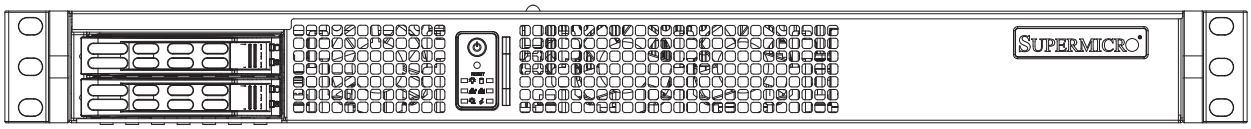
SC506 Chassis Series



USER'S MANUAL

Revision 1.0

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, and 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 website 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 and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL Super Micro Computer, Inc. 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, SUPER MICRO COMPUTER, INC. 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. Supermicro'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 or Class B 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 industrial environment for Class A device or in residential environment for Class B device. 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: This product can expose you to chemicals including lead, known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

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.

Manual Revision 1.0

Release Date: February 04, 2021

Unless you request and receive written permission from Super Micro Computer, Inc., you may not copy any part of this document. Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Copyright © 2021 by Super Micro Computer, Inc.
All rights reserved.
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 server. Installation and maintenance should be performed by experienced technicians only.

Please refer to the SC506 server specifications page on our website for updates on supported memory, processors and operating systems (http://www.supermicro.com).

Notes

For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: http://www.supermicro.com/support/manuals/
- Product drivers and utilities: https://www.supermicro.com/wld
- Product safety info: http://www.supermicro.com/about/policies/safety_information.cfm

If you have any questions, please contact our support team at:
support@supermicro.com

This manual may be periodically updated without notice. Please check the Supermicro website for possible updates to the manual revision level.

Warnings

Special attention should be given to the following symbols used in this manual.



Warning! Indicates important information given to prevent equipment/property damage or personal injury.



Warning! Indicates high voltage may be encountered when performing a procedure.

Table of Contents

Chapter 1 Introduction

1.1 Overview....7
1.2 Unpacking the System....7
1.3 Chassis Features....8
Control Panel....8
Front Features....9
Rear Features....9

Chapter 2 Rack Installation

2.1 Overview....10
2.2 Unpacking the System....10
2.3 Preparing for Setup....10
Choosing a Setup Location....10
Rack Precautions....10
General Server Precautions....11
Rack Mounting Considerations....11
Ambient Operating Temperature....11
Reduced Airflow....11
Mechanical Loading....11
Circuit Overloading....12
Reliable Ground....12
2.4 Rack Mounting Instructions....13
Installing the Chassis into a Standard Rack....13
Installation Procedure....13
Mid-Mount Telco Rack....14
Installing the Chassis into a Telco (Two-Post Style) Rack....14
Standard Rack with a Fixed Rail Kit....15
3.1 Removing Power....16
3.2 Accessing the Chassis....17
3.3 Chassis Components....18
Storage Drives....18

Drive Carrier Indicators 18
System Fans 20
Power Supply 21
3.4 Installing the Motherboard 22
Chassis Standoffs 22
Motherboard Installation 22
Installing the Motherboard 22
Appendix A Cables, Screws, and Other Accessories
A.1 Overview 23
A.2 Cables Included with the SC506 Chassis 23
A-3 Optional Accessories 23
Hard Drive Bracket 23
Extending Power Cables 24
Front Panel to the Motherboard 24
A-4 Chassis Screws 25
Appendix B Power Supply Specifications

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)
Website:	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)
Website:	www.supermicro.nl

Asia-Pacific

Address:	Super Micro Computer, Inc. 3F, No. 150, Jian 1st Rd. Zhonghe Dist., New Taipei City 235 Taiwan (R.O.C)
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3992
Email:	support@supermicro.com.tw
Website:	www.supermicro.com.tw

Chapter 1

Introduction

1.1 Overview

The Supermicro SC506, is an all-purpose chassis for many different applications. It is an excellent chassis platform for data centers, government labs, or business enterprises, for cloud and virtualization, simulation, automation, hosting and storage.

In addition to the chassis, several included parts are listed below.

Main Parts List		
Description	**Part Number**	**Quantity**
Power supply modules	PWS-301R-1R	2
System Fan	FAN-0065L4	3
Backplane	BPN-SAS3-826TQ-B2B	1
Rail kit (optional)	MCP-290-50404-ON	1 set

1.2 Unpacking the System

Inspect the box in which the server was shipped and note if it was damaged. If any equipment appears damaged, file a damage claim with the carrier who delivered it.

1.3 Chassis Features

Control Panel

The chassis front features a control panel to monitor node function and control power.

