

Transport GT20

B3970-U



Service Engineer's Manual

PREFACE

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Version 1.0

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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 on 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 conforme aux normes de Classe B d'interférence radio tel que spécifié par le Ministère Canadien des Communications dans les règlements 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 Transport GT20. This manual is intended for experienced users and integrators with hardware knowledge of personal computers.

This manual consists of the following parts

- Chapter 1:** Provides an Introduction to the Transport GT20 B3970-U bare-bones, 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, an optional PCI-X card, and hard drives.
- Chapter 3:** Covers removal and replacement procedures for pre-installed components
- Appendix:** Provides information on installing SMDC cards and describes the differences between mainboard BIOS and system BIOS. The cable connection tables are also provided for reference of system setup.

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 Transport GT20, 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 and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure, contact the Power Company.
- The unit uses a three-wire ground cable, which is equipped 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 kind of plug, contact your electrician to replace your obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be in the way of foot traffic.
- 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 done, 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.

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Chapter 1: Overview

1.1 About the Transport GT20 B3970-U

Congratulations on your purchase of the TYAN Transport™ GT20 (B3970-U), a highly-optimized rack-mountable barebone system. The Transport GT20 (B3970-U) is designed to support AMD® Opteron™ 2000 940-pin processor, providing a rich feature set and incredible performance. Leveraging advanced technology from AMD®, the Transport GT20 (B3970-U) server system is capable of offering scalable 32 and 64-bit computing, high-bandwidth memory design, and a lightning-fast PCI-X bus implementation. The Transport™ GT20 (B3970-U) not only empowers your company in today's demanding IT environment but also offers a smooth path for future application usage.

TYAN is also proud to deliver the Transport™ GT20 (B3970-U) in SATA flavor while supporting up to four (4) hot-swap hard drives, one (1) slim CD-ROM and one (1) optional slim floppy disk drive (not included). The Transport™ GT20 (B3970-U) uses TYAN's latest tooling-made chassis featuring a robust structure, tool-less and modularized design, and a solid mechanical enclosure. All of this provides the Transport™ GT20 (B3970-U) the power and flexibility to meet the needs of nearly any server application.

1.2 Product Model

Model	HDD Bays	Hot-Swap Support	HDD Backplane
B3970-UG20V4H	Removable, 4 HDDs	Yes	4-port SATA



1.3 Features

Enclosure

- Industry 19" rack-mountable 1U chassis
 - (4) 3.5" HDD bays
 - (1) slim CD-ROM bay
- Dimension: D 22.4 x W 17.2 x H 1.72 inch (568x436x43.6mm)

Processor

- (1) 1207-pin ZIF socket for AMD[®] Opteron 2000 Series processors
- Integrated 144-bit DDR2 memory controller

Chipset

- Broadcom BCM5785 (HT-1000) core-logic
- SMSC SCH4307 Super I/O

Memory

- Dual channel memory bus
- (8) 240pin DIMM sockets
- Registered, ECC DDR2 module supported, up to 16GB DDR2-667/533

Expansion Slots

- (1) 64-bit / 133MHz PCI-X slot on riser card (Riser card model: M2055)
- (1) Tyan "TARO" SO-DIMM socket

Back I/O Ports

- Stacked PS/2 mouse & keyboard ports
- Stacked 2 USB 2.0 ports
- (1) 9-pin COM port
- (1) 15-pin VGA port
- (2) RJ45 connectors

Front Panel Features

- I/O
 - (2) USB 2.0 ports
- LED indicators
 - Power LED
 - (2) LAN LEDs
 - ID LED
 - HDD active LEDs
- Switches
 - Power

- Reset
- ID

Storage

- Pre-installed slim type 24x CD-ROM
- (4) hot-swappable, SATA HDD

Networking

- (2) Intel i8254PI GbE LAN controllers

Video

- ATI[®] XGI Volari Z7 (XG20)
- 16MB frame buffer memory

Motherboard

- TYAN Tomcat S3970-U 1U system board
- ATX footprint 12" x 10.2" (304.8mm x 259.1mm)

BIOS

- AMI BIOS on 8Mbit LCP Flash ROM
- Serial Console Redirect
- USB boot supported
- ACPI supported
- PnP, DMI2.0, WfM2.0 Power Management

Server Management

- (2) SMSC EMC6D103 Hardware Monitoring IC.
- Temperature and voltage monitoring
- Watch dog timer support
- Chassis intrusion detection

System Cooling

- (4) Sunon 40*40*28mm 14500rpm heavy-duty fans
- (1) passive CPU heatsink

Power Supply

- PS 12V, 1U, 350W

Regulatory

- FCC Class B (Declaration of Conformity)
- CE (Declaration of Conformity)

Environment Temperature

- Operating temperature 5°C~35°C
- Non-operating temperature -40°C ~ 70°C

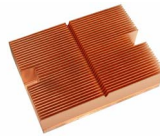
1.4 Unpacking

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.



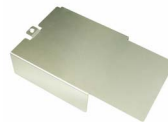
1 x Tyan driver CD



Heatsink



HDD Screws



Air Duct



Mounting Ears & Screws



Power Cables
Left to right: Europe, US

FDD Kit



FDD Cable



FDD Backplane Cable



FDD Installing Rails & Screws



Barebone Manual



Mainboard Manual

Rail Kit



Mounting Bracket x 4



Screws Kit



Sliding Rails x 2

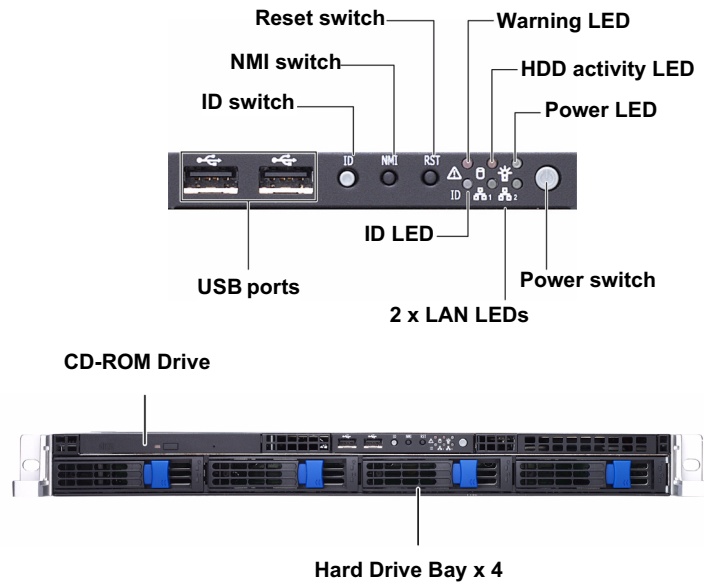


**Sliding Brackets
Front L-Bracket x 2
Rear L-Bracket x 2**

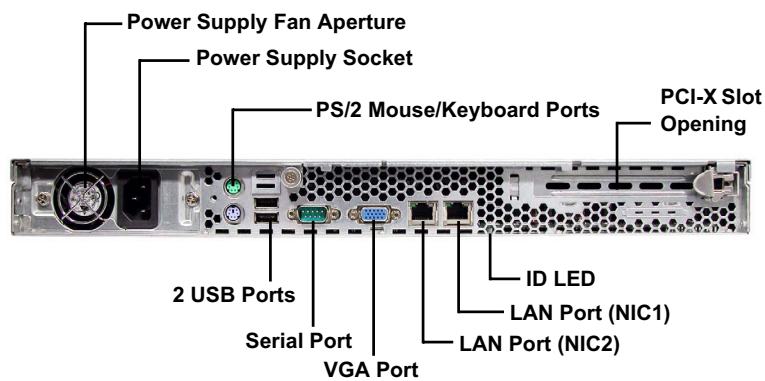
1.5 About the Product

The following views show you the product.

1.5.1 Front View



1.5.2 Rear View



1.5.3 LED Definition

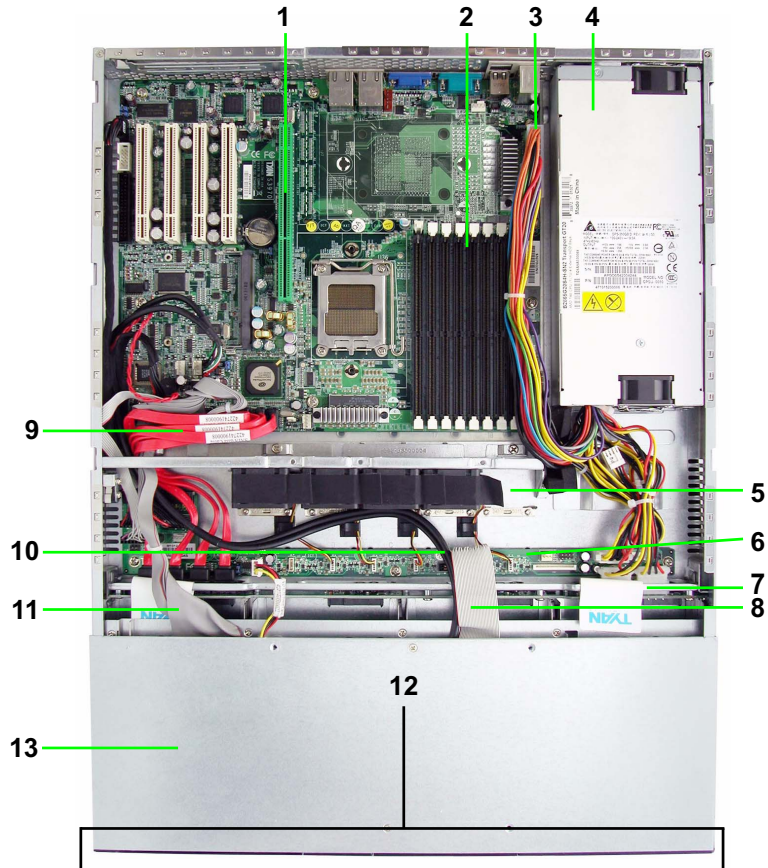
Front Panel

LED	Color	State	Description
Power	Green OFF	ON OFF	Power ON Power OFF
HDD Activity	Amber OFF	Random Blink OFF	HDD access activity No disk activity
LAN1/LAN2 Activity	Green Green OFF	ON Blinking OFF	LAN linked LAN accessing No LAN linked
Warning	Red OFF	ON OFF	Fan fails Normal
ID LED	Blue OFF	ON OFF	System is identified System is not identified
Hot Swappable HDD Tray Power LED	Green OFF	ON OFF	Power connected Power disconnected
Hot Swappable SATA HDD Access LED	Amber OFF	Random Blinking OFF	HDD access activity No disk activity
Hot Swappable SAS HDD Access LED	Amber Amber OFF	ON Random Blinking OFF	HDD ready HDD access activity HDD not ready

