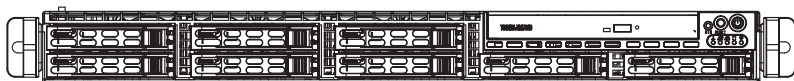


# SUPERO®

## SC113 Chassis Series



SC113TQ-R650UB

SC113TQ-700CB

SC113TQ-700UB

SC113TQ-R650CB

SC113TQ-560UB

## USER'S MANUAL

1.0a

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Release Date: August 14, 2008

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## Preface

### About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC113 1U chassis. Installation and maintenance should be performed by experienced technicians only.

Supermicro's SC113 1U chassis features a unique and highly-optimized design. The chassis is equipped with a 650W or 700W, advanced design, high-efficiency >85%+ power supply for superb power savings. High performance fans provide ample optimized cooling for and 8 hot-swappable 2.5" SAS/SATA drives offers maximum storage capacity in a 1U form factor.

This manual lists compatible parts available when this document was published. Always refer to the our Web site for updates on supported parts and configurations.

## Manual Organization

### Chapter 1 Introduction

The first chapter provides a checklist of the main components included with this chassis and describes the main features of the SC113 chassis. This chapter also includes contact information.

### Chapter 2 System Safety

This chapter lists warnings, precautions, and system safety. You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed before installing and servicing this chassis.

### Chapter 3 Chassis Components

Refer here for details on this chassis model including the fans, bays, airflow shields, and other components.

### Chapter 4 System Interface

This chapter provides details on the system interface, which includes the functions and information of the control panel LEDs and other LEDs located throughout the system.

### Chapter 5 Chassis Setup and Maintenance

Refer to this chapter for detailed information on this chassis. You should follow the procedures given in this chapter when installing, removing, or reconfiguring your chassis.

### Chapter 6 Rack Installation

This chapter covers detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing, removing or reconfiguring your chassis into a rack environment.

### Appendices

These appendices list compatible cables, power supply specifications, and compatible backplanes. Not all compatible backplanes are listed. Refer to our Web site for the latest compatible backplane information at <http://www.supermicro.com>.

#### Appendix A Chassis Cables

#### Appendix B Power Supply Specifications

#### Appendix C SAS-113TQ Backplane Specifications



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***Appendix B SC113 Power Supply Specifications***

***Appendix C BPN-SAS-113TQ Backplane***

## Notes

# Chapter 1

## Introduction

### 1-1 Overview

Supermicro's SC113 1U chassis features a unique and highly-optimized design. The chassis is equipped with high efficiency power supply. High performance fans provide ample optimized cooling for the dual processor modules and 8 hot-swap drive bays offer maximum storage capacity in a 1U form factor. Only SAS or enterprise SATA HDDs are recommended.

### 1-2 Shipping List

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model <http://www.supermicro.com/products/chassis/1U/?chs=113>

<b>SC113 Chassis</b>				
<b>Model</b>	<b>CPU</b>	<b>HDD</b>	<b>I/O Slots</b>	<b>Power Supply</b>
<b>SC113TQ-700UB</b>	Single/Dual CPU	8x 2.5" hot-swap SAS/SATA	2x FH, 1x LP	700W
<b>SC113TQ-700CB</b>	Dual CPU	8x 2.5" hot-swap SAS/SATA	1x FF	700W
<b>SC113TQ-R650UB</b>	Single/Dual CPU	8x 2.5" hot-swap SAS/SATA	2x FH, 1x LP	Redundant 650W
<b>SC113TQ-R650CB</b>	Dual CPU	8x 2.5" hot-swap SAS/SATA	1x FF	Redundant 650W
<b>SC113TQ-560UB</b>	Single/Dual CPU	8x 2.5" hot-swap SAS/SATA	2x FH, 1xLP	560W

FF: Full-height, full length card

FH: Full-height card

LP: Low-profile card

## 1-3 Chassis Features

The SC113 1U high-performance chassis includes the following features:

### **CPU**

The SC113 Chassis supports a single or dual CPU. Please refer to the motherboard specifications pages on our website for updates on supported processors.

### **Hard Drives**

The SC113 chassis features 8 hard drive bays for 2.5" hot-swappable SAS/SATA drives. Once setup correctly, these drives can be removed without powering down the server.

### **I/O Expansion Slots**

The SC113 Chassis includes either one full I/O expansion slot or two full I/O expansion slots and one low profile I/O slot. See the chart on the previous page for your specific chassis model.

### **Peripheral Drives**

Each SC113 Chassis supports one slim DVD-ROM Drive. This drive allows data to be quickly installed or saved. (On some chassis models, the DVD-ROM is an optional item).

### **Other Features**

Other on-board features are included to promote system health. These include four cooling fans, a convenient power switch, reset button, and 5 LED indicators.

## 1-4 Contacting Supermicro

### Headquarters

Address: Super Micro Computer, Inc.  
980 Rock Ave.  
San Jose, CA 95131 U.S.A.

Tel: +1 (408) 503-8000

Fax: +1 (408) 503-8008

Email: [marketing@supermicro.com](mailto:marketing@supermicro.com) (General Information)  
[support@supermicro.com](mailto:support@supermicro.com) (Technical Support)

Web Site: [www.supermicro.com](http://www.supermicro.com)

### Europe

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's-Hertogenbosch, The Netherlands

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Fax: +31 (0) 73-6416525

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[support@supermicro.nl](mailto:support@supermicro.nl) (Technical Support)  
[rma@supermicro.nl](mailto:rma@supermicro.nl) (Customer Support)

### Asia-Pacific

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Taiwan, R.O.C.

Tel: +886-(2) 8226-3990

Fax: +886-(2) 8226-3991

Web Site: [www.supermicro.com.tw](http://www.supermicro.com.tw)

Technical Support:  
Email: [support@supermicro.com.tw](mailto:support@supermicro.com.tw)

Tel: 886-2-8226-1900

## 1-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (<http://www.supermicro.com/support/rma/>).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.



## Chapter 2

# System Safety

### 2-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following the steps in the order given should enable you to have your chassis set up and operational within a minimal amount of time. This quick setup assumes that you are an experienced technician, familiar with common concepts and terminology.

### 2-2 Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.

You will also need it placed near at least one grounded power outlet. When configured, the SC113 chassis includes one power supply. "R" models (i.e. SC113TQ-R650UB chassis) includes a redundant power supply and require two grounded outlets.

### 2-3 Preparing for Setup

The SC113 Chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before you begin the installation procedure.

## 2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC113 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and floppy drives (not necessary for hot swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.
- Serverboard battery: CAUTION - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- DVD-ROM Laser: CAUTION - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous

radiation exposure, do not open the enclosure or use the unit in any unconventional way.

## 2-5 General Safety Precautions

- Keep the area around the chassis clean and free of clutter.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

## 2-6 System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing any board from its antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

## Chapter 3

# Chassis Components

### 3-1 Overview

This chapter describes the most common components included with your chassis. Some components listed may not be included or compatible with your particular chassis model. For more information, see the installation instructions detailed later in this manual.

### 3-2 Components

#### Chassis

The chassis includes eight 2.5" hard drive bays, and one slim DVD-ROM drive. (On some chassis models, the DVD-ROM is an optional item). For the latest shipping lists, visit our Web site at: <http://www.supermicro.com>.