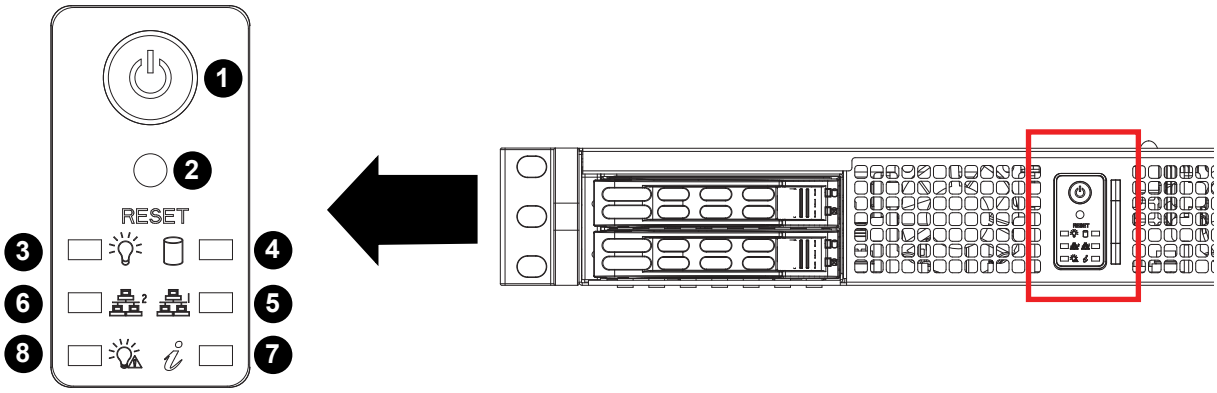


Figure 1-1. Control Panel

Control Panel Features		
Item	**Features**	**Description**
1	Power button	The main power switch applies or removes primary power from the power supply to the server but maintains standby power. To perform most maintenance tasks, unplug the system to remove all power..
2	Reset button	Reboots the system.
3	Power LED	Indicates power is being supplied to the system power supply units. This LED is illuminated when the system is operating normally.
4	HDD LED	Indicates hard disk drive activity.
5	NIC LED	Indicates network activity on LAN1 when flashing.
6	NIC LED	Indicates network activity on LAN2 when flashing.
7	Information LED	Alerts operator to several states, as noted in the table below.
8	Power Fail LED	Indicates a power supply module has failed.

Information LED	
Status	**Description**
Continuously on and red	An overheat condition has occurred. (This may be caused by cable congestion.)
Blinking red (1Hz)	Fan failure, check for an inoperative fan.
Blinking red (0.25Hz)	Power failure, check for a non-operational power supply.
Solid blue	UID has been activated locally to locate the server in a rack environment.
Blinking blue	UID has been activated using IPMI to locate the server in a rack environment.

Front Features

The front of the chassis includes 2 hot-swap drive bays and the chassis control panel.

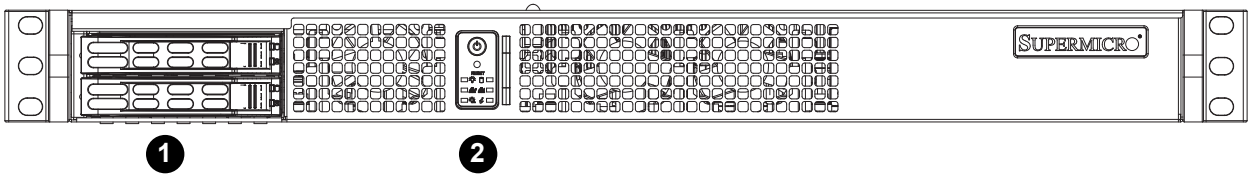


Figure 1-2. Chassis Front View

Front Chassis Features		
Item	**Feature**	**Description**
1	Control Panel	Described in previous section
2	Drives	Two 2.5" SAS3/SATA hot-swap storage drive bays

Rear Features

The illustration below shows the features on the rear of the chassis.

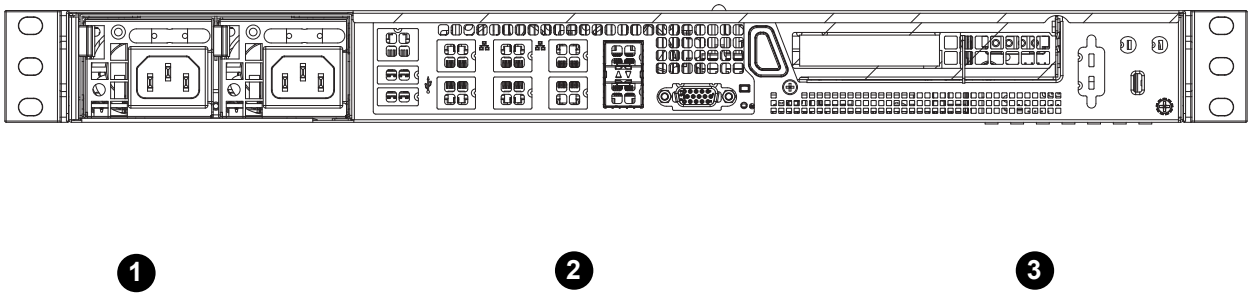


Figure 1-3. Chassis Rear View

Rear Chassis Features		
Item	**Feature**	**Description**
1	Power Supplies	Redundant power supply modules
2	I/O Panel	Input/Output ports
3	PCI Slots	Seven usable slots for low-profile expansion cards

Note: An optional kit is available to install two internal 2.5" SAS3/SATA hard drives in the rear of the chassis.

Chapter 2

Rack Installation

2.1 Overview

This chapter provides a quick setup to install the chassis into a rack.

2.2 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.

2.3 Preparing for Setup

The box your chassis was shipped in should include four mounting screws, which you will need if you intend to install the system into a 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 similar environments).

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.
- 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 hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door, all panels and all components on the servers closed when not servicing, in order 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 (for example, the use of power strips, and other devices).



To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

2.4 Rack Mounting Instructions

This section provides information on installing the SC506 chassis into a rack unit 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.

