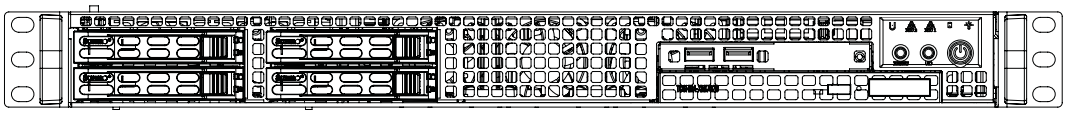
SUPERO®

SC111 Chassis Series



SC111T-560UB SC111T-560CB

USER'S MANUAL

1.0a

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software, if any, and documentation may not, in whole or in part, be copied, photocopied, reproduced, translated or reduced to any medium or machine without prior written consent.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

WARNING: Handling of lead solder materials used in this product may expose you to lead, a chemical known to the State of California to cause birth defects and other reproductive harm.

Manual Revision 1.0a
Release Date: October 31, 2008

Printed in the United States of America

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 SC111 1U chassis. Installation and maintenance should be performed by experienced technicians only.

Supermicro's SC111 1U chassis is a cost effective, short depth (21.95"), 2.5" HDD 1U chassis solution. It has four hot-swap 2.5" SAS/SATA HDD trays coupled with our new advanced design 560W silver level high-efficiency power supply (85% efficiency at 20% system loading)

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 SC111 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 he 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-809T/TQ Backplane Specifications

Table of Contents

Chapter 5 Chassis Setup and Maintenance

Chapter 6 Rack Installation

Notes

Chapter 1

Introduction

1-1 Overview

Supermicro's SC111 1U chassis is a cost effective, short depth (21.95"), 2.5" HDD 1U chassis solution. It has four hot-swappable 2.5" SAS/SATA hard disk drive trays, coupled with our new advanced design, 560W high-efficiency power supply (85% efficiency at 20% system loading)

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

SC111 Chassis				
Model	**CPU**	**HDD**	**I/O Slots**	**Power Supply**
SC111T-560UB	Single/Dual CPU	4x 2.5" hot-swap SAS/SATA	1x FF	560W
SC111T-560CB	Single/Dual CPU	4x 2.5" hot-swap SAS/SATA	2x FH, 1x LP	560W

FF: Full-height, full length card

FH: Full-height card

LP: Low-profile card

1-3 Chassis Features

The SC111 1U high-performance chassis includes the following features:

CPU

The SC111 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 SC111 chassis features 4 hard drive bays for 2.5" hot-swappable SAS/SATA drives. Once setup correctly, these drives can be removed without powering down the server. Recommended for SAS or enterprise HDDs only.

Optional Features

Optional features on the SC111 chassis include one slim DVD-ROM drive and one USB port.

I/O Expansion Slots

The SC111 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.

Other Features

Other on-board features are included to promote system health. These include three 40x56mm fans and two optional 40x28mm add-on card fans.

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 (General Information) support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V. Het Sterrenbeeld 28, 5215 ML 's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information) support@supermicro.nl (Technical Support) rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	Super Micro Computer, Inc. 4F, No. 232-1, Liancheng Rd. Chung-Ho 235, Taipei County Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Web Site:	www.supermicro.com.tw

Technical Support:

Email:	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, famailiar 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 assembled, the SC111 chassis includes one power supply.

2-3 Preparing for Setup

The SC111 chassis includes a set of rail assemblies, including mounting brackets and mounting screws which you will need to install the system into a 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 SC111 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 four 2.5" hard drive bays, and is recommended for SAS or enterprise HDDs only. The chassis includes a 560 Watt high-efficiency power supply. For the latest shipping lists, visit our Web site at: http://www.supermicro.com.

This chassis accepts a 1U backplane, three fans (with two optional fans) and a power supply. SC111 models come in black.

Backplane

Each SC111 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 SC111 chassis accepts three system fans and provides space for two additional fans if required. System fans for the SC111 chassis are powered from the serverboard. These fans are 1U high and are powered by 4-pin connectors.

Mounting Rack

The SC111 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 SC111 chassis model includes one high-efficiency power supply rated at 560 Watts. 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.

Optional Features

One slim DVD-ROM drive and/or one USB com port are optional features on the SC111 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 hard drive trays that provide system and component status. This chapter explains the meanings of all LED indicators and the appropriate responses that need to be taken.

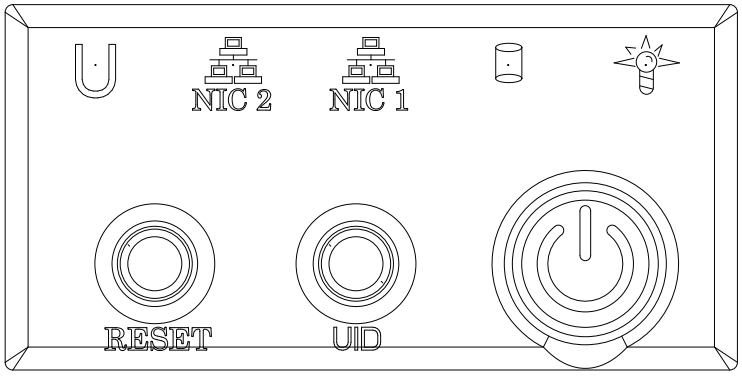
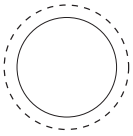


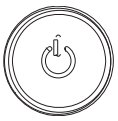
Figure 4-1. Control Panel Buttons and LEDs

4-2 Control Panel Buttons

The SC111 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 SC111 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 indated 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 4-2: 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.)

- NIC2: Indicates network activity on GLAN2 when flashing.

- NIC1: Indicates network activity on GLAN1 when flashing.

- HDD: Indicates IDE channel activity. SAS/SATA 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 SC111 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

Some power supplies include an LED in the rear with the following definitions:

- 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.

Notes

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
- Installing Hard Drives
- DVD-ROM Drive Installation
- Installing the Motherboard (includes I/O slot setup)
- Installing the Air Shroud and Checking the Airflow