This chassis accepts a 1U backplane, four fans (with an optional fifth fan) and one or two power supplies. SC113 models come in black.

#### Backplane

Each SC113 chassis comes with a 1U SAS/SATA backplane. For more information regarding compatible backplanes, view the appendices found at the end of this manual. In addition, visit our Web site for the latest information: <http://www.supermicro.com>.

#### Fans

The SC113 chassis accepts four system fans and provides space for two additional fans if required. System fans for the SC113 chassis are powered from the serverboard. These fans are 1U high and are powered by 4-pin connectors.

#### Mounting Rails

The SC113 can be placed in a rack for secure storage and use. To setup your rack, follow the step-by-step instructions included in this manual.

## **Power Supply**

Each SC113 chassis model includes one or two high-efficiency power supplies rated at 560, 650 or 700 Watts. "R" models include a second redundant, hot-swappable power supply. In the unlikely event your power supply fails, replacement is simple and can be done without tools.

## **Air Shroud**

Air shrouds are shields, usually plastic, that channel air directly to where it is needed. Always use the air shroud included with your chassis.

### **3-3 Where to get Replacement Components**

Although not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors / System Integrators / Resellers. A list of Supermicro Authorized Distributors / System Integrators / Reseller can be found at: <http://www.supermicro.com>. Click the Where to Buy link.

## Chapter 4

# System Interface

### 4-1 Overview

There are several LEDs on the control panel and on the drive carriers that provide system and component status. This chapter explains the meanings of all LED indicators and the appropriate responses that need to be taken.

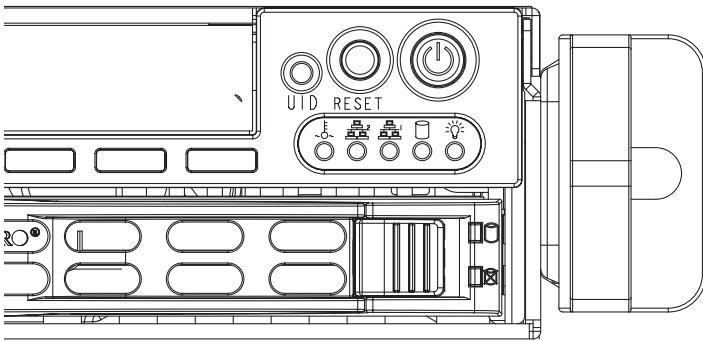
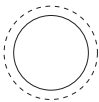


Figure 4-1. Control Panel Buttons and LEDs

## 4-2 Control Panel Buttons

The SC815 chassis includes two or three push-buttons located on the front panel: a reset button, a power on/off button, and a UID button



- **Reset:** The reset button is used to reboot the system.



- **Power:** The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system before servicing.



- **UID:** When used with a UID-compatible motherboard, the UID button is used to turn on or off the blue light function of the the U-LED. Once the blue light is activated, the unit can be easily located in very large racks and server banks.



## 4-3 Control Panel LEDs

The control panel located on the front of the SC815 chassis has up to five LEDs. These LEDs provide critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any action that may be required.



- **Universal Information LED:** The Universal Information LED is used to indicate fan failure, power failure, overheat condition, or to identify the unit within a large rack installation. The feature requires a motherboard that supports the Universal Information LED.

When this LED blinks red quickly, it indicates a fan failure and when blinking red slowly a power failure. This LED will be blue when used for UID (Unit Identifier). When on continuously red, it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. See the table below for descriptions of the LED states.

Universal Information LED States	
State Indication	
Fast Blinking Red (1x/sec)	Fan Fail
Solid Red	CPU Overheat
Slow Blinking Red (1x/4 sec)	Power Fail
Solid Blue	Local UID Button Depressed
Blinking Blue	IPMI-Activated UID

**Figure 3-1. Universal Information LED States**

**Note:** Deactivating the UID LED must be performed in the same way it was activated. (If the UID LED was activated via IPMI, you can only turn the LED off via IPMI and not with the UID button.)



- **Overheat/Fan Fail:** When this LED flashes it indicates a fan failure. When continuously on (not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm.



- NIC2: Indicates network activity on GLAN2 when flashing.



- NIC1: Indicates network activity on GLAN1 when flashing.



- HDD: Indicates IDE channel activity. SAS/SATA drive, SCSI drive, and/or DVD-ROM drive activity when flashing.



- Power: Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

## 4-4 Drive Carrier LEDs

The SC113 chassis uses SAS/SATA drives.

### SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

- Green: Each Serial ATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SATA drive carrier) indicates drive activity. A con-

nection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- Red: The red LED to indicate an SAS/SATA drive failure. If one of the SAS/SATA drives fail, you should be notified by your system management software.

## 4-5 Power Supply LEDs

This chassis provides several options which may include hot-swappable, cold-swappable, and redundant power supplies. Some power supplies include an LED in the rear with the following definitions:

### 560W, 650W and 700W Power Supplies

560W, 650W and 700W Power Supply LEDs	
State Indication	
Solid Green	System is on.
Solid Amber	System is off and plugged in or 5V stand by on.

- Solid Green: When illuminated, the green LED indicates that the power supply is on.
- Solid Amber: When illuminated, the amber LED indicates the power supply is plugged in and turned off, or the system is off but in an abnormal state.

## **All Other Power Supplies**

- Solid Green: When illuminated, this green LED indicates that the power supply is on.
- Solid Amber: When illuminated, the amber LED indicates the power supply is plugged in and turned off, or the system is off but in an abnormal state.

## Chapter 5

# Chassis Setup and Maintenance

### 5-1 Overview

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tool you will need to install components and perform maintenance is a Phillips screwdriver. Print this page to use as a reference while setting up your chassis.

### 5-2 Installation and Maintenance Procedures

#### Installation

Removing the Chassis Cover and Front Bezel

Installing Hard Drives

DVD-ROM Installation

Installing the Motherboard (includes I/O slot setup)

Installing the Air Shroud and Checking the Airflow

#### General Maintenance

General Maintenance: Systems Fans

General Maintenance: Replacing the Power Supply



**Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.**

## 5-3 Removing the Chassis Cover and Front Bezel

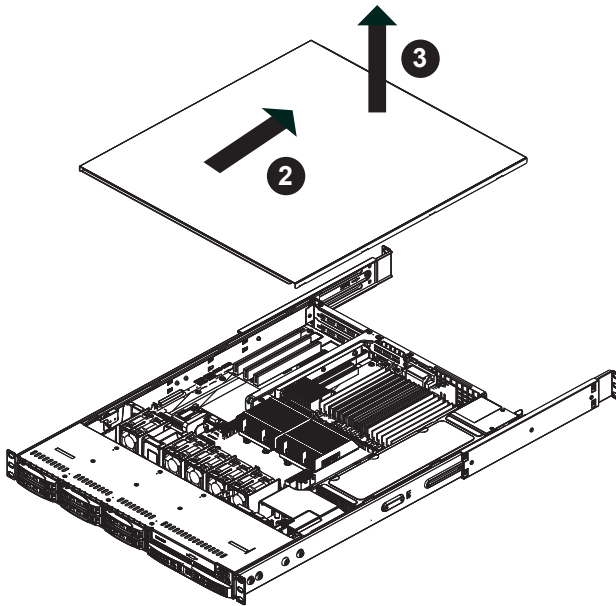


Figure 5-1: Removing the Chassis Cover

### *Removing the Chassis Cover:*

1. Remove the screws securing the top cover to the chassis.
2. Slide the cover toward the rear of the chassis.
3. Lift the cover off the chassis.



