Tank FT48

B5382

Service Engineer's Manual

Preface

Copyright

Version 1.00

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Federal Communications Commission

Notice for the USA Compliance Information Statement (Declaration of Conformity Procedure) DoC FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

1) This device may not cause harmful interference, and

2) This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Plug the equipment into an outlet on a circuit different from that of the receiver.

Consult the dealer or an experienced radio/television technician for help.

Notice for Canada

This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conformé aux norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'interférence radio.)

Notice for Europe (CE Mark) This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

About this Manual

This manual provides you with instructions on installing your FT48-B5382, and consists of the following sections:

Chapter 1: Provides an Introduction to the FT48-B5382 barebone, packing list, describes the external components, gives a table of key components, and provides block diagrams of the system.

Chapter 2: Covers procedures on installing the CPU, memory modules, PCI cards and hard drives.

Chapter 3: Covers removal and replacement procedures for pre-installed components, introduces the fan board, LED control board, SAS/SATA backplane, and provides tables for pin definition.

Appendix: Describes the differences between mainboard BIOS and system BIOS. Provides the cable connection tables for reference of system setup. Installing instructions for the SMDC card, expansion hard drives, and server rackmounting are also given.

For information on the mainboard, please refer to the attached mainboard user's manual. You can find the detailed description about jumper and BIOS settings from the motherboard manual.

Safety Information

Before installing and using the FT48-B5382, take note of the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots or openings on the unit which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure about your power source, contact the power company.
- The unit uses a three-wire grounded cable, which is supplied with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this type of plug, contact an electrician to replace the obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be stepped on.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots, as they may touch high voltage components and result in shock and damage to the components.
- When replacing parts, ensure that you use parts specified by the manufacturer.
- When service or repairs have been carried out, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.
- Disassembly of this unit should not be attempted by unqualified persons. When the chassis cover is removed there is a danger of electric shock and risk of damage to the system.
- Do not attempt to lift or move this product alone. When moving this product, at least two people should lift it onto a suitable trolley or cart. When bolting the product into a rack, two people should hold the device in place while a third person bolts the device securely to the rack.

Table of Contents

Chapter 1: Overview

1.1 About the TYAN Tank FT48-B5382

Congratulations on your purchase of the TYAN Tank™ FT48-B5382, a highly-optimized tower or rack-mountable (option) barebone system. The TYAN Tank™ FT48-B5382 is designed to support the latest two Intel® Xeon® processors 5000/5100/5300 series, providing a rich feature set and incredible performance. Leveraging advanced technology from Intel®, the Tank™ FT48-B5382 server system is capable of offering scalable 64 and 128-bit computing, high-bandwidth memory design, and a lightning-fast PCI-E bus implementation. The Tank™ FT48-B5382 not only empowers your company in today's demanding IT environment but also offers a smooth path for future application usage.

Externally-accessible hot-swap SAS/SATAII hard drive bays provide high storage flexibility, while two Gigabit Ethernet ports deliver excellent network connectivity, and a 5.25" type 8x DVD-ROM drive comes as standard. These features make the Tank™ FT48-B5382 a totally flexible solution for a wide range of advanced processing applications.

WARNING: This product is very heavy and should not be lifted by a single person. When installing this product in a rack, we recommend that at least two people lift the server while a third person guides it into place and tightens the fixings. Always use a suitable trolley or cart to transport the device.

1.2 Product Model

Model	Supported HDD type & quantity	Hot-swappable	Power supply
B5382F48W8H	SATA/SATA2 (8)	Yes	700W single PSU
B5382F48W8HR	SATA/SATA2 (8)	Yes	750W (2+1) redundant, hot swap PSU

1.3 Features

Enclosure
- Industry 19” rack-mountable 4U & Pedestal convertible chassis
- (3) 5.25” Driver bays
- (8) 3.5” HDD bays
- Dimensions:
  -D 27.5 x W 16.8 x H 6.9 inch
  -D 700 x W 427 x H 176 mm

Processors
- Dual LGA771 sockets
- Support up to two Intel® Dempsey / Woodcrest / Clovertown processors
- 1333/1066/667MT/s FSB
- VRD 11.0

Chipset
- Intel® “Blackford” (5000P) MCH + 6321ESB + PXH-V chipset
- Supports 667/1066/1333 MT/s FSB CPU’s
- Winbond 83627HF Super I/O chip
- Intel® PXH-V supports one PCI-X bus

Memory
- (16) 240-pin DDR2 FBDIMM sockets via two memory riser cards (M5382)
- (8) FBDIMMs on each memory riser card
- Supports maximum of 64GB of DDR2-533/667

Expansion Slots
- (2) PCI-X 64/100MHz slots from 6321ESB
- (2) PCI-X 64/133MHz slots from PXH-V
- (1) PCI-E x16 slot (w/ x8 signals from MCH)
- (1) PCI-E x16 slot (w/ x8 signals from 6321ESB)
- (1) PCI slot
- Seven expansion slots in total

Back I/O Ports
- (1) PS/2 mouse and keyboard port
- (1) 15-pin VGA port
- (2) RJ-45 ports, side-by-side
- (4) USB 2.0 ports, side-by-side
- (1) 9-pin Serial port
- Stacked Mic-in/Line-in/Line-out audio jacks

Front Panel Features
- I/O
  -(2) USB 2.0 ports
- LED indicators
  -Power LED
  -(2) LAN LEDs
  -HDD LED (for internal SATA/ IDE)
- Switches
  -Power and Reset switches

Integrated FireWire (1394a) Controller
- TI® TSB43AB22 1394a controller
- (2) Internal IEEE 1394a pin headers

Integrated Storage Controller
- On board LSI 1068E SAS controller for model: B5382F48W8H/ B5382F48W8HR
  -Support 8-port SAS for internal connection

Storage
- HDD support:
  -Support (8) hot-swappable SAS/SATA HDD with RAID 0, 1, and 1E (Mirroring Enhanced)
- Pre-installed (1) 5.25” type 8x DVD-ROM

Networking
- (1) Intel® “Gilgal” (82563EB) PHY
- (2) Gigabit LAN ports

Integrated Video Controller
- ATI® ES1000
- 32MB DDR memory

Motherboard
- TYAN Tempest i5000 PW (S5382)
- SSI/ Extended ATX footprint (12” x 13”)

System Cooling
- (3) 12V, 4800RPM, 120x120x38 hot-swap system fan
- (2) Active CPU heat-sink

BIOS

- Phoenix BIOS® on 8Mbit Flash ROM
- Supports APM 1.2, ACPI 1.0b
- Serial Console Redirect
- PXE via Ethernet
- USB device boot
- PnP, DMI 2.0, WFM 2.0 Power Management
- User-configuration of H/W monitoring
- Auto-configuration of hard disk types
- Multiple boot options
- 48-bit LBA support

Server Management

- Analog Devices ADT7470 Hardware Monitor
- CPU thermal & voltage monitor support
- 2-pin chassis intrusion header
- Multiple 4-pin fan monitoring headers
- PECI circuit for “Woodcrest” and the processor thermal monitoring
- Infineon SLB9635 Trusted Platform Module (TPM)
- Tyan SMDC M3291, IPMI v2.0 compliant Remote server management kit (option)

Power Supply

- B5382F48W8HR: 750W (2+1) redundant hot-swap
- B5382F48W8H: 700W single
- SSI (24 + 8 + 8 pin) power connectors

Regulatory

- FCC Class B (Declaration of Conformity)
- European Community CE (DoC)

Environment

- Operating temperature 5ºC ~ 35ºC
- Non-operating temperature -40ºC ~ 70ºC

1.4 Unpacking

This section describes the FT48-B5382 package contents and accessories.Open the box carefully and ensure that all components are present and undamaged.

1.4.1 Box Contents

Component	Description
	Industry standard 4U chassis with eight HDD bays and three further 5.25-inch device bays
	Tyan Tempest i5000PW S5382 mother-board (pre-installed)
	Two M5382 memory riser cards
	DVD-ROM drive (pre-installed)
	Two M1211 SAS/SATA backplanes (pre-installed)
	M1007 LED control board (pre-installed)

Component	Description
	M1014 FAN control board (pre-installed)
	B5382FT48W8HR - 750W (2+1) redundant hot-swap PSU B5382FT48W8H - 700W single PSU
	(3) system cooling fans (pre-installed) 120 x 120 x 38 mm

1.4.2 Accessories

If any items are missing or appear damaged, contact your retailer or browse to TYAN's Web site for service: http://www.tyan.com.

The Web site also provides information on other TYAN products, plus FAQs, compatibility lists, BIOS settings, and more.

TYAN Driver CD

Power Cables
B5382F48W8H: US x 1; Europe x 1
B5382F48W8HR: US x 3; Europe x 3

2 x CPU Heatsinks with Fans

5 x Long Card Holders (including five screws)

Barebone Manual & Mainboard Manual

Keys

TYAN Logo

FDD Cable

HDD Screws

FDD Front Panel

Security Tab
(including two screws)

1 x 1394 cable

1 x DVD-ROM cable

Sliding Rail Kit (Option)

Rail assembly

2 x Mounting Ears
(including six screws)

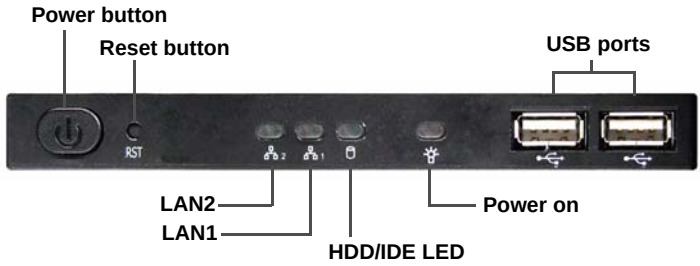
Screws &
Small Brackets

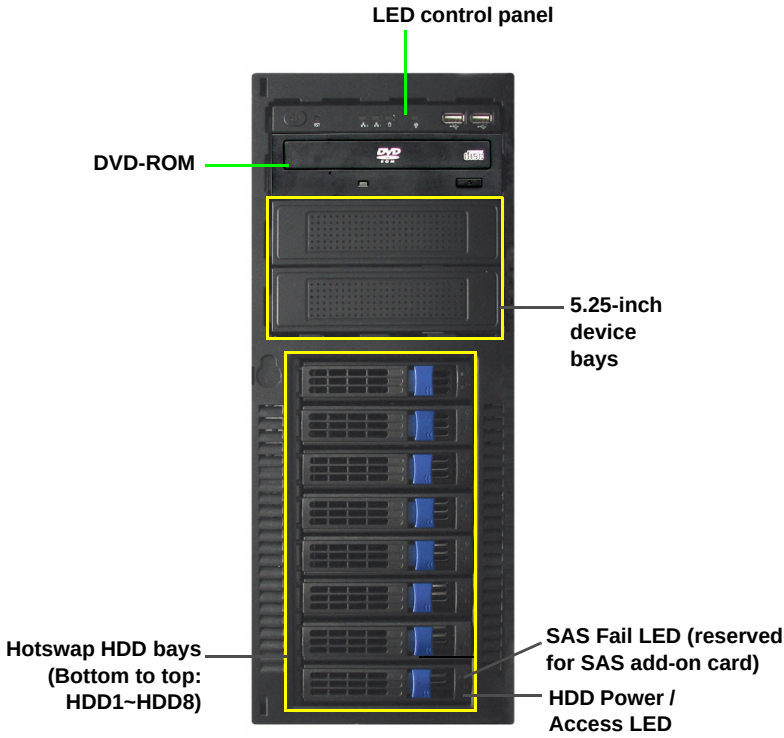
1.5 About the Product

This section contains hardware diagrams and a block diagram of the FT48-B5382 system.