General Maintenance

- Systems Fans
- 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

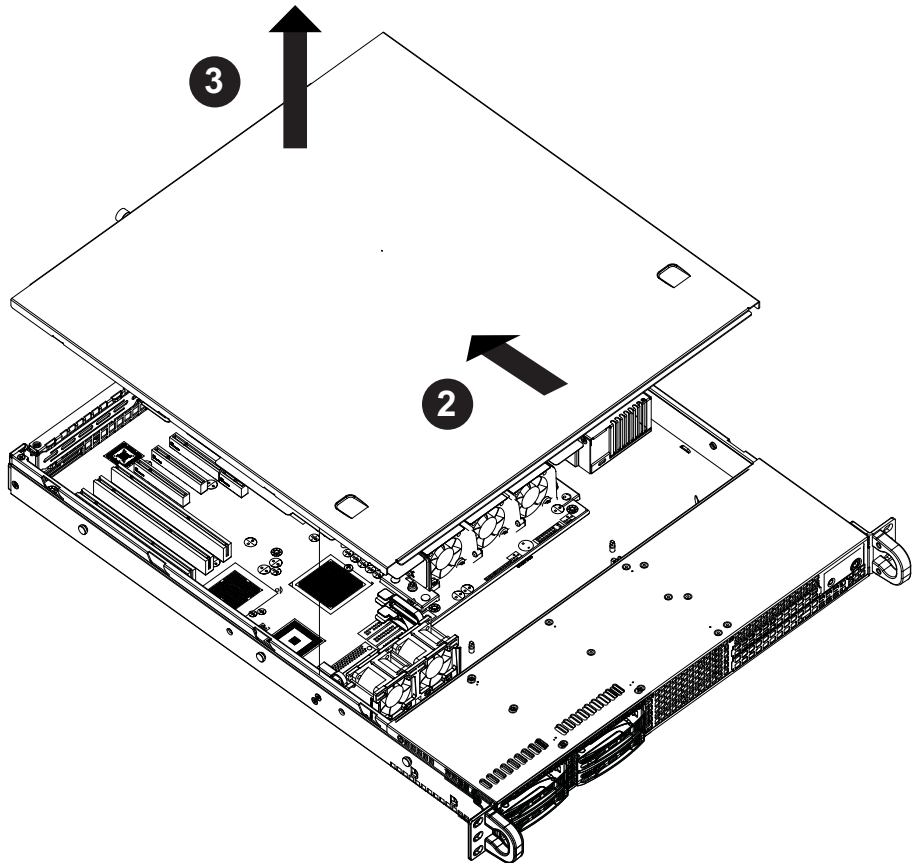


Figure 5-1: Removing the Chassis Cover

Removing the Chassis Cover

1. Remove the screws securing the top cover to the chssis.
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

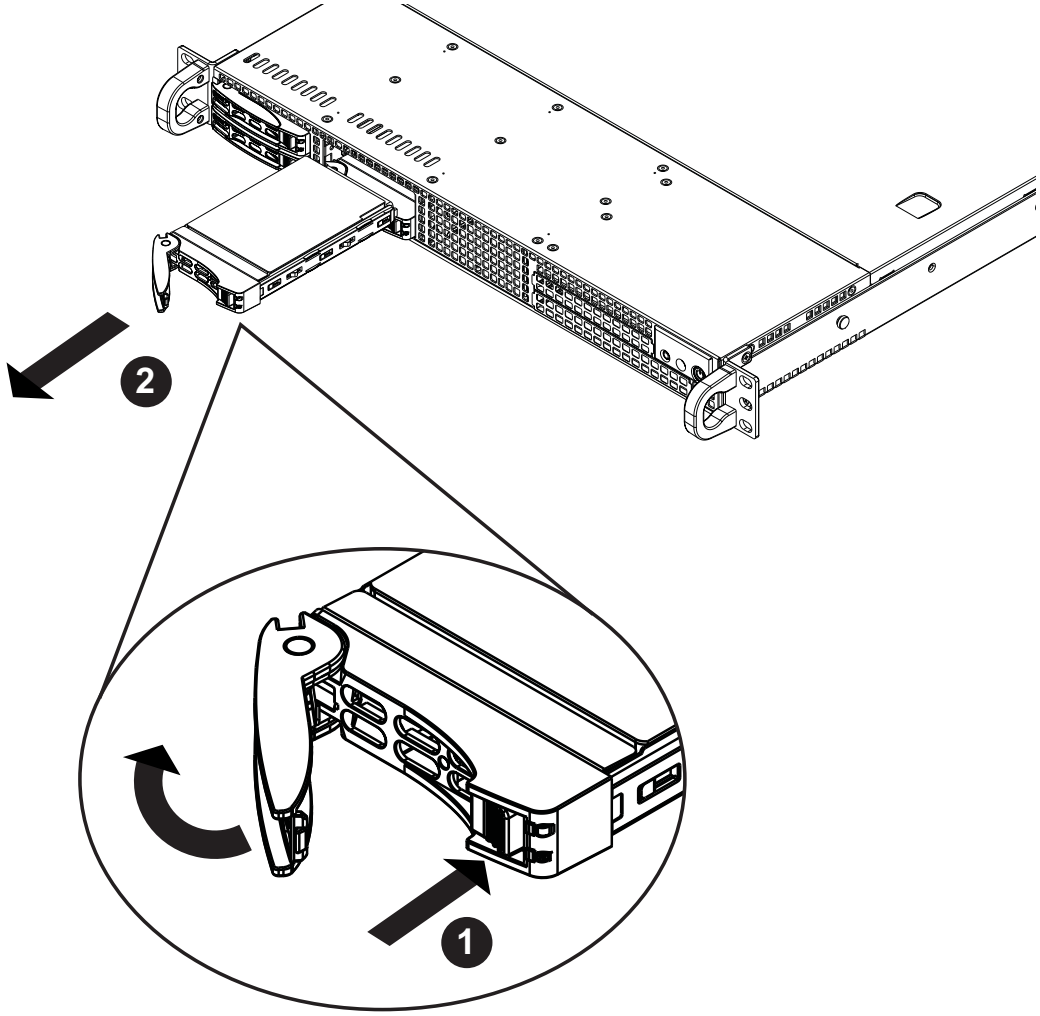


Figure 5-2: Removing Hard Drive

Only SAS or SATA hard drives are recommended for use in the SC111 chassis.

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.

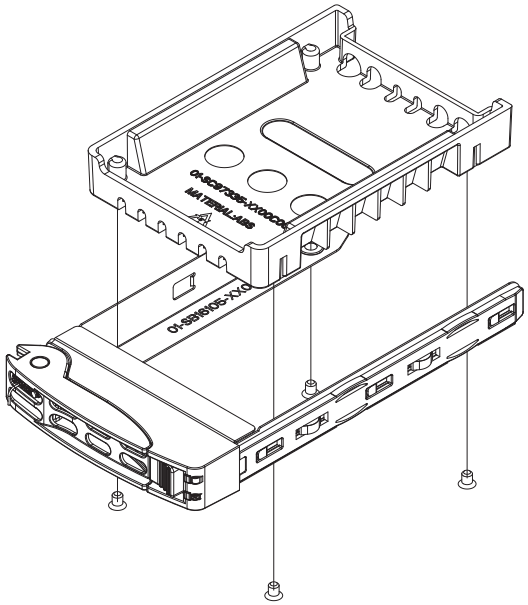


Figure 5-3: Hard Drive Carrier

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 "SAS" or “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 or USB Comport Installation

The SC111 chassis includes either a DVD-ROM or USB com port, which is usually pre-installed. In the unlikely event that the DVD-ROM or USB com port needs to be replaced, follow the instructions below.

Installing or Replacing a DVD-ROM Drive or USB Com Port

1. Power down the system and if necessary, remove the server from the rack.

2. When installing a device for the first time, it is necessary to remove the front mini bezel (grate) from slot A (for a USB com port) or slot B (for a DVD-ROM drive).

3. Pull the bezel forward and off the front of the chassis. (If a device was previously installed, this cover may already be removed).

4. Remove the top chassis cover and unplug the drive's power and data cables from the motherboard and/or backplane.

5. The DVD-ROM requires an additional lock screw (C) at the back of the DVD-ROM drive to be removed. Remove the lock screw through the interior of the chassis and gently push the DVD-ROM drive (D), DVD-ROM adapter card (E) and drive tray out through the front of the chassis.