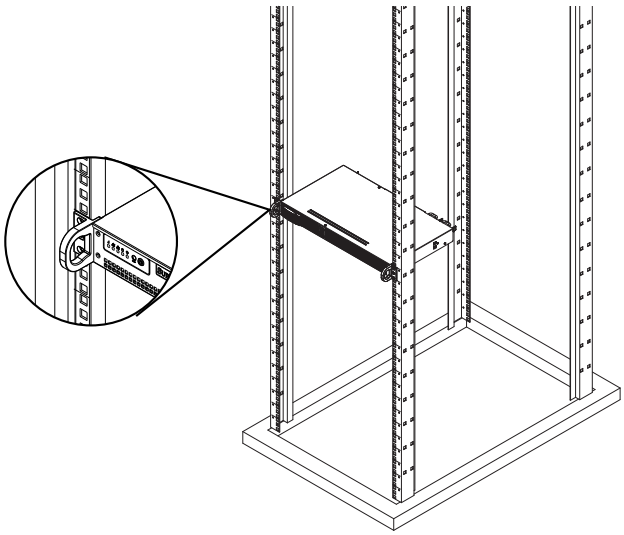


Figure 6-1: Installing the Chassis into a Rack

Note: figures are for illustrative purposes only. Servers should always be installed in racks from the bottom up.

Installing the Chassis into a Standard Rack

Installation Procedure

1. Confirm that chassis includes the four mounting screws required to mount the chassis into a rack.
2. Align the thru holes of the chassis with the thru holes of the rack.
3. Insert the mounting screws into the thru holes in the front of the chassis and through the thru holes in the rack.

Warning: do not pick up the server by the front handles. They are designed to pull the system from a rack only.

Mid-Mount Telco Rack

The SC506 supports Telco Rack installation. The SC506 chassis compact design allows the chassis to be installed into a Telco rack without the use of rails.

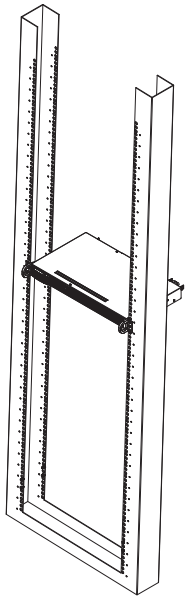


Figure 6-2: Installing the Chassis into a Telco Rack

Note: figures are for illustrative purposes only. Servers should always be installed in racks from the bottom up.

Installing the Chassis into a Telco (Two-Post Style) Rack

To install the chassis into a Telco style two-post rack, use two L-shaped brackets on either side of the chassis (four total). First, determine how far follow 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 chassis, 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.



Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Standard Rack with a Fixed Rail Kit

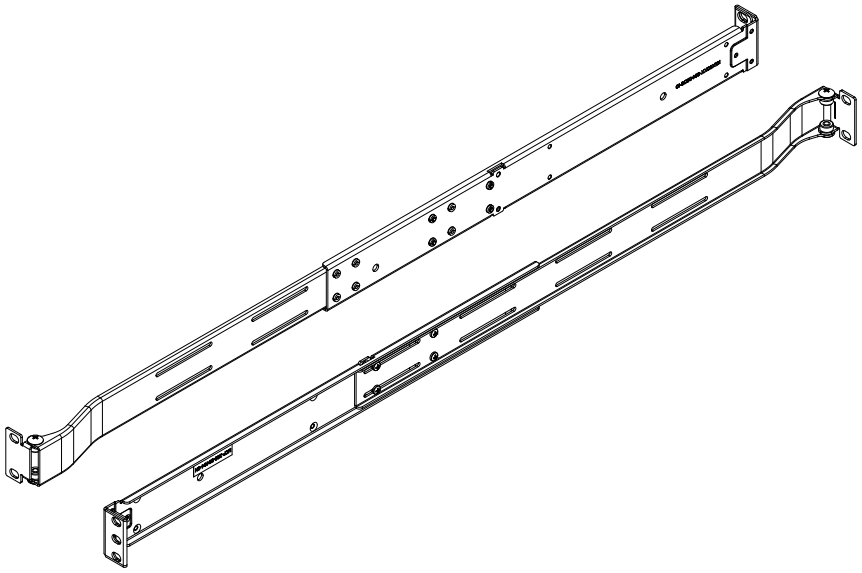


Figure 6-3. Fixed Rails

The chassis can be mounted in a rack using a fixed rail kit (optional, MCP-290-50404-0N).

Installing the Chassis on Fixed Rails into a Standard Rack

1. Adjust the rails to the appropriate length according to the distance between the front and back of the rack they will be installed on. Use eight screws through the rail openings to secure the rail length adjustments, as pictured below.

