

SBC-815ET-VER

User's Guide

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Kontron America



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Table Of Contents

| | |
|--|-----------|
| Safety Instructions..... | 9 |
| <i>Before You Begin</i> | <i>9</i> |
| <i>When Working Inside a Computer</i> | <i>10</i> |
| <i>Preventing Electrostatic Discharge</i> | <i>11</i> |
| Preface..... | 13 |
| <i>How to Use This Guide</i> | <i>13</i> |
| <i>Customer Comments</i> | <i>14</i> |
| <i>Advisory Conventions.....</i> | <i>15</i> |
| <i>Unpacking</i> | <i>16</i> |
| <i>Regulatory Compliance Statements.....</i> | <i>17</i> |
| <i>FCC Compliance Statement for Class A Devices.....</i> | <i>17</i> |
| <i>CE Certification</i> | <i>17</i> |
| <i>Guarantee and Warranty Policy</i> | <i>18</i> |
| <i>Guarantee</i> | <i>18</i> |
| <i>Limited Warranty</i> | <i>18</i> |
| <i>Return Procedure.....</i> | <i>19</i> |
| <i>Limitation of Liability.....</i> | <i>19</i> |
| Chapter 1: Introduction | 21 |
| <i>Overview</i> | <i>21</i> |
| <i>What's Included.....</i> | <i>22</i> |
| Chapter 2: Specifications | 23 |
| <i>Functional Specifications.....</i> | <i>23</i> |
| <i>Mechanical Specifications</i> | <i>25</i> |
| <i>Environmental Specifications</i> | <i>25</i> |
| <i>System Architecture</i> | <i>26</i> |
| <i>Block Diagram.....</i> | <i>28</i> |
| Chapter 3: Hardware Configuration | 29 |
| <i>Hardware Configuration</i> | <i>29</i> |
| <i>Jumper Settings</i> | <i>30</i> |
| <i>Safe Mode (JP1)</i> | <i>30</i> |
| <i>RTC CMOS Clear (JP2).....</i> | <i>30</i> |
| <i>AT/ATX Power Selection (JP3).....</i> | <i>30</i> |
| <i>Connectors.....</i> | <i>31</i> |
| <i>Connector Table.....</i> | <i>31</i> |
| <i>IDE1/IDE2 (J1/J3)</i> | <i>31</i> |
| <i>Floppy Driver Interface (J2).....</i> | <i>32</i> |
| <i>Parallel Port Connector (J4).....</i> | <i>32</i> |
| <i>ATX Power Control Connector (J5).....</i> | <i>32</i> |
| <i>ATX Power Button Interface(J6)</i> | <i>33</i> |

| | |
|--|----|
| Serial Port 1 and 2 (J7 and J8)..... | 33 |
| IrDA Header (J9)..... | 33 |
| Chassis/CPU Fan Power (J10, J19)..... | 33 |
| USB Connector (J11)..... | 33 |
| Reset Header (J12)..... | 34 |
| External Speaker Header (J13)..... | 34 |
| Keyboard Lock Header (J14)..... | 34 |
| IDE1/IDE2 Active LED Header (J15)..... | 34 |
| Ethernet RJ-45 (J16)..... | 34 |
| USB Connector (J17)..... | 35 |
| PS/2 Keyboard-Mouse (J18)..... | 35 |
| PCI (J20)..... | 36 |
| Standard 5-1/4 Disk Power (J21)..... | 36 |
| External Keyboard (J22)..... | 37 |
| VGA (J23)..... | 37 |

Chapter 4: System Installation 39

| | |
|-------------------------------------|----|
| Overview..... | 39 |
| Installing the CPU..... | 39 |
| Removing the CPU..... | 39 |
| Configuring System Bus..... | 39 |
| Main Memory..... | 39 |
| M-Systems Flash Disk..... | 40 |
| Installing the Flash Disk..... | 40 |
| Installing the SBC..... | 41 |
| INF Chipset Component Driver..... | 41 |
| Graphics Controller..... | 42 |
| Driver Support..... | 42 |
| Fast Ethernet Controller..... | 43 |
| Drivers..... | 43 |
| LAN LED..... | 43 |
| PCI Connector..... | 44 |
| Clearing the CMOS..... | 44 |
| Programming the Watchdog Timer..... | 44 |