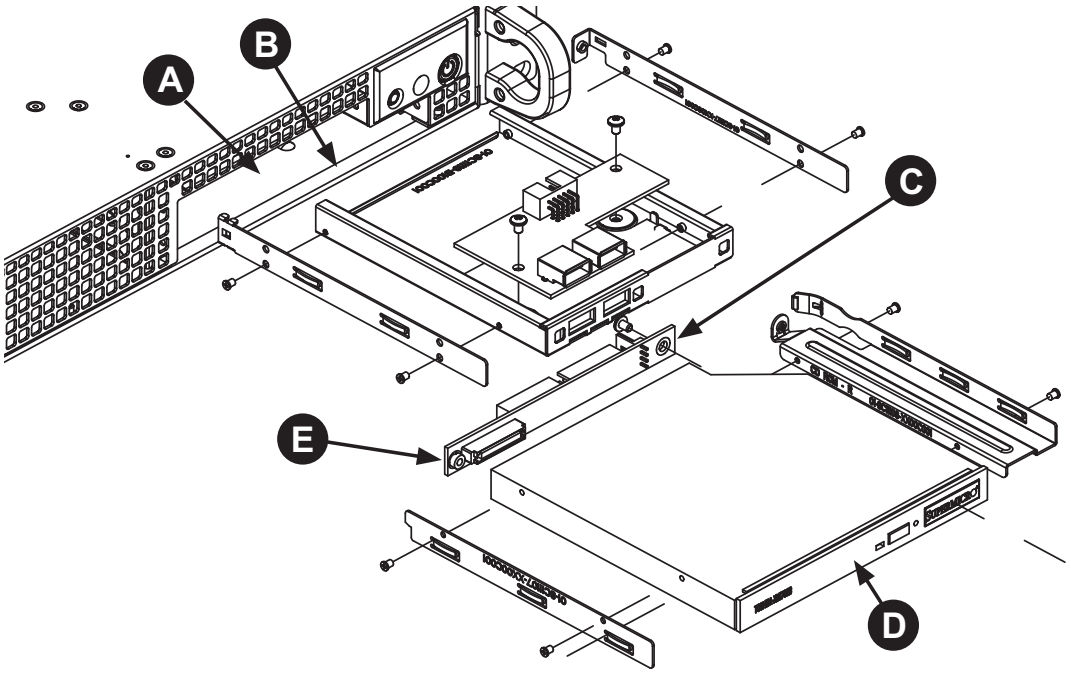


Figure 5-4: Installing the DVD-ROM Drive

6. If replacing an existing DVD-ROM drive or USB com port, remove the drive screws (F), place the replacement drive into the drive tray, and replace the drive tray mounting plates (G), using the drive screws.

7. If installing a USB com port, gently slide the assembled drive, drive tray and drive tray mounting plates into the chassis.
   If installing a DVD-ROM drive, gently slide the assembled drive, drive tray, drive tray mounting plates, and the DVD-ROM drive adapter board into the chassis and secure

8. Reattach the drive tray to the chassis by replacing the mini-bezel lock screw, and tightening it from inside the chassis.

9. Reconnect the data and power cables.

10. Replace the chassis cover, return the server to the rack if necessary, and power up the system.

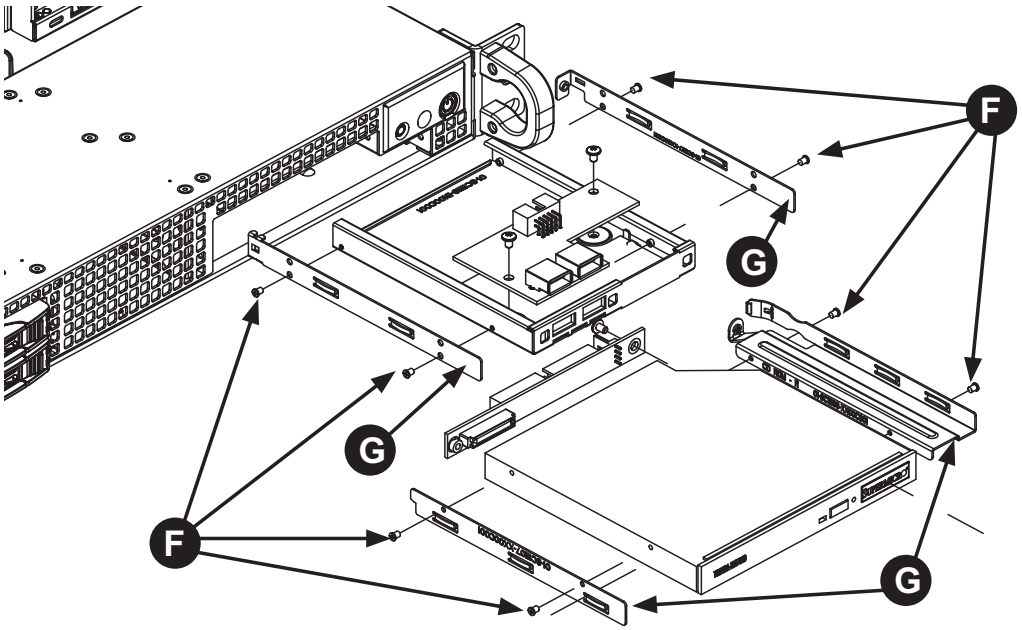


Figure 5-5: DVD and USB Com Port Installation

5-6 Installing the Motherboard

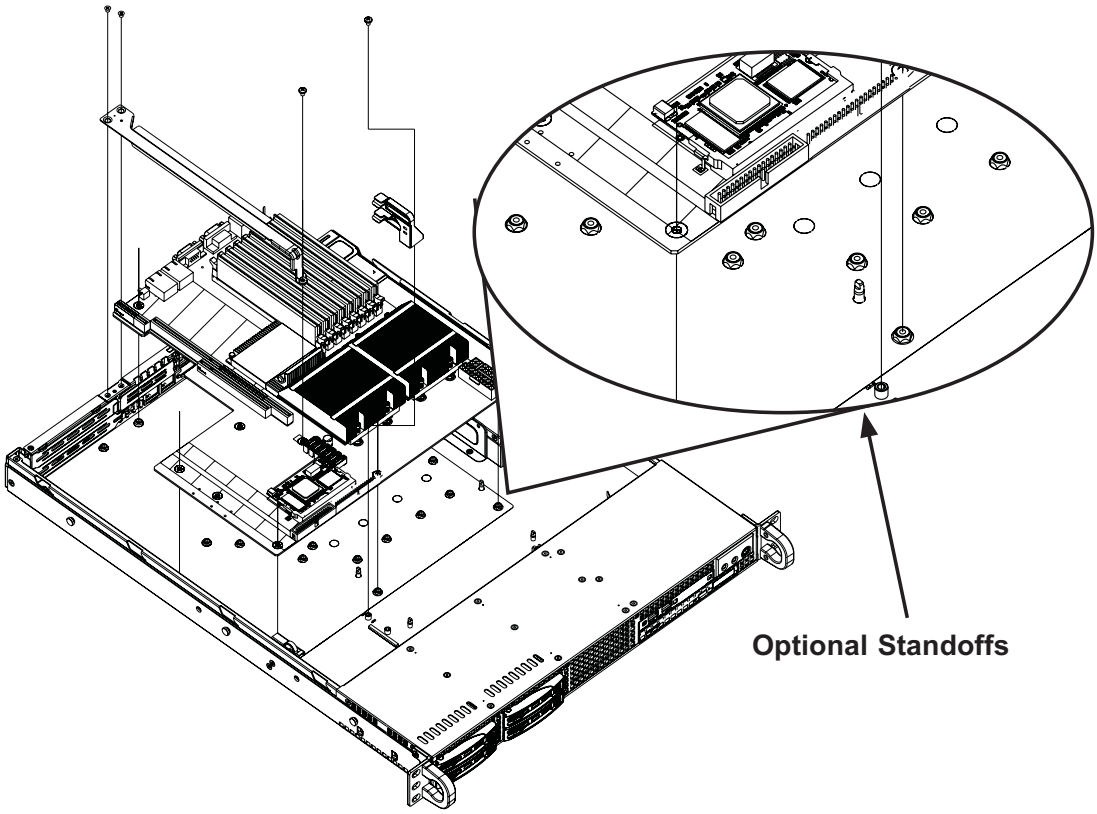


Figure 5-6: Chassis Standoffs

Permanent and Optional Standoffs

Standoffs prevent short circuits by creating space between the motherboard and the chassis surface. The SC111 chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC111 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 bracket. To do this, remove the two screws holding the card in place and lift the bracket 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.