Rear I/O LED

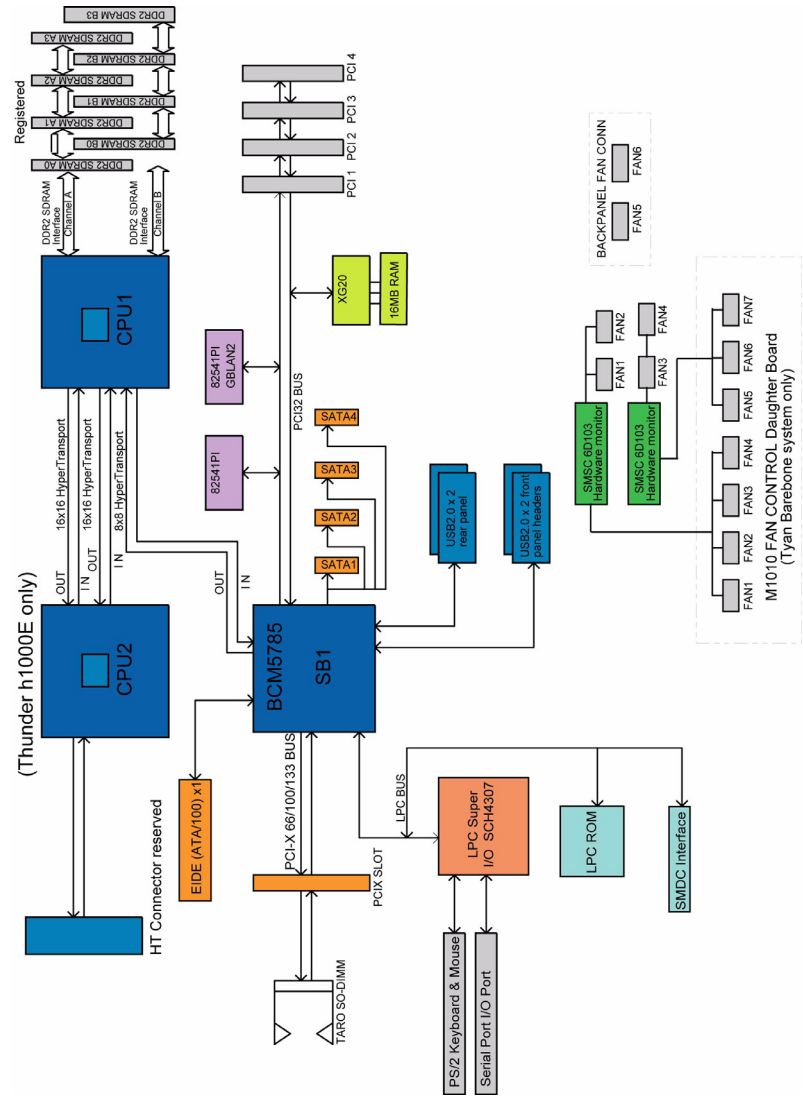
LED	Color	State	Description
RJ45 NIC1 Linkage (Left Side)	Green Green OFF	ON Blinking OFF	LAN linked LAN accessing No LAN linked
RJ45 NIC1 Mode (Right Side)	Amber Green OFF	ON ON OFF	Gigabit mode 100M mode 10M mode
RJ45 NIC2 Linkage (Left Side)	Green Green OFF	ON Blinking OFF	LAN linked LAN accessing No LAN linked
RJ45 NIC2 Mode (Right Side)	Amber Green OFF	ON ON OFF	Gigabit mode 100M mode 10M mode
ID LED	Blue OFF	ON OFF	System is identified System is not identified

1.5.4 Internal View

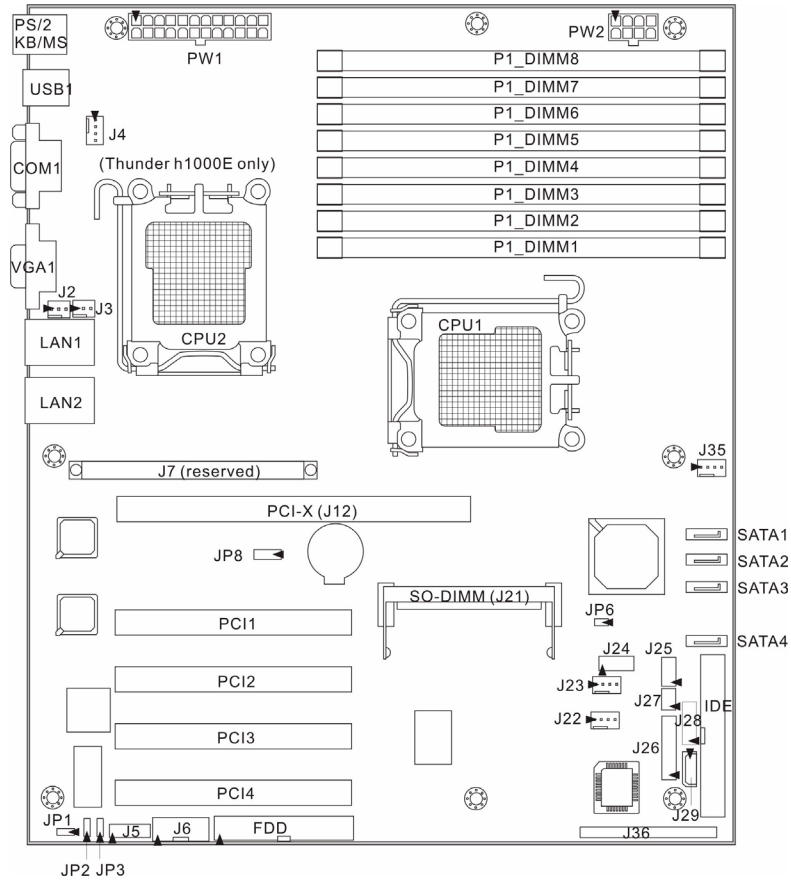


- | | |
|------------------------|----------------------------|
| 1. PCI-X Slot | 8. LED Control Board Cable |
| 2. Memory Slots | 9. SATA Cables (4) |
| 3. Power Connector | 10. USB Cable |
| 4. EPS Power Supply | 11. CD-ROM Cable |
| 5. System Fans | 12. Four SATA HDD Bays |
| 6. M1012 Adapter Board | 13. Slim CD-ROM |
| 7. SATA Backplane | |

1.5.5 Motherboard (S3970) Block Diagram



1.5.6 Motherboard Layout



Jumpers & Connectors

Jumper /Connector	Function
J2/J3	3-pin Back Panel Fan Connector
J4/J22/J23/ J35	4-pin Fan Connector with Speed Control
J6	COM2 Header
J24	USB Front Panel Connector
J25	Front Panel SATA LED Pin Header
J26	Front Panel Header
J27	LCM Pin Header
J29	IPMB Pin Header
JP1	VGA Enable/Disable Jumper (Close 1-2) Default, Enabled (Close 2-3) Disabled
JP2/JP3	SMDC/ASF2.0 Select Jumper (Close 1-2) Default, support ASF2.0 (Close 2-3) support SMDC card
JP6	PCI-X Frequency Select Jumper Open: 100MHz Installed: Default, 133MHz
JP8	Clear CMOS Jumper (Close 1-2) Default (Close 2-3) Clear CMOS
J21	TARO SO-DIMM Socket
J36	SMDC Connector
J5/J28	Reserved for OEM only

Chapter 2: Setting Up

2.0.1 Before You Begin

This chapter explains how to install the CPU, CPU heatsink, memory modules, and hard drives. Instructions on inserting a PCI-X card are also given.

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

2.0.2 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.

2.0.3 Tools

The following procedures 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.

2.0.4 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 Transport GT20 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, 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.

2.1 Rack Mounting

After installing the necessary components, the Transport GT20 can be mounted in a rack using the supplied rack mounting kit.

Rack mounting kit

Sliding Rails x 2:

Sliding Brackets x 4 (Front x 2, Rear x 2)

Mounting Ears x 2

Screws Kit x 1

Mounting Brackets x 4

2.1.1 Installing the Server in a Rack

Follow these instructions to mount the GT20 into an industry standard 19" rack.

NOTE: Before mounting the Transport GT20 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 (including screws for SMDC)

A: Flat 6#-32 x4~x16

B: B-type 6#-32 x4

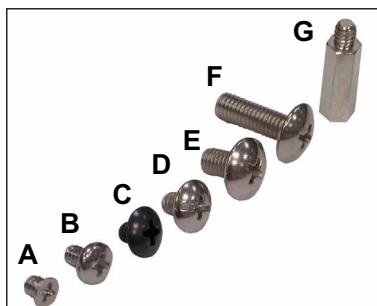
C: M4-4L x8

D: M4-5L x4

E: M4-8L x8

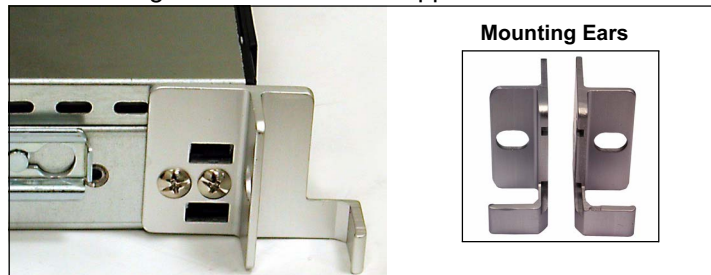
F: M4-15L x2

G: 13.5mm stand-off x1



Installing the Inner Rails to Chassis

1. Screw the mounting ear to each side of GT20 as shown using 2 screws from the supplied screws kit.



2. Draw out the inner rails from rail assembly. Install inner rails to left and right sides of chassis using 2 M4-5L(D) screws for each side.