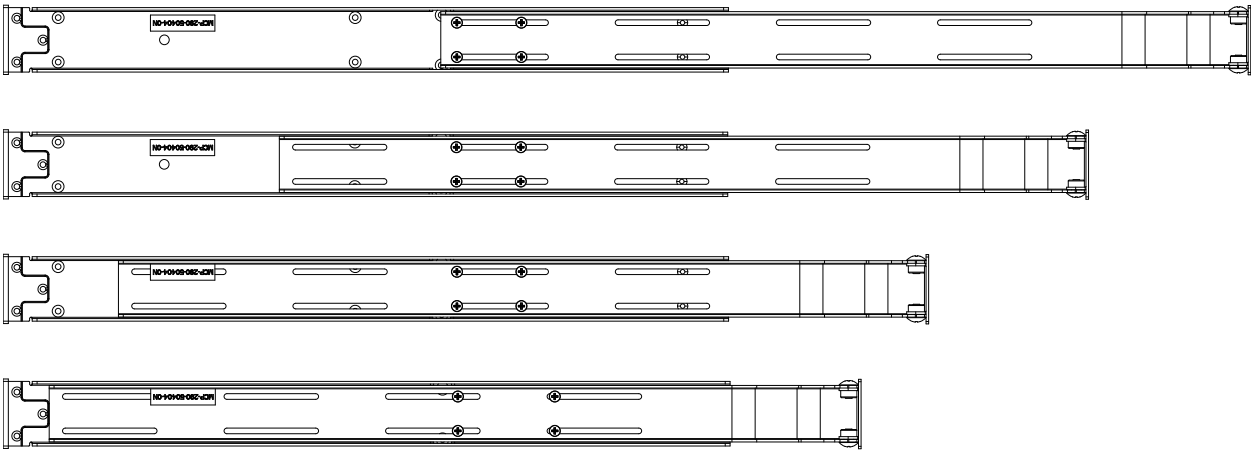


Figure 6-4. Rail Length Adjustments

1. Attach the rails to the chassis using three screws through the holes in each front bracket to secure a bracket to each side of the chassis.

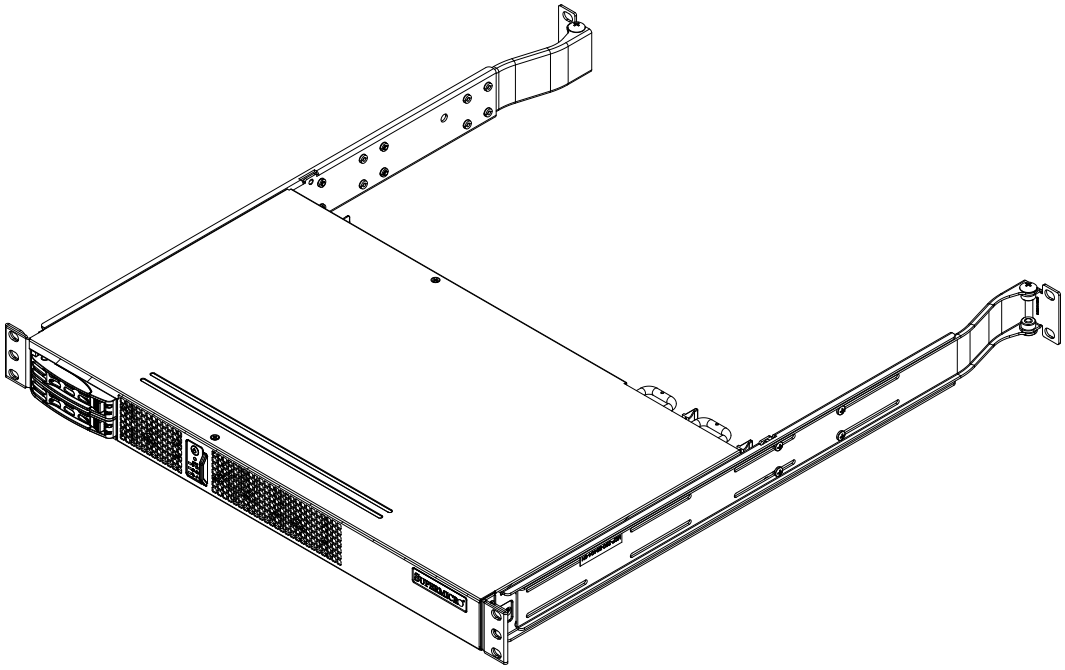


Figure 6-5. Rails Attached to the Chassis

2. Install the chassis on rails into the rack, using three screws through each front bracket and two screws through each rear bracket to secure the rails to the rack.