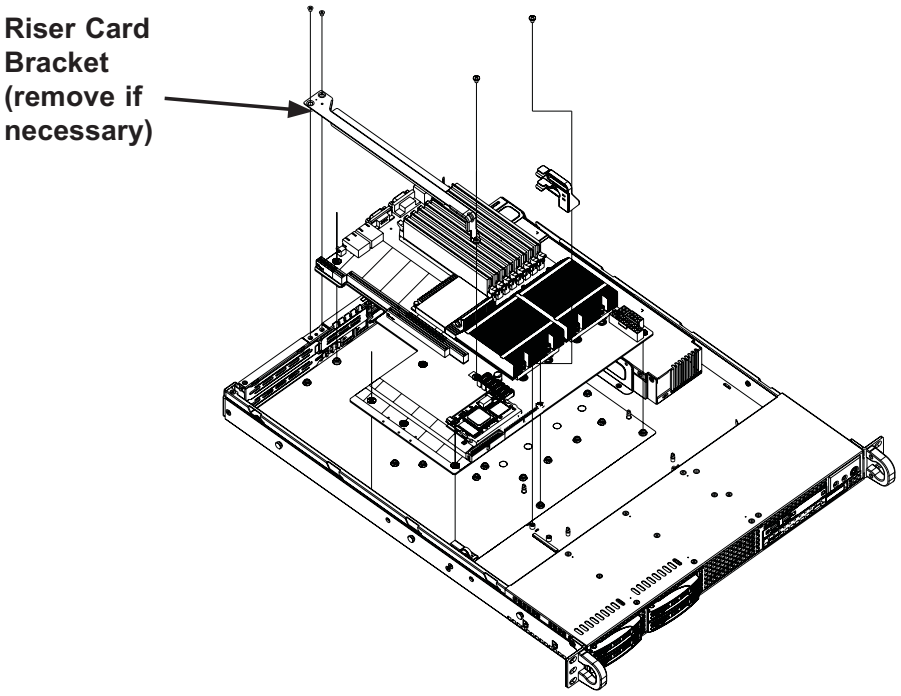


Figure 5-7: Installing the Motherboard

Expansion Card Setup

SC111 chassis includes I/O slots for add-on cards and expansion cards. "C" models (such as SC111T-560CB) include one full height slot. "U" model chassis (such as SC111T-560UB) 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 SC111 chassis. Riser cards are sold separately. For the latest riser card compatibility and performance information, visit our website at: http://www.supermicro.com.

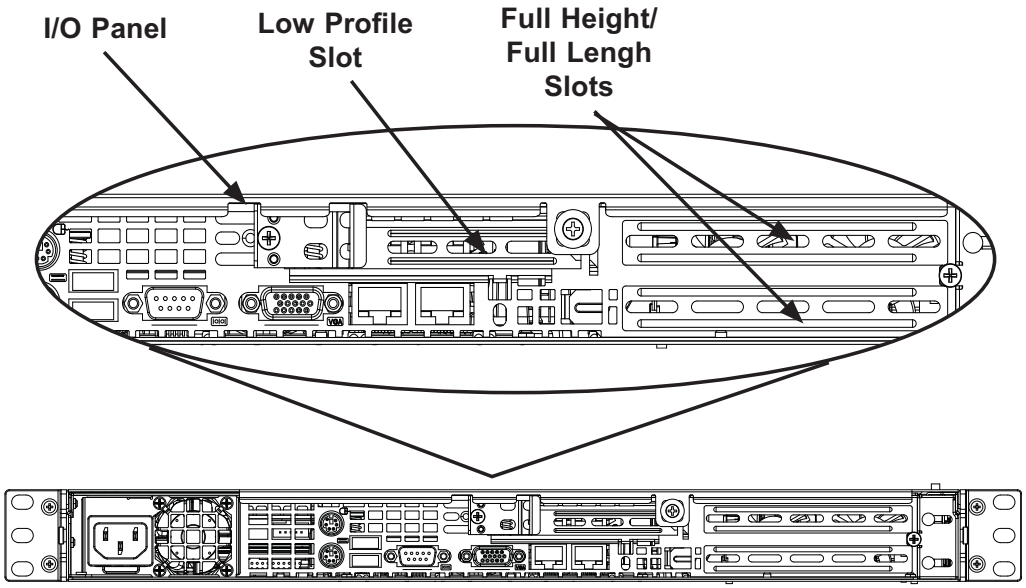


Figure 5-8: SC111 Rear - Full Height/Full Length Slots and Low Profile Slot

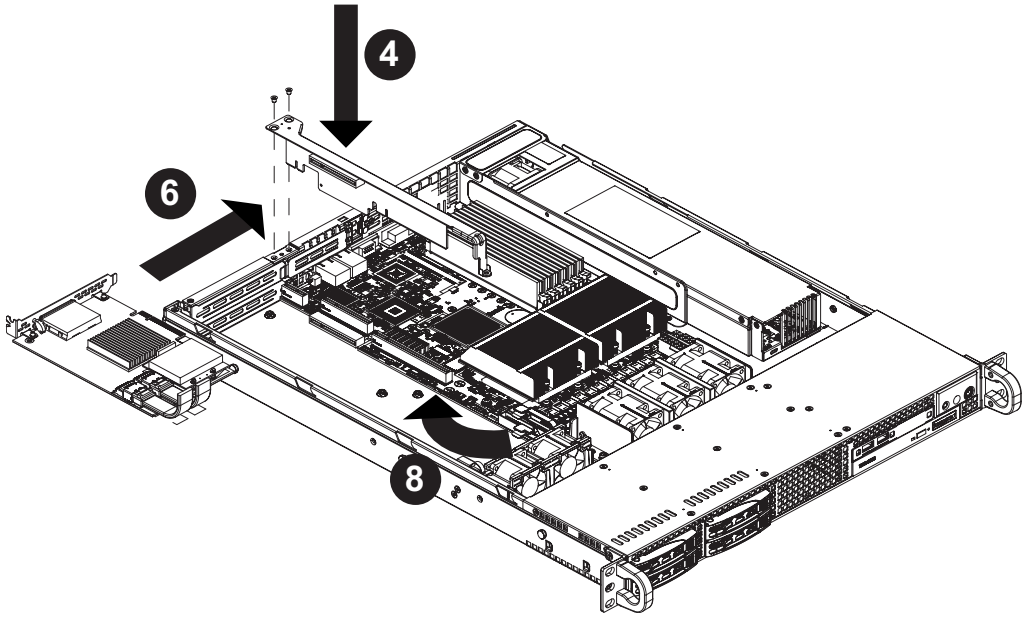


Figure 5-9: Chassis with a Riser Card

Installing an Expansion Card

1. Confirm that you have the correct riser card for your chassis model and that the add-on card includes a standard bracket.

2. Remove the chassis cover.

3. Install the riser card into the riser card bracket.

4. Insert the riser card card into the appropriate slot on the motherboard. Secure the riser card bracket to the chassis using screws as illustrated.

5. Choose the I/O panel slot in which to place the add-on card. On that slot, open the I/O panel lever and slide the I/O panel sideways. From inside the chassis, remove the I/O panel.

6. Slide the add-on card into the riser card and attach the add-on card bracket in place of the I/O panel bracket.

7. Secure the add-on card by closing the I/O panel lever.

8. If additional support for the add-on card is required, locate the add-on card support arm on the floor of the chassis and rotate the add-on card support arm inward to support the edge of the add-on card.

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 SC111 chassis air shroud does not require screws to set up.