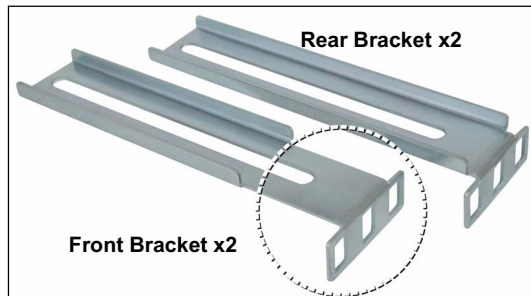


Installing Outer Rails to the Rack

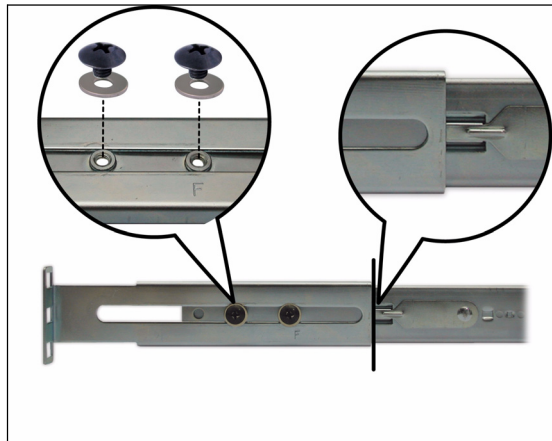
3. Measure the distance between inner side of the front and rear mounting brackets in the rack.



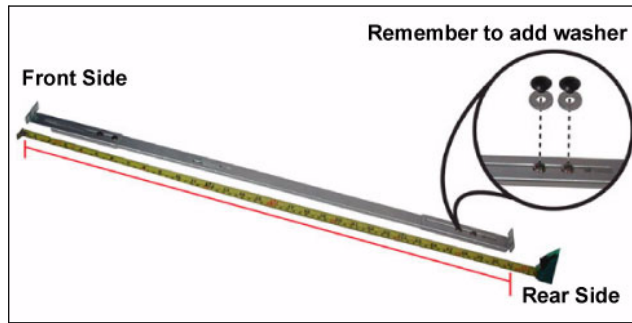
4. Locate the front and rear brackets.



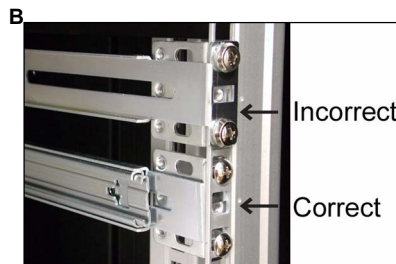
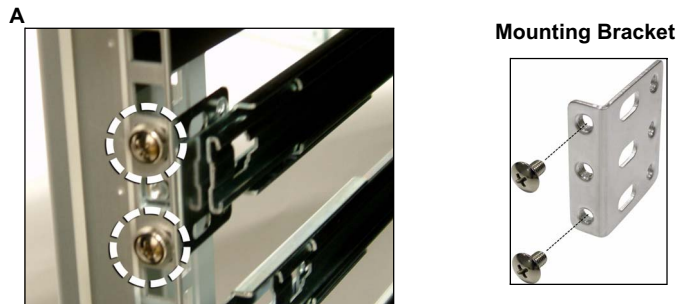
5. Reserve 40mm on the front bracket. Secure the front bracket to outer rail with 2 M4-4L(C) screws.



6. Reserve the distance same as in Step 2 on rear bracket. Secure the rear bracket to outer rail with 2 M4-4L(C) screws.



7. Secure the outer rail to the rack using 2 brackets and 4 M4-8L(E) screws for each side (A). Secure the mounting brackets from inside, not outside, of the rack (B).

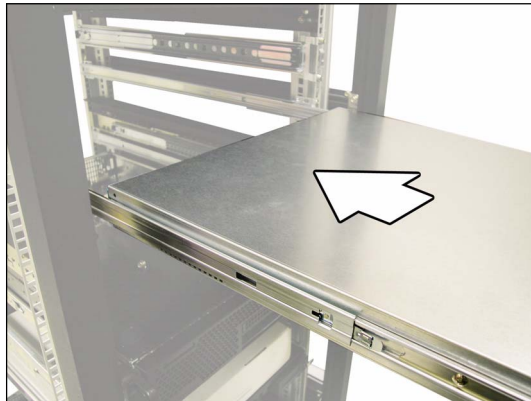


Rackmounting the Server

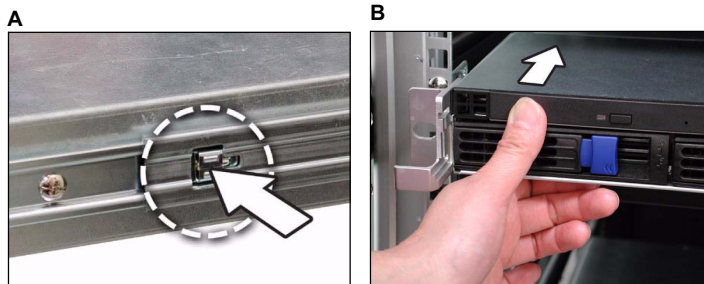
8. Draw out the middle rail to the latch position.



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



10. Push the chassis in and press the latch key (A). Then push the whole system into the rack (B).



11. Secure the mounting ears of chassis to the rack with 2 M4-15L(F) screws.



NOTE: To avoid injury, it is strongly recommended that two people lift the GT20 into the place while a third person screws it to the rack.

2.2 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPU, memory modules and PCI card.

2.2.1 Removing the Chassis Cover

Follow these instructions to remove the Transport GT20 chassis cover.

1. Remove the screw on the back side. Then slide the chassis cover in the direction of arrow.



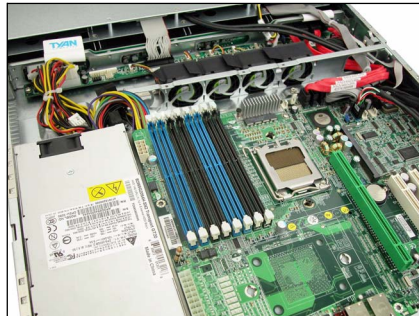
2. Lift the cover off.



2.2.2 Installing the Memory

Follow these instructions to install the memory modules on the motherboard.

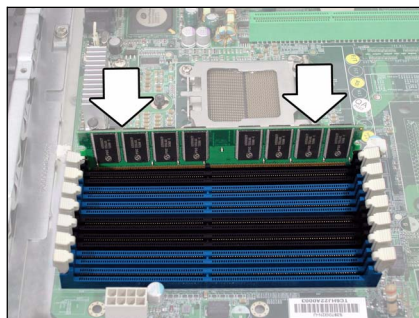
1. Locate the memory slots on the motherboard.



2. Press the memory slot locking levers in the direction of the arrows as shown in the following illustration.



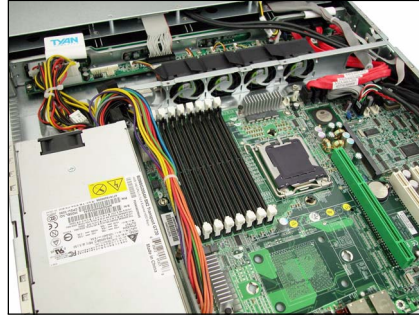
3. Align the memory module with the slot. When inserted properly, the memory slot locking levers lock automatically onto the indentations at the ends of the module. For optimal system operation, please install memory **in pairs**.



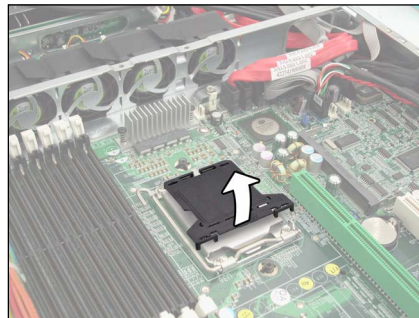
2.2.3 Installing the CPU and Heatsink

Follow these instructions to install the CPU and CPU heat-sink.

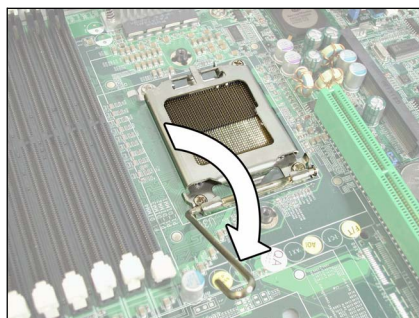
1. Locate the CPU socket.



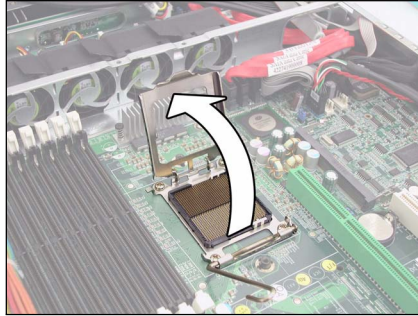
2. Take off the CPU protection cap.



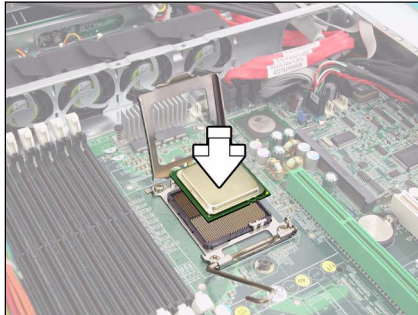
3. Pull the CPU lever up to unlock the CPU socket.



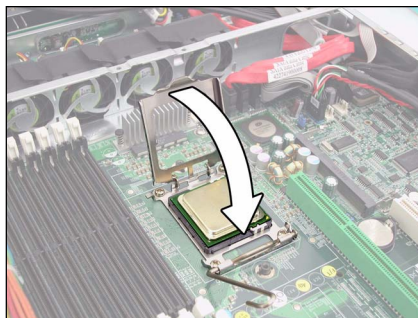
4. Open the socket in the direction as illustrated.



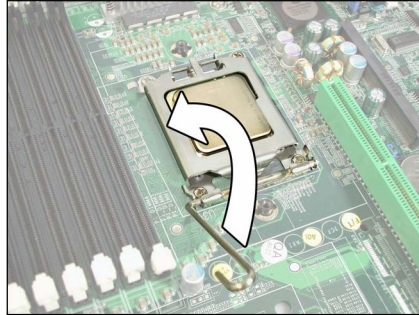
5. Place the CPU on the CPU socket, ensuring that pin 1 is located in the right direction.