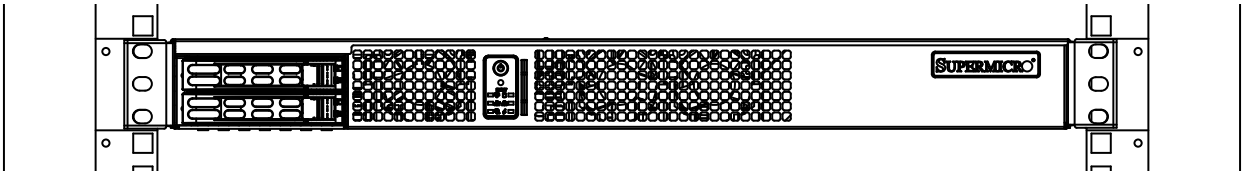


Figure 6-6. Front of Chassis on Rails Installed into a Rack

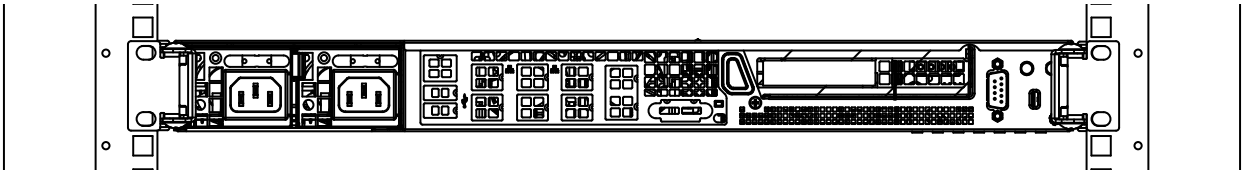


Figure 6-7. Rear of Chassis on Rails Installed into a Rack

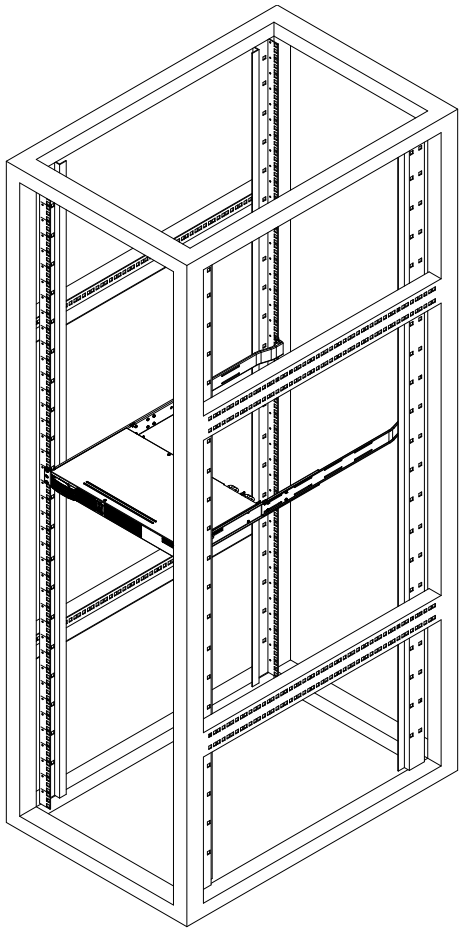


Figure 6-8. Installing the Server on Fixed Rails into a Rack

Note: Figures are for illustrative purposes only. Servers should always be installed in racks from the bottom up.

Chapter 3

Maintenance and Component Installation

This chapter provides instructions on installing and replacing main system components. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

Installation or replacement of most components require that power first be removed from the system. Please follow the procedures given in each section.

3.1 Removing Power

Use the following procedure to ensure that power has been removed from the system. This step is necessary when removing or installing non-hot-swap components or when replacing a non-redundant power supply.

1. Use the operating system to power down the system.
2. After the system has completely shut-down, disconnect the AC power cords from the power strip or outlet.
3. Disconnect the power cords from the power supply modules.

3.2 Accessing the Chassis

The chassis top is removable to allow access to components.

Removing the Top Cover

1. Remove the screw from the left, right and top sides of the chassis as shown.
2. Push the cover towards the back and pull the top cover straight up. Set aside screws.

Caution: 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 for proper airflow and to prevent overheating.

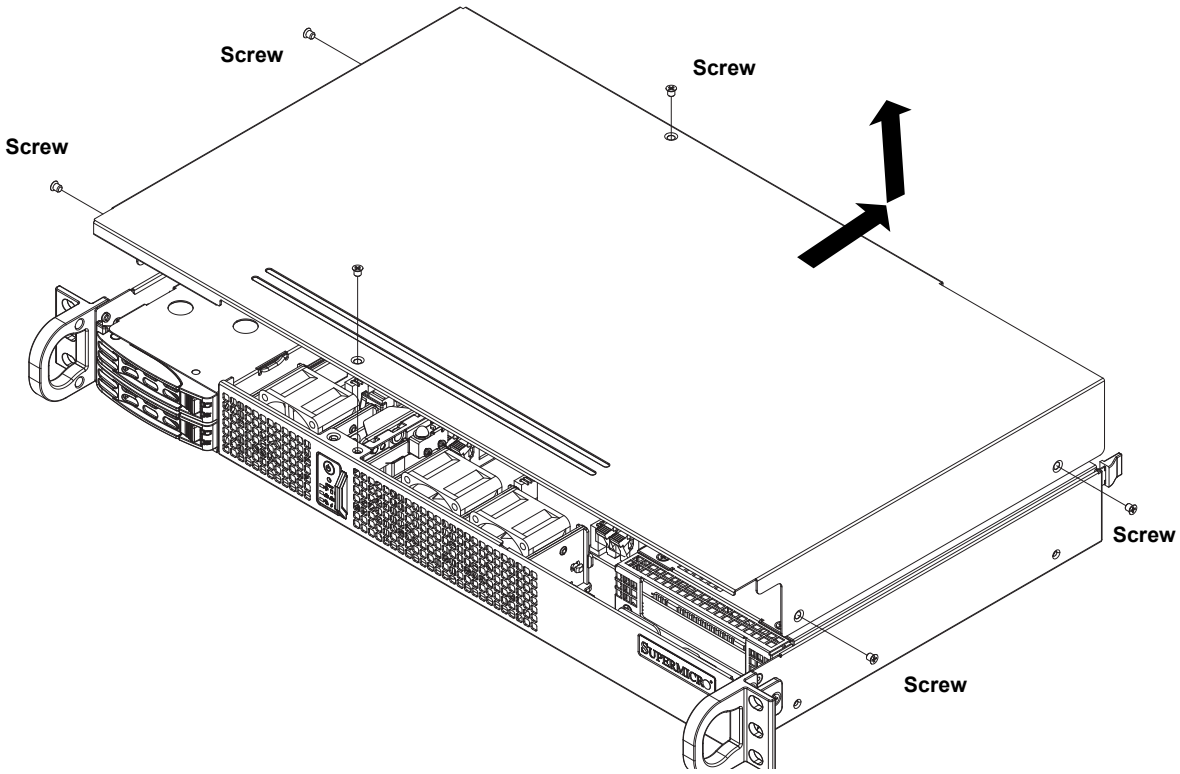


Figure 3-1. Removing the Chassis Cover

3.3 Chassis Components

Storage Drives

The SC506 chassis supports two 2.5" storage drives, housed in a drive cage inside the chassis.