**Warning:** Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

## 5-4 Installing Hard Drives

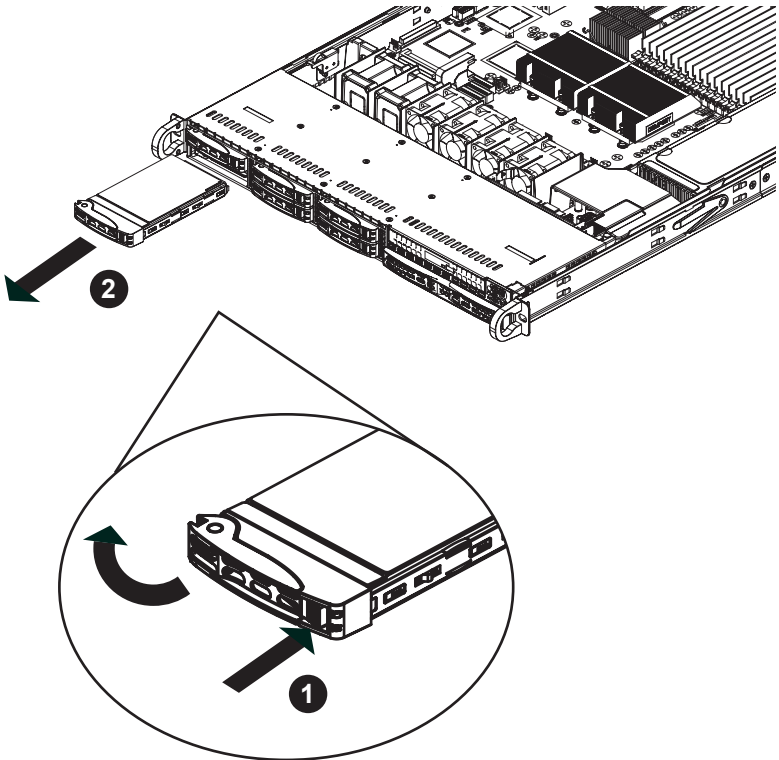
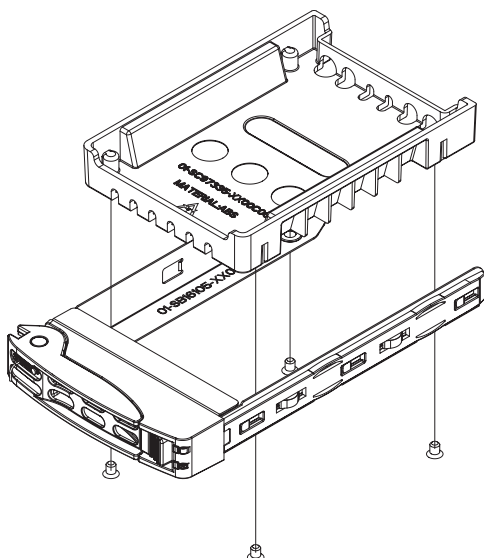


Figure 5-2: Removing Hard Drive

The SC113 chassis supports 8 hot-swappable hard drives. Only SAS or enterprise SATA HDD are recommended.

### ***Removing Hard Drive Trays from the Chassis***

1. Press the release button on the drive tray. This extends the drive bay handle.
2. Use the handle to pull the drive out of the chassis.



**Figure 5-3: Hard Drive Carrier**

***Installing a Hard Drive into a Drive Carrier***

1. Remove the dummy drive, which comes pre-installed in the drive carrier, by removing the screws securing the dummy drive to the carrier. Note that these screws cannot be reused on the actual 2.5" hard drive.
2. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.
3. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked "SATA" to aid in correct installation.
4. Secure the drive to the carrier with four M3 screws as illustrated below. These screws are included in the chassis accessory box.
5. Insert the drive carrier into its bay, keeping the carrier oriented so that the hard drive is on the top of the carrier and the release button is on the right side. When the carrier reaches the rear of the bay, the release handle will retract.
6. Push the handle in until it clicks into its locked position



**Warning:** Except for short periods of time (swapping hard drives), do not operate the server with the hard drives empty.



## 5-5 DVD-ROM Drive Installation

The SC113 chassis models include a DVD-ROM, which is usually pre-installed.

### *Installing or Replacing a DVD-ROM Drive*

1. Power down the system and if necessary, remove the server from the rack and the front bezel from the chassis.
2. Remove the chassis cover.
3. Unplug the drives power and data cables from the motherboard and/or back-plane.
4. Unlock the mini-bezel lock screw and remove the mini-bezel (grate) from the drive bay. The bezel can be removed by pulling out the hard drive beneath the DVD-ROM, then pulling the mini-bezel forward.
5. When installing or removing a DVD-ROM drive, the mini bezel lock screw must be removed and the drive tray must be completely separated from the chassis.
6. Remove the DVD-ROM from the drive tray by removing the drive screws, then secure the replacement DVD-ROM into the drive tray, using the drive screws.
7. Reattach the drive tray to the chassis by replacing the mini-bezel lock screw, and tightening it from inside the chassis.

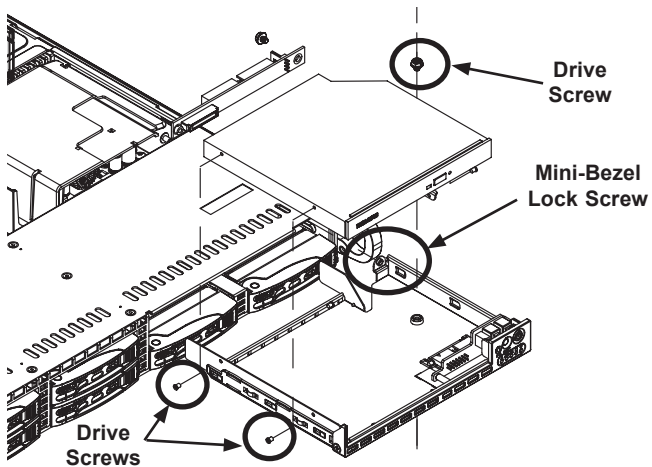


Figure 5-4: Installing the DVD-ROM Drive

8. Reconnect the data and power cables.
9. Replace the chassis cover (replace the server in the rack, if necessary) and power up the system.