6. Close the cover in the direction shown.

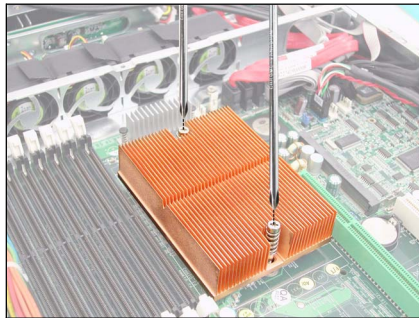


7. Press the CPU socket lever down in the direction shown to secure the CPU.

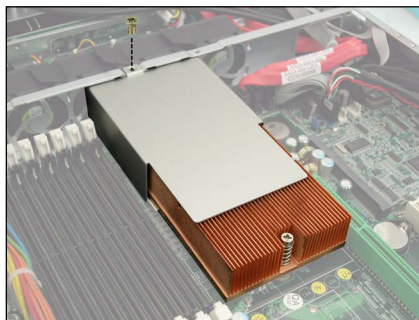


8. Secure the heatsink to the motherboard using two screws.

NOTE: Remember to install the washer and nut while installing the screws.



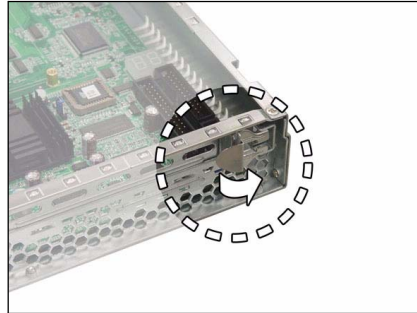
9. Place the air duct with one screw.



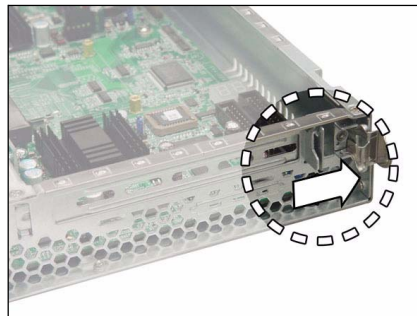
2.2.4 Installing the PCI-X Card

Follow these instructions to install a PCI-X card.

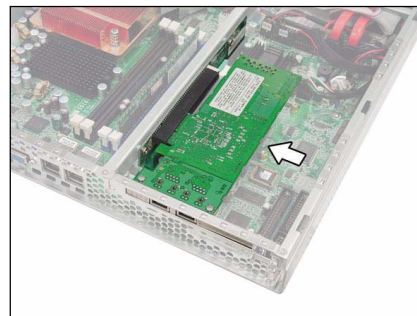
1. Push the tab of PCI-X slot on the rear panel in the direction as shown to release the I/O shield.



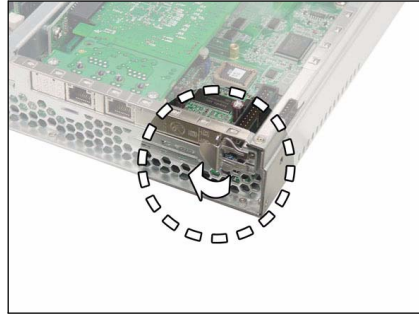
2. Move the I/O shield to right as shown and then take off the I/O shield.



3. Insert the PCI-X card in the directions of arrow as shown.



4. Push the tab of PCI-X slot on the rear panel in the direction as shown to secure PCI-X card.

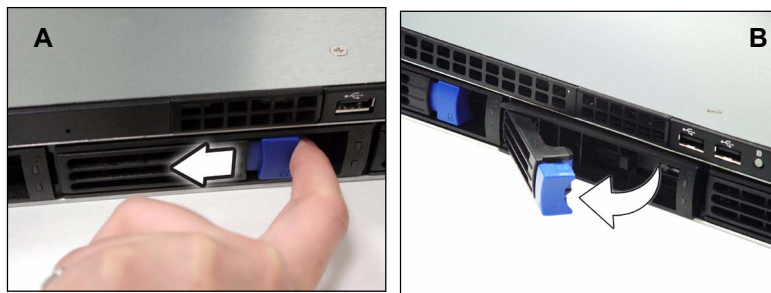


2.3 Installing the External Hard Drive

The GT20 chassis kit supports external SATA or SAS hard drives.

Follow these instructions to install an external SATA or SAS hard drive.

1. Press the locking lever latch in the direction of arrow (A) and then pull the locking lever open (B).



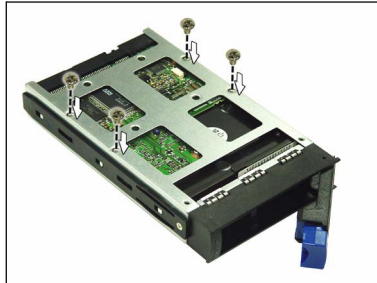
2. Slide the drive tray out.



3. Place a hard drive into the drive tray.



- Using 4 HDD screws to secure the HDD.



- Reinsert the drive tray into the chassis (A), ensuring that the drive tray is completely inserted into the chassis (B).

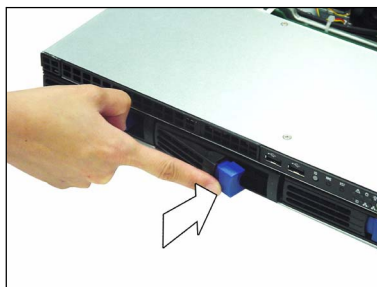
A



B



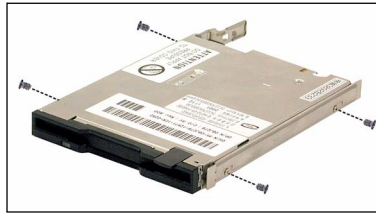
- Pressing the locking lever to secure the hard drive tray.



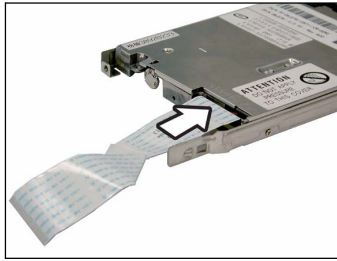
2.4 Installing the Slim FDD (Option)

1. Locate the two FDD rails and screws from the FDD kit. Secure the two rails to FDD using four screws.

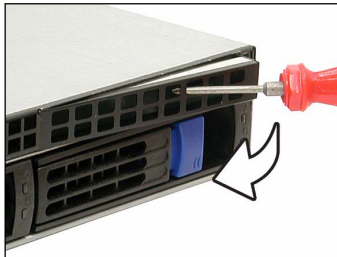
FDD Rails & Screws



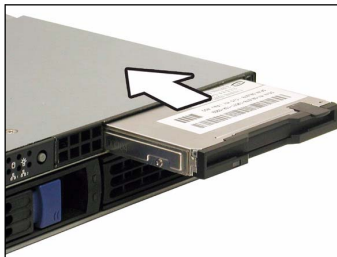
2. Connect the FFC cable to FDD.



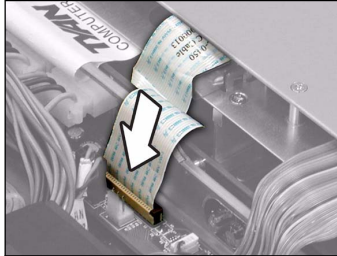
3. Using a screw driver to pull open the door of FDD tray.



4. Insert FDD module into the tray.



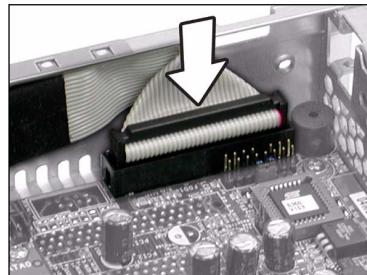
5. Connect the FFC cable to the connector on M1012 adapter board.



6. Locate the FDD cable from FDD kit. Connect the wrinkle side to the connector on M1012 adapter board. Refer to the picture below for the correct direction.



7. Connect the other side to the connector on motherboard.



NOTE

Chapter 3: Replacing Pre-Installed Components

3.1 Introduction

This chapter explains how to replace pre installed components including the motherboard, LED control board, HDD, and CD-ROM drive.

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 Transport GT20 or injury to yourself.

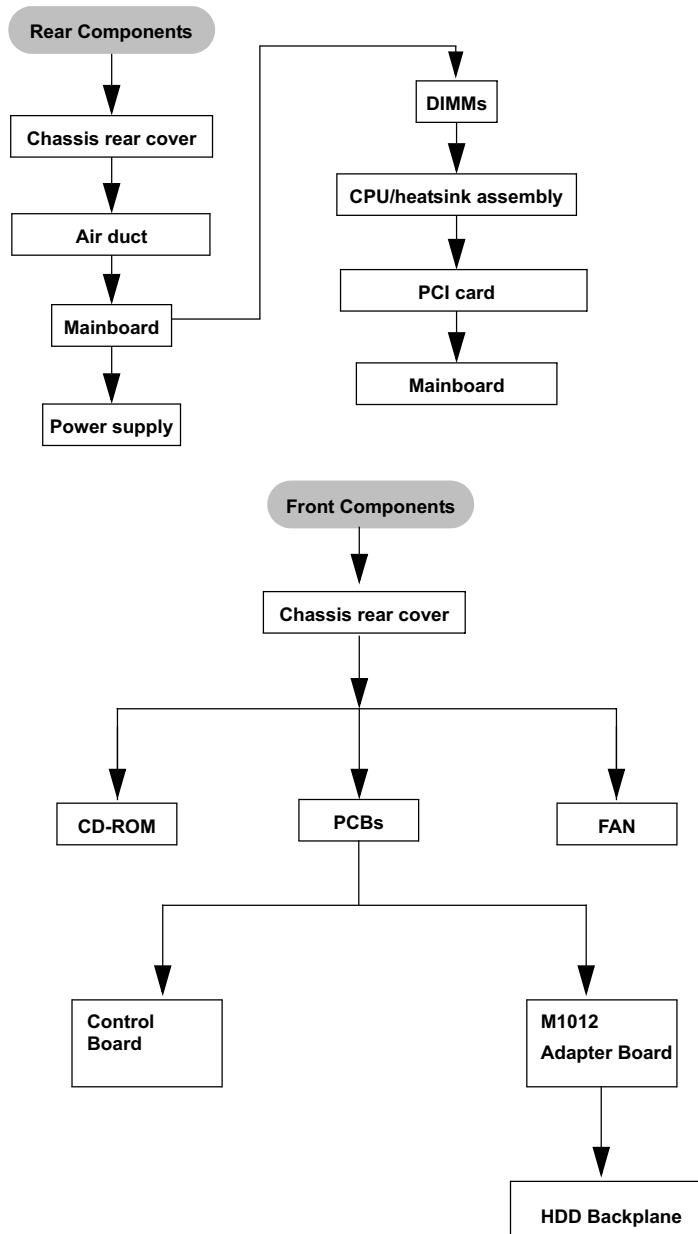
- Ground yourself properly before removing the top cover of the system. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity 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.