1.5.1 System Front View and Front Panel

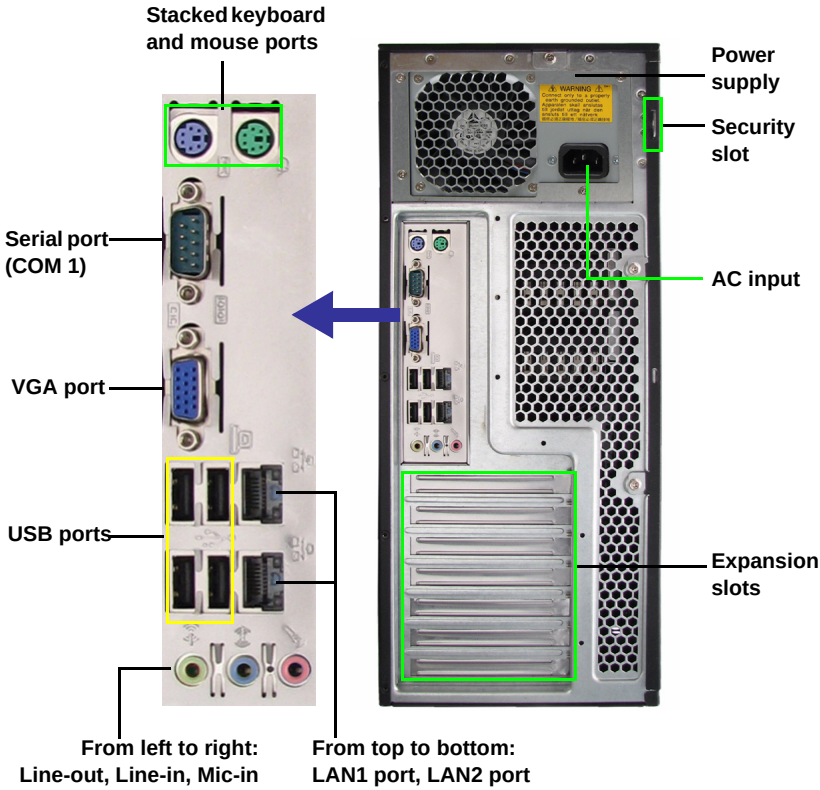
See the diagram below for details of the front panel indicators and switches.





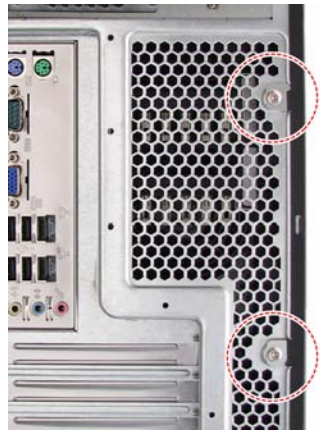
1.5.2 System Rear View

B5382F48W8H

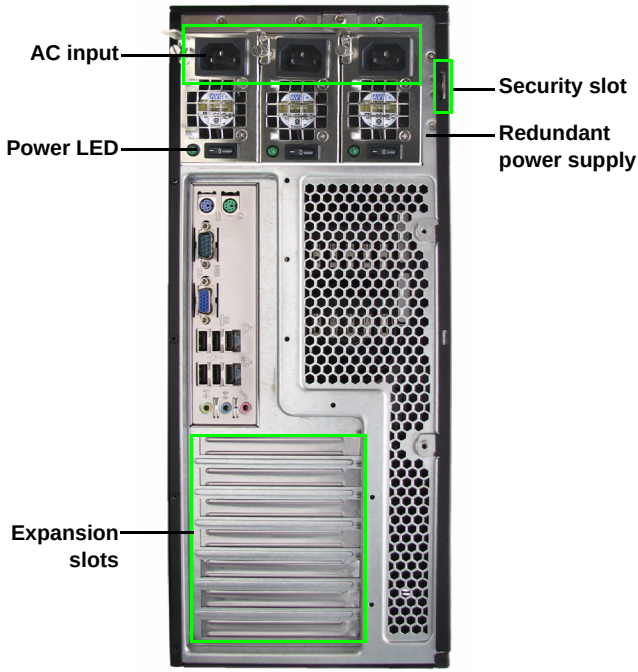


LAN1 port	→	On-board LAN0
LAN2 port	→	On-board LAN1

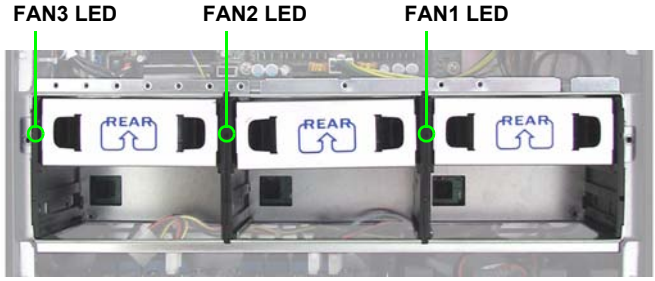
On the rear of the FT48-B5382, two screw holes are available for you to secure the chassis lid with two screws. By default, the unit has no screws secured from the rear.



B5382F48W8HR



1.5.3 System Top View for FAN LEDs



LED	Color	Description
FAN1/FAN2/FAN3	Green	Fan is functioning normally.
	Red	Fan fails.

1.5.4 LED Control Panel

LED	Color	State	Description
Power LED	Red	On	System is turned on
		Off	No mains power
HDD/ IDE LED	Green	Blinking	Internal SATA/ IDE access
		Off	No disk activity
LAN LED	Green	On	LAN is connected
	Green	Blinking	LAN is active

Each LAN LED on the front panel corresponds to the on-board LAN port as listed below.

LED LAN1	→	On-board LAN0
LED LAN2	→	On-board LAN1

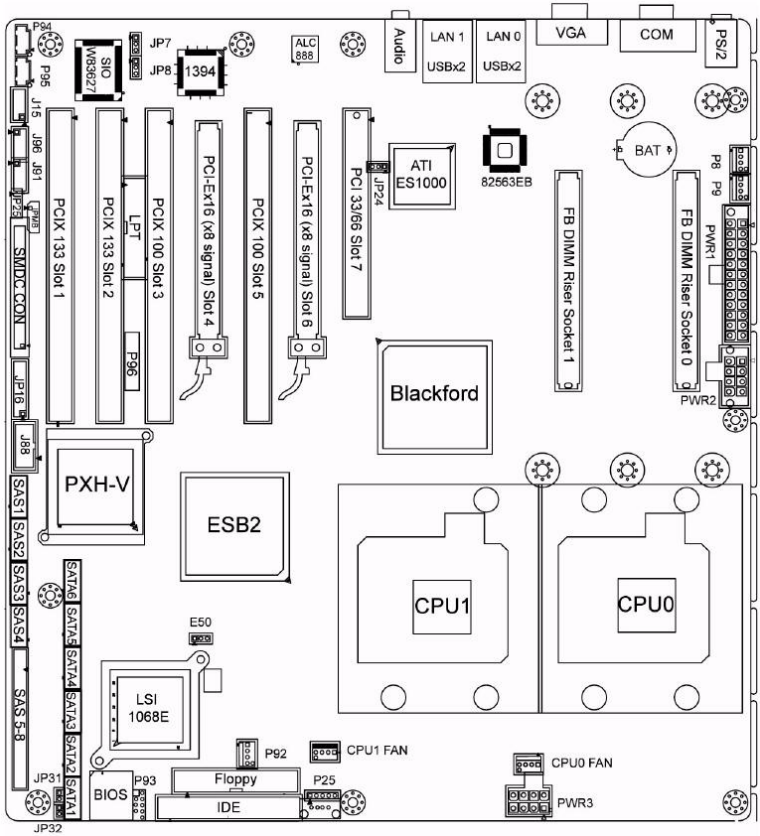
1.5.5 HDD Tray LEDs

LED	Color	State	Description
Hot Swappable HDD Power/ Access LED (Only for internal SAS port access)	Green Green OFF	ON Blinking OFF	Power connected SATAII/ SAS HDD access activity Power disconnected
Hot Swappable HDD SAS Fail LED	Amber OFF	ON OFF	SAS HDD fail (reserved for SAS add-on card) No failure found

1.5.6 Rear LEDs

LED	Color	State	Description
RJ45 NIC 1 Linkage (Left)	Green Green	On Blinking Off	LAN linked LAN access No LAN accessed
RJ45 NIC 1 Mode (Right)	Amber Green	On On Off	Gigabit mode 100M mode 10M mode
RJ45 NIC 2 Linkage (Left)	Green Green	On Blinking Off	LAN linked LAN access No LAN linked
RJ45 NIC 2 Mode (Right)	Amber Green	On On Off	Gigabit mode 100M mode 10M mode
Power supply module	Green	On Off	Power on Power off / fail

