

BBS-2002

1U High, Small Box Bare Bone System

- **1U High, Small Box •**
- **HS-5230CF PCI-ISA Bus SBC •**
- **300MHz Low Power CPU •**
- **45W Power Supply •**

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Safety Instructions

Before getting started, read the following important cautions.

1. The BBS-2002 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-2002 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-2002 is properly grounded.
4. The brightness of the flat panel display decreases with usage. However, hours of use vary depending on the application environment.
5. The flat panel display is not susceptible to shock or vibration. When assembling the BBS-2002, make sure it is securely installed.
6. 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

General Description

This chapter contains the general information and the detailed specifications of the BBS-2002. Chapter 1 includes the following sections:

- **General Description**
- **Features**
- **Specifications**
- **I/O Outlets**
- **Utilities Supported**
- **Dimensions**

1.1 General Description



Enclosed in a 1U small box structure, the physical appearance of the BBS-2002 may seem to be identical to a high-powered DC power supply, but do not let its physical attributes mislead you. This small box houses a semi-functional system based on the HS-5230CF PCI-ISA Bus SBC that supports a Cyrix Geode GX1 300MHz low power embedded CPU.

Powered by a 45W power supply, the BBS-2002 small box's front panel incorporates various connectors for VGA, dual LAN, 4 COM, keyboard and mouse for user friendly connections. An exclusive COM port slot is reserved for future connection to the HS-5230CF PCI-ISA Bus SBC.



The chassis can also accommodate one 2.5" hard drive space. Airflow management within the chassis is fulfilled effectively by two 4cm ball bearing cooling fans on the rear panel.

1.2 Features

- 1U high, small box design
- Built-in HS-5230CF PCI-ISA Bus SBC
- Built-in 300MHz low power CPU, 45W power supply
- Cyrix CX5530 CRT/Panel display controller
- Dual RealTek RTL8100 10/100 Based LAN
- Cyrix CX5530 3D audio controller
- CompactFlash card adapter, four COM, two USB connectors
- One 2.5" HDD space
- PC/104 Bus connector
- DiskOnChip™ socket supporting memory sizes of up to 288MB
- Two 4cm ball bearing cooling fans

1.3 Specifications

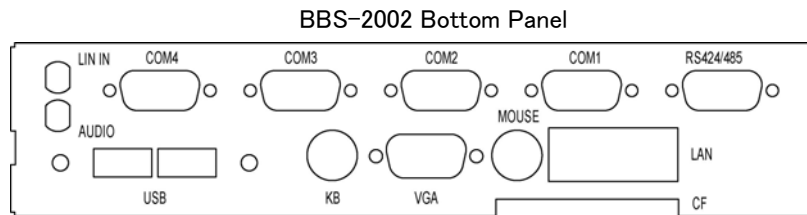
- **System Board:** HS-5230CF industrial PCI-ISA Bus SBC
- **CPU:** Cyrix Geode GX1 300MHz low power embedded CPU
- **Memory:** One DIMM socket supporting up to 256MB
- **Chipset:** Cyrix Geode GX1/CX5530
- **CompactFlash:** One, IDE interface adapter
- **VGA:** Cyrix CX5530 with 4MB shared main memory supporting CRT/Panel displays up to 1024 x 768 at 16-bit colors
- **LAN:** Dual RealTek RTL8100 10/100 Based LAN
- **Audio:** Cyrix CX5530 3D audio controller
- **HDD/FDD/CD-ROM:** One 2.5" HDD space
- **Serial Port:** One RS-232/422/485 and three RS-232, OR four RS-232
- **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 4cm ball bearing cooling fans
- **Power Supply:** 45W power supply
- **Temperature:** 0~55 °C (operating); -20~+70 °C (storage)
- **Dimensions:** 20.52 x 27.5 x 4.47 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

