray-mounted SCA2, 3.5” x 1”, Ultra2/Ultra160 hard disk drives. For RAID configurations, the SCSI drives may be hot-swapped while the system is running.

4.2.1 Hard Disk 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.

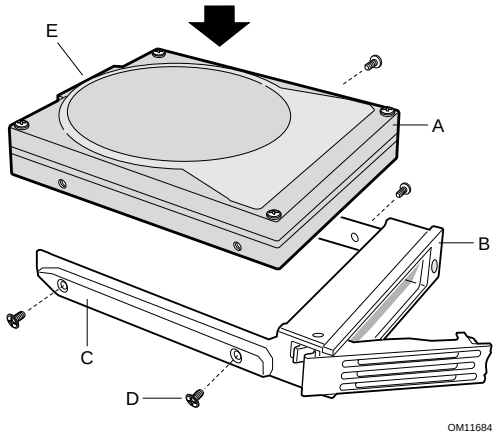


Figure 18. Hard Drive Tray Assembly

4.3 Tape Drive Bay

The user can purchase a tape drive and install it in the 3.5-inch drive bay using the carrier provided. SCSI tape drives are recommended due to the cable length required. If an IDE tape drive is installed, an IDE add-in controller card must be used. The cable routing will be similar to that which is shown for a SCSI tape drive.

> ***Note***: **The use of the legacy IDE connector on the SCB2 server board (J1J1) to support an IDE peripheral device in the SR2200 chassis is not a supported configuration. Using this connector in the SR2200 chassis may produce unreliable operation of the IDE device and may result in data loss**

A SCSI tape drive can be connected in one of two ways:

- Using the on-board SCSI controller (SCSI SCB2 only). This requires that the user connect the backplane to an add-in RAID or SCSI controller.
- Using an add-in SCSI controller board. This allows the user to leave the backplane connected to the on-board SCSI controller.

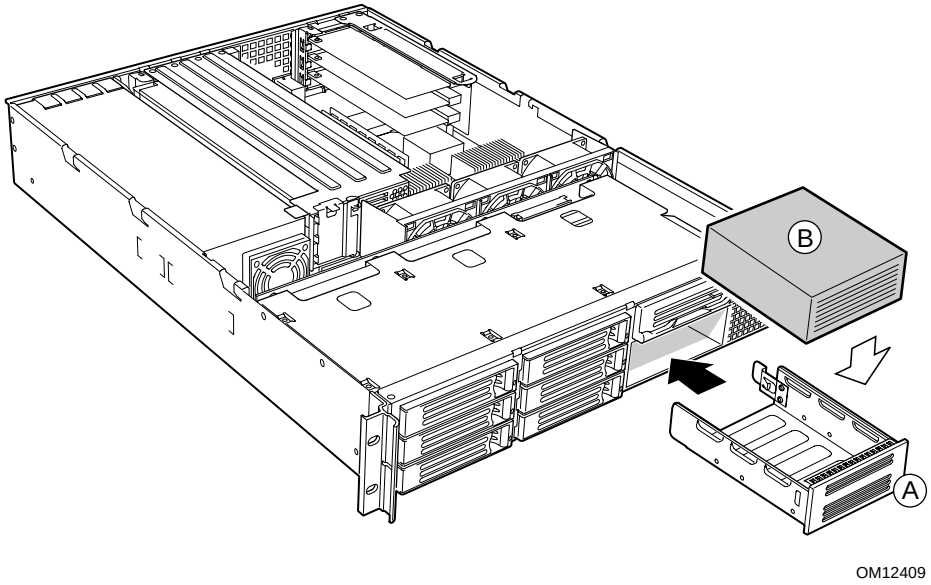


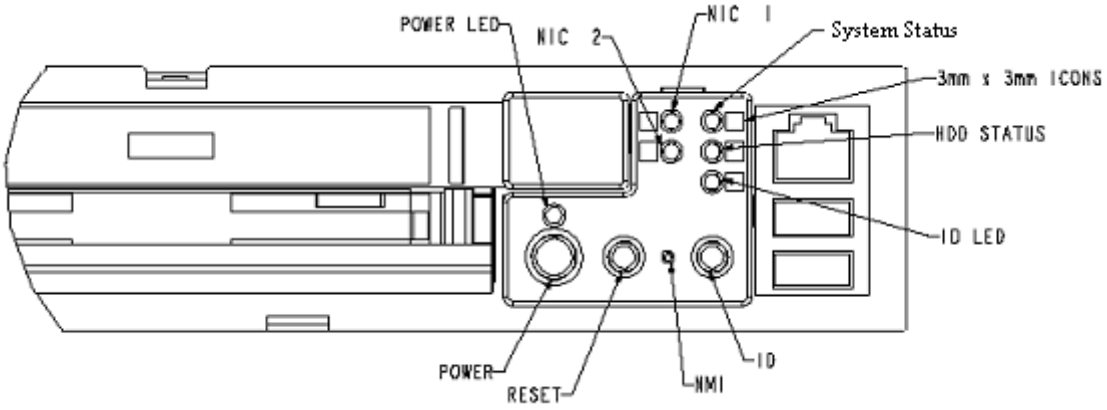
Figure 19. Mounting a Tape Drive

Caution: **Carefully route cables to minimize airflow blockage which may cause cooling problems**

Note: **To remove the tape drive tray (A) from the chassis, a spring latch located on the back right side of the carrier must be released to allow the drive tray to slide free. Do not attempt to pull out the drive tray without first releasing the spring latch. Doing so may damage the plastic faceplate.**

5. Front Panel Assembly

The SR2200 front panel assembly is located on the right side of chassis and consists of an interface board, front panel and three I/O connectors.



5.1 Front Panel Buttons and Intrusion Switch

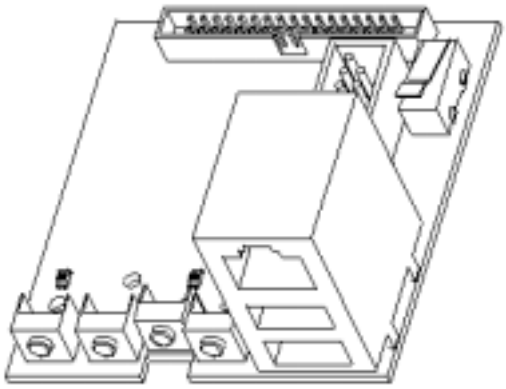


Figure 21. Front Panel Assembly

The SR2200 front panel assembly houses several system control buttons and a chassis intrusion switch. Each of their functions is listed in the table below.