Chapter 5: BIOS 45

| | |
|--|----|
| Overview..... | 45 |
| Entering Setup..... | 45 |
| Main Menu..... | 47 |
| Standard CMOS Features Setup Menu..... | 48 |
| Screen Shot..... | 48 |
| Menu Selections..... | 49 |
| IDE Adapters Setup Menu..... | 50 |
| Screen Shot..... | 50 |
| Menu Selections..... | 51 |
| Advanced BIOS Features..... | 52 |
| Screen Shot..... | 52 |
| Virus Warning..... | 52 |
| L1 Cache / L2 Cache..... | 52 |
| Quick Power on Self Test..... | 53 |

| | |
|--|----|
| First/Second/Third/Fourth Boot Device | 53 |
| Boot Up NumLock Status | 53 |
| Security Option | 53 |
| PS/2 Mouse Function Control | 53 |
| OS Select For DRAM > 64MB | 54 |
| HDD S.M.A.R.T. Capability | 54 |
| Advanced Chipset Features | 55 |
| Screen Shot..... | 55 |
| SDRAM CAS Latency Time | 56 |
| SDRAM Cycle Time Tras/Trc..... | 56 |
| SDRAM RAS-to-CAS Delay..... | 56 |
| SDRAM RAS Precharge Time | 56 |
| System BIOS Cacheable | 56 |
| Video BIOS Cacheable | 57 |
| Memory Hole At 15-16M | 57 |
| Delayed Transaction | 57 |
| Display Cache Frequency..... | 57 |
| System Memory Frequency | 57 |
| On-Chip Video Window Size..... | 57 |
| CAS# Latency | 58 |
| Paging Mode Control | 58 |
| RAS-to-CAS Override | 58 |
| RAS# Timing | 58 |
| RAS# Precharge Timing | 58 |
| Integrated Peripherals | 59 |
| Screen Shot..... | 59 |
| OnChip Primary/Secondary PCI IDE | 60 |
| IDE Primary/Secondary Master/Slave PIO | 60 |
| IDE Primary/Secondary Master/Slave UDMA..... | 60 |
| USB Controller | 60 |
| USB Keyboard Support..... | 60 |
| Init Display First..... | 60 |
| IDE HDD Block Mode..... | 61 |
| Power On Function | 61 |
| Keyboard Power On Password..... | 61 |
| Hot Key Power On..... | 61 |
| Onboard FDC Controller | 61 |
| Onboard Serial Port 1/Port 2..... | 62 |
| UART Mode Select..... | 62 |
| RxD, TxD Active | 62 |
| Onboard Parallel Port..... | 62 |
| Parallel Port Mode..... | 62 |
| EPP Mode Select | 63 |
| ECP Mode Use DMA | 63 |
| PWRON After PWR-Fail | 63 |
| Watch Dog Timer Select | 63 |
| DOC Memory Address Range | 63 |
| Power Management Setup..... | 64 |
| Screen Shot..... | 64 |
| ACPI Function | 64 |
| Power Management..... | 65 |
| Video Off Method | 65 |

| | |
|--|-----------|
| Video Off In Suspend..... | 65 |
| Suspend Type..... | 65 |
| Suspend Mode..... | 65 |
| HDD Power Down..... | 65 |
| Soft-Off by PWR-BTTN..... | 66 |
| Wake-Up On LAN..... | 66 |
| Resume On Ring..... | 66 |
| Resume by Alarm..... | 66 |
| Date (of Month) Alarm..... | 66 |
| Time (hh:mm:ss) Alarm..... | 66 |
| Primary/Secondary IDE 0/1..... | 67 |
| FDD, COM, LPT Port..... | 67 |
| PnP/PCI Configuration Setup..... | 68 |
| Screen Shot..... | 68 |
| PNP OS Installed..... | 68 |
| Reset Configuration Data..... | 68 |
| Resource Controlled By..... | 69 |
| IRQ Resources..... | 69 |
| DMA Resources..... | 69 |
| PCI/VGA Palette Snoop..... | 69 |
| Assign IRQ For VGA/USB..... | 69 |
| PCI Slot4/1/2/3 IRQ Assign..... | 70 |
| PC Health Status..... | 70 |
| Screen Shot..... | 70 |
| Frequency/Voltage Control..... | 71 |
| Screen Shot..... | 71 |
| Auto Detect DIMM CLK..... | 71 |
| Spread Spectrum..... | 71 |
| CPU HOST/PCI Clock/PC133..... | 71 |
| CPU Clock Ratio..... | 72 |
| Default Menu..... | 73 |
| Load Fail-Safe Defaults..... | 73 |
| Load Optimized Defaults..... | 73 |
| Supervisor/User Password Setting..... | 74 |
| Enter Password..... | 74 |
| Password Disabled..... | 74 |
| Exiting Selection..... | 75 |
| Save & Exit Setup..... | 75 |
| Exit Without Saving..... | 75 |
| POST Messages..... | 76 |
| POST Beep..... | 76 |
| Error Messages..... | 76 |
| BIOS POST Check Point List..... | 82 |
| BIOS Flash Utility..... | 87 |

