

## **BBS-2003**

**2U High, Small Box Bare Bone System**

- **2U High, Small Box** •
- **HS-6237 PCI-ISA Bus SBC** •
- **Coppermine 800MHz CPU** •
  - **128MB SDRAM** •
  - **HPS-3S1 Backplane** •
  - **70W Power Supply** •

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## **Safety Instructions**

***Before getting started, read the following important cautions.***

1. The BBS-2003 does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.
2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
3. Disconnect the power cord from the BBS-2003 before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the BBS-2003 is properly grounded.
4. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

*Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.*

*When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.*

## Safety Approvals

- ◆ **CE Marking**
- ◆ **FCC Class A**

## FCC Compliance

This equipment has been tested and complies with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. If not installed and used in accordance with proper instructions, this equipment might generate or radiate radio frequency energy and cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. 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 to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician for help.
5. Shielded interface cables must be used in order to comply with emission limits.



# Chapter 1

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## General Description

This chapter contains the general information and the detailed specifications of the BBS-2003.

### 1.1 General Description



The physical appearance of the BBS-2003 resembles that of a power supply. However this small box houses the HS-6237 PCI-ISA Bus SBC that supports the Coppermine 800MHz CPU.

Although it only stands 2U in high, the BBS-2003 small box manages to equip itself with connectors for VGA, LAN, two COM, two USB, keyboard and mouse for user friendly connections. The front panel features the power switch and power inlet.

The BBS-2003 also offers two internal drive bays for installation of 2.5" hard drives. Enclosure ventilation system features two 5cm ball bearing cooling fans situated on the front panel. These fans guarantee adequate airflow within the chassis.

Powered by a 70W power supply, the BBS-2003 small box's front panel incorporates various connectors for VGA, LAN, two COM, parallel, two USB, keyboard and mouse for connections.

The chassis can also accommodate two 2.5" hard drive spaces. Airflow management within the chassis is fulfilled effectively by two 5cm ball bearing cooling fans on the rear panel.

## 1.2 Features

- 2U high, small box design
- Built-in HS-6237 PCI-ISA Bus SBC
- Built-in Coppermine 800MHz CPU, 128MB SDRAM, HPS-3S1 backplane, 70W power supply
- C&T 69000 CRT/Panel display controller
- Intel 82559ER 10/100 Based LAN
- Two COM, parallel, two USB connectors
- Two PCI expansion slots
- Two 2.5" HDD spaces
- PC/104 Bus connector
- DiskOnChip™ socket supporting memory sizes of up to 288MB
- Two 5cm ball bearing cooling fans

## 1.3 Specifications

- **System Board:** HS-6237 industrial PCI-ISA Bus SBC
- **Backplane:** HPS-3S1 industrial backplane
- **CPU:** Coppermine 800MHz CPU
- **Memory:** Two DIMM sockets supporting up to 512MB
- **Chipset:** Intel 82443BX/82371
- **PCI Slot:** Two PCI expansion slots
- **VGA:** C&T 69000 with 2MB memory supporting CRT/Panel displays up to 1280 x 1024 at 256 colors
- **LAN:** Intel 82559ER 10/100 Based LAN
- **HDD/FDD/CD-ROM:** Two 2.5" HDD spaces
- **Serial Port:** Two RS-232
- **Parallel:** One enhanced bi-directional parallel port supporting SPP/ECP/EPP



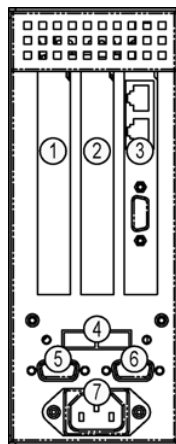
- **PC/104:** PC/104 connector for 16-bit ISA Bus
- **USB:** Two USB connectors
- **Keyboard:** PS/2 6-pin Mini DIN
- **Mouse:** PS/2 6-pin Mini DIN
- **DiskOnChip™:** DiskOnChip™ socket supporting memory sizes of up to 288MB
- **BIOS:** Award PnP Flash BIOS
- **Watchdog Timer:** Sets 1/2/10/20/110/220 seconds activity trigger with Reset or NMI
- **Fan:** Two 5cm ball bearing cooling fans
- **Power Supply:** 70W power supply
- **Temperature:** 0~55° C (operating); -20~+70° C (storage)
- **Dimensions:** 20.52 x 29.7 x 7.97 cm

**NOTE:** For more detailed information on the system engine board used in your Bare Bone, refer to the system board User's Manual that came with the system packaging.