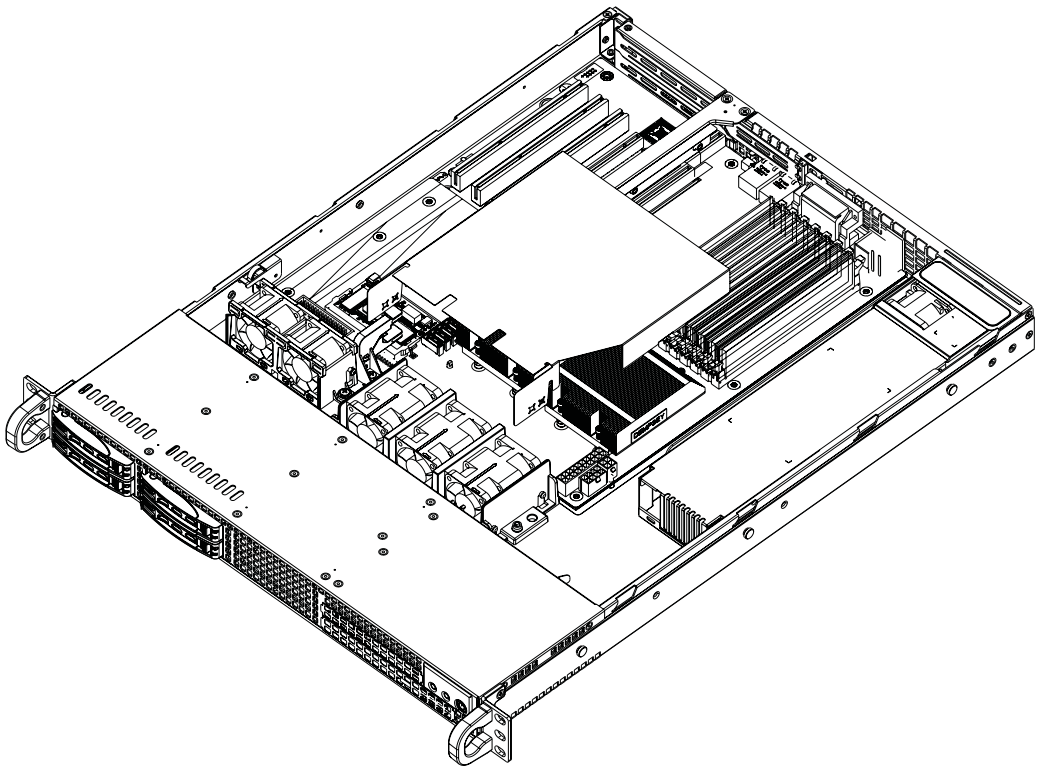


Figure 5-10: Air Shroud Installation

Air Shroud Installation

1. Align the air shroud over the motherboard and behind the system fans.
2. Gently place the air shroud in your chassis with the front side touching the edges of the fans.
3. See the instructions in the following section for checking the air flow.

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

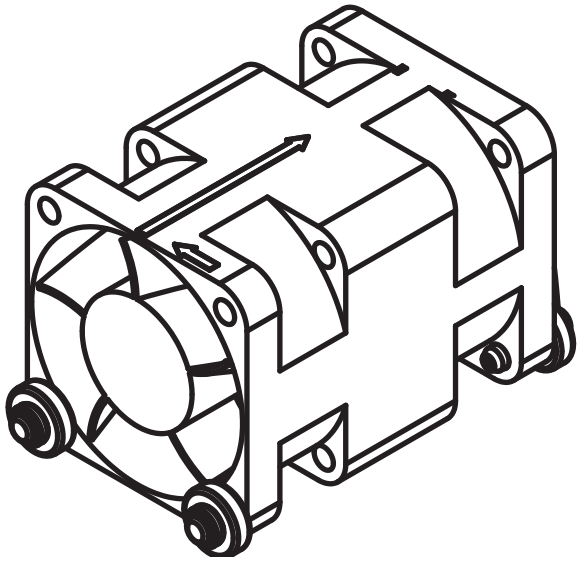


Figure 5-11: System Fan

Three 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 SC111 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 SC111 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.

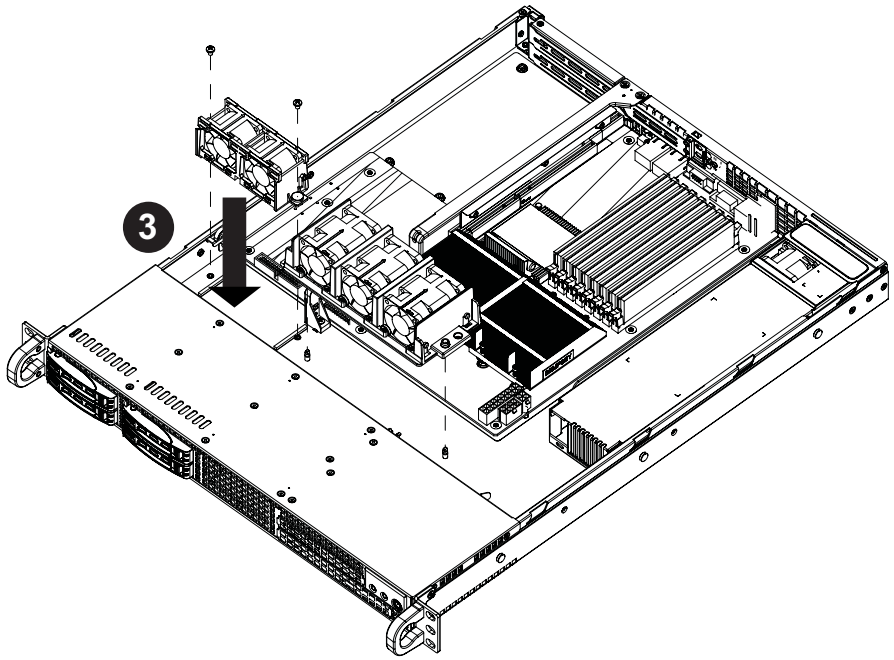


Figure 5-12: Chassis Fans

The SC111 chassis includes three 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 Replacing the Power Supply

The SC111 chassis has a 560 Watt power supply. This power supply is auto-switching capable. It can 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 SC111 chassis, power must be completely removed from the server before removing and replacing the power supply unit.

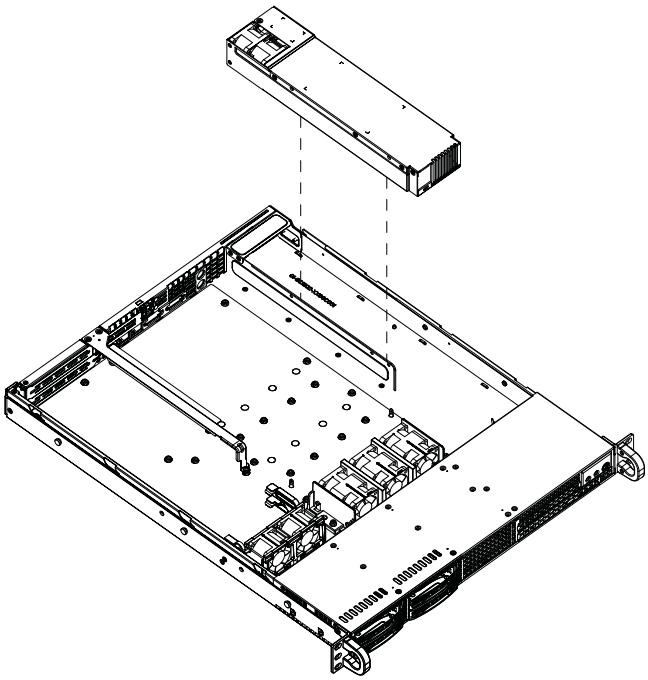


Figure 5-13: Removing the Power Supply

Replacing the Power Supply

1. Power down the server and unplug the power cord. Push the release tab (on the back of the power supply) as illustrated.

2. Unscrew the two screws securing the power supply to the bottom of the chassis.

3. Replace the failed power module with another of the same model.

4. Plug the AC power cord back into the module and power up the server.

Notes

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 (Tmra).

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 SC111 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 rail that secures directly to the chassis, and an outer rail that secures directly to the rack itself.

Inner Rails

The SC111 chassis includes a set of inner rails which are to be secured to the chassis, allow the chassis to be mounted into a rack.