## 5-6 Installing the Motherboard

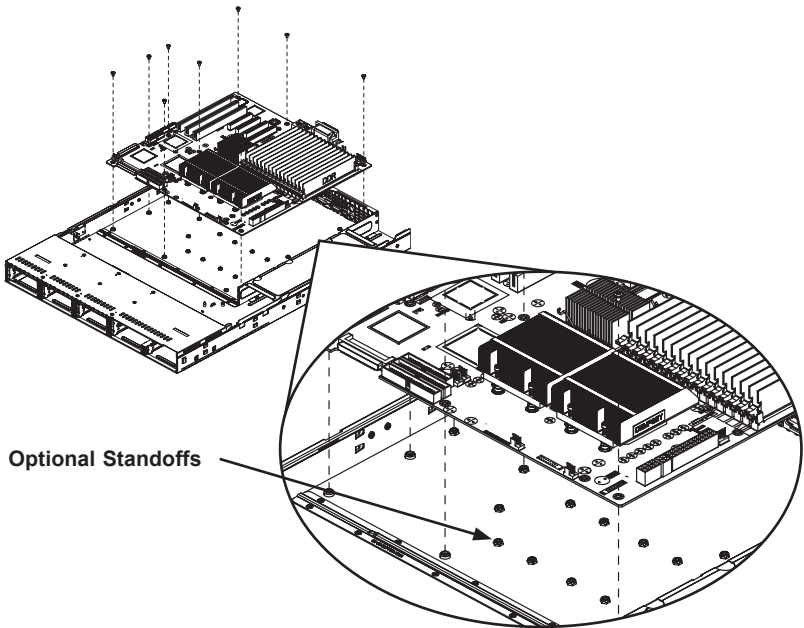


Figure 5-5: Chassis Standoffs

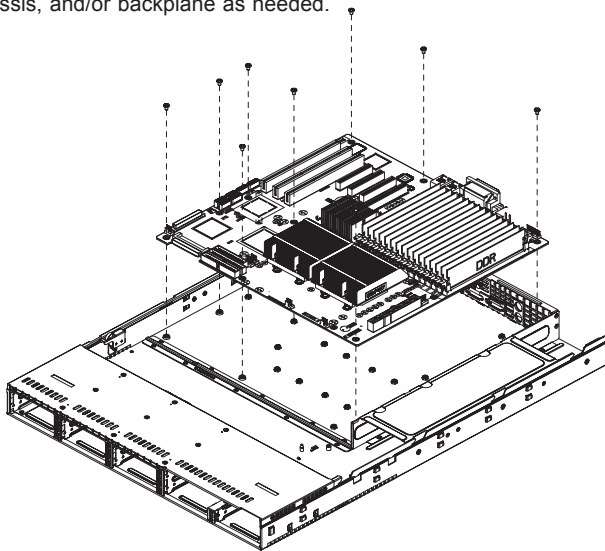
### Permanent and Optional Standoffs

Standoffs prevent short circuits by creating space between the motherboard and the chassis surface. The SC113 chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC113 accessories packaging.

Some motherboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are included for these motherboards. To use an optional standoff, you must place the hexagonal screw through the bottom the chassis and secure the screw with the hexagon nut (rounded side up).

### ***Installing the Motherboard***

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, and precautions.
2. Disconnect the power supply and lay the chassis on a flat surface.
3. Open the chassis cover.
4. If necessary, remove the riser card. To do this, remove the two screws holding the card in place and lift the card from the chassis.
5. As required by your motherboard, install standoffs in any areas that do not have a permanent standoff. To do this:
  - A. Place a hexagonal standoff screw through the bottom the chassis.
  - B. Secure the screw with the hexagon nut (rounded side up).
6. Lay the motherboard on the chassis aligning the permanent and optional standoffs
7. Secure the motherboard to the chassis using the rounded, Phillips head screws.
8. Secure the CPU(s), heatsinks, and other components to the motherboard, chassis, and/or backplane as needed.



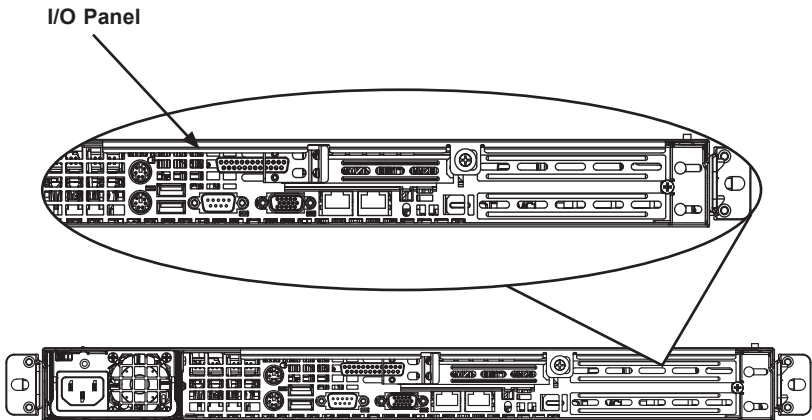
**Figure 5-6: Securing the Motherboard to the Chassis**

## Expansion Card Setup

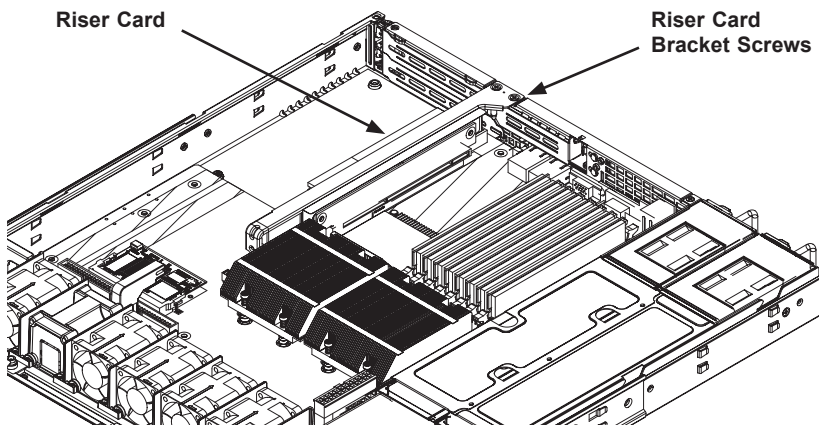
SC113 chassis includes I/O slots for add-on cards and expansion cards. "C" models (like SC113TQ-700CB) include one full height slot. "U" model chassis include two full-height expansion slots and one low-profile expansion slot.

Note: You must use a riser card to install expansion cards into any SC113 chassis. Riser cards are sold separately.

For the latest compatibility and performance information, visit our website at: <http://www.supermicro.com>.



**Figure 5-7: SC113 Chassis Rear  
with Two Full Height/Full Length I/O Slots  
and One Low Profile I/O Slot**



**Figure 5-8: Chassis with a Riser Card**

### ***Installing an Expansion Card***

1. Confirm that you have the correct riser card for your chassis model and the add-on card includes a standard bracket.
2. Remove the chassis cover.
3. Install the riser card onto the bracket. Insert the card and bracket into the appropriate slot on the motherboard. Secure the riser bracket to the chassis using screws as illustrated.
4. Choose the I/O panel in which to place the add-on card.
5. In that slot, open the I/O panel lever and slide the I/O panel sideways.
6. From inside the chassis, remove the I/O panel.
7. Slide the add-on card into the riser card and attach the add-on card bracket in place of the I/O panel.
8. Secure the add-on card by closing the I/O panel lever.
9. Connect cables to the add-on card if necessary.

## 5-7 Installing the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The SC113 chassis air shroud does not require screws to set up.