Appendix B: Troubleshooting..... 89

| | |
|----------------------|----|
| Overview..... | 89 |
| Backplane Setup..... | 89 |
| Backplane..... | 89 |
| ATX Power..... | 89 |

| | |
|--|----|
| <i>ATX FAQs</i> | 92 |
| <i>Hardware Installation</i> | 93 |
| <i>BIOS Settings</i> | 94 |
| <i>Loading Default Optimal Setting</i> | 94 |
| <i>Auto Detect Hard Disks</i> | 94 |
| <i>Improper Disabling</i> | 94 |
| <i>OS Diagnostics</i> | 96 |
| <i>Booting</i> | 96 |
| <i>Display Setup</i> | 96 |
| <i>Network Setup</i> | 96 |
| <i>Windows NT 4.0</i> | 97 |

List of Figures

| | |
|--|----|
| Figure 1: Jumper/Connector Locations | 29 |
|--|----|

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Safety Instructions

Before You Begin

Before handling your SBC-815ET-VER card, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the “Advisories” section in the Preface for advisory conventions used in this user’s guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- ♦ Always use caution when handling or operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- ♦ If you have any problems or questions about the unit, please contact Kontron Post-Sales Technical Support.



WARNING

High voltages are present inside a computer chassis when the unit’s power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.



When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

- 1) Turn off the computer and any peripherals.
- 2) Disconnect the computer and peripherals from their power sources or subsystems to prevent electric shock or system board damage. This does not apply when hot swapping parts.
- 3) Follow the guidelines provided in “Preventing Electrostatic Discharge” on the following page.
- 4) Disconnect any telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- ◆ To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.
- ◆ When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned



CAUTION

Do not attempt to service the system yourself. Follow installation and troubleshooting instructions closely.



Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Kontron strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- ◆ When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.
- ◆ When transporting a sensitive component, first place it in an antistatic container or packaging.
- ◆ Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.
- ◆ Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.
- ◆ Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

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Preface

How to Use This Guide

This guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.



Note: Additional technical information, BIOS updates, and drivers are available on our web site, www.kontron.com, under Technical Support.

The following is a summary of the chapter contents:

- ♦ **Chapter 1, Introduction**, Presents contents of package and a detailed overview of the product specifications.
- ♦ **Chapter 2, Specifications**, Provides functional, mechanical, electrical, and environmental specifications.
- ♦ **Chapter 3, Hardware Configuration**, Shows the definitions and locations of jumpers and connectors for various system environments.
- ♦ **Chapter 4, System Installation**, Explains how to install processors, main memory, the SBC, Compact Flash Cards, as well as how to clear the CMOS and how to set the Watch Dog Timer.
- ♦ **Chapter 5, BIOS**, Explains the various available system configuration choices.
- ♦ **Appendix A, Troubleshooting**, Provides you a few useful tips to quickly start the SBC-815ET-VER operation. The chapter mainly focuses on system integration matters, such as backplane setup, BIOS setting, and OS diagnostics.

Customer Comments

If you have any difficulties using this user's guide, discover an error, or just want to provide some feedback, please send us a message using the online form under "Contact Us" on our web site (www.kontron.com) under "Technical Support." Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user's guide in our online Support Library. Thank you.



Note: You may also use the online form on our web site to submit comments or concerns about our products, or request technical support.

Advisory Conventions

Four types of advisories are used throughout this user's guide to provide helpful information or to alert you to the potential for hardware damage or personal injury. They are Notes, Cautions, and Warnings. The following is an example of each type of advisory. Use caution when servicing any electrical component



Note: A note is used to make helpful information stand out.



Important: An important note indicates information that is important for you to know.



CAUTION

A CAUTION indicates potential damage to hardware and tells you how to avoid the problem.



WARNING

A WARNING indicates the potential for bodily harm and tells you how to avoid the problem.



Disclaimer: We have tried to identify all situations that may pose a warning or caution condition in this user's guide. However, Kontron does not claim to have covered all situations that might require the use of a Caution or Warning.

Unpacking

When unpacking, follow these steps:

- 1) After opening the box, save it and the packing material for possible future shipment.
- 2) Remove all items from the box. If any items listed on the purchase order are missing, notify Kontron customer service immediately.
- 3) Inspect the product for damage. If there is damage, notify Kontron customer service immediately. Refer to “Guarantee and Warranty Policy” for the return procedure.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and Safety Standards.