Table 10. Contol Button and Intrusion Switch Functions

Feature	Function
Power button	Toggles the system power on/off. This button also functions as a Sleep Button if enabled by an ACPI-compliant operating system.
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 you 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 interface board behind the front panel.

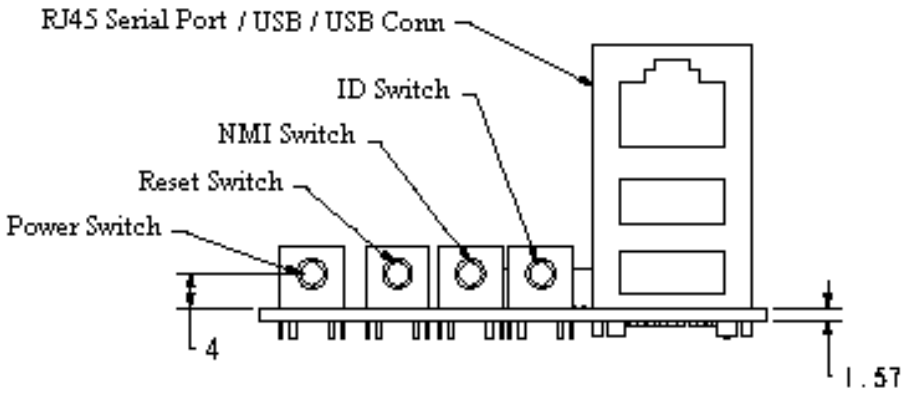


Figure 22. Front Panel Assembly Interface Board, Front View

5.2 Front Panel Assembly Connectors

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

- Two USB
- One RJ45 serial port

The following tables provide the pin-outs for both types of connectors.

Table 11. External USB Connectors 1 and 2 (J3)

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

Table 12. RJ45 Serial Connector (J3)

Pin #	I/O	Description
1	I	RTS2_L
2	I	DTR2_L
3	I	SOUT2
4	PWR	GND
5	O	INUSE_L
6	O	SIN2
7	O	DSR2_L
8	O	CTS2_L

The front panel assembly interface board also has two internal connectors:

- A 34-pin header provides control and status information to/from the baseboard through the hard disk drive backplane board.
- A 10-pin USB header provides control for two USB ports from the baseboard.

A 34-pin flat cable connects 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 SCB2 baseboard.

Table 13. Internal USB Header (J2)

Pin #	I/O	Description
1	PWR	VREG_FP_USBPWR3
2	PWR	VREG_FP_USBPWR4
3	I/O	USB_DM3_FP
4	I/O	USB_DM4_FP
5	I/O	USB_DP3_FP
6	I/O	USB_DP4_FP
7	PWR	GND
8	PWR	GND
9	NC	KEY
10	NC	USB_FP_OC

Table 14. Front Panel (J1) to HDD Backplane Connector

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	EMP_DSR2_L
26	I	EMP_INUSE_L
27	I	EMP_SIN2
28	O	EMP_SOUT2
29	I	EMP_RTS2_L
30	I	EMP_CTS2_L
31	O	EMP_DTR2_L
32	I	EMP_DCD2_L
33	NC	NC_FP_RSV1
34	NC	NC_FP_RSV3

5.2.1 Front Panel RJ45 Serial Port

The RJ45 serial connector located on the front panel is designed to provide a PC-to-PC interface to access the server management features of the system. This connector is not designed to support a modem; there is no Ring Indicate signal.

To access the server management features from a roving console, such as a laptop or other mobile PC, a RJ45 to DB-9 serial cable must be used. Should the user choose to assemble his/her own cable, the following table provides the pin-out for each connector.

Intel provides an accessory kit (Intel Order Code: AXXRJ45DB9) that contains RJ45 to DB-9 adapters for both the front and rear RJ45 serial ports. Both the front and rear RJ45 serial ports share common serial port signals. By default, the rear RJ45 serial port is enabled when the front RJ45 serial port is not in use. When a cable is inserted into the front RJ45 serial port, logic on the baseboard will disable the rear RJ45 serial port.

Table 15. Front Panel Serial Port Adapter Pin-out

Signal Name	RJ45	DB9
No connect	N/A	1
SIN	6	2
SOUT	3	3
DTR	2	4
GRND	4	5*
DSR	7	6
RTS	1	7
CTS	8	8
RIN	5	5*
No connect		9

Note: **Even though many of the serial signals are common between the front and back RJ45 serial ports, each port requires a separate RJ45-to-DB9 adapter, depending on the serial signals that are required. The front and back RJ45-to-DB9 adapters are NOT interchangable.**

Refer to the SCB2 Technical Product Specification for additional details on RJ45 serial port usage.

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 16. Front Panel LED Functions

LED	Color	State	Description
Power / Sleep (on standby power)	Green	On	Legacy power on / ACPI S0 state
		Blink [1,4]	Sleep / ACPI S1 state
	Off	Off	Power Off / ACPI S4 or S5 state

LED	Color	State	Description
NIC1 / NIC2 Activity	Green	Random Blink	Provides an indicator for NIC activity
System Status (on standby power)	Green	On	Running / normal operation
		Blink [1,2]	Degraded
	Amber	On	Critical or non-recoverable condition.
		Blink [1,2]	Non-critical condition.
	Off	Off	POST / system stop.
Disk Activity	Green	Random blink	Provides an indicator for disk activity.
	Off	Off [3]	No hard disk activity
System Identification	Blue	On	Identify active via command or button.
	Off	Off	No Identification.

Notes:

1. Blink rate is ~1 Hz with at 50% duty cycle.
2. The amber status takes precedence over the green status. When the amber LED is on or blinking, the green LED is off.
3. Also off when the system is powered off (S4/S5) or in a sleep state (S1).
4. 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.

The current limiting resistors for the power LED, the system fault LED, and the NIC LEDs are located on the SCB2 server board.

5.3.1 Power / Sleep LED

The BIOS controls the front panel power LED as described in Table 17.