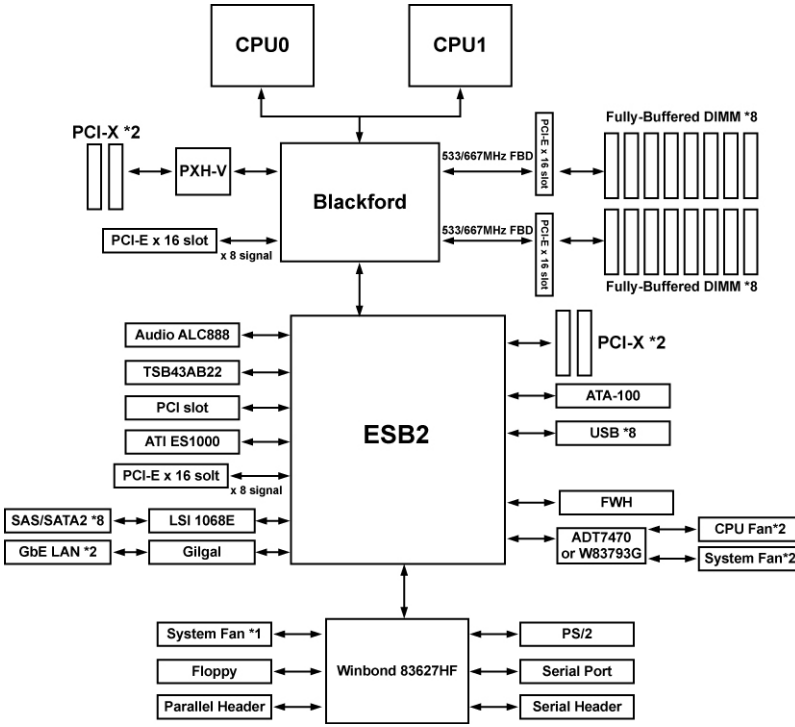
1.5.7 Motherboard Layout



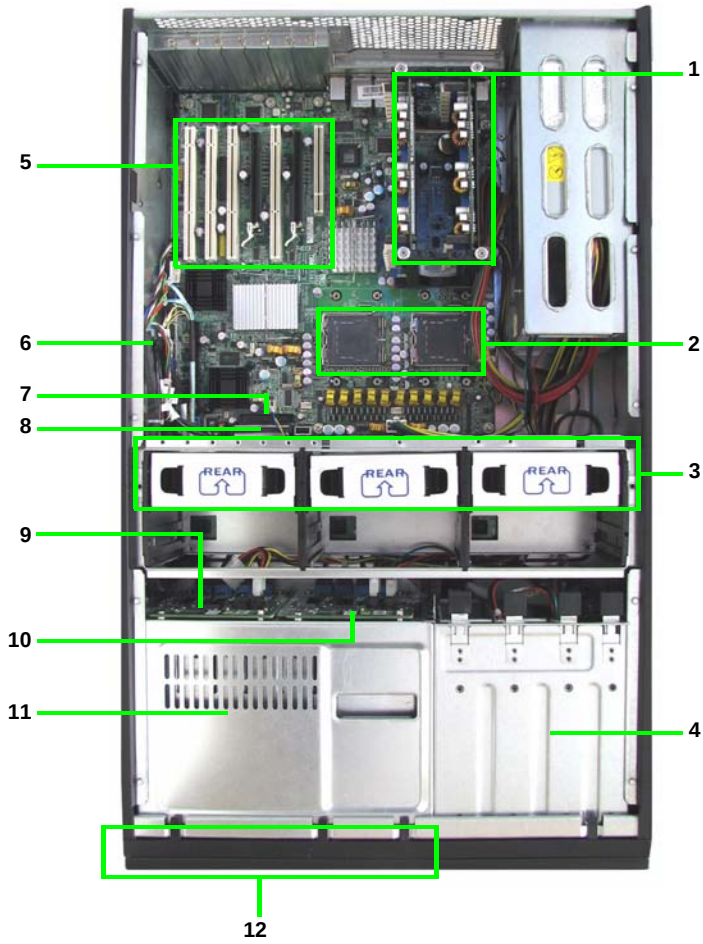
1.5.8 Jumpers & Connectors

Jumper/Connector	Function
J15	Audio Front Panel Header
J79	SMDC CON25 x 2_M3291
J80	IPMB Pin Header
J88	COM PORT Pin Header
J91/J96	IEEE 1394a Pin Header
JP16	Front Panel Header
P25	USB Header (5-Pin x 1)
P93	USB Header (5-Pin x 2)
P12/P13/P92/P8/P9	Fan Connectors (4-Pin x 1)
P94	CD-IN (4-Pin x 1)
P95	AUX-IN (4-Pin x 1)
P96	Intel High Definition Audio Digital Header
E50	Clear CMOS Jumper
JP7/JP8	LAN0 & LAN1 Enable/Disable Jumper
JP24	Integrated VGA Enable/Disable Jumper
JP25	Onboard Buzzer Enable/Disable Jumper
JP31/JP32	LAN0 & LAN1 LED Header
LPT1	LPT Pin Header (13-Pin x 2)

1.5.9 B5382 System Block Diagram



1.5.10 System Internal View



1. Memory riser cards
2. CPU0 / CPU 1 sockets
3. System fans (Right to left): FAN1/2/3
4. Cradle for 5.25-inch devices
5. PCI / PCI-X / PCI-E slots
6. SAS ports
7. Floppy disk drive socket
8. IDE socket (DVD-ROM drive)
9. SAS/SATA backplane 1
10. SAS/SATA backplane 2
11. Hard disk drive cradle
12. Eight (8) SAS/SATA HDD trays

Chapter 2: Setting Up

2.1 Before You Begin

This chapter explains how to install motherboard components, including CPUs, CPU heatsinks, memory modules, and PCI cards. There are also instructions in this section for installing SATA hard drives.

Take note of the precautions mentioned in this section when installing your system.

2.1.1 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers prevents them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

2.1.2 Tools

The following tools will be required to complete the installations described in this chapter.

- A cross head (Phillips) screwdriver
- A grounding strap and/or anti-static pad

Most of the electrical and mechanical connectors in your system can be disconnected using your fingers. It is recommended that you do not use needle-nosed pliers to remove connectors as these can damage the soft metal or plastic parts of the connectors.

2.1.3 Precautions

Components and electronic circuit boards can be damaged by discharges of static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to the Tank FT48-B5382 or injury to yourself.

- Ground yourself properly before removing the top cover of the system. Unplug the power from the power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, or leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.
- Always use the correct size screws and fixings when installing or replacing components.

Notes:

- All connectors are keyed to only attach one way.
- Always use the correct screw size as indicated in the procedures.

2.2 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPUs, memory modules and expansion cards.

2.2.1 Removing the Chassis Cover

Follow these instructions to remove the Tank FT48-B5382 chassis cover. This step is required before any other procedures in this chapter can be undertaken.

1. If the chassis lid is secured with two screws from the rear of the unit, remove them first. See “System Rear View” on page 10 for the screw locations.
2. Press the button on the release catch and lift the catch. Slide the chassis lid back slightly.

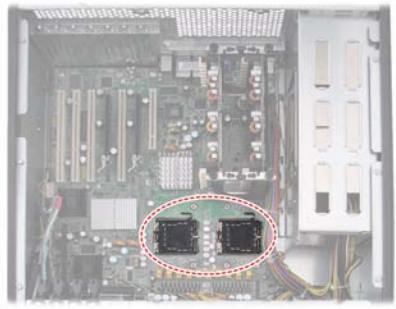
3. Lift the lid free from the chassis.

Follow the steps above in reverse to refit the chassis cover.

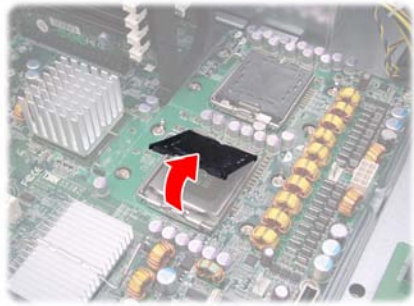
2.2.2 Installing the CPUs and Heatsinks

This section describes how to install Intel Xeon processors and heatsinks on the FT48-B5382 motherboard.

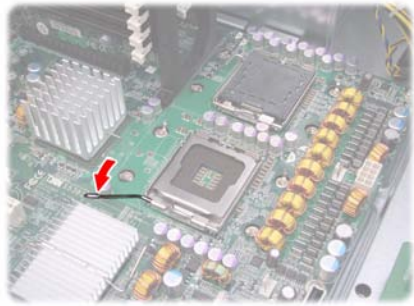
1. Locate the two CPU sockets on the motherboard.



2. Take off the CPU protection cap.

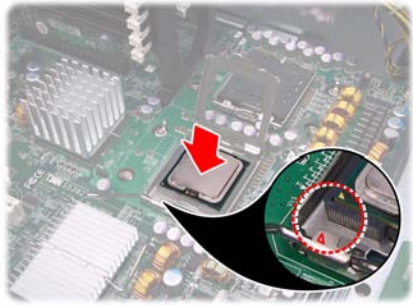


3. Pull the CPU lever up to unlock the CPU socket.



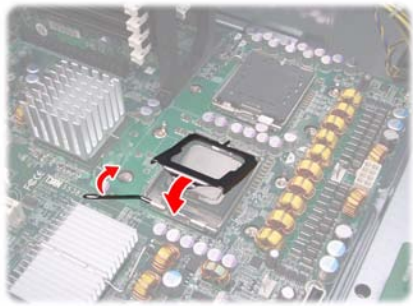
4. Open the socket in the direction as illustrated.

5. Place the CPU in the socket as shown, making sure that pin 1 is located correctly.



NOTE: The CPU will only fit in the socket one way. No force should be required to insert the CPU.

6. Close the socket cover to lock the CPU in place, and press the CPU lever down in the direction shown to secure the CPU.



7. Remove all packaging from the new heatsink. Place the fan and heatsink on top of the CPU and attach with four screws as shown.

NOTE: All heatsinks must be installed with fans facing the rear of the chassis to ensure efficient cooling.

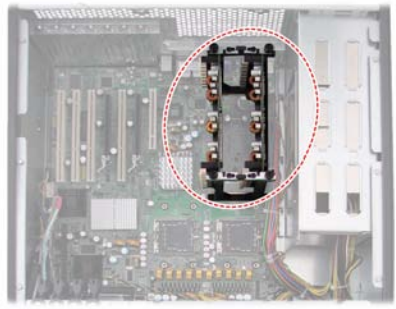
8. Attach the fan power cable to the CPU fan pin header on the motherboard as shown. See “Motherboard Layout” on page 14 for the fan header locations.

9. Repeat these steps to install the second CPU.

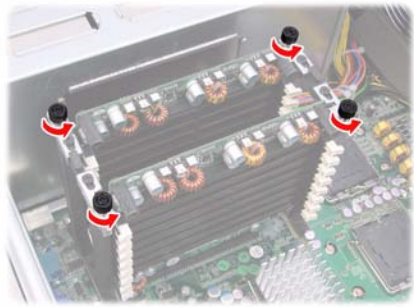
2.2.3 Installing the Memory

Follow the instructions in this section to install memory modules in your FT48-B5382 system.

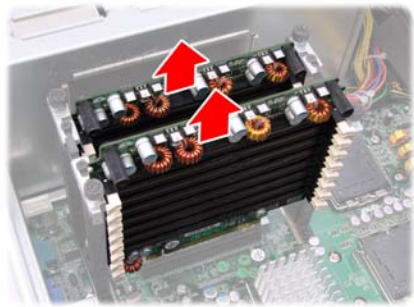
1. Locate the memory sockets on the memory riser cards.