Note: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro website at http://www.supermicro.com/products/nfo/files/storage/SBB-HDDCompList.pdf.

Drive Carrier Indicators

Each drive carrier has two LED indicators: an activity indicator and a status indicator. For RAID configurations using a controller, the meaning of the status indicator is described in the table below. For OS RAID or non-RAID configurations, some LED indications are not supported, such as hot spare.

Drive Carrier LED Indicators			
	Color	**Blinking Pattern**	**Behavior for Device**
Activity LED	Blue	Solid On	SAS drive installed
	Blue	Blinking	I/O activity
Status LED	Red	Solid On	Failure of drive with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for drive with RSTe support *(not supported in VMD mode)*
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support

Installing a 2.5" Hard Drive

1. Remove the chassis cover as described in Chapter 3.2.
2. Remove the left chassis handle as shown below.
3. Insert and secure the hard drive(s) to the hard drive cage with screws, included with the hard drive.
4. Replace left chassis handle.
5. Replace chassis cover.

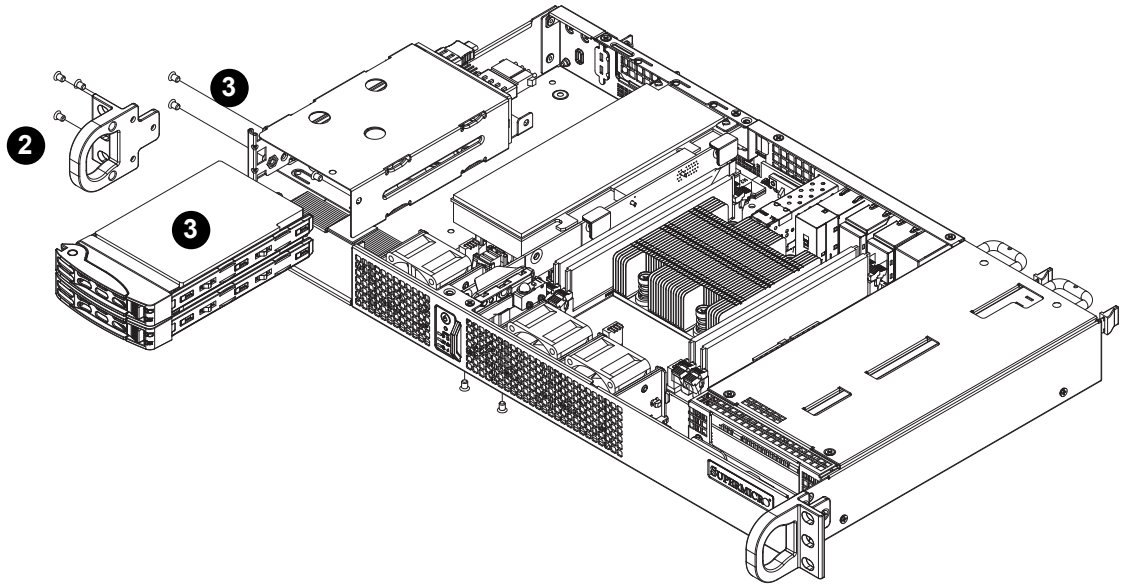


Figure 3-2. Installing Hard Drives

System Fans

Three hot-swap fans provide cooling. They can be replaced without powering down the system.

Fan speed is controlled by a system temperature setting in IPMI. If a fan fails, the remaining fans will ramp up to full speed. The system can continue to run with a failed fan. Replace any failed fan at your earliest convenience with the same type and model.

Changing a System Fan

1. Determine which fan is failing. If possible, use IPMI. If not, remove the chassis cover while the power is on, and examine the fans to determine which one has failed.
2. Remove the failed fan's power cable from the motherboard.
3. Remove the fan housing screws from underneath the chassis.
4. Lift the fan housing up and out of the chassis. Remove the failed fan from the housing.
5. Place the replacement 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. Put the fan housing back into the chassis, secure with screws and reconnect the cable.
7. Replace the drawer and confirm that the fan is working properly before replacing the chassis cover.