Table 17. 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 is off, and the operating system has not saved any context to the hard disk.
S4	ACPI	Off	Mechanical is off. The operating system has saved context to the hard disk.
S3-S1	ACPI	Slow blink [1]	DC power is still on. The operating system has saved context and gone into a level of low-power state.
S0	ACPI	Steady on	System and the operating system are up and running.

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

5.3.2 System Status LED

5.3.2.1 Critical Conditions

A critical condition is 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.

5.3.2.2 Non-Critical Conditions

A non-critical condition is threshold crossing associated with the following events:

- 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 a system memory or CPU configuration changes. Refer to the SCB2 BIOS EPS for more information.

5.3.2.3 Degraded Conditions

A degraded condition is associated with the following events:

- Non-redundant power supply operation. This applies only when the BMC is configured for a redundant power subsystem.
- One or more processors are disabled by 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 indicates drive activity either from the on-board SCSI controller or from the on-board IDE controller. The SCB2 baseboard 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. This is especially useful when the system is installed within in a high density rack or cabinet that is populated with several similar systems. The system ID LED is illuminated when the System ID button on the front panel is pressed or it can be illuminated remotely through server management software.

6. Hot-Swap SCSI Backplane

The SR2200 server chassis provides a multi-fuctional SCSI Backplane, supporting the following functions:

- Seven SCA2 compatible hot-swap SCSI connectors
- One Floppy/CDROM module connector (not available if a 7 HDD configuration is used)
- Support for the following SCSI bus specifications: Fast, Ultra, Ultra-2, and Ultra-160
- Active SCSI termination (SPI-4 compatible)
- Support for dual-mode SE/LVD operations [1]
- Per-drive power control, including automatic slot power-down upon drive removal
- SAF-TE 1.0 compliant, enclosure management and monitoring functions
- Provides a pathway for front panel, ATA-33, and floppy signals from the baseboard to the appropriate connectors

Note: **Due to signal integrity issues, the SCSI backplane in the SR2200 chassis will not support single-ended (SE) SCSI drives**

6.1 Hot-Swap SCSI Backplane Board Layout

The Hot-Swap SCSI Backplane resides in the hot-swap drive bay of the SR2200 server chassis.

The following diagrams show the layout of components and connectors on the Hot-swap SCSI Backplane printed circuit board.

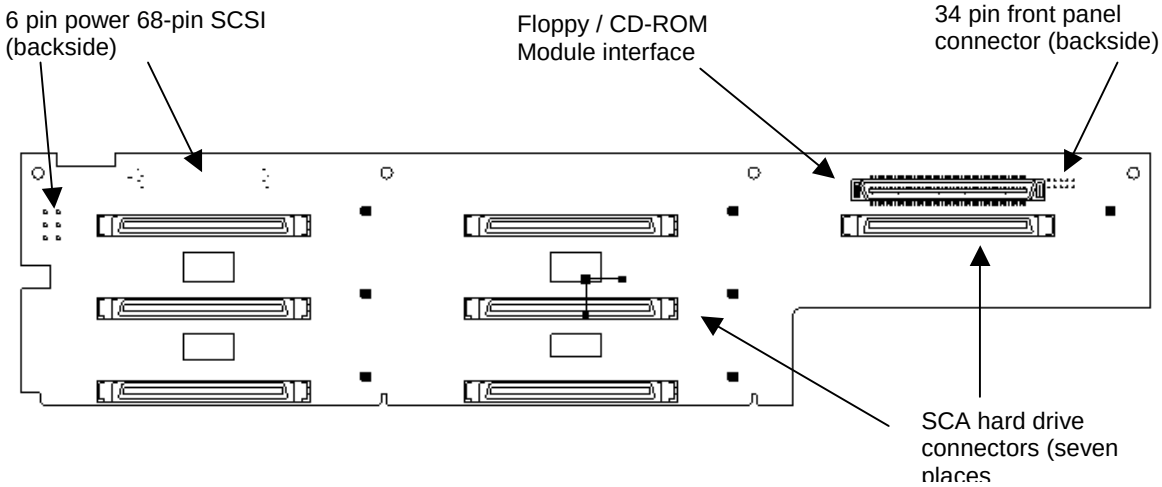


Figure 23. Component Side Hot-Swap SCSI Backplane Connector Placement

[1] Due to signal integrity issues, the SCSI Backplane in the SR2200 is not capable of supporting single ended (SE) SCSI drives.

6.2 SCSI Backplane Functional Architecture

The SCSI backplane functions begin 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 to update the FLASH executable code.