2. Rotate the four press brackets as shown to release the memory riser card.

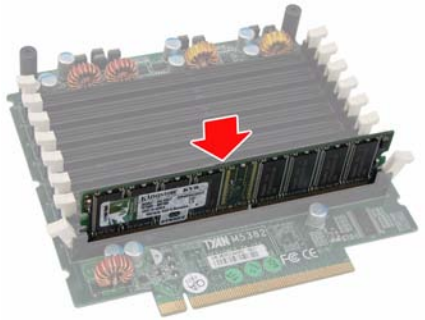


3. Lift the two memory riser cards from the FBDIMM riser socket.



4. Press the memory slot locking levers in the direction of the arrows as shown.

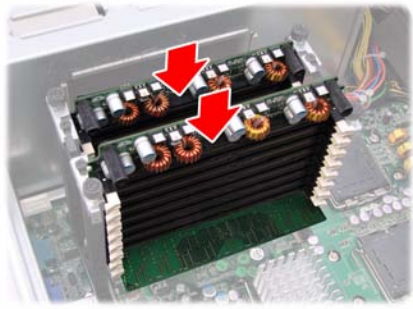
5. Insert the memory module into the slot.



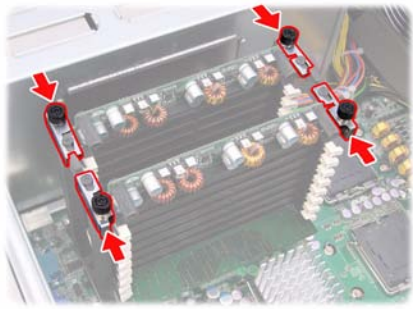
NOTE: Memory modules will fit in the slot only one way. Ensure that the notches in the memory modules line up with the corresponding notches in the slots.

When inserted properly, the memory slot locking levers lock automatically onto the indentations at the ends of the module. Make sure that the memory module is seated firmly in place.

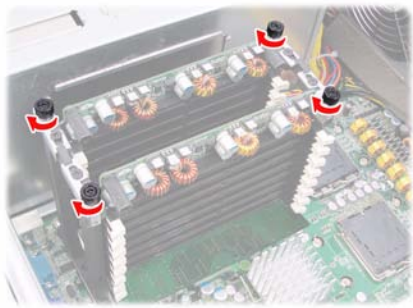
6. Insert the two memory riser cards into the socket as shown.



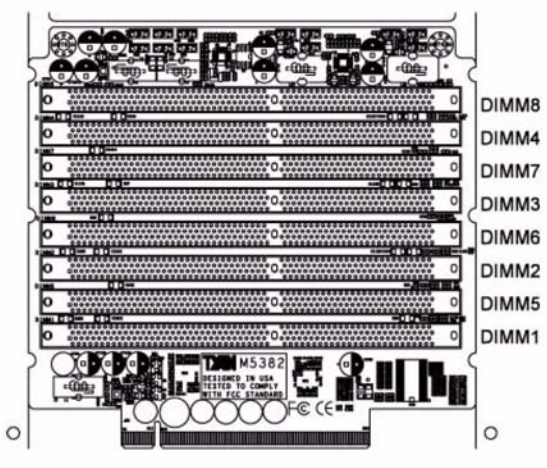
7. Install the four supplied press brackets in the direction of the arrow shown to fix the memory riser card.



8. Fasten the four press bracket screws as shown until firmly secured.



M5382 Layout



Attention When Installing the Memory!

Refer to the following table for supported memory populations.

		Quantity of memory installed								
		1	2	4		6		8		16
Fully Buffered DIMM Riser Socket 0	DIMM1	X	X	X	X	X	X	X	X	X
	DIMM2			X		X	X	X	X	X
	DIMM3					X		X		X
	DIMM4							X		X
	DIMM5		X	X	X	X	X	X	X	X
	DIMM6			X		X	X	X	X	X
	DIMM7					X		X		X
	DIMM8							X		X
Fully Buffered DIMM Riser Socket 1	DIMM1				X		X		X	X
	DIMM2								X	X
	DIMM3									X
	DIMM4									X
	DIMM5				X		X		X	X
	DIMM6								X	X
	DIMM7									X
	DIMM8									X

NOTE:
1. X indicates a populated DIMM slot.
2. Not all possible combinations are listed in the table.

2.2.4 Installing the PCI/PCI-X/PCI-E Cards

The FT48-B5382 has seven expansion slots:

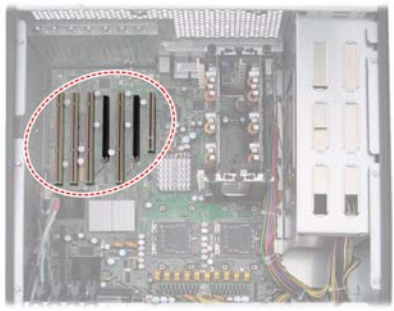
4 x PCI-X slots

2 x PCI-E x16 slots

1 x PCI slot

Follow the instructions in this section to install a PCI card in your system.

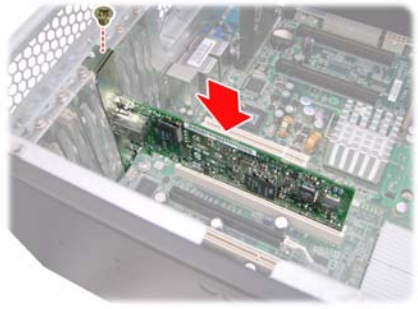
1. Locate the PCI/PCI-X/PCI-E card slots on the motherboard. See “System Internal View” on page 17 for the PCI/PCI-X/PCI-E slot locations.



2. Unscrew the blanking plate from the slot you want to use.

3. Lift up the blanking plate.

4. Insert a PCI/PCI-X/PCI-E card into a spare slot as shown, making sure it is firmly seated.



5. Secure the PCI/PCI-X/PCI-E card with the screw you removed from the blanking plate.

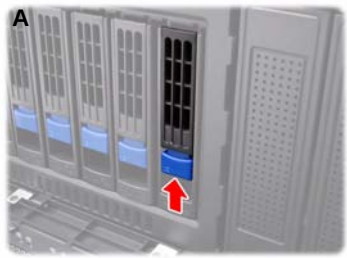
2.3 Installing Hard Drives

The FT48-B5382 supports eight, hot-swappable SAS/SATA hard drives. The unit is shipped with eight hot-swap bays and two SATA backplanes.

Hotswap HDD bays
(Bottom to top: HDD1, HDD2, HDD3, HDD4, HDD5, HDD6, HDD7, HDD8)

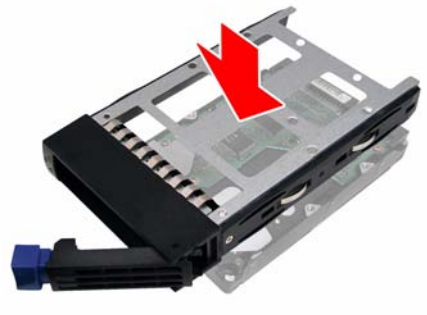
Follow these instructions to install a hard drive.

1. Press the release clip (**A**) and pull the release lever up to unlock the drive tray from the chassis (**B**).



2. Pull the empty drive tray from the chassis.

3. Place a SAS/SATA hard drive in the drive tray.



4. Secure the hard drive in place using four HDD screws.

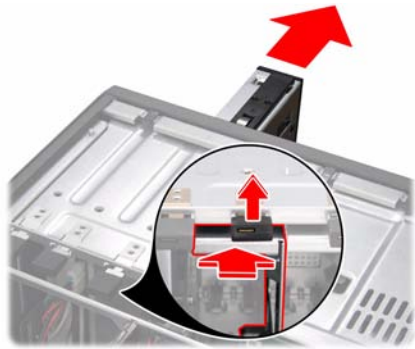
5. Insert the drive tray back into the chassis and push the locking lever into place to secure it.

2.4 Installing the Second DVD-ROM (Option)

Follow these instructions to install the second DVD-ROM.

1. Remove the FAN1 and FAN2 in the direction of the arrow from the chassis.

2. Unfasten an empty drive bracket from the chassis in the direction of the arrow shown.

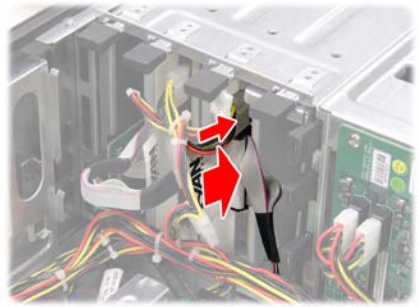


3. Remove the two rails from the drive bracket.

4. Attach the two rails removed from the drive bracket to the DVD-ROM with eight screws.

5. Slide the DVD-ROM into the chassis.

6. Connect the power and DVD-ROM cables to the rear of the DVD-ROM drive.



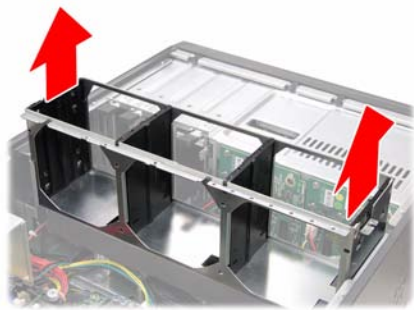
2.5 Installing the Floppy Disk Drive (Option)

Follow these instructions to install a floppy disk drive.

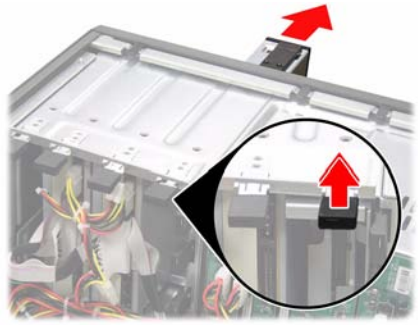
1. Remove all the fans in the direction of the arrow from the chassis.

2. Remove the two screws securing the fan cradle to the chassis.

3. Remove the fan cradle as instructed to reveal the fan control board.



4. Unfasten an empty drive bracket from the chassis in the direction of the arrow shown.



5. Use a thin tool such as a flat screwdriver to pry open the front panel of the drive bracket as indicated.

6. Remove the front panel and the inner piece as shown.

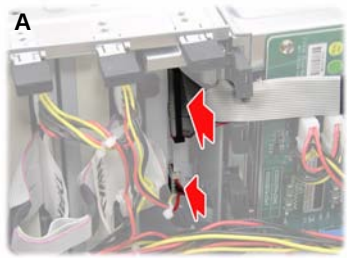
7. Install the FDD front panel to the front of the bracket.

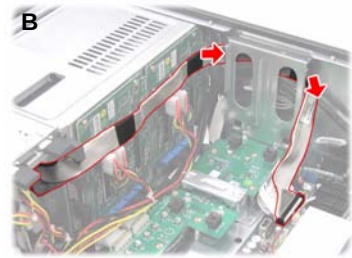
8. Place a FDD in the drive bracket.