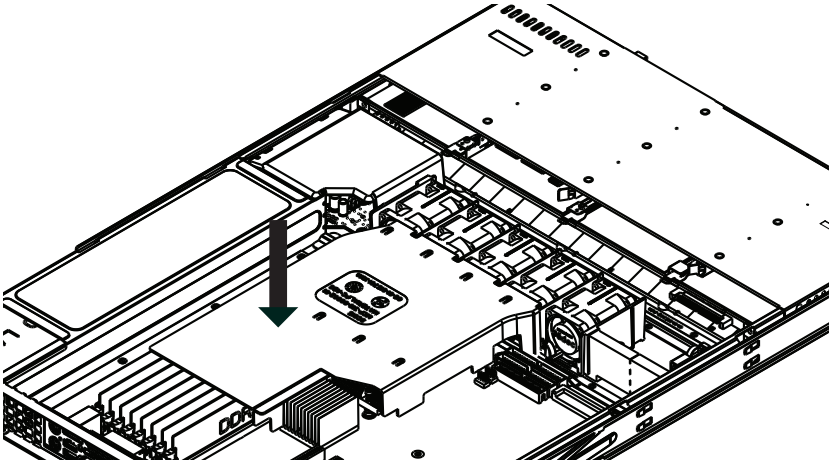


Figure 5-9: Air Shroud Installation

### *Air Shroud Installation*

1. If your motherboard uses 8 DIMMS, skip this step. If your motherboard uses between 9 and 16 DIMMS, you must install the optional air shroud flap. To do so:
  - a. Align the mounting holes in the air shroud, with the mounting holes in the optional flap.
  - b. Secure the flap to the air shroud using the screws provided.
2. Place air shroud in your chassis with the fan side touching the edges of the fans.

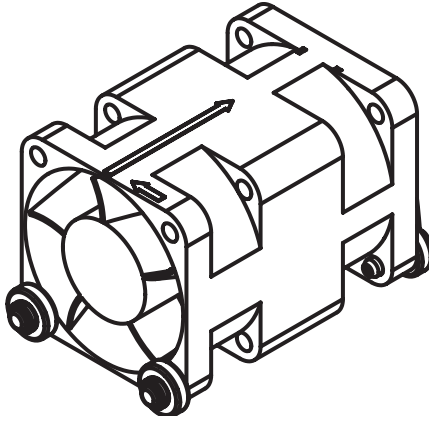
## Checking the Air Flow

### *Check the Airflow*

1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.
2. Do not operate the server without drives or drive trays in the drive bays. Use only recommended server parts.
3. Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.
4. The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons.



## 5-8 System Fans



**Figure 5-10: System Fan**

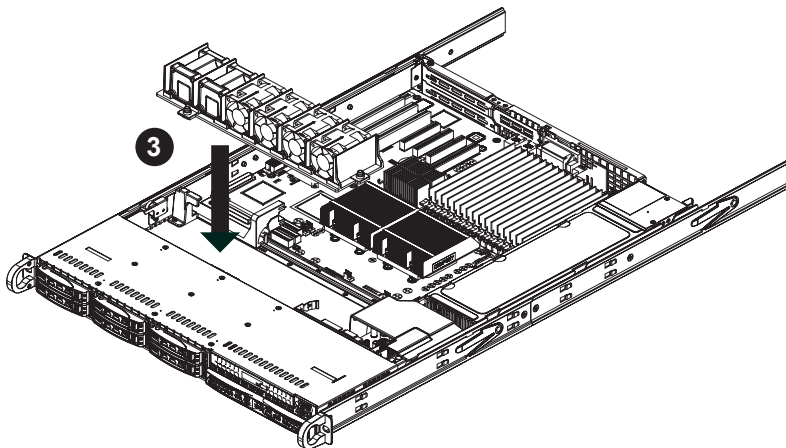
Four heavy duty fans provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the chassis' internal temperature.

The SC113 chassis contains counter-rotating fans. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels.

The SC113 chassis provides two additional open fan housings, where an additional system fan may be added for optimal cooling.

### ***Adding a System Fan***

1. Turn off the power to the system and unplug the system from the outlet.
2. Remove the dummy fan from the fan tray.
3. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
4. Connect the fan wires to the fan headers on the serverboard.
5. Power up the system and check that the fan is working properly before replacing the chassis cover.



**Figure 5-11: Chassis Fans**

The SC113 Chassis includes four pre-installed fans. Two additional open slots are available so that, up to two more fans may be added.

### ***Replacing a System Fan***

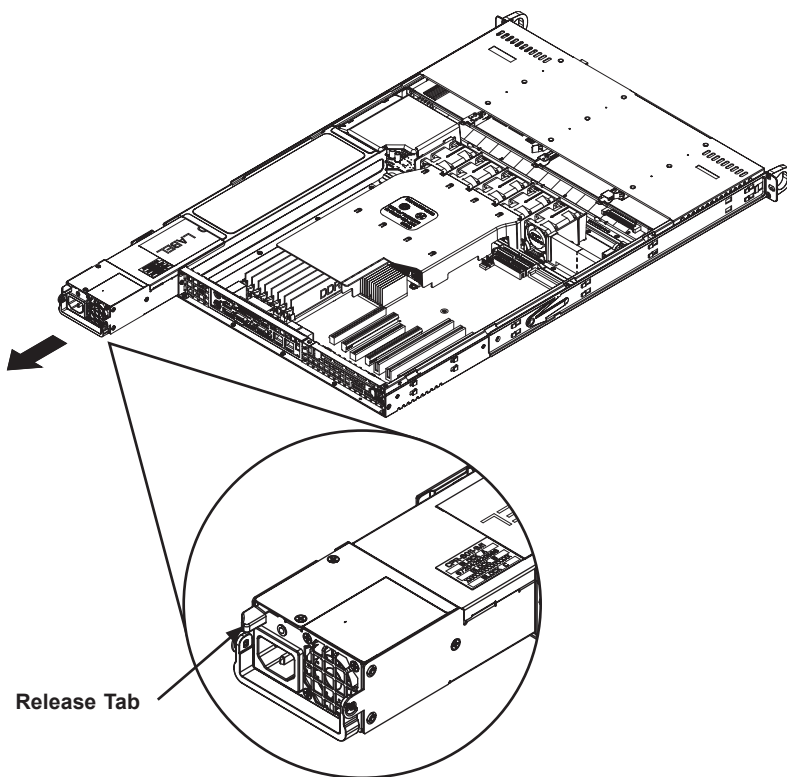
1. If necessary, open the chassis while the power is running to determine which fan has failed. Never run the server for an extended period of time with the chassis open.
2. Turn off the power to the system and unplug the system from the outlet.
3. Remove the failed fan's power cord from the serverboard.
4. Lift the failed fan from the chassis and pull it completely out from the serverboard.
5. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
6. Reconnect the fan wires to the exact same chassis fan headers as the previous fan.
7. Power up the system and check that the fan is working properly before replacing the chassis cover.

## 5-9 Power Supply

Depending on your chassis model, the SC113 Chassis has a 560W, 650W or 700W power supply. This power supply is auto-switching capable. They automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

### Power Supply Failure

If the power supply unit fails, the system will shut down and you will need to replace the unit. Replacement units can be ordered directly from Supermicro (see contact information in the Preface). As there is only one power supply unit in the SC113 Chassis, power must be completely removed from the server before removing and replacing the power supply unit for whatever reason.



**Figure 5-12: Removing the Power Supply**

### ***Replacing the Power Supply***

1. Power down the server and unplug the power cord. If your chassis includes a redundant power supply (at least two power modules), you can leave the server running and remove only one power supply.
2. Push the release tab (on the back of the power supply) as illustrated.
3. Pull the power supply out using the handle provided.
4. Replace the failed power module with the same model.
5. Push the new power supply module into the power bay until you hear a click.
6. Plug the AC power cord back into the module and power up the server.