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

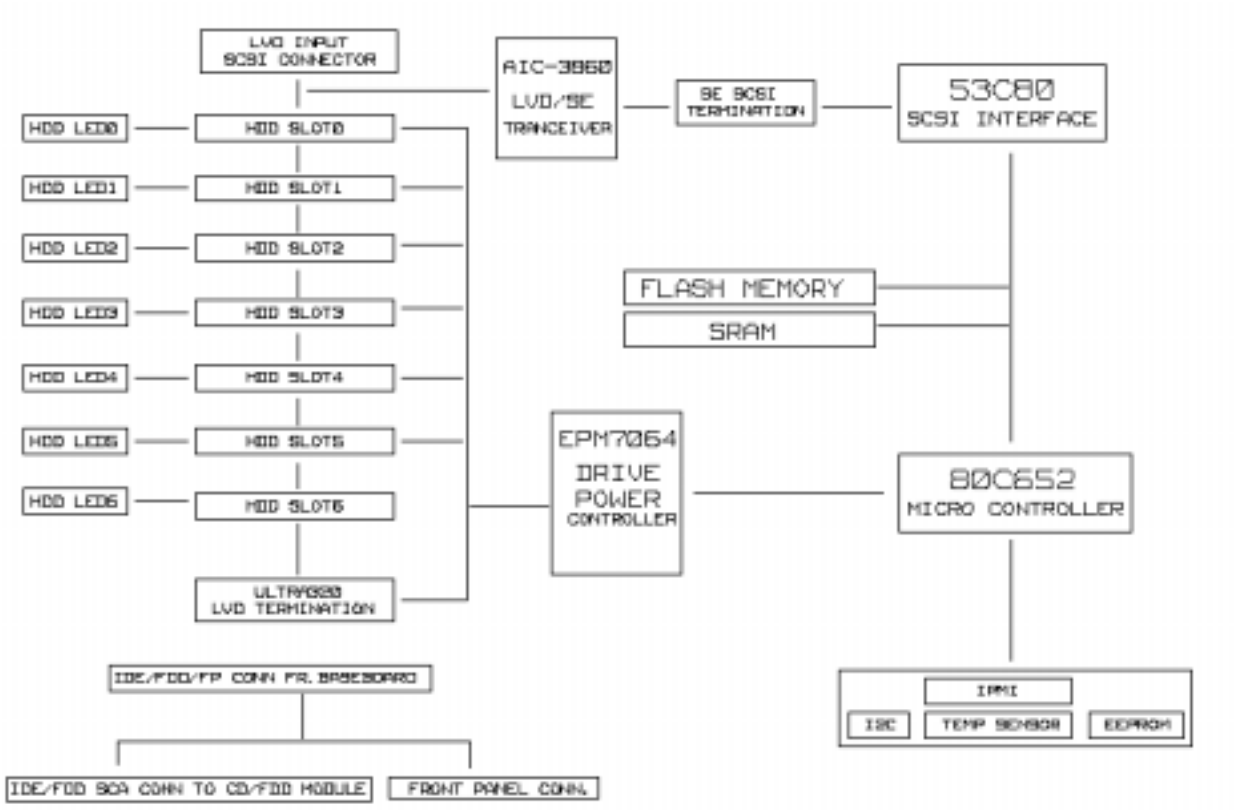


Figure 24. SCSI Backplane Block Diagram

6.2.1 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 microcontroller receives a “Reset” SAF-TE command.

6.2.2 Phillips* P80C652FBB Microcontroller

The SCSI backplane supports the SAF-TE 1.0 specification and utilizes the Philips P80C652FBB microcontroller for all SAF-TE functions. If necessary, the backplane can function without the SAF-TE microcontroller as a simple interconnection for the SCSI drives and termination in LVD or SE mode.

P80C652FBB features include:

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

6.2.2.1 I^2C Serial Communication-SI01

The I^2C 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.

6.2.2.2 I^2C Electrical Input/Output Specifications

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

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

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

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

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

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

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

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

The maximum low-level input current at V_{OLmax} of both the SDA pin and the SCL pin of an I^2C 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^2C 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^2C device is 10pf.

6.2.2.3 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}

6.2.3 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 the bus, so it is recommended that SAF-TE be pulsed infrequently. SAF_TE command processing is 2 - 10ms.

The SYM53C80S supports the following features:

- The 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 MB/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

6.2.4 SCSI Interface

The SCSI interface on the SR2200 Hot-swap SCSI Backplane provides the required circuitry between the SCSI bus and the 80C652 microcontroller. This allows the microcontroller 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 microcontroller. The 53C80S is a single-ended, narrow device.

6.2.5 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.

6.2.6 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

SR2200 Hot-swap SCSI Backplane using two Unitrode* UCC5638 Multi-mode SCSI 15 line terminators.

6.2.7 Power Control

Power control on the SR2200 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 is damaged during removal from the hot-swap drive bay. When a new drive is inserted, the power control waits a short amount of time for the drive to be fully seated before applying power to the drive.
- If the 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 prevents disruption of the entire SCSI array from possible sags in supply voltage and resultant current spikes.
- Hot-spare drive support: Spare drives remain in the hot-swap bay, but are left un-powered until a drive is determined to have failed. In case of a drive failure, 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 Power Connector

The SCSI backplane provides power to the drive bays, either supporting up to seven hard disk drives, or six hard disk drives and the optional Floppy/CDROM Module. A 6-pin power cable is routed from the power supply and plugs into 2x3 shrouded plastic PC power connector on the SCSI backplane. The following table shows the power connector pin-out.

Table 18. SCSI Backplane Power Connector Pin-out

Pin	Name	Pin	Name
1	GND	4	+12V
2	GND	5	+12V
3	+5V	6	+3.3V

6.3.1 Power Requirements

The Hot-swap SCSI backplane provides power for up to seven peripherals. The integrator should refer to the specific hard drive specification for power requirements. A typical 18 W drive would require approximately 0.9A of +5V and 1.1A of +12V.

Table 19. Power Requirements

# of Typical Hard Drives	Total 5V Current (amps)	Total 12V current (amps)	Total drive power (watts)
1	0.9	1.1	17.7
2	1.8	2.2	35.4
3	2.7	3.3	53.1
4	3.6	4.4	70.8
5	4.5	5.5	88.5
6	5.4	6.6	106.2
7	6.3	7.7	123.9

6.3.2 Drive Activity / Fault LEDs

The SCSI backplane provides Drive Activity/Fault LED Indicators, mounted near each SCA-2 connector. The driving circuitry is entirely contained on the backplane. The drive fault LEDs are activated by the microcontroller, and indicate a failure status for each drive. During initialization, the microcontroller flashes the LEDs for one second as part of POST.

6.3.3 Internal Management Bus (IMB)

The Internal Management 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 of the standard system interfaces (e.g., PCI bus or processor/memory bus). The I^2C bus controller is integrated into the microcontroller. IMB connectivity is provided to the SCSI backplane via the front panel connector.

6.3.4 Local I^2C EEPROM and Temperature Sensor

An I^2C bus temperature sensor is connected to the microcontroller on a private I^2C bus. Micro-controller programming implements the private I^2C connection by explicitly setting and clearing appropriate clock and data signals, to emulate an I^2C-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.

6.4 SCA2 Hot-Swap Connectors

The SCSI Backplane provides seven hot-swap SCA2 connectors that provide power and SCSI signals using a single connector. Each SCA drive attaches to the backplane using one of these connectors.

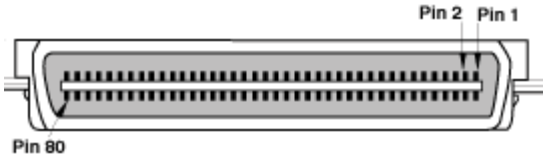


Figure 25. 80-pn SCA2 Connector

6.5 Baseboard to SCSI Interconnect

A 68-pin SCSI cable is used to interface the SCSI backplane with either the on-board SCSI channel of the SCB2 baseboard or an add-in PCI SCSI controller installed on the PCI riser card.