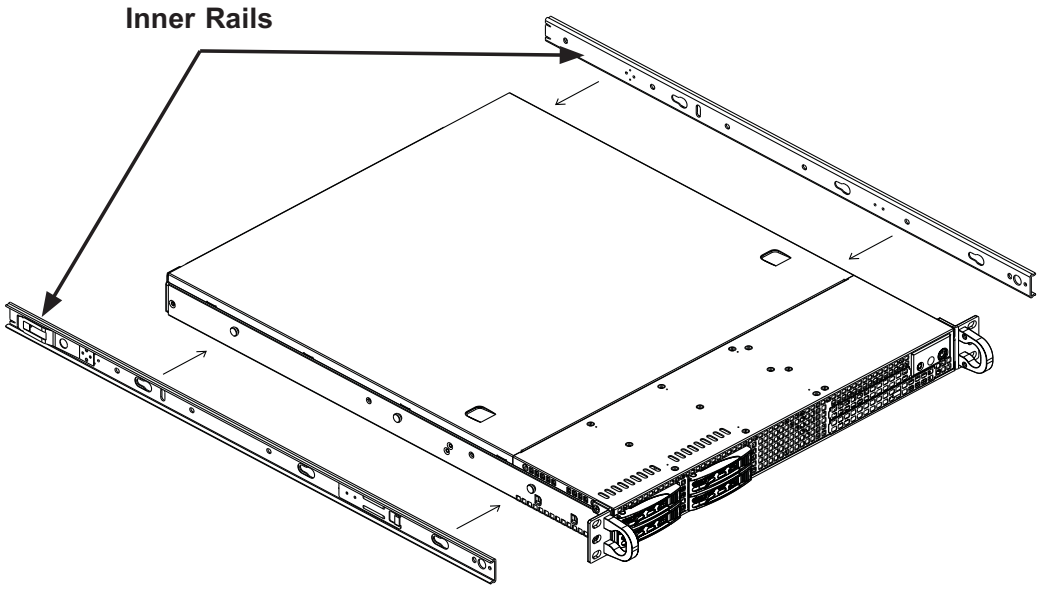


Figure 6-1: Inner Rails

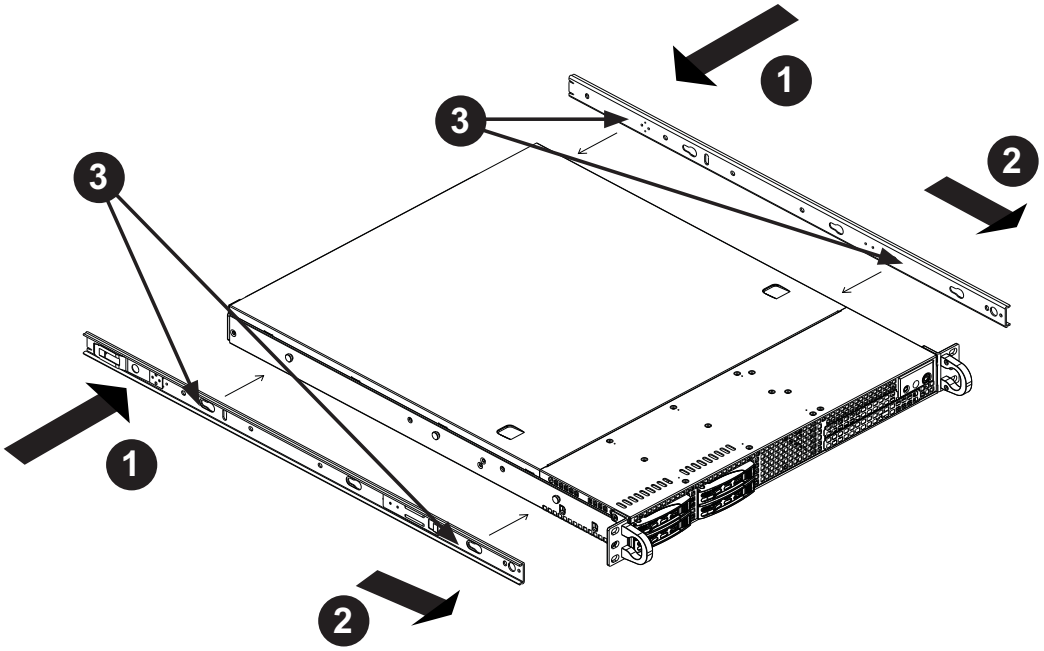


Figure 6-2: Installing the Inner Rails

Installing the Inner Rails

Installing the Inner Rails to the Chassis

1. Place the inner rail on the side of the chassis, aligning the hooks of the chassis with the rail extension holes. Make sure the rail faces "outward".

2. Slide the rail toward the front of the chassis.

3. Secure the chassis with two screws as illustrated.

4. Repeat steps 1-3 for the other inner rail.

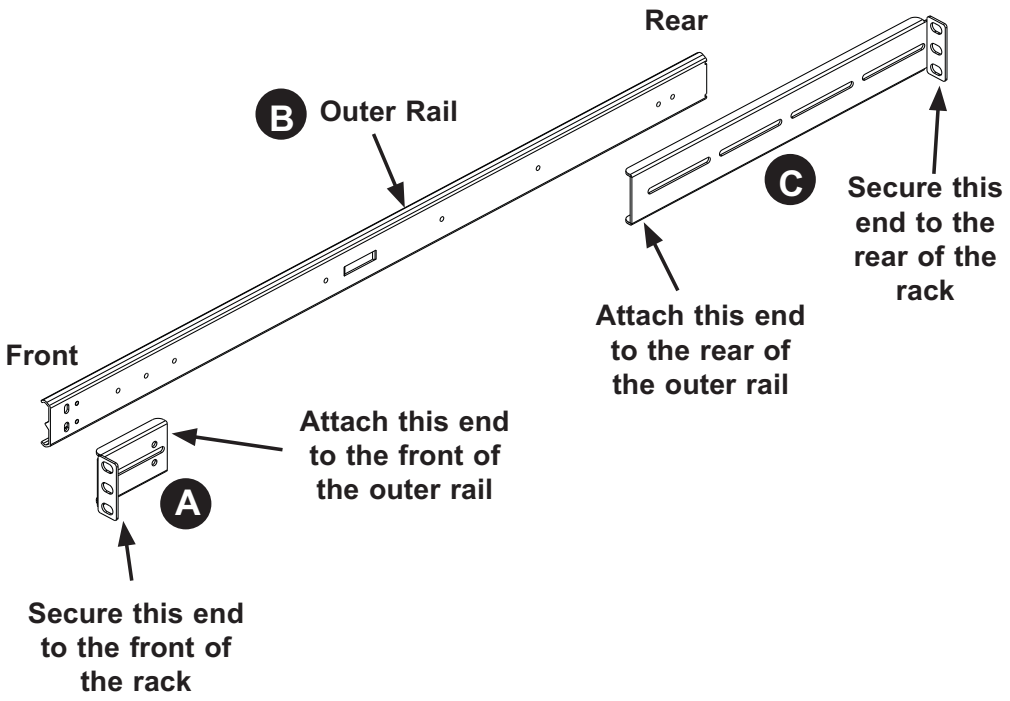


Figure 6-3: Assembling the Standard Outer Rails

Outer Rail Options

The SC111 chassis supports outer rails which secure the chassis into the the rack.

Installing the Outer Rails to the Rack

Installing the Outer Rails to the Rack

1. Attach the front bracket (A) to outer rail (B). Attach it to the flat side of the outer rail (B), on the front end. Secure them together using the screws provided.

2. Attach the rear bracket (C) to the flat side of the outer rail (B), on the rear end. Secure them together using the screws provided.