## Chapter 6

### Rack Installation

#### 6-1 Overview

This chapter provides a quick setup checklist to get your chassis up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time.

#### 6-2 Unpacking the System

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

#### 6-3 Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

##### Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).



## Warnings and Precautions!



### Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

### General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

## **Rack Mounting Considerations**

### **Ambient Operating Temperature**

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature ( $T_{mra}$ ).

### **Reduced Airflow**

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

### **Mechanical Loading**

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

### **Circuit Overloading**

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

### **Reliable Ground**

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

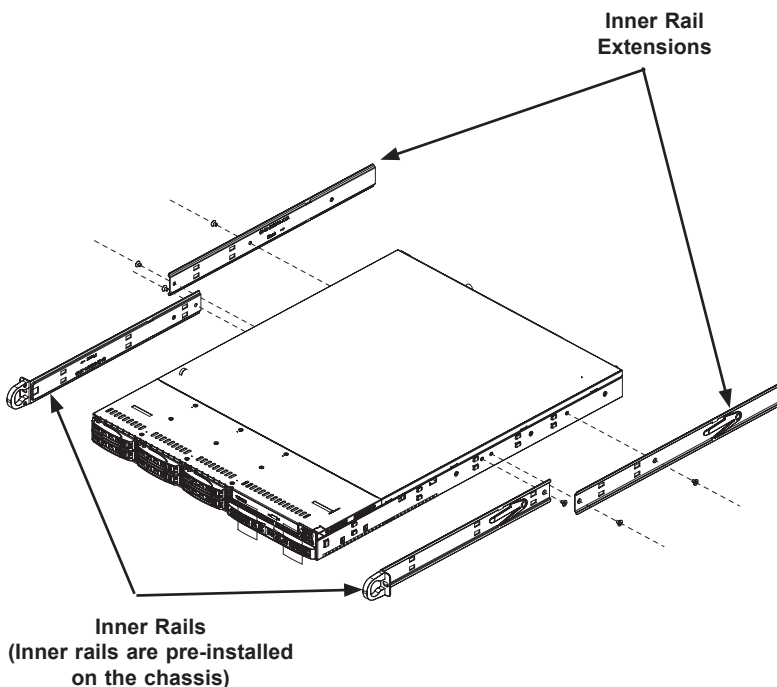
## 6-4 Rack Mounting Instructions

This section provides information on installing the SC113 chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

**NOTE:** This rail will fit a rack between 26" and 33.5" deep.

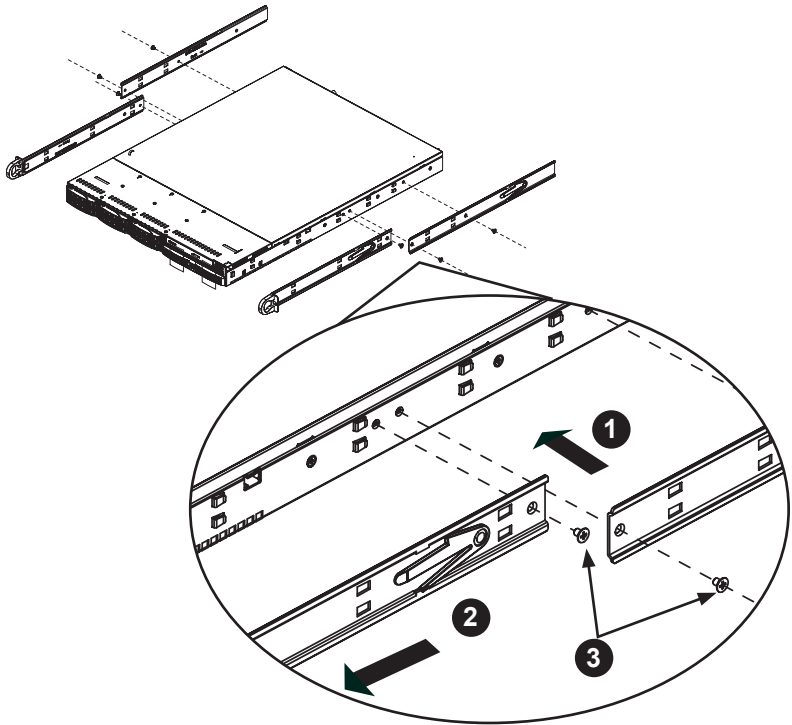
### Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.



**Figure 6-1. Identifying the Sections of the Rack Rails  
(right side rail shown)**





**Figure 6-2. Identifying the Sections of the Rack Rails  
(right side rail shown)**

### **Inner Rail Extension**

The SC113 chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached and do not interfere with normal use of the chassis if you decide not to use a server rack. Attach the inner rail extension to stabilize the chassis within the rack.

#### ***Installing the Inner Rails***

1. Place the inner rack extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.
2. Slide the extension toward the front of the chassis.
3. Secure the chassis with 2 screws as illustrated.
4. Repeat steps 1-3 for the other inner rail extension.

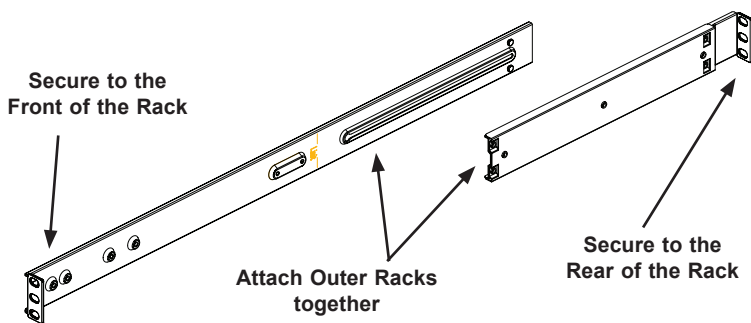


Figure 6-3. Assembling the Outer Rails

## Outer Rails

### *Installing the Outer Rails to the Rack*

1. Attach the short bracket to the outside of the long bracket. You must align the pins with the slides. Also, both bracket ends must face the same direction.
2. Adjust both the short and long brackets to the proper distance so that the rail fits snugly into the rack.
3. Secure the long bracket to the front side of the outer rail with two M5 screws and the short bracket to the rear side of the outer rail with three M5 screws.
4. Repeat steps 1-4 for the left outer rail.