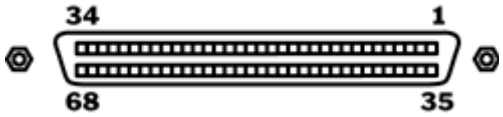


Figure 26. 68-pin SCSI Cable Connector

Table 20. Ultra2 (LVD) SCSI Connector Pin-out

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	-DB (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

Pin	Name	Pin	Name	Pin	Name	Pin	Name
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)

6.6 SCB2 Baseboard to CD/FDD/FP Interface

The SCSI backplane provides a pathway for the Floppy / FP / IDE signals from the SCB2 baseboard to the floppy / CD-ROM module interface connector and front panel connector. The following table provides the pin-out for the 100-pin (JAEE*: WR-100S-VF-1) connector.

Table 21. Floppy / FP / IDE Connector Pin-out

Pin	Name	Pin	Name
A1	EMP_DCD2_L	B1	EMP_DTR2_L
A2	EMP_CTS2_L	B2	EMP_RTS2_L
A3	EMP_SOUT2	B3	EMP_SIN2
A4	EMP_INUSE_L	B4	EMP_DSR2_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
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	RESERVED	B28	GND
A29	GND	B29	FDD_DENSEL0
A30	CHP3_CDRST_L	B30	GND

Pin	Name	Pin	Name
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	RESERVED

6.7 Floppy/CDROM Module Connector

An 80-pin SCA-2 connector supports the optional Floppy/CD-ROM peripheral module. Through this connector, the CD-ROM and FDD signals are interfaced to the respective units.

The use of SCSI drives on this connector is not supported. The mechanical design of the hard drive bay and the gender of the SCA2 connector prevents a SCSI HDD from being inserted into this peripheral connector. The following table shows the pin-out for the peripheral connector.

Table 22. 80-pin peripheral connector pin-out

Pin	Name	Pin	Name
1	N.C.	41	GND
2	N.C.	42	GND
3	N.C.	43	GND
4	N.C.	44	CD_FDD_PRSN_L
5	N.C.	45	CDR_DREQ
6	N.C.	46	N.C.
7	CDR_CS3_L	47	CDR_CS1_L
8	CDR_ADDR2	48	CDR_ADDR0
9	CDR_DACK_L	49	CDR_ADDR1
10	CDR_IRQ	50	CDR_IRDY
11	CDR_IOR_L	51	CDR_IOW_L

Pin	Name	Pin	Name
12	CDR_D15	52	CDR_D0
13	CDR_D14	53	CDR_D1
14	CDR_D13	54	CDR_D2
15	CDR_D12	55	CDR_D3
16	CDR_D11	56	CDR_D4
17	CDR_D10	57	CDR_D5
18	CDR_D9	58	CDR_D6
19	CDR_D8	59	CDR_D7
20	CHP3_CDRST_L	60	FDD_INDEX_L
21	FDD_DSKCHG_L	61	FDD_DIR_L
22	FDD_WDATA_L	62	FDD_DENSEL0
23	FDD_TRK0_L	63	FDD_DS0_L
24	FDD_RDATA_L	64	FDD_MTR0_L
25	FDD_STEP_L	65	FDD_WGATE_L
26	FDD_WPROT_L	66	FDD_HDSEL_L
27	N.C.	67	N.C.
28	N.C.	68	N.C.
29	N.C.	69	N.C.
30	N.C.	70	N.C.
31	N.C.	71	N.C.
32	N.C.	72	N.C.
33	N.C.	73	N.C.
34	+5V	74	CD_FDD_PRSN_L
35	+5V	75	GND
36	+5V	76	GND
37	N.C.	77	ACTIVE6_L
38	GND	78	N.C.
39	N.C.	79	N.C.
40	N.C.	80	N.C.

6.8 Front Panel Interface Connector

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

Table 23. SCSI Backplane FP Connector Pin-out

Pin	Name	Pin	Name
1	GND	2	FP_SYS_FLT_LED1_L
3	POWER_LED_ON_L	4	FP_SYS_FLT_LED2_L
5	VCC	6	SB5V
7	HDD_LED_ON_L	8	ID_LED_ON_L
9	PWR_SW_ACTIVE_L	10	NIC1_LED_3V_LINK_L

Pin	Name	Pin	Name
11	HDD_LED_FAULT_L	12	NIC1_LED_ON_ACTIVITY
13	RST_SW_ACTIVE_L	14	I2C_DATA
15	GND	16	I2C_CLK
17	ID_SW_ACTIVE_L	18	CHASSIS_INTRUSION
19	GND	20	NIC2_LED_3V_LINK_L
21	KEY	22	RESERVED 2
23	FP_NMI_BTN_L	24	NIC2_LED_ON_ACTIVITY
25	EMP_DSR2_L	26	EMP_INUSE_L
27	EMP_SIN2	28	EMP_SOUT2
29	EMP_RTS2_L	30	EMP_CTS2_L
31	EMP_DTR2_L	32	EMP_DCD2_L
33	RESERVED 1	34	RESERVED 3

7. Floppy/CDROM Module Interface Assembly

For system configurations that require a floppy drive and a CD-ROM drive, an optional Floppy/CDROM drive module can by used. The Floppy/CDROM module plugs into the flex bay (Drive bay closest to the front panel) in the front of the chassis.

The Floppy/CDROM module has an interface board, which provides blind mate attachment with the SCSI backplane. The interface board provides both ATA33 and floppy drive signals.

The Floppy/CDROM module supports the following features:

- ATA33 signal path from the SCA connector to the CD-ROM drive
- FDD signal path from the SCA connector to the floppy drive

7.1 CD-ROM Signal Interface

The CD-ROM (ATA33) signal interface uses a 40-pin high-density connector (Molex* 54132-4090). The connector pin-out is shown below.

Table 24. CD-ROM (ATA33) Interface Connector (J2) Pin-out

Pin	Signal Name	Signal Name	Pin
1	GND	GND	21
2	GND	GND	22
3	CDR_DREQ	CDR_D (15)	23
4	GND	CDR_ D (0)	24
5	VCC	CDR_D (14)	25
6	GND	CDR_D (1)	26
7	VCC	CDR_D (13)	27
8	CDR_CS1_L	CDR_D (2)	28
9	VCC	CDR_D (12)	29
10	CDR_ADDR0	CDR_D (3)	30
11	VCC	CDR_D (11)	31
12	CDR_ADDR1	CDR_D (4)	32
13	VCC	CDR_D (10)	33
14	CDR_IRQ	CDR_D (5)	34
15	CDR_DACK_L	CDR_D (9)	35
16	CDR_IRDY	CDR_D (6)	36
17	CDR_CS3_L	CDR_D (8)	37
18	CDR_IOR_L	CDR_D (7)	38
19	CDR_ADDR2	RESERVED	39
20	CDR_IOW_L	CHP3_CDRST_L	40

7.1.1 FDD Signal Interface

The floppy signal interface uses a 20-pin high density connector (Molex 52271-2690). The connector pin-out is shown below.