## 1.4 I/O Outlets

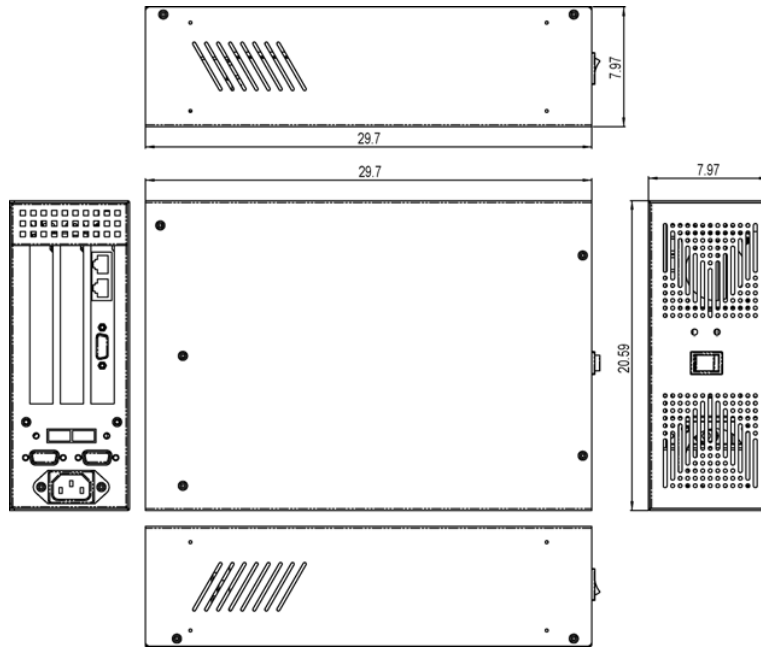
The following figure shows the I/O arrangement of the BBS-2003.

BBS-2003 Back Panel



NO.	Description
1	PCI Expansion Slot
2	PCI Expansion Slot
3	Single Board Computer
4	Two USB Connectors
5	COM Port Connector
6	COM Port Connector
7	AC Power In

## 1.5 Dimensions



# Chapter 2

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## Unpacking

### 2.1 Opening the Delivery Package

The BBS-2003 is packed in an anti-static bag. The board has components that are easily damaged by static electricity. Do not remove the anti-static wrapping until proper precautions have been taken. Safety Instructions in front of this manual describe anti-static precautions and procedures.

### 2.2 Inspection

After unpacking the board, place it on a raised surface and carefully inspect the board for any damage that might have occurred during shipment. Ground the board and exercise extreme care to prevent damage to the board from static electricity.

Integrated circuits will sometimes come out of their sockets during shipment. Examine all integrated circuits, particularly the BIOS, processor, memory modules, ROM-Disk, and keyboard controller chip to ensure that they are firmly seated. The BBS-2003 delivery package contains the following items:

- ◆ BBS-2003 Bare Bone System x 1
- ◆ 70W Power Supply x 1
- ◆ AC Power Core x 1
- ◆ Utility Disc x 1
- ◆ BBS-2003 User's Manual x 1
- ◆ HS-6237 User's Manual x 1

The BBS-2003 system along with its accessories is packed in several bags and boxes, all packed in one carton. Before you start, carefully read the safety instructions in front of this User's Manual.

It is recommended that you keep all the parts of the delivery package intact and store them in a safe/dry place for any unforeseen event requiring the return shipment of the product. In case you discover any missing and/or damaged items from the list of items, please contact your dealer immediately.

# Chapter 3

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## System Configuration

This chapter details the system parts and components with figures. Sections include

- System Major Parts

### 3.1 System Major Parts

Refer to the following diagrams to identify the major parts that make up the BBS-2003. The frame and accessories of this computer are mainly made of metals. The use of such mixture not only increases the hardness and fireproof but also beautify the tinge and coating of the finished unit.