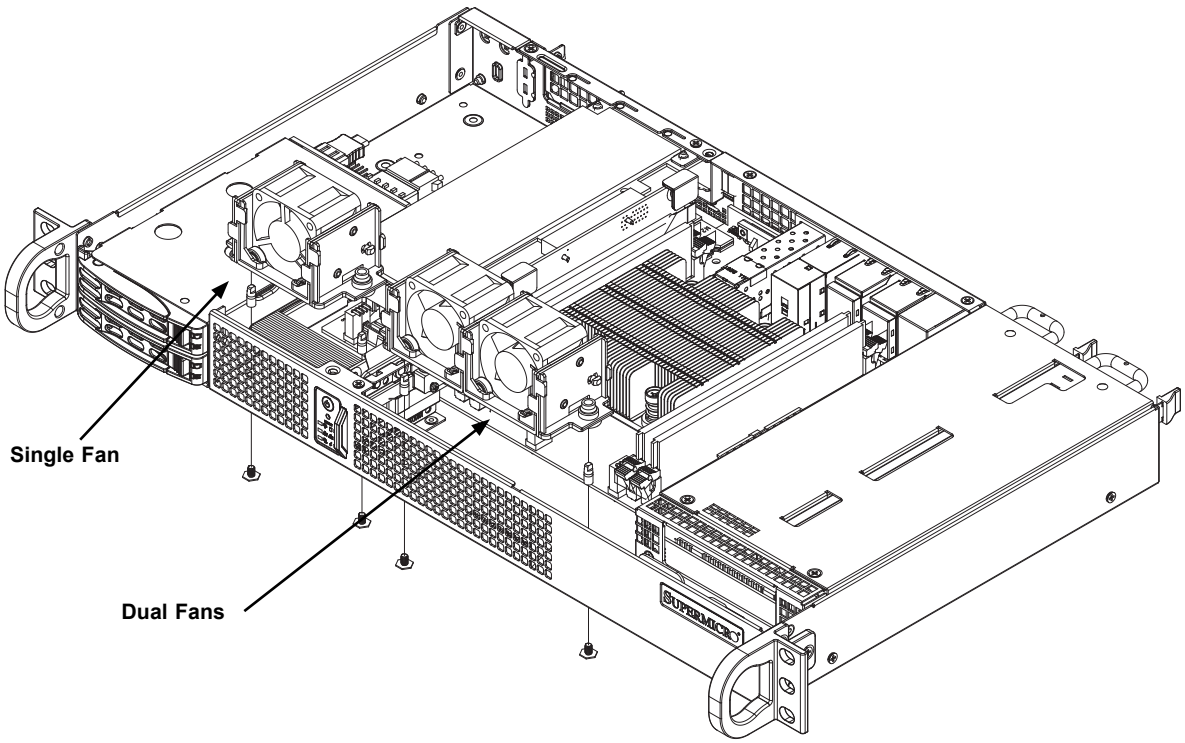


Figure 3-3. System Fan Placement

Power Supply

The chassis features redundant power supplies. The power modules can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors.

These power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 100-120v or 180-240v. 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.

Replacing the Power Supply

1. Unplug the AC cord from the module to be replaced.
2. Push the release tab on the back of the power supply as illustrated.

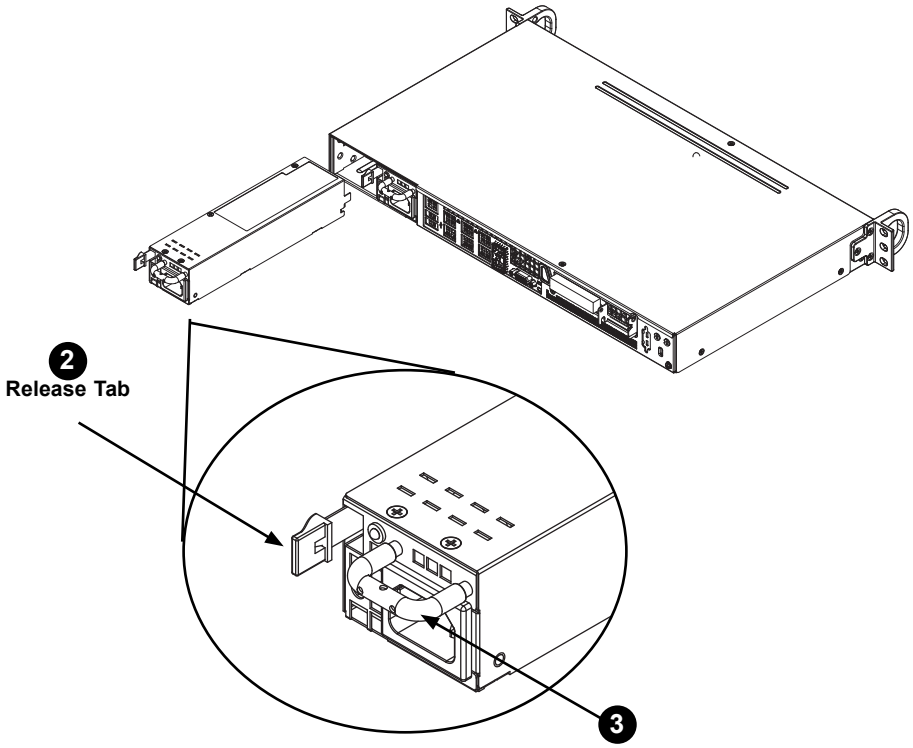


Figure 3-4. Power Supply Release Tab

3. Pull the power supply out using the handle.
4. Replace the failed power module with the same model.
5. Push the new power supply module into the power bay until it clicks.
6. Plug the AC power cord back into the module.

3.4 Installing the Motherboard

Chassis Standoffs

Standoffs prevent short circuits by securing space between the motherboard and the chassis surface. The SC506 chassis includes permanent and removable standoffs in locations used by Flex-ATX or Mini-ITX sized motherboards.