Table 25. FDD Interface Connector (J1) Pin-out

Pin	Signal Name	Signal Name	Pin
1	VCC	FDD_STEP_L	14
2	FDD_INDEX_L	GND	15
3	VCC	FDD_WDATA_L	16
4	FDD_DS0_L	GND	17
5	VCC	FDD_WGATE_L	18
6	FDD_DSKCHG_L	GND	19
7	NC	FDD_TRK0_L	20
8	NC	GND	21
9	NC	FDD_WPROT_L	22
10	FDD_MTR0_L	GND	23
11	NC	FDD_RDATA_L	24
12	FDD_DIR_L	GND	25
13	FDD_DENSEL_0	FDD_HDSEL_L	26

7.1.2 CD/FDD Signal Interface

The CD/FDD module signal interface uses an 80-pin SCA2 male connector (AMP* 1123283-9) The connector pin-out is shown below.

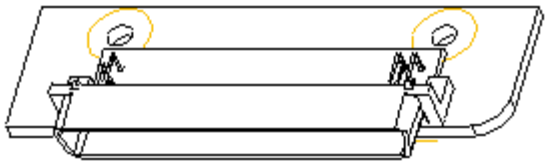


Figure 27. Floppy/CDROM Daughter Board

Table 26. SCA2 CD/FDD Interface Connector (J3) Pin-out

Pin	Signal Name	Signal Name	Pin
1	NC	GND	41
2	NC	GND	42
3	NC	GND	43
4	NC	GND (Drive Present Signal ON)	44

Pin	Signal Name	Signal Name	Pin
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
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	For IDE HSBP Power Control	NC	67
28	For IDE HSBP Power Control	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 Present Signal ON)	74
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	NC	80

7.2 CD-ROM Adapter Board

The slim-line CD-ROM drive within the Floppy/CDROM module has a separate interface board connecting the drive to the module.

7.2.1 CD-ROM Signal Interface

The CD-ROM (ATA33) signal interface has two connectors, a 40-pin high density connector (Molex 52559-4092) and 50-pin high density connector (JAEE* Kx14-50K5D1). The connector pin-outs are shown below.

Table 27. CD-ROM (ATA33) Interface Connector (J1) Pin-out (CD/FDD Board Side)

Pin	Name	Name	Pin
1	CHP3_CDRST_L	CDR_IOW_L	21
2	NC	CDR_ADDR2	22
3	CDR_D (7)	CDR_IOR_L	23
4	CDR_D (8)	CDR_CS3_L	24
5	CDR_D (6)	CDR_IRDY	25
6	CDR_D (9)	CDR_DACK_L	26
7	CDR_D (5)	CDR_IRQ	27
8	CDR_D (10)	VCC	28
9	CDR_D (4)	CDR_ADDR1	29
10	CDR_D (11)	VCC	30
11	CDR_D (3)	CDR_ADDR0	31
12	CDR_D (12)	VCC	32
13	CDR_D (2)	CDR_CS1_L	33
14	CDR_D (13)	VCC	34
15	CDR_D (1)	GND	35
16	CDR_D (14)	VCC	36
17	CDR_D (0)	GND	37
18	CDR_D (15)	CDR_DREQ	38
19	GND	GND	39
20	GND	GND	40

7.2.2 FDD Signal Interface

The FDD signal interface uses a 20-pin high density connector (JAEE: Kx14-50K5D1). The connector pin-out is shown below.

Table 28. CD-ROM (ATA33) Interface Connector (J2) Pin-out (CD-ROM Side)

Pin	Name	Name	Pin
1	NC	GND	26
2	NC	CDR_IRDY	27
3	NC	CDR_DACK_L	28
4	NC	CDR_IRQ	29
5	CHP3_CDRST_L	1K Pull-Down	30
6	CARD (8)	CDR_ADDR1	31
7	CARD (7)	1K Pull-Down	32
8	CARD (9)	CDR_ADDR0	33
9	CARD (6)	CDR_ADDR2	34
10	CARD (10)	CDR_CS1_L	35
11	CARD (5)	CDR_CS3_L	36
12	CARD (11)	NC	37
13	CARD (4)	VCC	38
14	CARD (12)	VCC	39
15	CARD (3)	VCC	40
16	CARD (13)	VCC	41
17	CARD (2)	VCC	42
18	CARD (14)	GND	43
19	CARD (1)	GND	44
20	CARD (15)	GND	45
21	CARD (0)	GND	46
22	CDR_DREQ	HDSEL (NC)	47
23	GND	GND	48
24	CDR_IOR_L	NC	49
25	CDR_IOW_L	NC	50

8. PCI Riser Cards

The SR2200 2U server chassis supports the use of two 3-slot PCI riser cards. Each riser card is capable of supporting a 3.3-volt, 64-bit, 66-MHz PCI add-in card. Due to component placement requirements on the SCB2 baseboard, the PCI riser located closest to the edge of the baseboard will only support low-profile add-in cards. The second riser card will support both full-length and low-profile PCI cards. The following table provides the pin-out of the 64-bit PCI connector.