9. Secure the FDD in place using four screws.

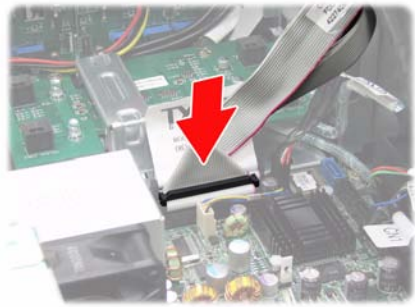
10. Slide the FDD with the drive bracket back into the chassis.

11. Connect one end of the supplied FDD cable and the power cable to the rear of the FDD (A). Pass the other end through the space behind the metal plate as shown below (B).





12. Connect the other end of the FDD cable to the connector on the motherboard.

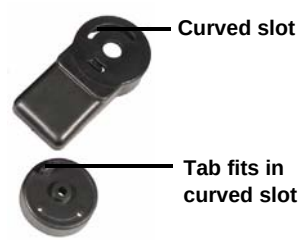


2.6 Installing Chassis Foot Stands

The FT48-B5382 can be used as a standalone device when fitted with the supplied plastic feet. When used as a standalone device, the feet must be fitted to prevent the unit from falling over.

The four feet should be attached as follows:

1. Each foot consists of two pieces. Insert the round piece of the foot into the larger foot section. The small plastic tab on the round piece should fit into the curved slot on the other piece.



2. Use a single screw through the center of the round section to fasten the foot assembly to the bottom of the chassis. The plastic tab that protrudes through the curved slot should fit into an indent in the chassis case. When fitted, each foot should rotate about 90°.

3. Fit all four feet in the same way.

NOTE: When using as a standalone unit, all four feet should be fitted and extended fully to prevent instability.

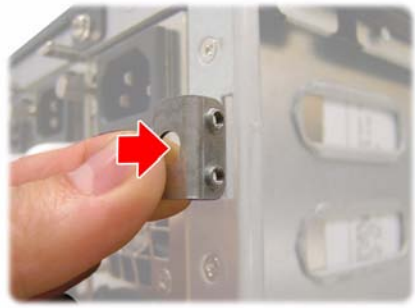
2.7 Opening the Chassis Door

1. Insert the front door key (packed in a bag in the accessory box) and rotate the key 90 degrees counterclockwise to unlock the door.

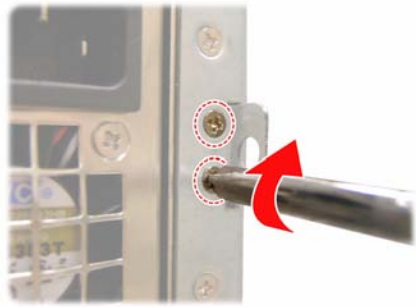
2. Pull the door in the direction of the arrow to open.

2.8 Installing the Security Tab

1. Insert the supplied security tab into the security slot from the rear of the FT48-B5382 as shown below.



2. Secure the security tab with two screws.



3. Now you can lock the FT48-B5382 chassis with a padlock using the opening from the security tab.

Chapter 3: Replacing Pre-installed Components

3.1 Introduction

This chapter describes how to replace all the pre-installed components of your FT48-B5382, including the motherboard, SATA backplane, LED control board, power supply, cooling fans, and fan control board.

Take note of the precautions in this section when installing your system.

3.1.1 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers keeps them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

3.1.2 Tools

The procedures that follow require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconnected using your fingers. It is recommended that you do not use needle-nosed pliers to remove connectors as these can damage the soft metal or plastic parts of the connectors.

3.1.3 Precautions

Components and electronic circuit boards can be damaged by static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to the FT48-B5382 or injury to yourself.

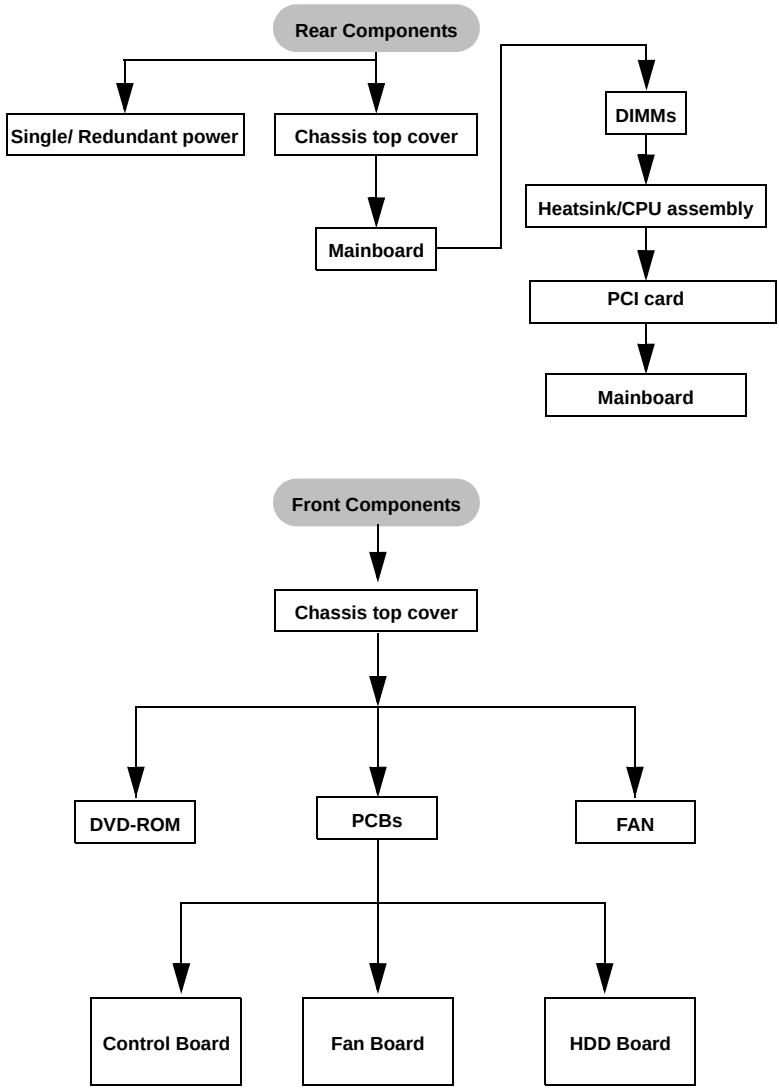
- Ground yourself properly before removing the top cover of the system. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

Notes:

- All connectors are keyed to only attach one way.
- Always use the correct screw size as indicated in the procedures.

3.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.



Note: The Transport FT48-B5382 should be always powered off before disassembly.

3.3 Removing the Chassis Cover

Follow these instructions to remove the Tank FT48-B5382 chassis cover. This step is required before any other procedures in this chapter can be undertaken.

1. Press the button on the release catch and lift the catch. Slide the chassis lid back slightly.

2. Lift the lid free from the chassis.

Follow the steps above in reverse to refit the chassis cover.

3.4 Removing the Front Door Assembly

A door is supplied with the FT48-B5382 that can be used when the unit is rack mounted or standalone. Follow these instructions to remove the door.

1. Pull out the four fixing bars locking the door assembly onto the server.

2. Remove the door assembly from the four holes located on the lower edge of the server.

To replace the door assembly:

1. Tilt the door assembly and fit the four protruding tips into the holes located on the lower edge of the server.
2. Place the door assembly in place and make sure that the four fixing bars are locked onto the server.

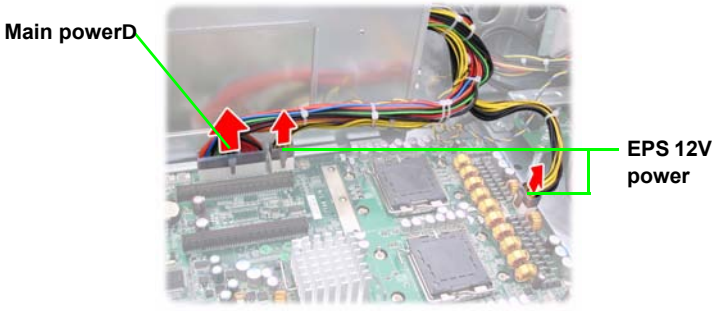
3.5 Replacing Motherboard Components

Follow these instructions to remove motherboard components and replace the motherboard.

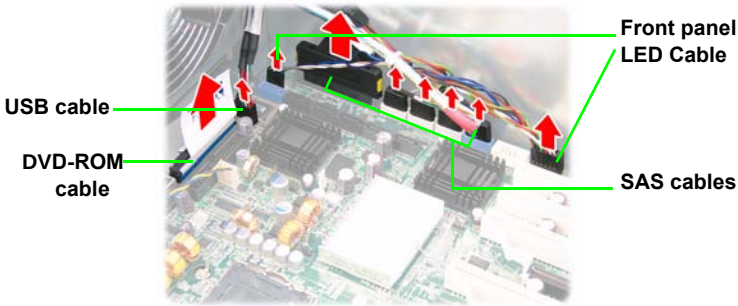
3.5.1 Disconnecting All Motherboard Cables

Before replacing the motherboard or certain components, remove cables connected to the motherboard. Follow these instructions to remove all motherboard cabling.

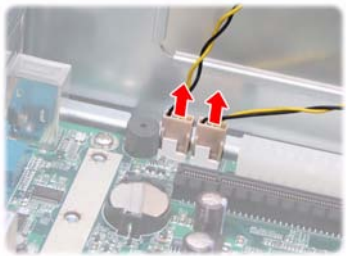
1. Disconnect all the power cables.

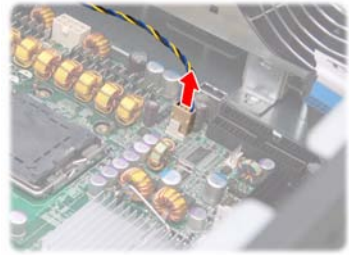


2. Disconnect the DVD-ROM drive cable, SAS/SATA hard drive cables, USB cable, and front panel LED cables.



3. Disconnect the fan cables.

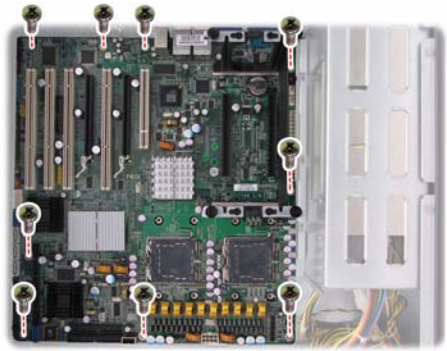




3.5.2 Replacing the Motherboard

After removing all of those cables, follow these instructions to replace the motherboard in your FT48-B5382.

1. Remove the heatsinks and processors if installed.
2. Remove the nine screws securing the motherboard to the chassis.



3. Carefully lift the motherboard from the chassis.

NOTE: The motherboard is fitted tightly into the chassis and will not lift straight out. You will need to lift one side of the board first and slide it out.