3. Secure the front bracket (A) to the front of the rack using the screws provided.

4. Secure the rear bracket (C), to the rear of the rack using the screws provided.

5. Repeat steps 1-4 for the other outer rail.

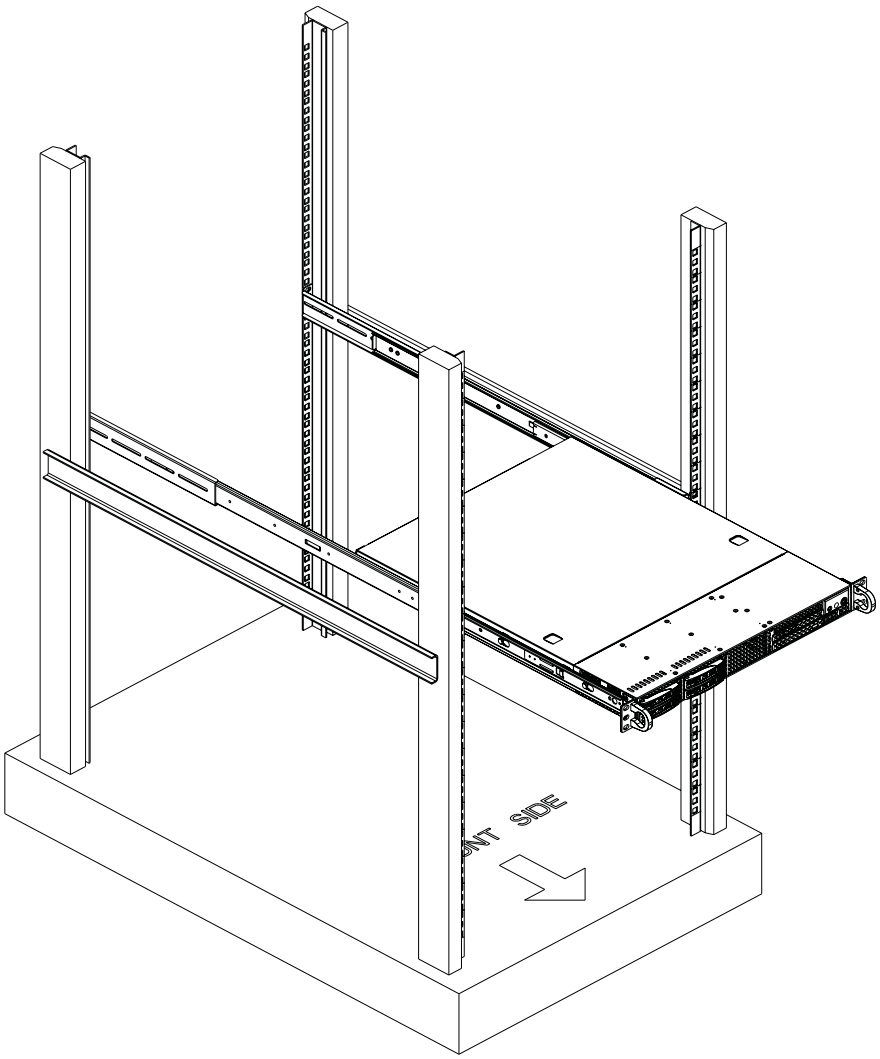


Figure 6-4: Installing the Chassis

Installing the Chassis into the Rack

Installing the Chassis

1. Confirm that the inner rails are correctly installed on the chassis, then confirm that the outer rails are correctly installed on the rack.

2. Align the inner rails on the chassis with the front of the outer rails on the rack.

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 tighten the thumbscrews that hold the front of the server to the 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.

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

SC111T-560CB and SC111T-560UB			
Part #	**Type**	**Length**	**Description**
CBL-0157L	Round Ribbon Cable	9"	8 pin to 8 pin ribbon cable for SGPIO.
CBL-0191L	Ribbon, Round Cable	50cm	20 pin to 20 pin ribbon cable for control panel
CBL-0226L	SATA Cable	43cm	SATA cables (three included)
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 mother boards. 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.

SC111T-560CB, SC111T-560UB		
	560W AC to DC w/PFC	**560W AC to DC w/PFC I2C**
MFR Part #	PWS-562-1H	PWS-562-1H20
Rated AC Voltage	100-240V 60-50Hz 0.5 - 2.6 Amp	100-240V 50-60Hz 6.5 - 2.6 Amp
+5V standby	2 Amp	2 Amp
+12V	46.5 Amp	46.5 Amp
+5V	15 Amp	15 Amp
+3.3V	15 Amp	15 Amp
-12V	0.5 Amp	0.5 Amp

Notes

Appendix C

SAS-809T/TQ Backplane Specifications

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

Electrostatic 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 backplane 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 backplane.
- Disconnect the power cable before installing or removing any cables from the backplane.
- Make sure that the 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.

C-4 Front Connectors and Jumpers

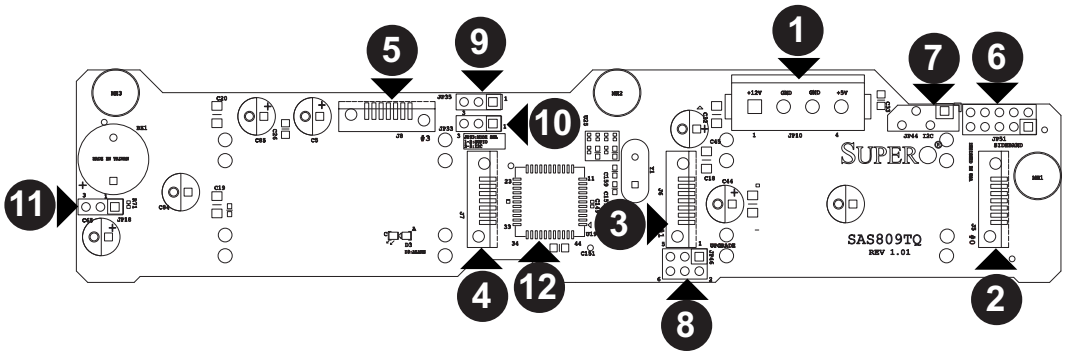


Figure C-1: Front Jumpers and Connectors

The SAS-809T and SAS-809TQ model backplanes have the same printed circuit board, except that the SAS-809T model does not include the MG9071 AMI chip and its supporting components.

Front Connectors

1. Power Connector (4-pin) JP10
2. SAS Port #0 J5
3. SAS Port #1 J6
4. SAS Port #2 J7
5. SAS Port #3 J8
6. Sideband JP51 (Not included on the SAS-809T backplane)
7. I^2C JP44 (Not included on the SAS-809T backplane)
8. Upgrade JP46 (Not included on the SAS-809T backplane)
9. Chip Reset JP35 (Not included on the SAS-809T backplane)
10. Mode Select JP33 (Not included on the SAS-809T backplane)
11. Buzzer Reset JP18
12. MG9071 Chip (not included on the SAS-809T backplane)

C-5 Front Connector and Pin Definitions

1. Backplane Main Power Connectors

The 4-pin connectors designated JP10 provides 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. - 5. SAS Ports

The SAS ports are used to connect the SAS drive cables. The four ports are designated #0 - #3. Each port is also compatible with SATA drives.

6. Sideband Header

The sideband header is designated JP51. For SAS-2 to work properly, you must connect an 8-pin sideband cable. See the table to the right for pin definitions.

Sideband Headers (JP51)

Pin #	Definition	Pin #	Definition
2	SDIN/ Backplane Addressing (SB5)	1	Controller ID (SB6)
4	SDOUT/I²C Reset (SB4)	3	GND (SB2)
6	GND (SB3)	5	SDA (SB1)
8	Backplane ID (SB7)	7	SCL (SB0)
10	No Connection	9	No Connection

7. I²C Connectors

The I²C Connector, designated JP44, is used to monitor HDD activity and status. See the table on the right for pin definitions.

I²C Connector Pin Definitions (JP44)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

8. Upgrade Connectors

The upgrade connector, designated JP46, is only included on the SAS-809TQ backplane and is used for manufacturer's diagnostic purposes only.

9. MG9071 Chip Reset

The chip reset, designated JP35, is only included on the SAS-809TQ backplane and is used to reset the MG9071 chip. For details, see the jumper settings section of this manual.

10. Mode Select

Mode select, designated JP33, is only included on the SAS-809TQ backplane. It allows switching between I2C and SGPIO modes. For details, see the I2C and SGPIO settings section of this manual.

11. Buzzer Reset

The buzzer reset is designated as JP18. It is used to reset the buzzer after it has been activated.