Table 29. 3V 64-bit PCI Connector Pin-out

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
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]

Pin	Side B	Side A	Pin	Side B	Side A
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

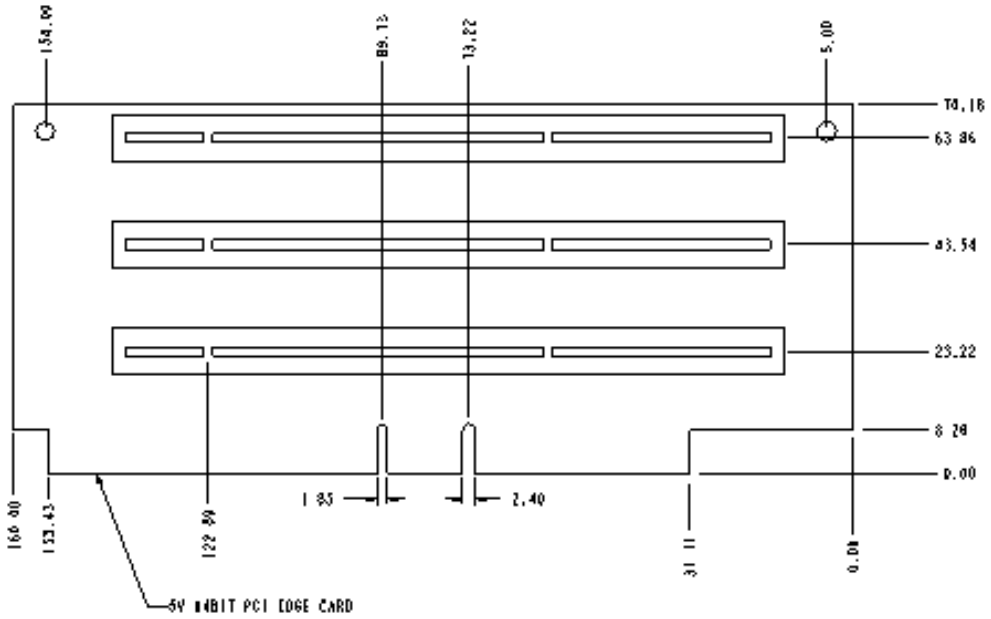


Figure 28. 2U PCI Riser Card Mechanical Drawing

9. Supported Intel® Server Boards

The SR2200 2U server chassis is designed to support the feature requirements of the Intel® SCB2 server board. Please refer to the SCB2 Technical Product Specification for additional baseboard information. It will support the following feature set:

- Dual Intel® Pentium™ III processors with 512 KB cache (FCPGA2)
- 133 MHz Front Side Bus
- ServerWorks* ServerSet III HE-SL chipset
  - HE-SL North Bridge
  - CIOB20 I/O Bridge
  - CSB5 South Bridge
- Support for six PC-133 compliant registered ECC SDRAM DIMMs providing up to 6 GB of memory
- 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
    - Two network interface controllers: Intel® 82550PM Fast Ethernet Controllers
    - ATA-100 controller: Promise Technology* PDC20267 *(ATA-100 SCB2 board only)*
  - Segment B: 64-bit, 66/33 MHz, 3.3 V, (P64-B) supporting the following configuration:
    - One PCI I/O riser slot capable of supporting full length PCI add-in cards
    - Dual-channel wide Ultra-160 SCSI controller providing one internal and one high density external channel support: Adaptec* AIC-7899W SCSI Controller (SCSI SCB2 board only)
  - Segment C: 64-bit, 66/33 MHz, 3.3 V (P64-C) supporting the following device:
    - One PCI I/O riser slot, with support for low-profile PCI add-in cards 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 two optional USB ports for front panel support
- One external low-profile RJ45 Serial 2 port on the back of the board, with an optional Serial 2 interface for front panel support. An internal header is available providing an optional COM1 port.
- Support for up to three multi-speed fans and three fixed speed fans
- High density connectors for 2U chassis design support: front panel, floppy, ATA
- SSI compliant connectors for SSI interface support: front panel, floppy, ATA

10. Serial Port Usage

When integrated with an SCB2 server board, the SR2200 server chassis provides two common external RJ45 serial ports, one located on the back of the system, and the other located on the front panel.

The use of RJ45 connectors for the serial interface is becoming a standard for use in the high-density server market. The RJ45 serial connector on the back of the system is intended to support a serial port concentrator allowing for remote access to the server's Emergency Management Port.

The serial connector on the front panel can be used as a direct connect to the Emergency Management Port, allowing for PC-to-PC serial communications to diagnostics on a server mounted in a rack environment. See the *SCB2 Technical Product Specification* (TPS) for more information concerning server management and the Emergency Management Port.

Mode	Front	Back
Modem	No	Yes
Serial Concentrator	No	Yes
PC to PC communication	Yes	Yes

The serial connectors cannot both be used at the same time. Logic on the baseboard determines which connector is in use. If the front serial connector is used, the rear serial connector is disabled.

10.1 Rear Serial Port Usage

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

Serial terminal concentrators use one of two serial communication standards. Some terminal concentrators require a DCD signal, while others require a DSR signal. The SCB2 baseboard can be configured to support either of these configurations by setting the appropriate jumper on the jumper block that is located directly behind the RJ45 serial connector on the baseboard. Refer to the *SCB2 Technical Product Specification* for additional configuration information of the serial port.

10.2 Front Serial Port Usage

The front RJ45 serial post is intended to support PC-to-PC serial communication only. It shares common serial signals with the RJ45 serial port located on the back of the system. However, It will not support a modem because there is no Ring Indicate (RI) signal. Instead, it sets pin #5 to ground, causing logic on the baseboard to disable the rear serial port when a cable or adapter is plugged into it.

11. Regulatory and Integration Information

11.1 Product Regulatory Compliance

11.1.1 Product Safety Compliance

The SR2200 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)

11.1.2 Product EMC Compliance

The SR2200 has been has been 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)

11.1.3 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

11.2 Electromagnetic Compatibility Notices

11.2.1 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.

11.2.2 FCC Verification Statement

Product Type: CAB2; SPKA4; SC7000
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

11.2.3 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.

11.2.4 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.

11.2.5 Japan EMC Compatibility

Electromagnetic Compatibility Notices (International)

この装置は、情報処理装置等電波障害自主規制協議会（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.

11.2.6 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。

11.3 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.

12. Environmental Limits

12.1 Board Level Environmental Limits

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

Table 30. Operating & Non-operating Environmental Limits

Temperature	Specification
Non-operating	-40°C to 70°C
Operating Temperature	0°C to 55°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 at 15- 30 °C/min ramp rates
Humidity	**Specification**
Non-operating	92% RH at +50°C
Vibration	**Specification**
Non-Operating:	Random input, 5Hz to 500Hz, 3.13g RMS
Shock	**Specification**
Non-operating	50g, 170 inches/sec unpackaged. Packaged shock height dependant on total package weight.
ESD	**Specification**
Operating	Indirect (radiated) only. Test to 15KV with limited errors and to 20K with no damage.
EMI	**Specification**
Operating	Required to meet EMI emission requirements, tested as part of system.