Motherboard Installation

Installing the Motherboard

Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections. The SC506 chassis supports 9.6" x 9.6" Micro ATX motherboards. Refer to the Supermicro Web site or contact Supermicro for assistance.

1. Power down the server, disconnect the power cord from the power supply and remove the cover.
2. Compare the mounting holes in the motherboard to those in the chassis then add or remove standoffs as needed.
3. Lay the motherboard in the chassis, aligning it with the standoffs.
4. Secure the motherboard to the chassis using the rounded, Phillips head screws. Do not exceed eight pounds of torque when tightening down the motherboard.
5. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.
6. Connect the cables between the motherboard, chassis, front panel, and power supply, as needed.

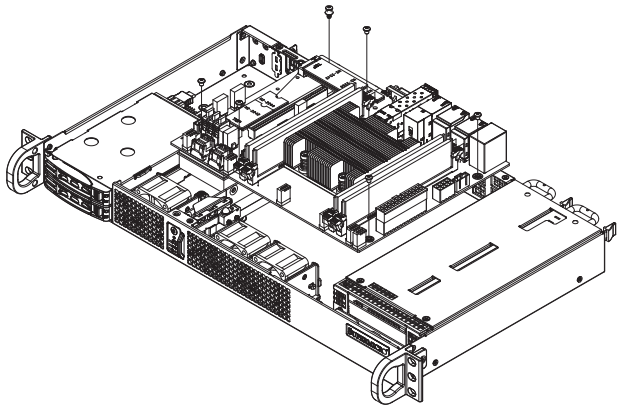


Figure 3-5: Installing a Motherboard

Appendix A

Cables, Screws, and Other Accessories

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 the SC506 Chassis

SC506-200B			
Part #	**Type**	**Length**	**Description**
CBL-PWEX-1097-15	Ribbon	6"	16-pin to 16-pin ribbon cable for control panel
CBL-PWEX-1098F-10	Ribbon	4"	16-pin to 16-pin ribbon cable, control panel converter
CBL-PWCD-0260-IS	Cable	6 ft	Regional power cord

A-3 Optional Accessories

The following accessories are compatible with the SC506 chassis.

Hard Drive Bracket

MCP-220-00044-0N 2.5" hard drive bracket. One bracket can hold up to two 2.5" hard drives. The SC506 can hold up to two brackets, for a total of up to four hard drives.

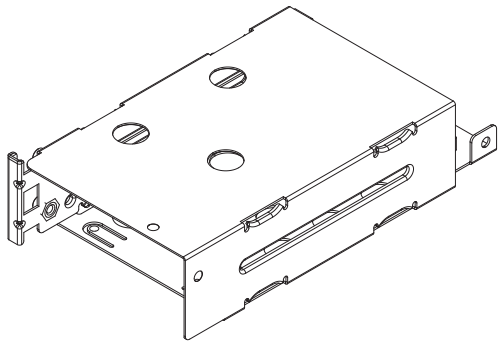


Figure A-1: Hard Drive Bracket

Extending Power Cables

Although Supermicro 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	CBL0060	7.9” (20 cm)

Front Panel to the Motherboard

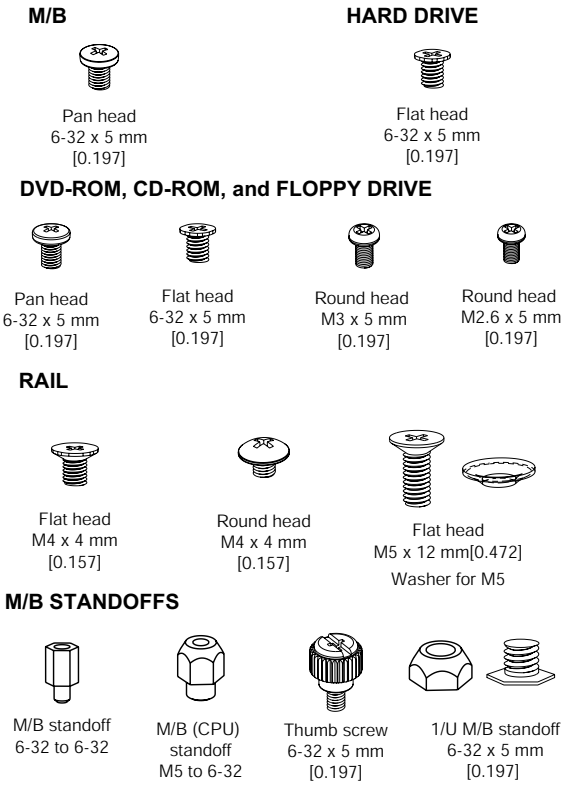
The SC506 chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

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	varies*	CBL-0068
20-pin	varies*	CBL-0067

* Split cables: Use these cable if your motherboard requires several different connections from the front panel.

A-4 Chassis Screws

The accessory box includes all the screws needed to setup your chassis. This section lists and describes the most common screws used. Your chassis may not require all the parts listed.



Appendix B

Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

80 Plus Gold Level Certified Power Supply	
	200W
MFR Part #	PWS-203-1H
Rated AC Voltage	100 - 240V 50 - 60Hz 4-2 Amps
+5V standby	2 Amps
+12V	16 Amps
+5V	8 Amps
+3.3V	8 Amps
-12V	0.5 Amps



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.