3.3 Removing the Cover

Before replacing any parts you must remove the chassis cover.

Follow these instructions to remove the cover of the Transport GT20 chassis cover.

1. Remove the screw on the back side. Then slide the chassis cover in the direction of arrow.



2. Lift the cover off.



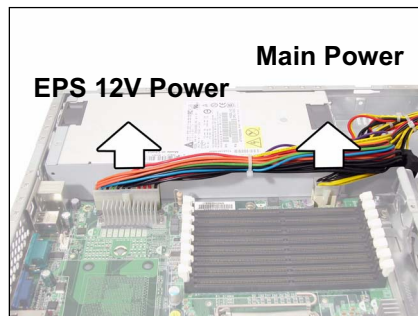
3.4 Replacing Motherboard Components

Follow these instructions to replace motherboard components, including the motherboard.

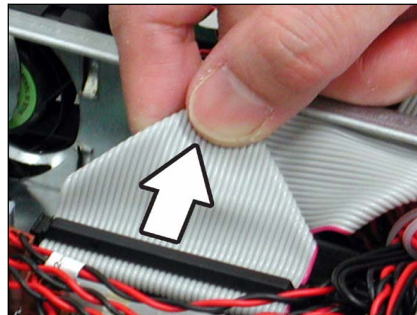
3.4.1 Disconnecting All Motherboard Cables

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

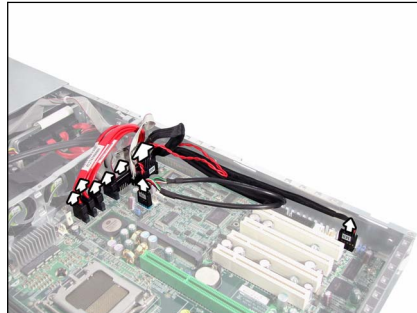
1. Disconnect ATX power cables.



2. Disconnect CD-ROM drive cable.



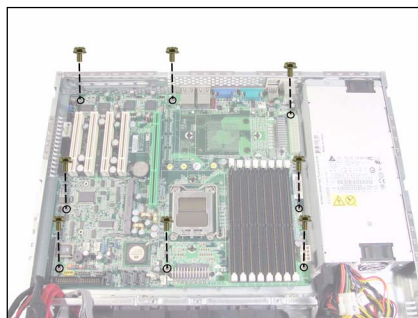
3. Disconnect all cables from front panel, USB, fans and SATA connectors.



3.4.2 Removing the Motherboard

After removing all of those cables, follow these instructions to remove the motherboard from the chassis.

1. Remove eight screws securing the motherboard to the chassis.

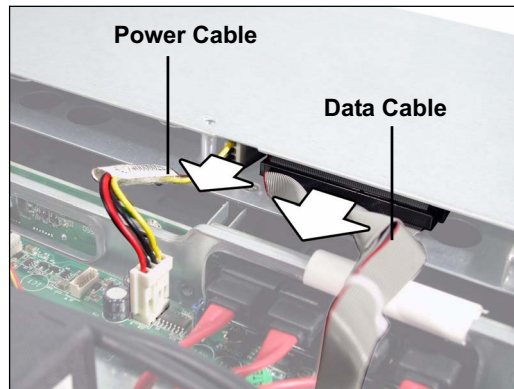


2. Remove the motherboard.

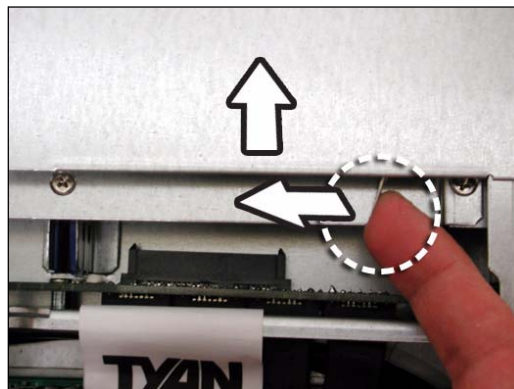
3.5 Replacing the Slim CD-ROM

Follow these instructions to replace the CD-ROM.

1. Remove power and data cables from the slim CD-ROM adapter.



2. Press the tab in the directions as show to release the CD-ROM drive.



3. The CD-ROM drive will be freed from the drive bay after pressing the tab.



4. Remove two screws that secure CD-ROM drive to the bracket.



5. Replace the CD-ROM drive.



6. Secure CD-ROM to the bracket using two screws. Then replace the unit into the drive bay and connect the CD-ROM power and data cables.

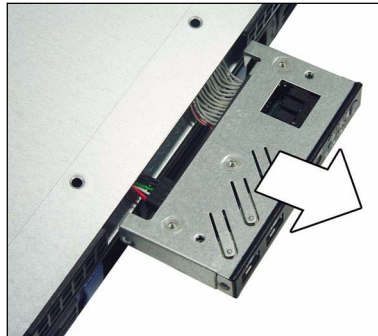
3.6 Replacing the LED Control Board

Follow these instructions to replace the LED control board.

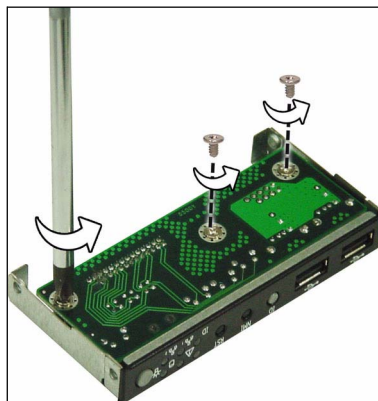
1. Remove two screws securing LED control board unit to the chassis.



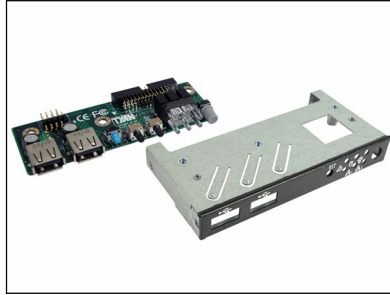
2. Lift the LED control board unit free of the chassis.



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

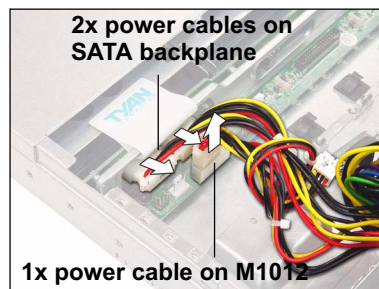
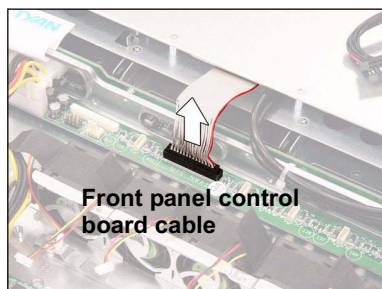
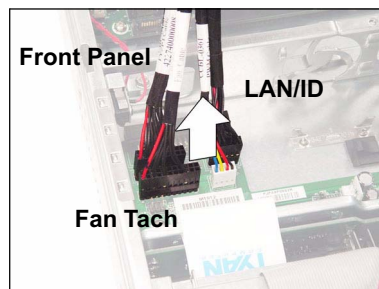
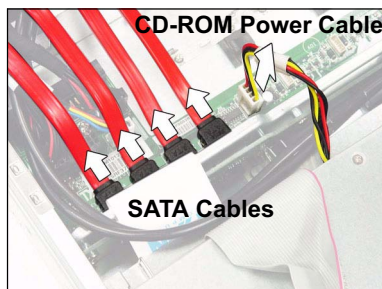


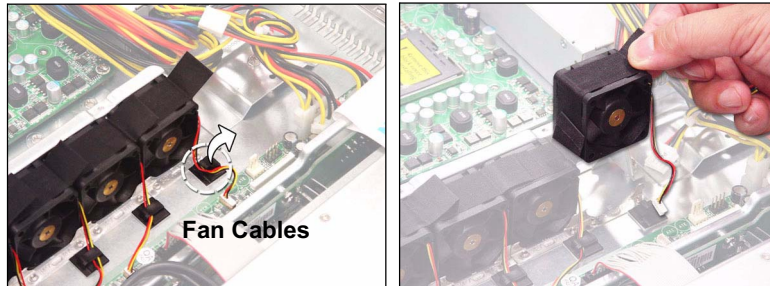
4. Lift the LED control board free from the chassis. After replacement, insert the unit into the chassis.



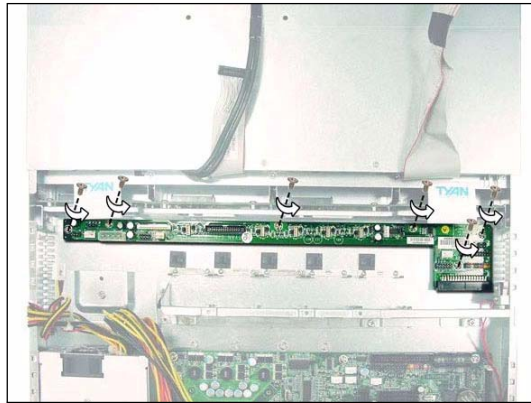
3.7 Replacing the M1012 Adapter Board

1. Remove all of those cables connected to the adapter board, including fan cables, CD-ROM power cable, front LED panel cable, power cables, and SATA cables.