12. MG9071 Chip

The MG9071 chip, is only included on the SAS-809TQ backplane. It is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

C-6 Front Jumper Locations and Pin Definitions

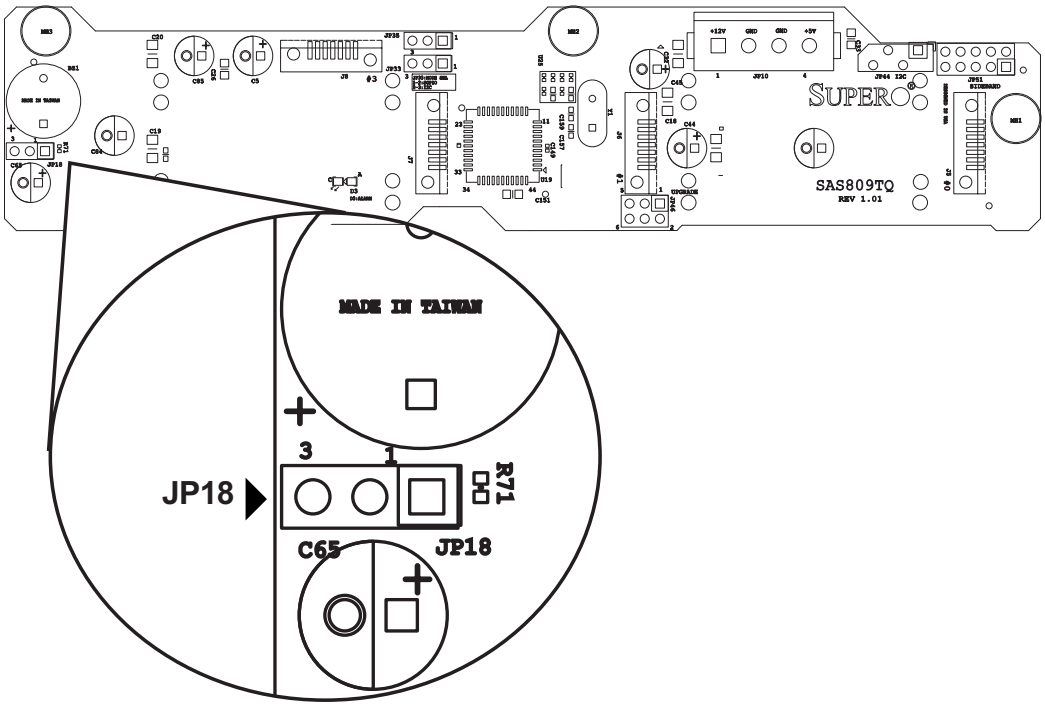
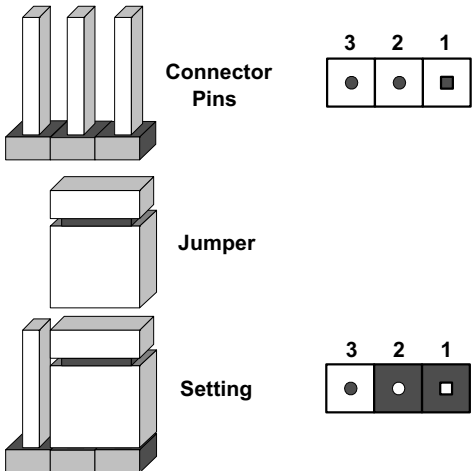


Figure C-2: Jumpers Locations

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	2-3: Enabled 1-2: Disabled	Buzzer Reset
JP35	2-3: Default 1-2: Reset	MG9071 Reset

I²C and SGPIO Modes and Jumper Settings

This backplane can utilize I²C 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 I²C mode or restore your backplane to SGPIO mode. This feature is only available with the SAS-809TQ backplane.

I²C Setting		
Jumper	**Jumper Setting**	**Note**
JP33	2-3	Controller ID

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

Front LED Indicators

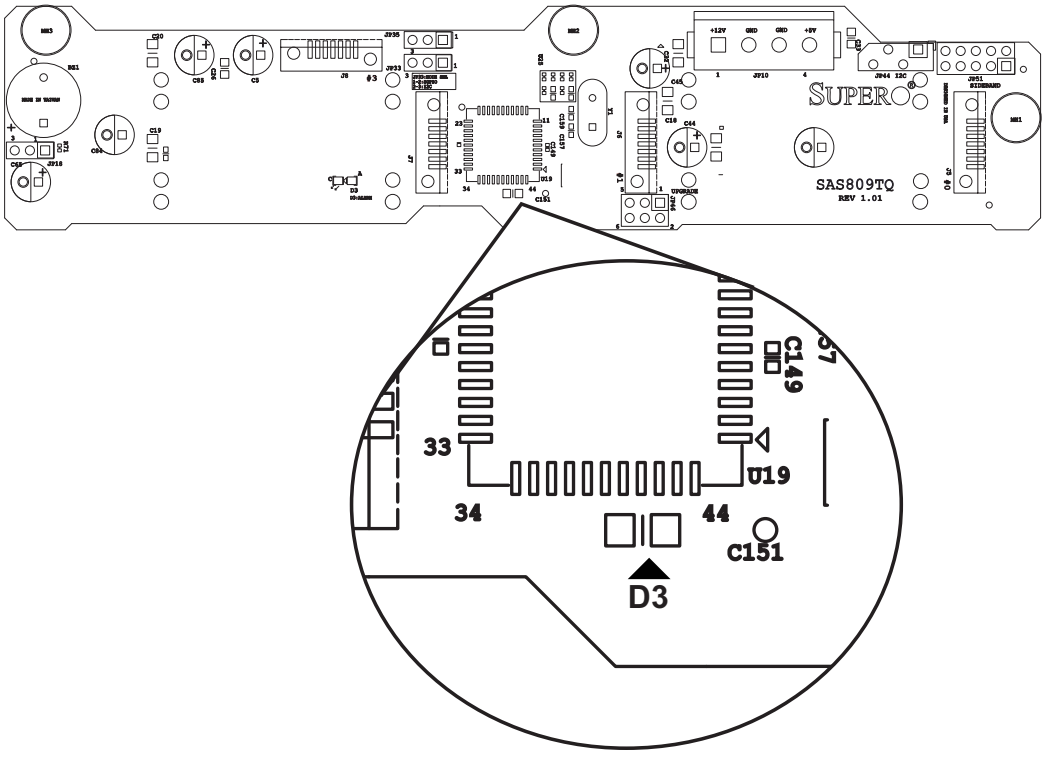


Figure C-3: Front LEDs

Front Panel LEDs		
LED	**STATE**	**SPECIFICATION**
D3	ON	Overheat/ Drive Failure LED Indicator (Red light: flashing, Buzzer: On)

C-7 Rear Connectors and LED Indicators

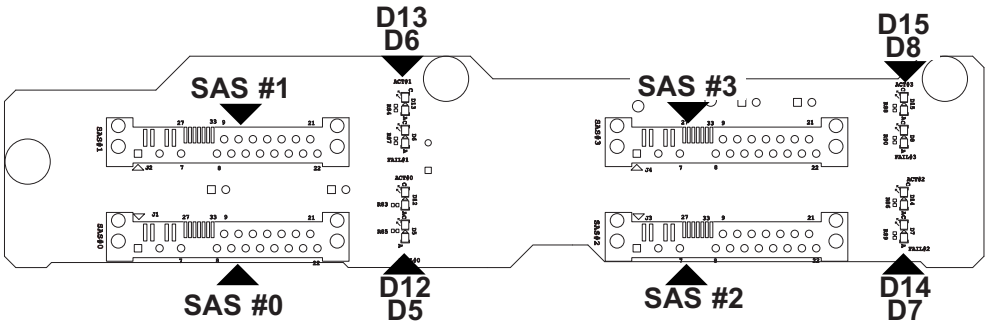


Figure C-4: Rear Connectors and LEDs

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

Rear LED Indicators		
Rear Connector	**Hard Drive Activity**	**Failure LED (Not included on SAS-809T)**
SAS #0	D12	D5
SAS #1	D13	D6
SAS #2	D14	D7
SAS #3	D15	D8

Notes

Disclaimer (cont.)

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.