3.6 Replacing the Cooling Fans

The FT48-B5382 requires three chassis cooling fans. Follow these instructions to replace a cooling fan.

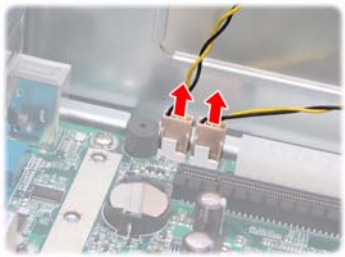
1. Remove the fan in the direction of the arrow from the chassis.

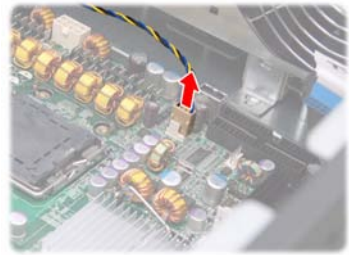
2. Replace a new fan into the fan cradle following the above steps in reverse.

3.7 Replacing the Fan Control Board

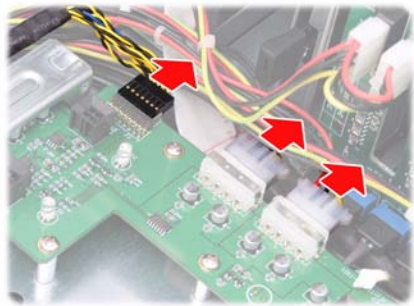
To replace the fan control board, you need to remove all the fans and the fan cradle first. Refer to the first three steps given in “2.5 Installing the Floppy Disk Drive (Option)”. Then, do the following:

1. Locate the system fan connectors on the motherboard. See “Motherboard Layout” on page 14 for the fan header locations.
2. Unplug the fan cable from the pin header on the motherboard.

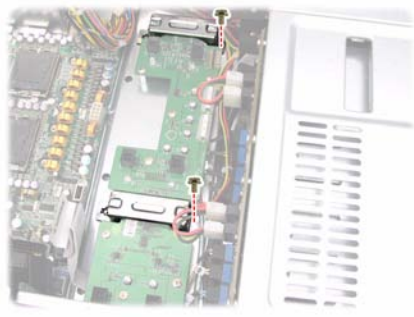




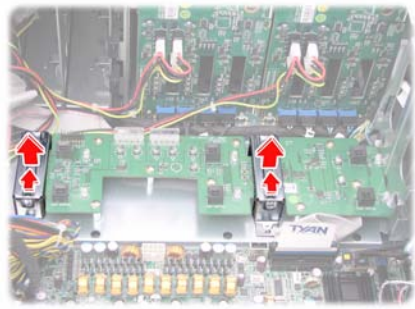
3. Disconnect all the connector cables from the fan control board.



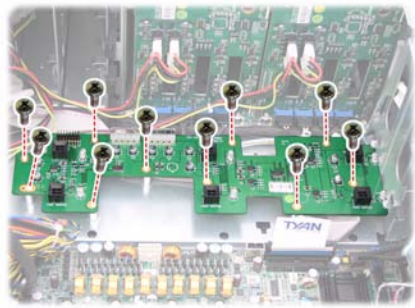
4. Remove the two screws securing the fixing brackets to the fan control board.



5. Remove the two fixing brackets as instructed for replacement of the fan control board.

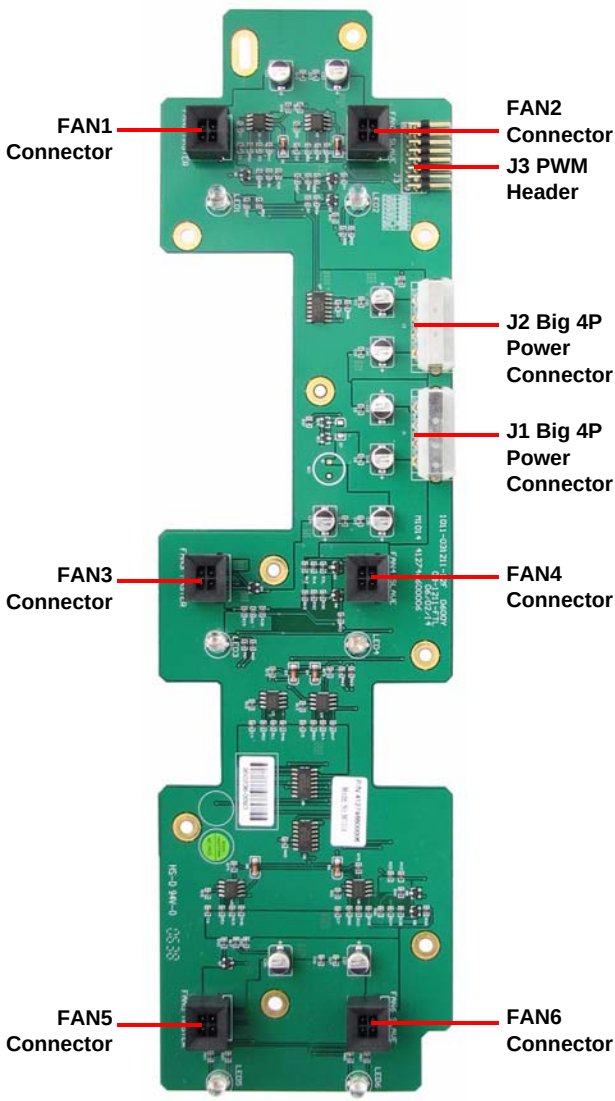


6. Remove the ten screws securing the fan board to the chassis.



7. After replacement, install the fixing brackets and secure the fan cradle in place following the above steps in reverse.

3.7.1 Fan Board Features



3.7.2 Fan Board Connector Pin Definition

J3 and PWM Pin Header

1	FAN1 PWM	2	GND
3	FAN2 PWM	4	GND
5	FAN3 PWM	6	GND
7	FAN4 PWM	8	GND
9	FAN5 PWM	10	GND
11	FAN5 PWM	12	GND
13	FAN PWM INPUT	14	KEY PIN
15	MUTE+	16	GND

FAN1~FAN6 Fan Connector Pin Out

1	GND
2	VDD +12V
3	CLOCK
4	PWM

J1, J2 Big 4-pin Power Connector Pin Out

1	VDD +12V
2	GND
3	GND
4	VDD +5V

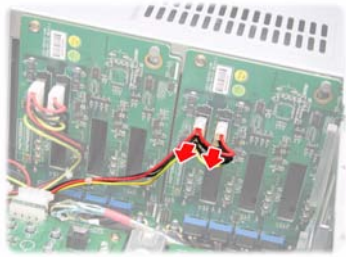
Each system fan connects to the fan board as listed below:

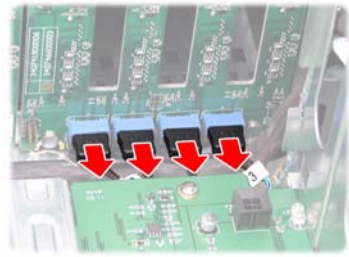
System Fan	Connects to	Fan Board
System Fan1	→	Fan1 connector
System Fan2	→	Fan3 connector
System Fan3	→	Fan5 connector

3.8 Replacing the SAS/SATA Backplane

To replace the SAS/SATA backplane, you need to remove all the fans and the fan cradle first. Refer to the first three steps given in “2.5 Installing the Floppy Disk Drive (Option)”. Then, do the following:

1. Remove all the SAS/SATA hot-swap HDD trays corresponding to the SAS/SATA backplane to be replaced from the FT48-B5382.
2. Disconnect all cables from the SATA/SAS backplane to be replaced.





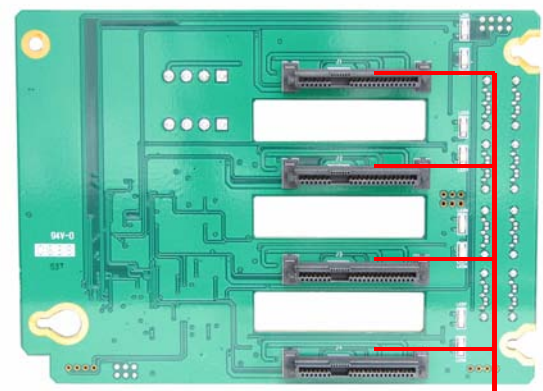
3. Remove the screw holding the SATA/SAS backplane.

4. Lift the backplane from the chassis.

5. Place a new backplane in position and secure in place with one screw. Then reconnect the power and data cables.

3.8.1 M1211 SAS/SATA Backplane Features

Front View

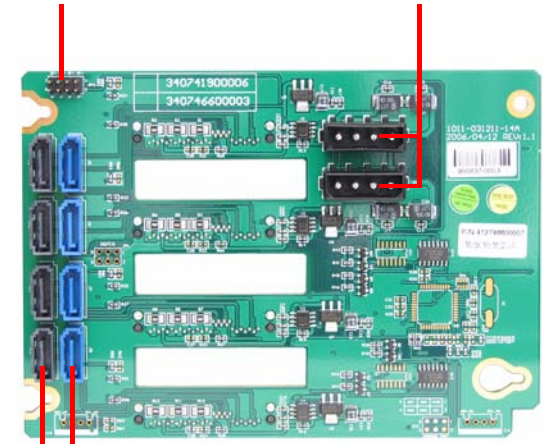


(Top to bottom) J1/J2/J3/J4 29 pin SAS/SATA connectors

Rear View

JP3 2x4 pin header for SAS Hard Disk Failure LED

J13/J14 Big 4P Power Connector



(Top to bottom) J5/J6/J7/J8 (Default) Primary 7 pin connectors

(Top to bottom) J9/J10/J11/J12 (SAS solution only) Secondary 7 pin connectors

3.8.2 M1211 SAS/SATA Backplane Connector Pin Definition

For Hard Disk Fail LED Input

1	HDD AF+	2	HDD AF-
3	HDD BF+	4	HDD BF-
5	HDD CF+	6	HDD CF-
7	HDD DF+	8	HDD DF-

J13 and J14 Big 4-pin Power Connector Pin Out

1	VDD +12V
2	GND
3	GND
4	VCC +5V

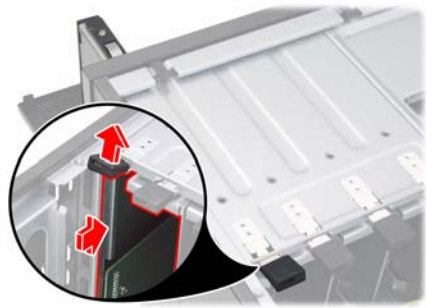
3.9 Replacing the LED Control Board

Follow these instructions to replace the LED control board.