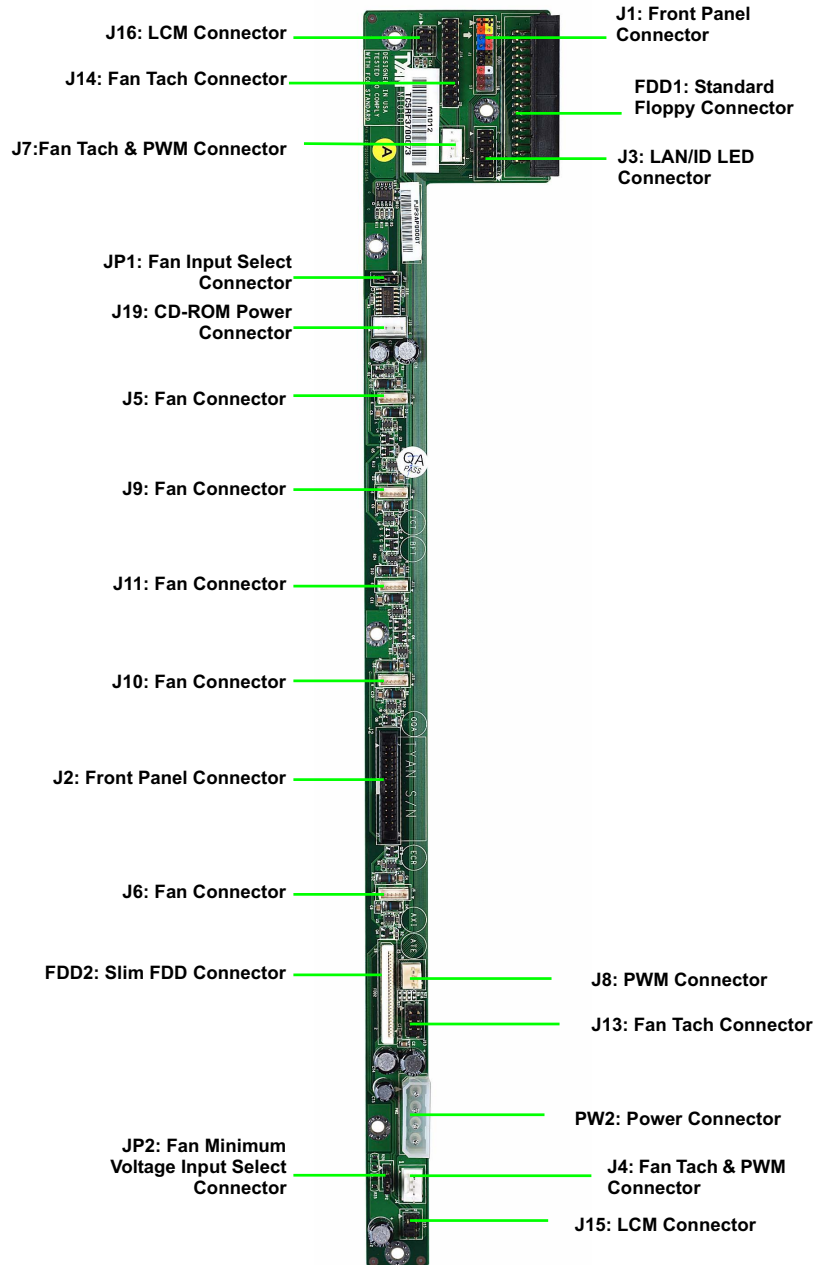




2. Remove six screws to release the adapter board. Refer to p.46 for the location.



3.7.1 M1012 Adapter Board Features for B3970-U



3.7.2 M1012 Adapter Board Connector Pin Definition

J1 TYFP Front Panel Connector

1	HDLED+	2	PW_LED+
3	HDLED-	4	PW_LED -
5	RESET-	6	PWR_SW+
7	RESET+	8	PWR_SW -
9	VOLTAGE5	10	WLED+
11	EXT_INT	12	WLED-
13	V5SB	14	KEY PIN
15	ICH_SMBDAT	16	GND
17	ICH_SMBCLK	18	INTRU#

J2 Front Panel Connector

1	HDLED+	2	HDLED-
3	RESET+	4	RESET-
5	PW_LED+	6	PW_LED-
7	WLED+	8	WLED-
9	ICH_SMBDAT	10	ICH_SMBCLK
11	EXT_INT	12	VOLTAGE5
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

J3 LAN/ID LED Connector

1	LAN1_LED+	2	LAN1_LED-
3	LAN2_LED+	4	LAN2_LED-
5	LAN3_LED+	6	LAN3_LED-
7	ID_LED+	8	ID_LED-
9	ID_SW+	10	ID_SW-
11	KEY PIN	12	NC

FAN Signal Related Connector Pin Definition

NOTE: The FAN signal naming is based on HW circuit design only. It might be different from the system fan naming.

J4 Fan TACH & PWM Connector

1	GND
2	NC
3	FAN1_TACH
4	PWM1 (Default)

J7 Fan TACH & PWM Connector

1	GND
2	NC
3	FAN7_TACH
4	PWM1 (Default)

J8 PWM Connector

1	GND
2	PWM2
3	FAN1_TACH

J13 Fan TACH Connector

1	GND	2	FAN1_TACH
3	GND	4	FAN2_TACH
5	GND	6	FAN3_TACH
7	KEY PIN	8	NC

J14 Fan TACH Connector

1	GND	2	FAN1_TACH
3	GND	4	FAN2_TACH
5	GND	6	FAN3_TACH
7	GND	8	FAN4_TACH
9	GND	10	FAN5_TACH
11	GND	12	FAN6_TACH
13	GND	14	FAN7_TACH
15	GND	16	FAN8_TACH
17	GND	18	FAN9_TACH
19	GND	20	FAN10_TACH
21	KEY PIN	22	PWM

J6 Fan Connector

1	FAN1_12VPWM
2	FAN1_TACH
3	GND
4	GND
5	FAN2_TACH
6	FAN2_12VPWM

J10 Fan Connector

1	FAN3_12VPWM
2	FAN3_TACH
3	GND
4	GND
5	FAN4_TACH
6	FAN4_12VPWM

J11 Fan Connector

1	FAN5_12VPWM
2	FAN5_TACH
3	GND
4	GND
5	FAN6_TACH
6	FAN6_12VPWM

J9 Fan Connector

1	FAN7_12VPWM
2	FAN7_TACH
3	GND
4	GND
5	FAN8_TACH
6	FAN8_12VPWM

J5 Fan Connector

1	FAN9_12VPWM
2	FAN9_TACH
3	GND
4	GND
5	FAN10_TACH
6	FAN10_12VPWM

J15 & J16 LCM Connectors

1	LCM_+5V	2	LCM_SIN
3	KEY PIN	4	GND
5	LCM_+5VSB	6	LCM_SOUT

JP1 Fan Input Select Connector

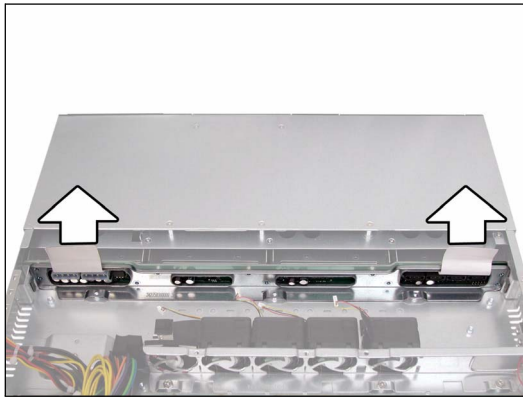
Pin1 & Pin2 Close	Fan PWM signal from J8
Pin2 & Pin3 Close	Fan PWM signal from J4, J7 & J14 (Default)

JP2 Fan Input Select Connector

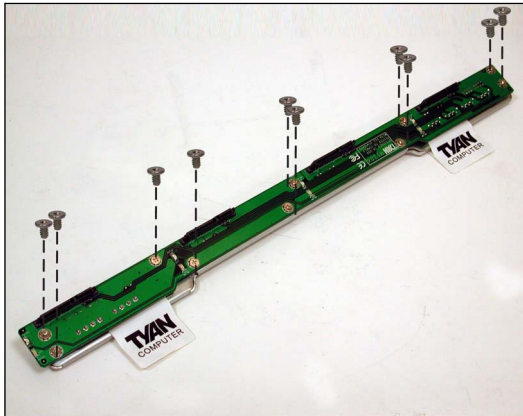
Pin1 & Pin2 Close	0V
Pin2 & Pin3 Close	+5V (Default)

3.8 Replacing the SATA Backplane

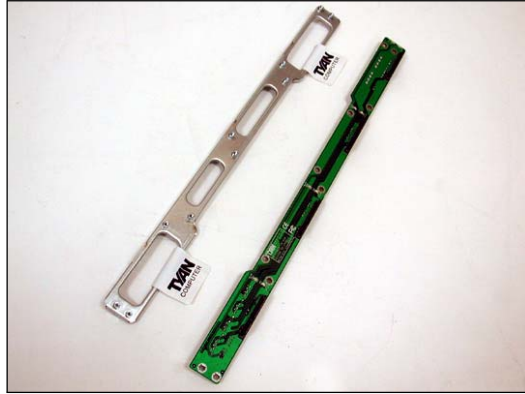
1. After removing the M1012 adapter board, disconnect those cables connected to the SATA backplane, including SATA and power cables.
2. Grab the two tabs to lift the SATA backplane off.