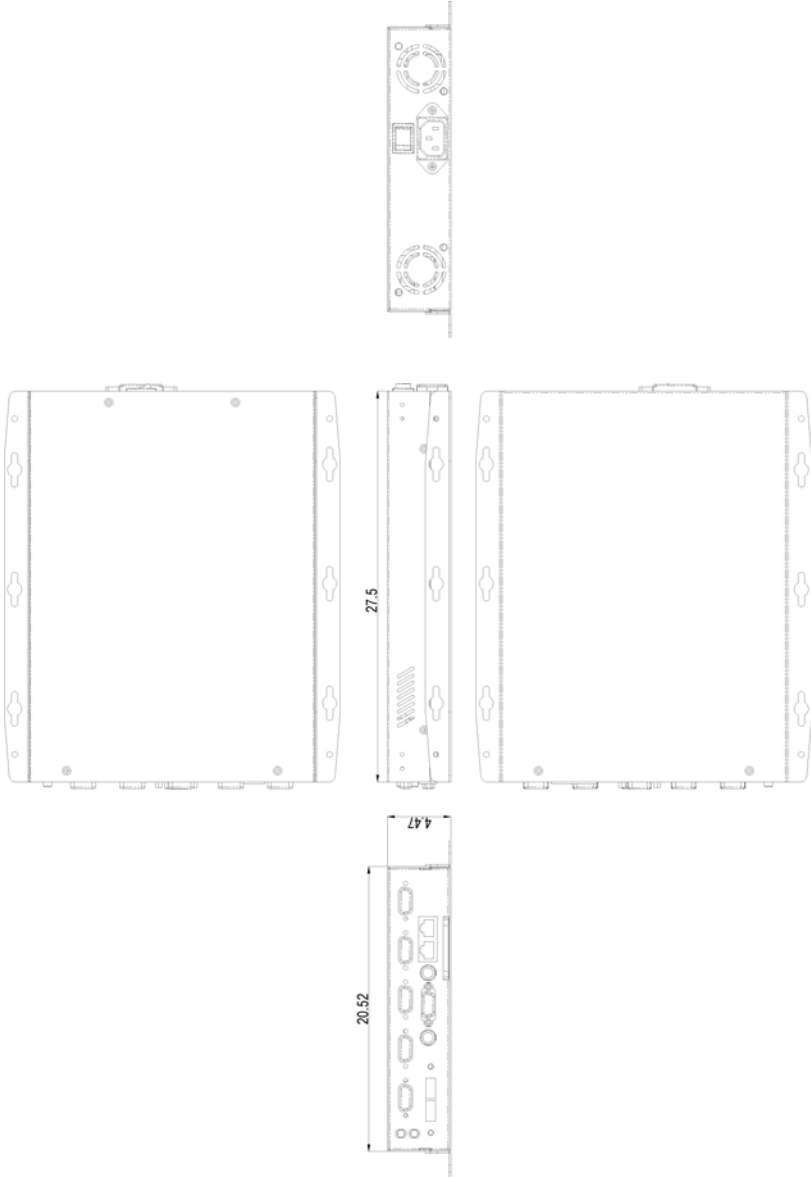
The following figure shows the I/O arrangement of the BBS-2002.



1.5 Utilities Supported

- Ethernet Utility
- VGA Drivers

1.6 Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The BBS-2002 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-2002 delivery package contains the following items:

- ◆ BBS-2002 Bare Bone System x 1
- ◆ 45W Power Supply x 1
- ◆ AC Power Core x 1
- ◆ Utility Disc
- ◆ User's Manual

The BBS-2002 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

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-2002. 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 4cm 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-2002, the port outlets include four COM ports, keyboard, mouse, CRT, two RJ-45, two USB, MIC In and Audio Out.
3. **Power Supply:** The power supply adapted in this computer is a super-slim 45W 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 engines used for BBS-2002 is BOSER's HS-5230CF or high version (HS-6238.....)
6. **Power Switch:** This switch controls the system power on/off.

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Chapter 4

Power Supply

The power supply used in the BBS-2002 is a 45W 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 90VAC to 264VAC or 120VDC to 370VDC
- **Input Frequency:** The range of input frequency is from 47HZ to 440HZ
- **Input Current:** The maximum input current is 1A (RMS) at 115VAC
- **Inrush Current:** The cold inrush current will limit less than 50A at 264VAC input voltage

4.1.2 Output Specifications

- **Load Range:** Voltage accuracy is set at full load. Maximum output power is 42.6W

Output	Min. Load	Rated Load	Max. Load	Voltage Accuracy
+5V	0.4A	3A	5A	4.85~5.15V
+12V	0.2A	2A	2.5A	11.52~12.48V
-12V	0A	0.3	0.5A	11.64~12.36V

- **Ripple and Noise:** The peak to peak ripple and noise for +5V output is less than 50mV, 120mV for +/-12V outputs. Measuring is done by 20MHz bandwidth limited oscilloscope and terminated each output with a 0.1uF ceramic capacitor and a 10uF electrolysis capacitor at rated load, nominal line
- **Line Regulation:** The line regulation for +5V and -12V is less than +/-1%, +/-2% for +12V. Measuring at full load and from 100VAC to 240VAC input voltage changing
- **Load regulation:** The load regulation for +5V output is less than +/-3%, +/-5% for +12V, and +/-1% for -12V. Measuring is measured from 60% to 100% and 60% to 20% with full load (60% +/-40% full load)

4.1.3 General Features

- **Efficiency:** The efficiency is 75% typical while measuring is at nominal line and rated load
- **Hold up time:** Hold up time is 20mS typical at 115VAC input
- **Over Voltage Protection:** The trip point of crowbar circuit is around 5.7V to 6.7V for +5V output and 14.4V to 16.8V for +12V. The power supply will go into hiccup mode against short circuit or over load conditions, and will do auto-recovery while faulty conditions are removed

4.1.4 Environmental Specifications

- **Temperature:** 0~50 °C (operating); -20~+85 °C (storage)

4.1.5 International Standards

- **Safety Standards**

Designed to meet the following standards:

UL 1950, TUV EN 60950, CE mark

- **EMI Standards**

Designed to meet the following conducted limits:

EN 55022 class B, CISPR/FCC class B

4.1.6 Mechanical Specification

- **Dimensions:** 10.16 x 5.08 x 3.048 cm. Tolerance specified is +/-0.4mm.
- **Connectors:**
 - I/P Connector: Molex 5277 or equivalent
 - O/P Connector: Molex 5273 or equivalent