1. Remove the FAN1 in the direction of the arrow from the chassis.

2. Remove all the cables from the LED control board.

3. Unfasten the LED module and slide it out as shown to lift it free of the chassis.

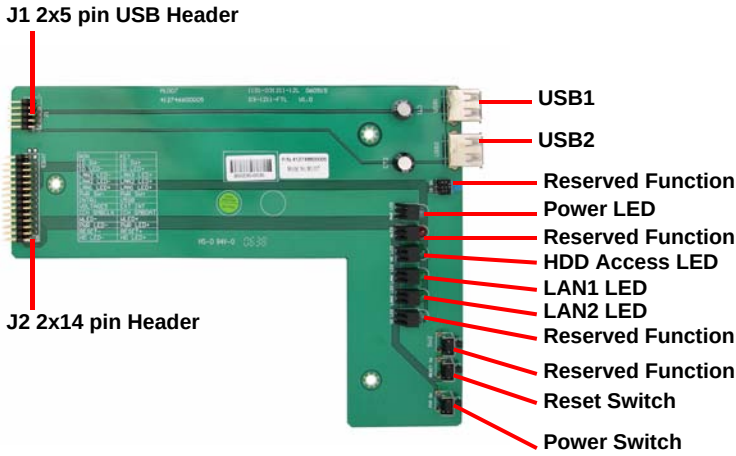


4. Remove the three screws securing the LED control board to the bracket.

5. Slide the LED control board from the bracket as shown.

6. After replacement, insert and secure the unit to the chassis following the above steps in reverse.

3.9.1 M1007 LED Control Board Features



3.9.2 M1007 LED Control Board Connector Pin Definition

J1 2 x 5 Pin USB Header

1	VCC +5V	2	VCC +5V
3	USB1-	4	USB0-
5	USB1+	6	USB0+
7	GND	8	GND
9	KEY PIN	10	GND

J2 2 x 14 Pin Connector

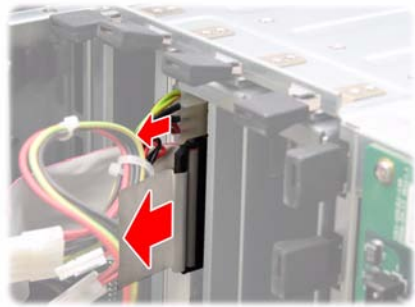
1	HD_LED+	2	HD_LED-
3	RESET+	4	RESET-
5	PW_LED+	6	PW_LED-
7	WLED+	8	WLED -
9	ICH_SMBDAT	10	ICH_SMBCLK
11	EXT_INT	12	VOLTAGES
13	V5SB	14	INTRU#
15	PWR_SW+	16	PWR_SW-
17	LAN1_LED+	18	LAN1_LED+
19	LAN2_LED+	20	LAN2_LED+
21	LAN3_LED+	22	LAN3_LED+
23	ID_LED+	24	ID_LED-
25	ID_SW+	26	ID_SW-
27	KEY PIN	28	NC

3.10 Replacing the DVD-ROM

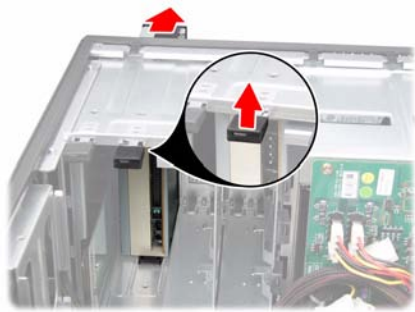
Follow these instructions to replace the DVD-ROM.

1. Remove the FAN1 and FAN2 in the direction of the arrow from the chassis.

1. Remove the power and DVD-ROM cables from the rear of the DVD-ROM drive.



2. Unfasten the DVD-ROM drive and slide it out of the chassis in the direction of the arrow shown.



3. Remove the eight screws securing the two DVD-ROM rails to the drive.

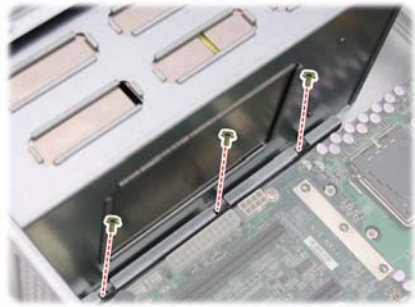
4. After replacement, insert the unit to the chassis following the above steps in reverse.

3.11 Replacing the Power Supply

3.11.1 Standard Power Supply

To replace the power supply follow these instructions.

1. Unplug the power cable from the faulty power supply.
2. Remove the three screws that secure the power supply to the chassis.



3. Remove the five screws securing the power supply to the chassis.

4. Lift the power supply free from the chassis.

5. Pull out the power supply unit from its casing.

6. Remove the four screws securing the cover plate to the power supply unit.

7. After replacement, place and secure the unit into the chassis following the above steps in reverse.

3.11.2 Redundant Power Supply

If the 2+1 redundant power supply is fitted, any of the three units can be hot swapped. Follow these instructions to replace a single power unit with a redundant power supply unit.

1. Install the redundant power supply and secure it with the five screws as shown.

2. Release the redundant power supply by turning thumb screw clockwise.

3. Press the latch and the handle together as shown.

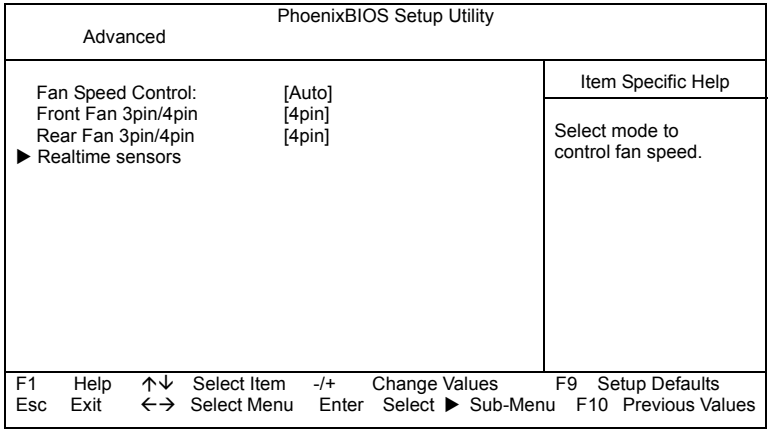
4. Pull out the power supply unit as shown.

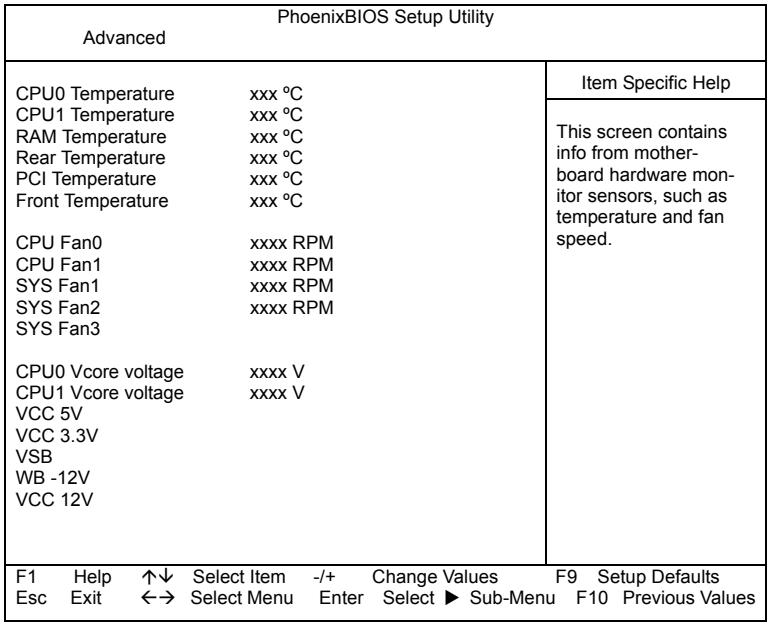
5. Place the unit with the new power supply unit and secure by tightening the thumb screw.

Appendix I: BIOS Differences

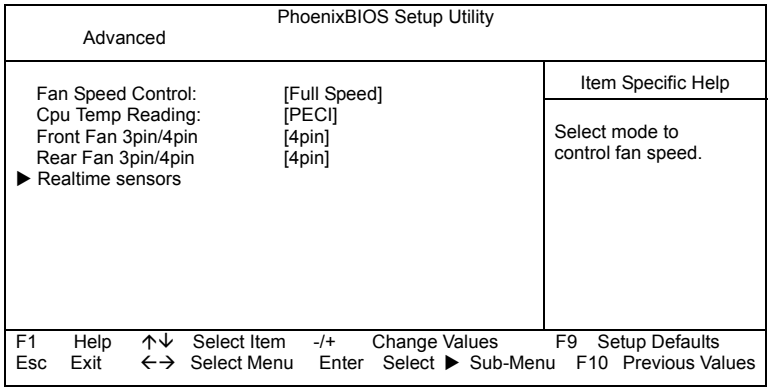
The BIOS of B5382 is similar to the BIOS of S5382. There is only one menu different. You may refer to the attached motherboard manual for the complete BIOS information. The differences between B5382 and S5382 is on the “Advanced/Hardware Health Information” menu. See the following for the differences.

B5382 Advanced/Hardware Health Information





S5382 Advanced/Hardware Monitor Information



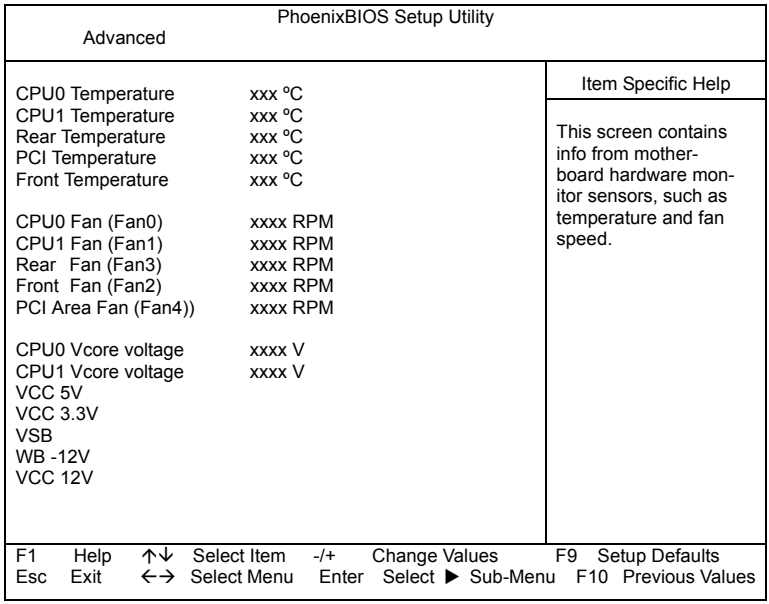


Table of Differences

	S5382	B5382
Auto Fan Control	Full Speed	Auto
Hardware Monitor Fan	CPU0 Fan (Fan0) CPU1 Fan (Fan1) Rear Fan (Fan3) Front Fan (Fan2) PCI Area Fan (Fan 4)	CPU Fan0 CPU Fan1 SYS Fan1 SYS Fan2 SYS Fan3