3. Remove ten screws that secure the bracket to the adapter board.

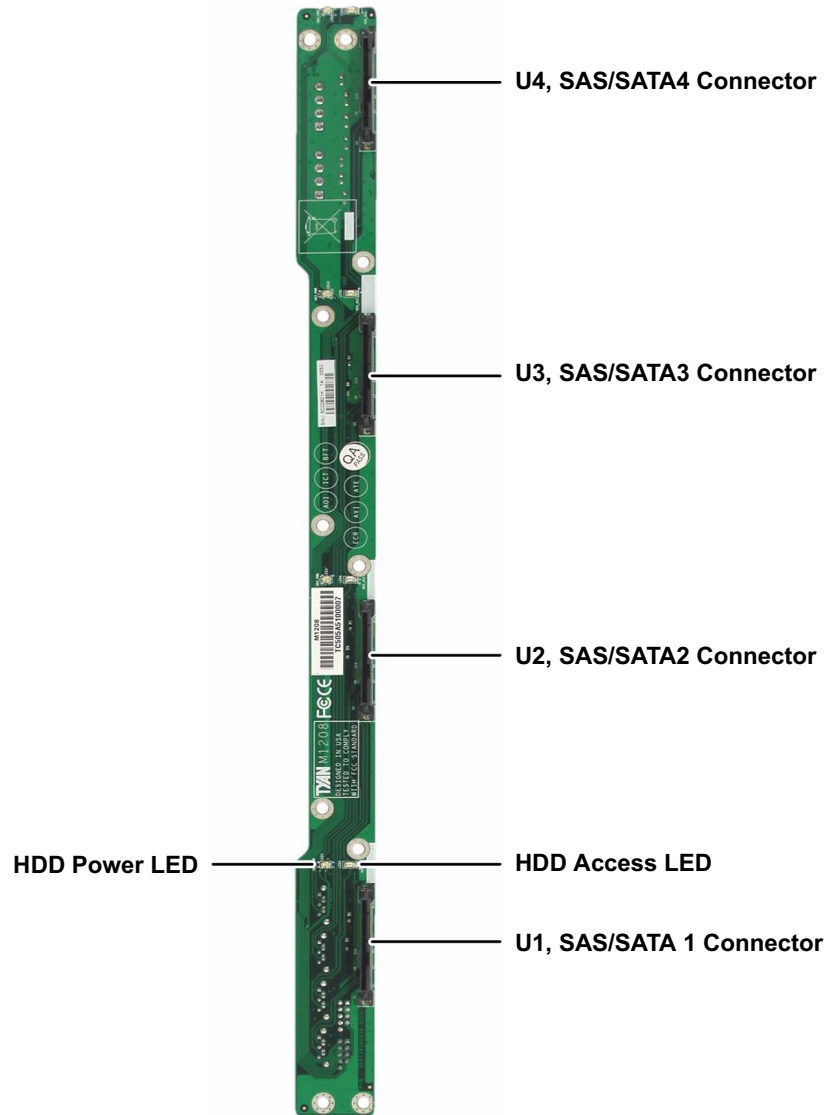


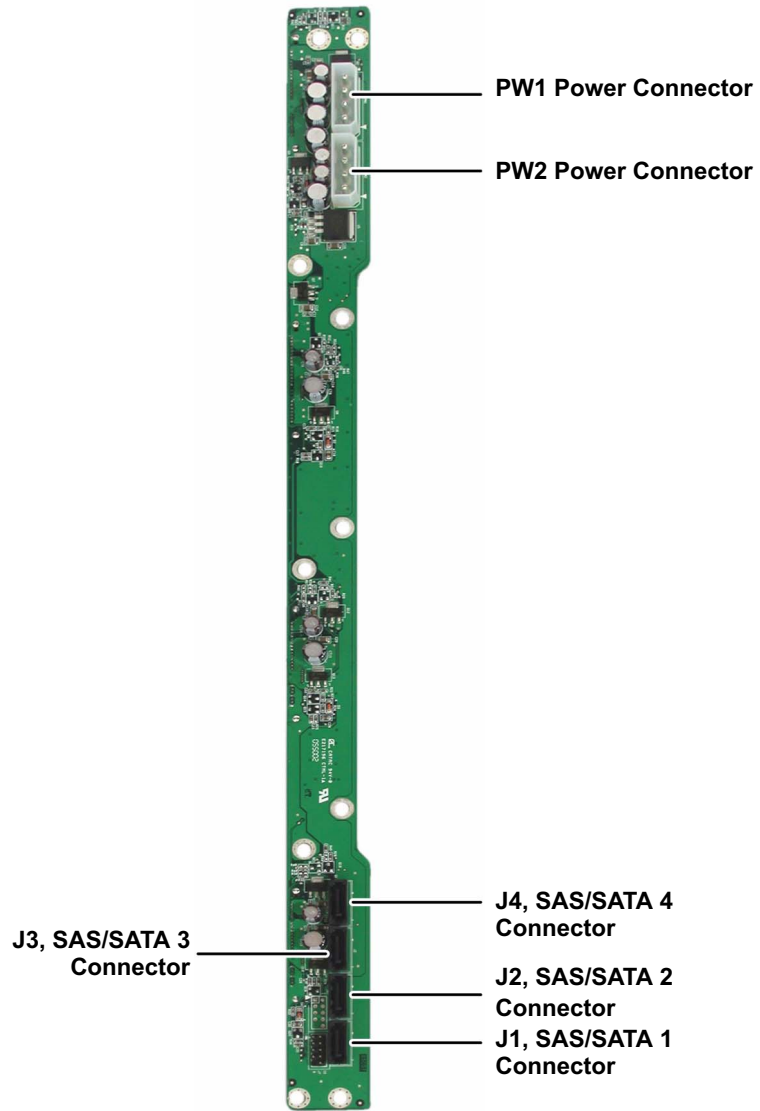
4. Release the adapter board free from the bracket.



5. After replacement, place and secure the unit into the chassis following the reverse procedures from step 1 to 4 after done.

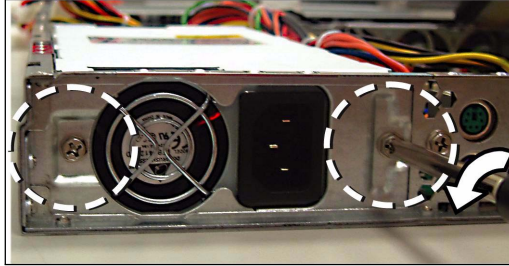
3.8.1 SAS/SATA Backplane (M1208) Features



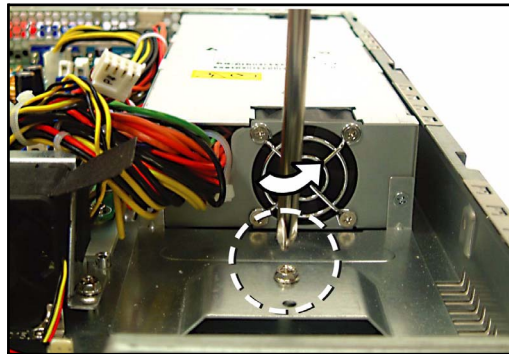


3.9 Replacing the Power Supply

1. Remove two screws securing the power supply to the chassis.



2. Remove the screw securing fan assembly to the chassis.



3. Lift the power supply free from the chassis. After replacement, place and secure the unit into the chassis following the reverse procedures from steps 1 to 2.



NOTE

Appendix I: BIOS Differences

The BIOS of B3970-U is similar to the BIOS of S3970G2N-U. There is only one menu different. You may refer to the attached motherboard manual for the complete BIOS information. The differences between B3970-U and S3970G2N-U is on the “Advanced/Hardware Health Configuration” menu. See the following for the differences.

B3970-U Advanced/Hardware Health Configuration

BIOS Setup Utility	
Advanced	
Hardware Health Configuration	Enables Hardware Health Monitoring Device
H/W Health Function [Enabled]	
FAN Select [3Pin FAN]	
AutoFAN1 Power Control [Enabled]	
PWM Minimal Duty Cycle [10% Duty Cycle]	
FAN Fail LED Indicator [Enabled]	
Hardware Health Event Monitoring	
▶ Mainboard Voltages Report	
CPU1 Temperature :xx °C/ xxx °F	
Mainboard Ambient Temp. :xx °C/ xxx °F	
System FAN1 Speed :xxxx RPM	
System FAN2 Speed :xxxx RPM	
System FAN3 Speed :xxxx RPM	
System FAN4 Speed :xxxx RPM	
	←→ Select Screen ↑↓ Select Item + - Change Option F1 General Help F10 Save and Exit ESC Exit

S3970 Advanced/Hardware Health Configuration

BIOS Setup Utility	
Advanced	
Hardware Health Configuration	Enables Hardware Health Monitoring Device
H/W Health Function [Enabled] FAN Select [4Pin FAN] Auto FAN1, 2 Power Control [Disabled] Auto FAN 3, 4 Power Control [Disabled] FAN Fail LED Indicator [Disabled]	
Hardware Health Event Monitoring	←→ Select Screen ↑↓ Select Item + - Change Option Tab Select Field F1 General Help F10 Save and Exit ESC Exit
▶Mainboard Voltages Report	
CPU1 Temperature :xx °C/ xxx °F Mainboard Ambient Temp. :xx °C/ xxx °F	
FAN1 Speed :xxxx RPM FAN2 Speed :xxxx RPM FAN3 Speed :xxxx RPM FAN4 Speed :xxxx RPM	

Table of Differences

	S3970	B3970-U
FAN Select	4Pin FAN	3Pin FAN
Fan Power Control	Disabled	Enabled
PWM Minimal Duty Cycle	[10% Duty Cycle]	--
FAN Fail LED Indicator	Disabled	Enabled
Hardware Monitor Fan	FAN1 Speed FAN2 Speed FAN3 Speed FAN4 Speed	System FAN1 Speed System FAN2 Speed System FAN3 Speed System FAN4 Speed

Appendix II: Cable Connection Tables

SATA Cable

Table 1: B3970-UG20S4H Model

M1204 SATA Backplane	Connect to	Motherboard
SATA 1	→	SATA 1
SATA 2	→	SATA 2
SATA 3	→	SATA 3
SATA 4	→	SATA 4

FAN Cable

Table 2: System Fan to M1012 Adapter Board

System Fan	Connect to	M1012
Fan 1	→	J6 Fan Connector
Fan 2	→	J10 Fan Connector
Fan 3	→	J11 Fan Connector
Fan 4	→	J9 Fan Connector
Fan 5	→	J5 Fan Connector

Table 3: M1012 Adapter Board to Motherboard

M1012	Connect to	Motherboard Fan
J14	→	J25, J27
J7	→	J20

Power Supply Cable

Table 4: Power Supply to Motherboard

Power Supply	Connect to	Motherboard
P1 24-pin power cable	→	PW1 24-pin connector
P2 8-pin power cable	→	PW2 8-pin connector

Table 5: Power Supply to M1012 Adapter Board

Power Supply	Connect to	M1012
P3 4-pin power cable	→	PW2 4-pin connector

Table 6: Power Supply to M1208 SATA Backplane

Power Supply	Connect to	M1204
P4 4-pin power cable	v	PW1 4-pin connector
P6 4-pin power cable	→	PW2 4-pin connector

Other Cables

Table 7: M1012 Adapter Board to Motherboard

M1012	Connect to	Motherboard
J1 Front Panel connector	→	J24 (TYFP1)
J3 (LAN / ID LED)	→	J5 (TYFP2)

Table 8: M1003 Front Panel Control Board Related Cable

M1003 J1 USB connector	→	Motherboard J22 USB2
M1003 J2 connector	→	M1012 J2 connector

Table 9: CD-ROM Related Cable

Motherboard PRE-IDE connector	→	CD-ROM Backplane
M1012 J19 power connector	→	CD-ROM Backplane

Table 10: FDD Related Cable (Option)

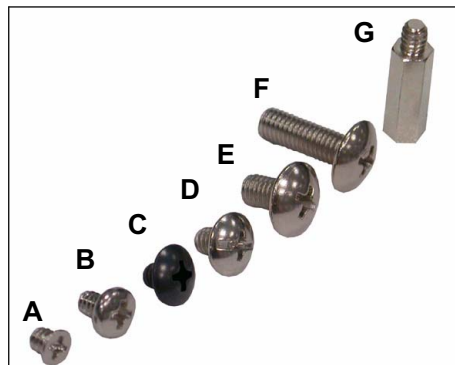
M1012 FDD1 connector	→	Motherboard JB1 FDD
M1012 FDD2 connector	→	Slim FDD drive

Appendix III: Installing SMDC Cards

The following provides you with the information on installing SMDC cards. You may refer to the following for installing M3289 or M3290 into HDD tray or chassis.