12.2 System Level Environmental Limits

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

Table 31. 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 1)	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 +/- degrees C)
Operating Shock	No errors with a half sine wave shock of 2G (with 11 millisecond duration).

Parameter	Limits
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

12.3 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. 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.

Following are the maximum times that a trained field service technician should take to perform the listed system maintenance procedures, after diagnosis of the system.

Table 32. Mean Time To Repair Estimate

Activity	Time Estimate
Remove cover	0.5 minutes
Remove and replace hard disk drive	3 minutes
Remove and replace power supply module	1 minute
Remove and replace power supply enclosure	10 minutes
Remove and replace front system fan	3 minutes
Remove and replace expansion board	5 minutes
Remove and replace front panel board	5 minutes
Remove and replace baseboard (with no expansion boards)	10 minutes

14. Calculated MTBF

The MTBF (Mean Time Between Failures) for the SR2200 Server chassis as configured from the factory is calculated at 35000 hours operating at 35 Degrees C. The following table shows the MTBF numbers for individual components within the chassis.

Table 33. SR2200 Component MTBF

Sub Assembly	MTBF (Hours)	FIT (Failures/10^9 hrs)
SCB2 Server board	110,000	9,091
350W power supply, 1 module and enclosure	90,000	11,111
Fans, (no redundancy)	150,000	6,667
Front Panel Board	2,500,000	400
Hot Swap SCSI Backplane	1,500,000	667
PCI Riser Card	4,000,000	250
PCI Riser Card	4,000,000	250
Total, SR2200 without server board	51,000	19,344
Total, SR2200 with server board	35,000	28,435

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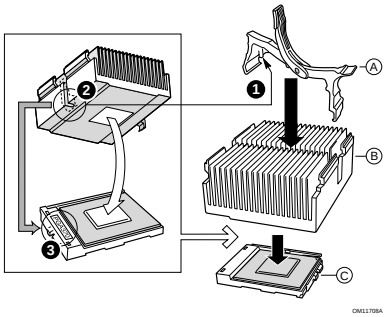
Appendix A: SR2200 Integration and Usage Tips

This appendix provides a list of useful information that is unique to the SR2200 server chassis and should be kept in mind while integrating and configuring your SCB2-based server.

- Only low-profile PCI add-in cards can be used in the PCI riser located closest to the edge of the chassis.
- The flex bay may be used to support a seventh LVD SCSI hard drive or a Floppy/CDROM module.
- The optional Floppy/CDROM module is NOT hot-swappable. The system must be powered down before the module is inserted or removed.
- The SR2200 server chassis will not support single ended (SE) SCSI drives. Only LVD SCSI drives will be supported.
- Before installing the SCB2 server board 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 SCB2 server board 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.
- When installing the orange Floppy/FP/ATA cable, verify that both cable connectors are seated securely and lay flat to the connectors located on the baseboard and backplane.
- The RJ45 serial connector located on the front panel is used for serial pc-to-pc communications only. This serial connector will not support a modem to access the server management features of the system.
- The blue system ID LEDs on both the SCB2 server board and the SR2200 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.
- To remove the tape drive tray from the chassis, a spring latch located on the back right side of the carrier must be released allowing the drive tray to slide free. Do not attempt to pull the drive tray out without first releasing the spring latch, doing so may damage the plastic faceplate
- The use of a third system fan may be required depending on the system configuration used. Some maximized system configurations may require the third system fan to maintain the system's thermal limits. System integrators should perform their own thermal validation tests if they suspect their system configuration may exceed the thermal limits of the system when using the two standard system fans.

- When installing the processor heat sink assembly, ensure the retention clip (A) and the heat sink (B) are properly oriented before clamping down the assembly to the processor socket. Processor heat sinks and retention clips that are not properly oriented may cause irreparable damage to the processor socket. See the SCB2 Product Guide for complete processor installation instructions.



Refer to the latest SCB2/SR1200/SR2200 Specification Update for a list of the latest specification changes, updates, and errata associated with the SR2200 server chassis. Specification updates are released on a monthly basis and can be downloaded from the Intel Customer Support Web site at:

http://support.intel.com/support/motherboards/server/SCB2/

Appendix B: SR2200 Errata

The following is a list of known errata for the SR2200 server chassis. Errata listed in this section are classified as issues that cause the chassis to deviate from the published specifications and that will not be addressed. For a complete list of errata for the SR2200 server chassis, including those that are planned to be addressed, please reference the SCB2/SR1200/SR2200 Monthly Specification Update posted to Intel's support web site.

http://support.intel.com/support/motherboards/server/SCB2/

1. CD-ROM tray bezels may jam with the Floppy/CDROM module bracket if excessive force is applied on the cdrom tray during installation. If this is seen to occur, eject the CDROM tray manually via the recessed manual release button by inserting pin through hole in bezel and lightly pulling on the tray if necessary. Subsequent CDROM tray ejects should not jam given that it is unlikely user will apply great force to close tray once Floppy/CDROM module is installed

Reference Documents

Refer to the following documents for additional information:

- *SCB2 Server Board External Product Specification*. Revision 1.0
- *SCB2 Baseboard Management Controller External Product Specification*. Revision 0.9
- *TPS 350W Power Supply Enclosure Specification Rev 03 Document No.A53953*
- *TPS 350W Power Supply Module Specification Rev 02 Document No.A45295*
- *Entry-Level Electronics-Bay Specification Rev 1.0*
- *ATX Specification Version 2.03*
- *SCSI Accessed Fault-Tolerant Enclosures Interface Specification*, © Conner Peripherals and Intel Corporation, Revision 1.00, October 17, 1995
- *SCSI Parallel Interface-3*, draft proposal revision 14
- *PCI Local Bus Specification Rev 2.2, December 18, 1998*
- *Single Connector Attachment for Small SCSI Disk Drives.* Small Form Factor Committee, revision 3.2
- *AIC-3860 Single-ended-to-Low Voltage Differential SCSI Transceiver Data Sheet,* Rev. A, 12/97.
- *The I^2C Bus and How to Use It,* January 1992, © 1992 Philips Semiconductors

Index