Appendix II: Cable Connection Tables

SAS/SATA Cables

Table 1: FT48-B5382 Model

M1211 SAS/SATA Backplane 1	Connects to	Motherboard
J8 (HDD1)	→	SAS1
J7 (HDD2)	→	SAS2
J6 (HDD3)	→	SAS3
J5 (HDD4)	→	SAS4
M1211 SAS/SATA Backplane 2	Connects to	Motherboard
J8 (HDD5)	→	SAS5~8
J7 (HDD6)		
J6 (HDD7)		
J5 (HDD8)		

FAN Cables

Table 2: System Fan to Motherboard

System Fan	Connects to	Motherboard
Fan 1	→	P9
Fan 2	→	P8
Fan 3	→	P92

Power Supply Cables

Table 3: Power Supply to Motherboard

Power Supply	Connects to	Motherboard
P1 24-pin power cable	→	PWR1 24-pin connector

Table 3: Power Supply to Motherboard

P2 8-pin power cable	→	PWR2 8-pin connector
P3 8-pin power cable	→	PWR3 8-pin connector

Table 4: Power Supply to Backplane

Power Supply	Connects to	M1211 SAS/SATA Backplane 1
P9 4-pin power cable	→	J13
P8 4-pin power cable	→	J14
Power Supply	Connects to	M1211 SAS/SATA Backplane 2
P11 4-pin power cable	→	J13
P10 4-pin power cable	→	J14

Table 5: Power Supply to FAN Board

Power Supply	Connects to	M1014 FAN Board
P13 4-pin power cable	→	J1
P12 4-pin power cable	→	J2

Table 6: Power Supply to DVD-ROM

Power Supply	Connects to	DVD-ROM
P4 4-pin power cable	→	DVD-ROM 1
P5 4-pin power cable	→	DVD-ROM 2 (option)

Table 7: Power Supply to FDD (Option)

Power Supply	Connects to	FDD
P6 4-pin power cable	→	FDD drive

Other Cables

Table 8: LED Control Board to Motherboard

LED Control Board	Connects to	Motherboard
USB connector	→	P93
Front panel header	→	JP16
		JP31, JP32

Table 9: DVD-ROM Cable to Motherboard

DVD-ROM	Connects to	Motherboard
DVD-ROM 1	→	IDE
DVD-ROM 2 (option)	→	IDE

Table 10: FDD Cable to Motherboard (Option)

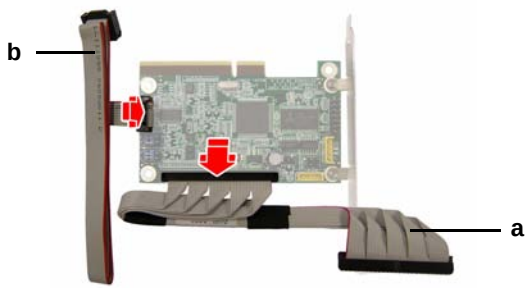
FDD	Connects to	Motherboard
FDD drive	→	Floppy

Appendix III: Installing the SMDC Card (Option)

The following provides you with the information on installing M3291 SMDC card into any PCI slot in your FT48-B5382 system.

1. Secure M3291 on a PCI bracket as shown.

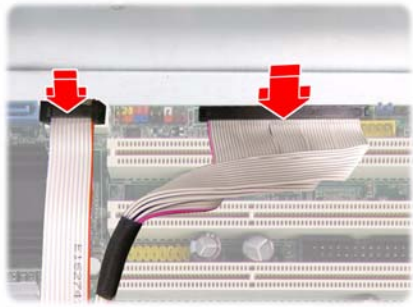
2. Connect the following cables to M3291 as shown.
   a. 2x25 pin SMDC cable to M3291 J1 connector.
   b. 2x5 pin serial cable to M3291 COM port (J2).



3. Unscrew the blanking plate from the slot as shown.
   LifUnscrew the blanking plate from the slot as shown.

4. Lift up the blanking plate.

5. Connect the other end of SMDC cable and serial cable to the SMDC connector (J79) and COM header (J88) on the motherboard.



6. Place the SMDC card in the PCI slot as shown.

7. Secure the PCI bracket with the screw you removed from the blanking plate.

Cable Connection Table

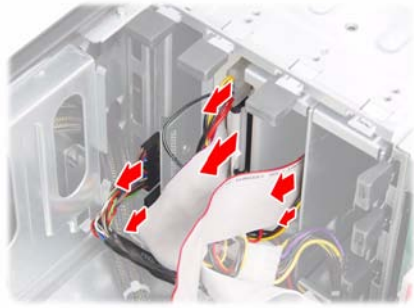
SMDC Card (M3291)	Connects to	Motherboard
J1 connector	→	J79 SMDC connector
J2 COM port	→	J88 COM port pin header

Appendix IV: Rack Mounting (Option)

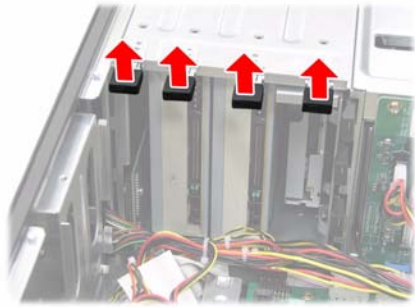
Installing the 5.25” Devices in Rackmount Position

Before mounting the FT48-B5382 in a rack, you need to rotate all the drives to the rackmount position first. Follow the steps as instructed below.

1. Remove all the fans and the fan cradle first. Refer to the first three steps given in “2.5 Installing the Floppy Disk Drive (Option)”.
2. Disconnect all the cables from the devices placed in the 5.25” bays as shown.



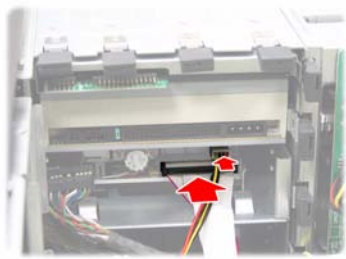
3. Unfasten the installed drives or the empty drive brackets from the chassis in the direction of the arrow shown.

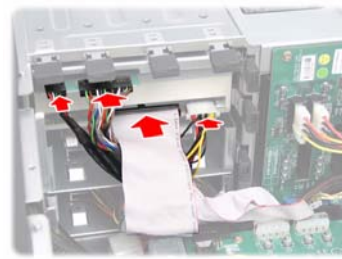


4. Slide all the drives or the brackets out of the chassis.

5. Slide all the drives or the brackets back into the chassis vertically.

6. Replace all the cables to the devices as shown.





7. Remove the front bezel from the door assembly and rotate it 90 degrees counterclockwise as shown.

8. Fit the front bezel back into position.

9. Now, all the drives and the front bezel are in the rackmount position.

Installing the Server in a Rack

The Tank FT48-B5382 can either be set in a tower position using the supplied chassis foot stands or mounted in a standard rack using the sliding rail kit.

Sliding rail kit (Option)

Rail assembly x 2

Mounting Ears x 2

Screws Kit x 3

Follow these instructions to mount the FT48-B5382 into an industry standard 19" rack.

NOTE: Before mounting the Tank FT48-B5382 in a rack, ensure that all internal components have been installed and that the unit has been fully tested. Maintenance can be performed on the unit while in a rack but it is preferable to install the device in a fully operational condition.

Screws List

No.	Screw	Size	Quantity
A		Bracket for M6 screw	10
B		M6	10
C		M4-L5	16

Installing the Inner Rails to the Unit

1. Remove the black panels from the left and right sides of server to reveal the rail mounting screwholes beneath.

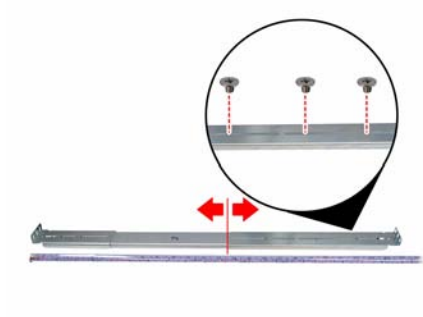
2. Screw the mounting ears to each side of the FT48-B5382 as shown using three M4-L5 screws (C) from the supplied screws kit.

3. Draw out the inner rails from each rail assembly. Install the inner sliding rails to each side of the server using five M4-L5 screws (C).

Installing the Outer Rails to the Rack

4. Measure the distance between inner side of the front and rear mounting brackets in the rack.

5. Adjust the outer rails to fit the length of the rack (the distance measured in step 4). The sliding brackets have long slits to allow them to be fixed to the other part of the rails in various positions.

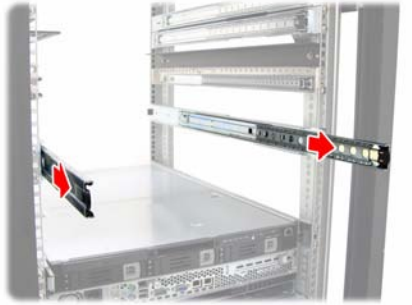


6. Install the two small brackets (A) to each mounting bracket (front x 2, rear x 2) in the rack.

7. Secure the outer rails to the rack using four M6 screws (B) for each side. Secure the mounting brackets from outside, not inside, of the rack.

Rackmounting the Server

8. Draw out the middle rail to the latch position.

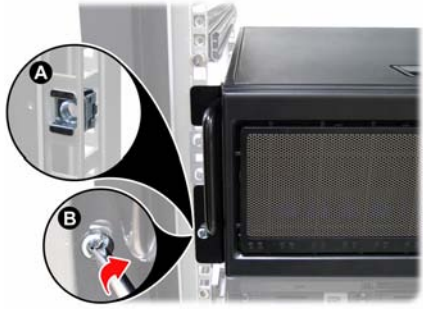


9. Lift the unit and then insert the inner slide rails into the middle rails.

10. Push the unit in and press the latch key.

11. Push the whole system into the rack.

12. Secure the mounting ears of the unit to the rack using two small brackets (A) and M6 screws (B).



Notes:

- When the rails are extended, they will lock. To shorten the rails again, you will need to operate the release mechanism in each rail.
- To avoid injury, it is strongly recommended that two people lift the FT48-B5382 into the place while a third person screws it to the rack.

Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then TYAN Computer Corporation can help.Besides designing innovative and quality products for over a decade, TYAN has continuously offered customers service beyond their expectations. TYAN's website (**www.tyan.com**) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. TYAN also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, TYAN serves multiple market segments with the industry's most competitive services to support them.

"TYAN's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com

Please feel free to contact us directly for this service at **tech-support@tyan.com**

Help Resources:

1. See the beep codes section of this manual.

2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com

3. Contact your dealer for help BEFORE calling TYAN.

4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.