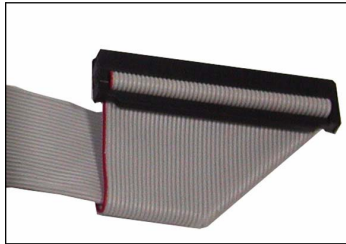
Screws List (including screws for Rail)

- A: Flat 6#-32 x4~x16
- B: B-type 6#-32 x4
- C: M4-4L x8
- D: M4-5L x4
- E: M4-8L x8
- F: M4-15L x2
- G: 13.5mm stand-off x1

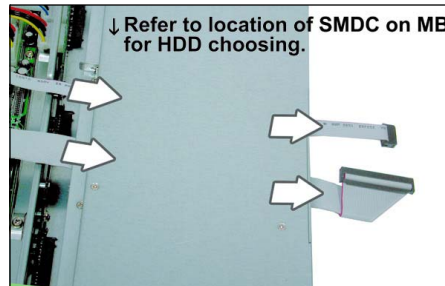


Installing M3289 into HDD Tray

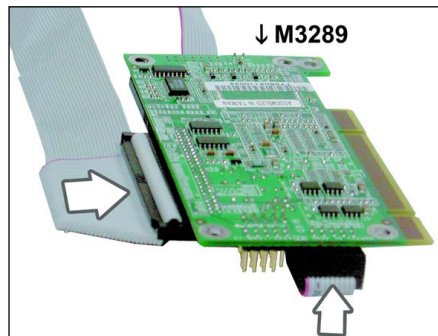
1. Fold up the cable.



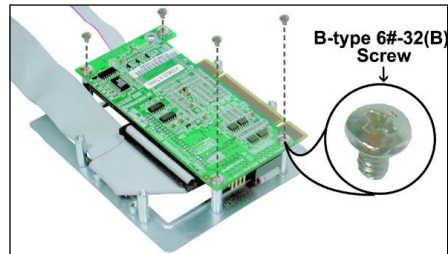
2. a: Choose a HDD tray. b: Insert the cable into the rear of HDD tray. c: Pull the cable out.



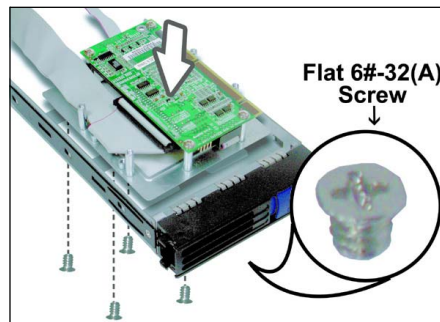
3. Connect the cable to M3289.



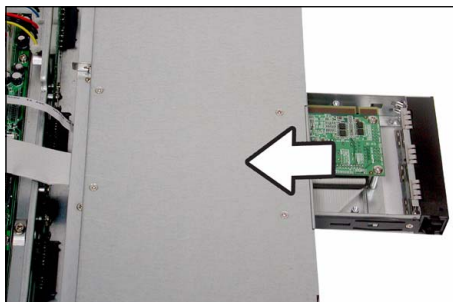
- Align M3289 in reverse with 4 "M1" stand-offs. Secure the SMDC with 4 screws as illustrated.



- Secure M3289 onto HDD tray as illustrated.



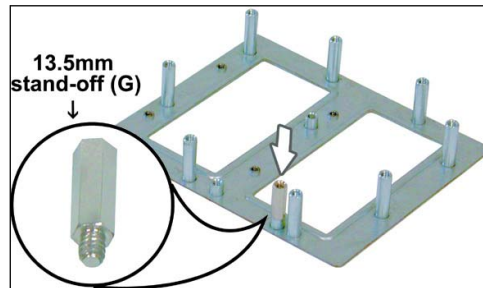
- Insert and secure the HDD tray. **NOTE:** For internal or dummy HDD tray, secure the HDD tray with 1 or 2 screws.



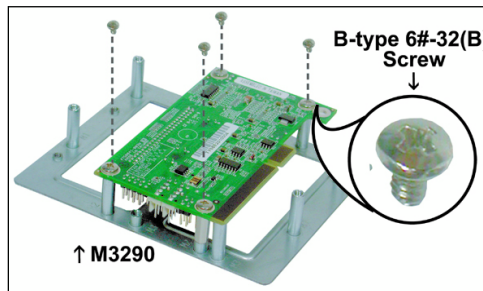
- Arrange and connect the cable to SMDC connector on mainboard. Be careful not to block the air flow.

Installing M3290/M3291 into HDD tray

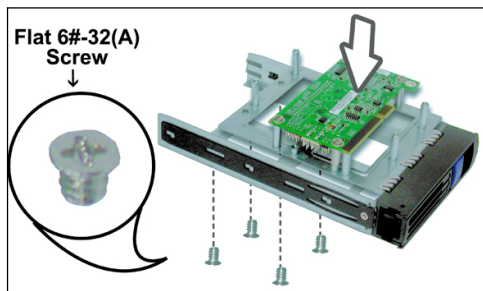
1. Secure a removable stand-off of 13.5mm to the location of "M2" stand-off as illustrated on SMDC bracket.



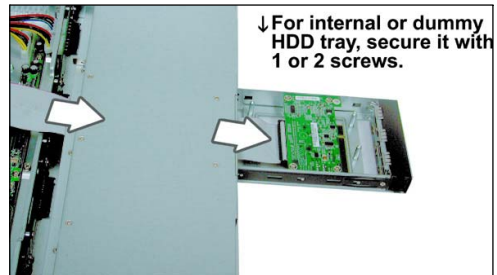
2. Secure M3290 in reverse to 4 "M2" stand-offs on bracket.



3. a: Choose a HDD tray. **NOTE:** Refer to the location of SMDC connector on mainboard for choosing a HDD tray.
b: Secure SMDC to the HDD tray.



4. a: Inset the cable into the rear of HDD tray. b: Connect the cable to M3290. c: Insert and secure HDD tray.

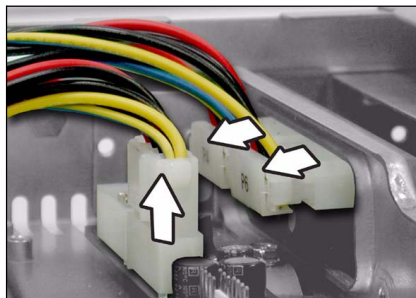


5. Arrange and connect the cable to SMDC connector on mainboard. Be careful not to block the air flow.

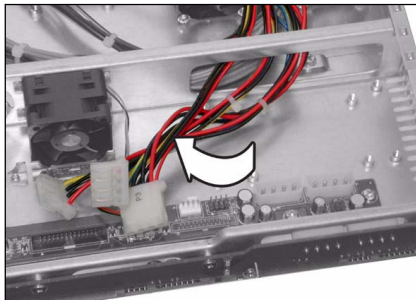
Installing M3290/M3291 into GT24 Chassis

NOTE: The products produced now may not support the procedures below. We'll provide you with the upgraded models as soon as possible.

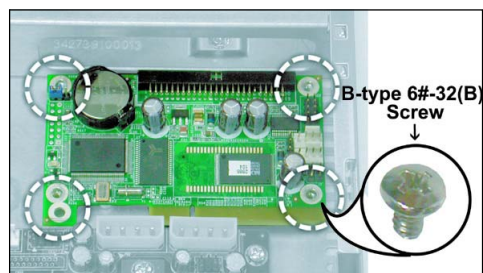
1. Disconnect the power connectors on HDD backplane and M1012.



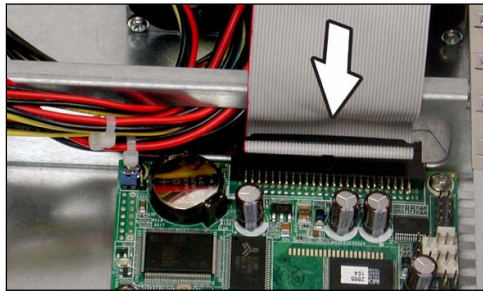
2. Push the power cables aside.



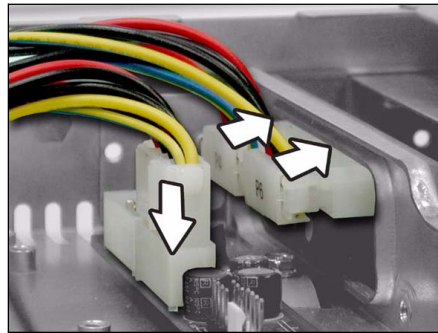
3. Align M3290 with 4 "M2" PC stand-offs. Secure M3290 to mainboard with 4 screws.



4. Connect the cable to M3290. Arrange and connect the cable to SMDC connector on mainboard. Be careful not to block the air flow.



5. Reconnect the power connectors on HDD backplane and M1012.



NOTE

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.main-board.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.

Transport GT20, B3970-U Service Engineer's Manual v1.0
Document part No. D1754-100

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