#### 3.1.1 Major Parts Description

1. **System Fan:** For sufficient airflow inside the system, two 5cm system fan is installed on the power supply bracket to dispense the system heat and stabilize the system during operation.
2. **Multi I/O Board:** This is the peripheral port that comes in one model. For BBS-2003, the port outlets include CRT, RJ-45, two COM, two USB, keyboard and mouse. It also provides two PCI expansion slots.
3. **Power Supply:** The power supply adapted in this computer is a 70W power that meets FCC/UL Class B specification.
4. **Hard Disk Drive:** This is the hard disk drive unit of the system.
5. **System control board:** System engine board used for BBS-2003 is BOSER's HS-6237 or other half-size SBC.
6. **Power Switch:** This switch on front panel controls the system power on/off.

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# Chapter 4

## Power Supply

The power supply used in the BBS-2003 is a 70W AT power supply. The specifications and features of this special power supply are listed in the following sections.

### 4.1 Specifications

#### 4.1.1 Input Specifications

- **Input Voltage:** The range of input voltage is from 85VAC to 270VAC
- **Input Frequency:** The range of input frequency is from 47HZ to 63HZ
- **Input Current:** The maximum input current is 2A at 115VAC or 1A at 230VAC
- **Inrush Current:** The inrush current will not exceed 30A at 115VAC input or 60A at 230VAC input, cold start, 25°C, with exclusion of EMI suppression capacitors

#### 4.1.2 Output Specifications

- **Load Range:** At factory, the all outputs at min. load conditions, the +5V output is set to between 5~5.1V, and the other outputs are checked to be within the specified voltage accuracy range

Output	Min. Load	Rated Load	Peak Load	Voltage Accuracy
+5V	0A	10A	12A	5.0 ~ 5.1V
+12V	0A	1.5A	2.5A	11.2 ~ 11.6V
-12V	0A	0.3A	----	-10.8 ~ -12V

- **Ripple and Noise:** The peak to peak ripple and noise for output is less than 1% of output voltage at rated load. Measuring is done by 15MHz band-width limited oscilloscope and terminate each with a 0.47uF capacitor
- **Line Regulation:** The line regulation for each output is less than +/-2% while measuring at rated load and +/-10% of input voltage changing
- **Load regulation:** The load regulation for +5V is less than +/-3%, for +12V is less than +/-4%, for -12V is less than +/-5%, measuring is done by changing the measured output load +/-40% from +/-60% rated load, and keep other outputs at 60% rated load

### 4.1.3 General Features

- **Efficiency:** The efficiency is 70% typical while measuring at nominal line and rated load
- **Hold up time:** The hold up time is longer than 16mS at 115VAC input and rated load, which is measured from the end of the last charging pulse to when the main output drops down to 95% output voltage
- **Protection:** For some reason the power supply fails to control itself, the build-in over voltage protection circuit will shut down the outputs to prevent damaging external circuits. The trip point of crowbar circuit is around 5.7~7.0V. The power supply will go into latch-off mode against short circuit or over load conditions, and have to OFF and ON the AC input to restart the power supply

### 4.1.4 Environmental Specifications

- **Temperature:** 0~50 °C (operating); -40~+85 °C (storage)
- **Altitude:** Will operate properly at any altitude between 0~10,000 ft

### 4.1.5 International Standards

- **Safety and EMI Standards**  
Designed to meet the following standards:  
UL 1950 D3 / CSA 22.2 NO.234 / VDE EN 60950  
FCC docket 20780 curve "B" / VFG 243

### 4.1.6 Mechanical Specification

- **Dimensions:** 7.62 x 12.7 x 3.86 cm. Tolerance specified is +/-0.4mm.
- **Connectors:**  
TB1 – AC Input: Molex 5277-02A or equivalent  
TB2 – DC Output: Molex 5273-04A or equivalent  
TB3 – for Fan Use Only: Molex 5045-02A or equivalent
- **DC Output Pin Assignment**

Pin	Description	Pin	Description
1	+5V	2	+5V
3	+5V	4	GND
5	GND	6	GND
7	+12V	8	-12V