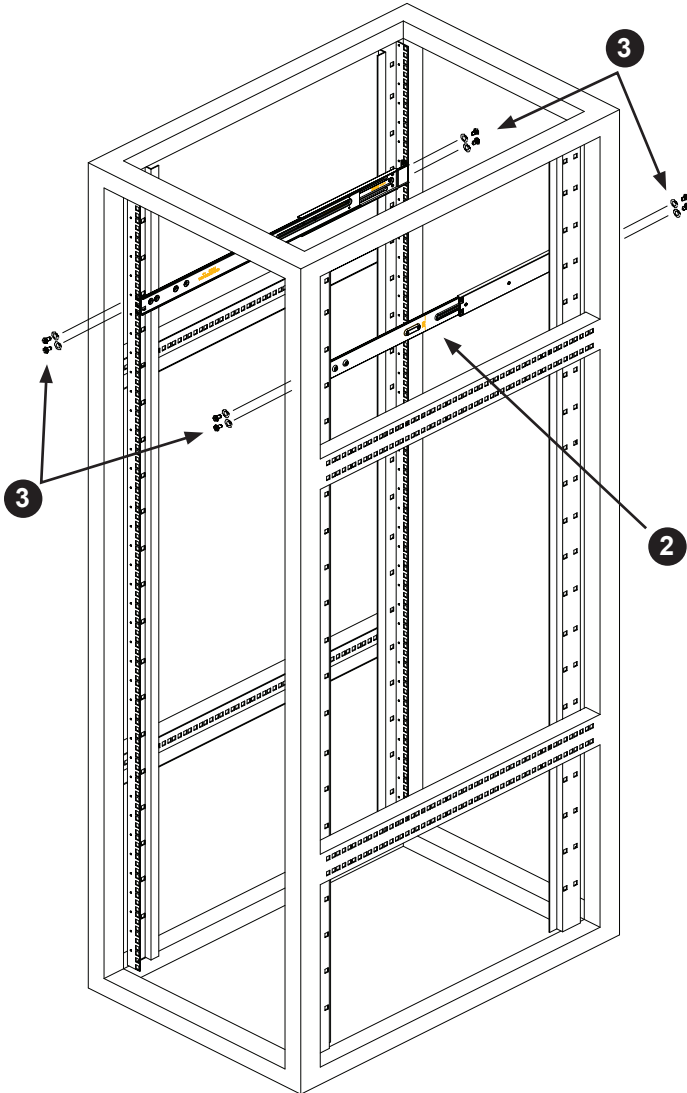
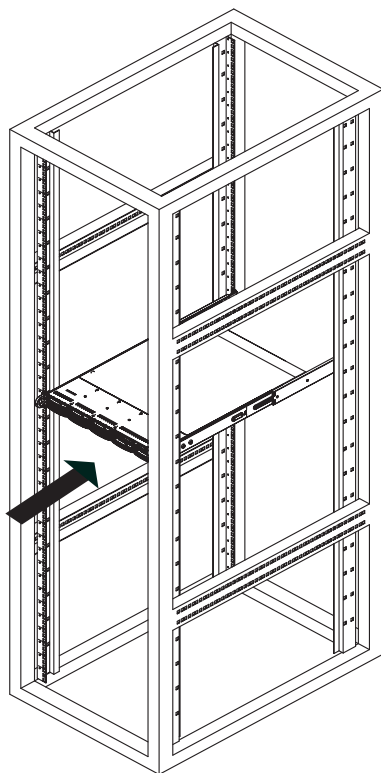


Figure 6-4. Installing the Outer Rails to the Server Rack



**Figure 6-5. Installing the Rack Rails**

### ***Installing the Chassis into a Rack***

1. Confirm that chassis includes the inner rails and rail extensions . Also, confirm that the outer rails are installed on the rack.
2. Line chassis rails with the front of the rack rails.
3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs click into position.
4. (Optional) Insert and tightening the thumbscrews that hold the front of the server to the rack.

## Installing the Chassis into a Telco rack

To install the chassis into a Telco type rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

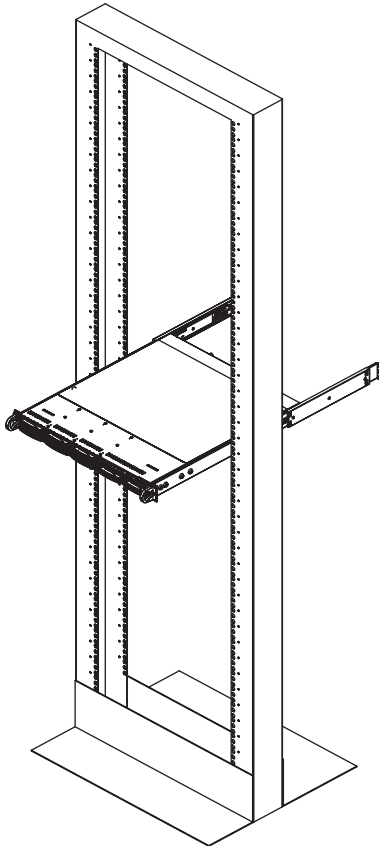


Figure 6-6. Installing the Server into a Telco Rack

## Notes

## Appendix A

### SC111 Chassis Cables

#### A-1 Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: [www.supermicro.com](http://www.supermicro.com).

#### A-2 Cables Included with SC111 Chassis (SAS/SATA)

<b>SC111-560CB, SC111-560UB</b>			
Part #	Type	Length	Description
CBL-0226L	Round Ribbon Cable	43cm	SATA cable
CBL-0191L	Ribbon, Round Cable	50cm	20 pin to 20 pin front CTL cable
CBL-0277L	HDD Cable	48cm	HDD power cable
CBL-0206L	SATA Cable	48cm	SATA cable

## A-4 Compatible Cables

These cables are compatible with the SC111 Chassis.

This section lists cables included with the SC111 Chassis packages.

### Alternate SAS/SATA Cables

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS/SATA cables must share, use one of the following cables. These cables must be purchased separately.

**Cable Name:** SAS Cable **Quantity:** 1

**Part #:** CBL-0175L

**Alt. Name:** "Big Four"

Description: This cable has one SFF-8484 (32 pin) connector on one end and 4 SAS connectors (7 pins each) at the other. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.

**Cable Name:** SAS Cable **Quantity:** 1

**Part #:** CBL-0116

**Alt. Name:** iPass or "Small Four"

Description: This cable has one ipass (SFF-8087/mini-sas) connector (36 pins) at one end and 4 SAS connectors on one end. This cable connects from the Host (motherboard or other controller) to the backplane SAS hard drive port.



## Extending Power Cables

Although Super Micro chassis are designed with to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the motherboards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	Cable Part #	Length
24 pin	CBL - 0042	7.9"(20 CM)
20 pin	CBL - 0059	7.9"(20 CM)
8 pin	CBL - 0062	7.9"(20 CM)
4 pin	CBL - 0060	7.9"(20 CM)

## Front Panel to the Motherboard

The SC111 chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	Number of Pins (Motherboard)	Cable Part #
16 pin	16 pin	CBL - 0049
16 pin	20 pin	CBL - 0048
20 pin	20 pin	CBL - 0047
16 pin	Split*	CBL - 0068
20 pin	Split*	CBL - 0067

\* Split Cables: Use these cables if your motherboard has different pin definitions than a Supmicro motherboard.

## Notes

## Appendix B

### SC111 Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

<b>SC111-560CB, SC111-560UB</b>	
<b>560W</b>	
<b>MFR Part #</b>	PWS-562-1H20
<b>Rated AC Voltage</b>	100-240V 60-50Hz 6.5 - 2.6 Amp
<b>+5V standby</b>	2 Amp
<b>+12V</b>	46.5 Amp
<b>+5V</b>	15 Amp
<b>+3.3V</b>	15 Amp
<b>-12V</b>	0.5 Amp

# Notes

## Appendix C

### BPN-SAS-113TQ Backplane

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

#### C-1 ESD Safety Guidelines

*Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.*

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the RAID card by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

#### C-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the SAS-113TQ backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.

- Make sure that the SAS-113TQ backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

### **C-3 An Important Note to Users**

- All images and layouts shown in this user's guide are based upon the latest PCB revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

## Jumper Settings and Pin Definitions

### C-4 Front Connectors and Jumpers

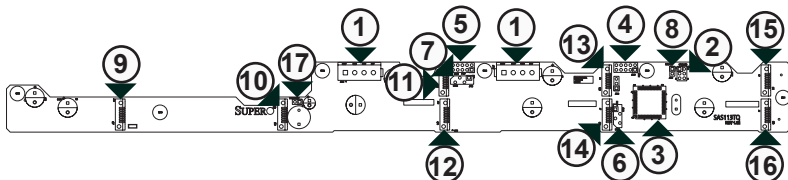


Figure 1-1: Front Jumpers and Connectors

#### *Front Connectors and Jumpers*

- |  |                      |
|--|----------------------|
| 1. Power Connectors (4-pin) JP10, JP13 | 10. Connector #6 J14 |
| 2. Upgrade Pin JP46                    | 11. Connector #5 J12 |
| 3. MG9072 Chip                         | 12. Connector #4 J10 |
| 4. Sideband #1 JP51                    | 13. Connector #3 J8  |
| 5. Sideband #2 JP52                    | 14. Connector #2 J7  |
| 6. I <sup>2</sup> C Connector #1 JP44  | 15. Connector #1 J6  |
| 7. I <sup>2</sup> C Connector #2 JP45  | 16. Connector #0 J5  |
| 8. MG9072 Reset JP29                   | 17. Buzzer Reset     |
| 9. Connector #7 J16                    |                      |

## C-5 Front Connector and Pin Definitions

### #1. Backplane Main Power Connectors

The 4-pin connectors, designated JP10 provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector (JP10)	
Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

### #2 Upgrade Connector

The Upgrade connector, designated JP46, serves a diagnostic purpose. This connector should be used by a certified and experienced technician.

### #3. MG9072 Chip

The MG9072 is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

### #4 and #5. Sideband Headers

The sideband headers are designated JP51 and JP52. For SES-2 to work properly, you must connect an 8-pin sideband cable. See the table to the right for pin definitions.

Sideband Headers (JP51 and JP52)			
Pin #	Definition	Pin #	Definition
2	SDIN/ Backplane Addressing (SB5)	1	Controller ID (SB6)
4	SDOUT/I <sup>2</sup> C Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	SLOAD/ SDA (SB1)
8	Backplane ID (SB7)	7	SCLOCK/ SCL (SB0)
10	No Con- nection	9	No Con- nection



**#6 and #7. I<sup>2</sup>C Connectors**

The I<sup>2</sup>C Connectors, designated JP44 and JP45, are used to monitor HDD activity and status. See the table on the right for pin definitions.

I <sup>2</sup> C Connector Pin Definitions (JP44 and JP45)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

**#8. MG9072 Reset**

Allows the MG9072 chip to be reset.

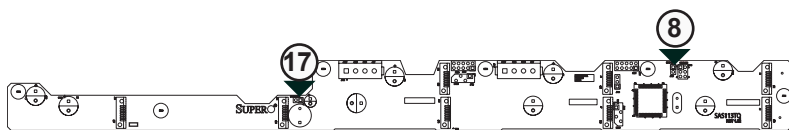
**#9 - #16. Connectors**

Connectors 0 through 7.

**#17. Buzzer Reset**

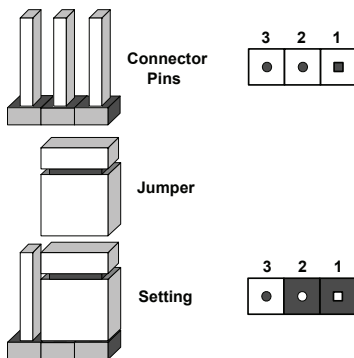
Allows the buzzer to be reset.

## C-6 Front Jumper Locations and Pin Definitions



### Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



Jumper Settings		
Jumper	Jumper Settings	Note
JP18	Open: Enabled Closed: Disabled	Buzzer Reset
JP29	Open: Default Closed: Reset	MG9072 Chip Reset

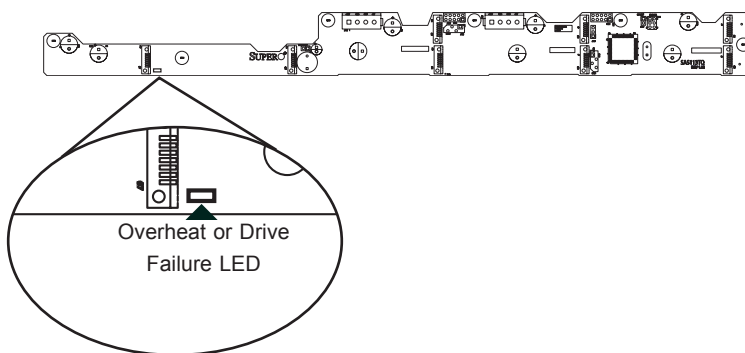
## I<sup>2</sup>C and SGPIO Modes and Jumper Settings

This backplane can utilize I<sup>2</sup>C or SGPIO. SGPIO is the default mode and can be used without making changes to your jumpers. The following information details which jumpers must be configured to use I<sup>2</sup>C mode or restore your backplane to SGPIO mode.

I <sup>2</sup> C Setting		
Jumper	Jumper Setting	Note
JP33	2-3	Controller ID

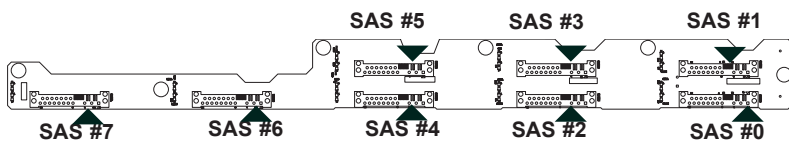
SGPIO (Default)		
Jumper	Jumper Setting	Note
JP33	1-2	Controller ID

## Front LED Indicators



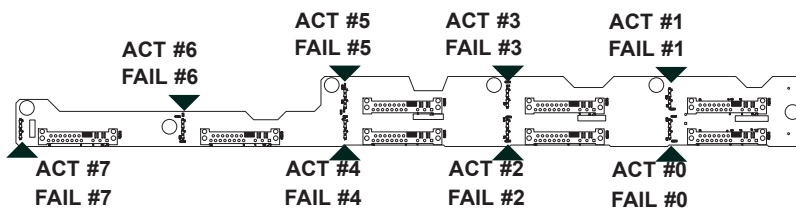
Front Panel LEDs		
LED	STATE	SPECIFICATION
D3	ON	Overheat or Drive Failure

## C-7 Rear Connectors and LED Indicators



### Rear SAS/SATA Connectors

Rear Connector	Connector Number	SAS Drive Number
SAS #0	J1	SAS/SATA HDD #0
SAS #1	J2	SAS/SATA HDD #1
SAS #2	J3	SAS/SATA HDD #2
SAS #3	J4	SAS/SATA HDD #3
SAS #4	J9	SAS/SATA HDD #4
SAS #5	J11	SAS/SATA HDD #5
SAS #6	J13	SAS/SATA HDD #6
SAS #7	J15	SAS/SATA HDD #7



### Rear LED Indicators

Rear Connector	Hard Drive Activity	Failure LED
SAS #0	D12	D5
SAS #1	D13	D6
SAS #2	D14	D7
SAS #3	D15	D8
SAS #4	D18	D19
SAS #5	D21	D20
SAS #6	D22	D23
SAS #7	D25	D26

Disclaimer (cont.)

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## Notes