FCC Compliance Statement for Class A Devices

The product(s) described in this user's guide has been tested and found to comply 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at their own expense.

You are cautioned that changes or modifications not expressly approved by Kontron could void your authority to operate the equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation



Note: The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

CE Certification

CE The product(s) described in this user's guide complies with all applicable European Union (CE) directives if it has a CE marking. The CE declaration of conformity is provided on the last page of this user's guide. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques. Although Kontron offers accessories, the customer must ensure that these products are installed with proper shielding to maintain CE compliance. Kontron does not offer engineering services for designing cabling systems. In addition, Kontron will not retest or recertify systems or components that have been reconfigured by customers.

Guarantee and Warranty Policy

Guarantee

A thirty day money-back guarantee is provided on all standard products sold. Special order products are covered by our Limited Warranty, however they may not be returned for refund or credit. EPROMs, RAM, Flash EPROMs or other forms of solid electronic media are not returnable for credit - but for replacement only. An extended warranty is available. Consult the factory.

Refunds

In order to receive a refund on a product for the purchase price, the product must not have been damaged by the customer or by the common carrier chosen by the customer to return the goods and the product must be returned complete (meaning all user's guides, software, cables, etc.) within 30 days of receipt and in an as-new and resalable condition. The "Return Procedure" must be followed to assure a prompt refund.

Restocking Charges

Product returned after 30 days, and before 60 days, of the purchase will be subject to a minimum 20% restocking charge and charges for any damaged or missing parts. Products not returned within 60 days of purchase, or products which are not in an as-new and resalable condition, are not eligible for a credit return and will be returned to the customer.

Limited Warranty

Effective April 1, 1998, all products carry a 2-year limited warranty. Within 2 years of purchase, Kontron will repair or replace, at our option, any defective product. Kontron will service the warranty for all standard catalog products for the first two years from the date of shipment. Please note: The 2-year warranty may not apply to special promotion items. Please consult the factory for warranty verification.

The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Kontron or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Kontron or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the user's guide.

No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever. Kontron reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

Return Procedure

For any Guarantee or Limited Warranty return, please contact Kontron Customer Service at 800-480-0044 or 858-677-0877 and obtain a Return Material Authorization (RMA) Number. All product(s) returned to Kontron for service or credit must be accompanied by a Return Material Authorization (RMA) Number. Freight on all returned items must be prepaid by the customer who is responsible for any loss or damage caused by common carrier in transit. Returns for Warranty must include a Failure Report for each unit, by serial number(s), as well as a copy of the original invoice showing the date of purchase.

To reduce risk of damage, returns of product must be in a Kontron shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Kontron Customer Service at a nominal cost.

Kontron owns all parts removed from repaired products. Kontron uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Kontron repairs or replaces a product, its warranty term is not extended.

Kontron will normally return your replacement or repaired items via ground. Overnight delivery or delivery via other carriers is available at an additional charge.

Shipments not in compliance with this Guarantee and Limited Warranty Return Policy will not be accepted by Kontron.

Limitation of Liability

In no event shall Kontron be liable for any defect in hardware, software, loss, or inadequacy of data of any kind, or for any direct, indirect, incidental, or consequential damages in connection with or arising out of the performance or use of any product furnished hereunder. Kontron's liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Kontron or its authorized agent.

Some sales items and customized systems are not subject to the guarantee and limited warranty. However in these instances, any deviations will be disclosed prior to sales and noted in the original invoice. **Kontron reserves the right to refuse returns or credits on software or special order items.**

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Chapter 1: Introduction

Overview

The SBC-815ET-VER all-in-one single board computer is designed to use a high performance Celeron/Pentium-III based CPU and is compatible with high-end computer systems that use PCI local bus architecture. It is made to meet today's demanding pace of innovation, yet to keep complete compatibility with hardware and software designed for the IBM PC/AT. It is suitable for those wishing to build up a high performance system for VARs, or for system integrators. The on-board 3D graphics display and fast Ethernet interface bring full functionality and high performance to all segments of the industrial PC market.

This single board computer runs an Intel Celeron/Pentium-III (FC-PGA & FC-PGA2) processor and supports DIMM up to 512 MB SDRAM. The enhanced on-board PCI IDE interface can support four drives with up to PIO mode 4 timing and Ultra DMA/33/66/100 synchronous mode feature. The onboard Super I/O Chipset integrates one floppy controller, two serial ports, one keyboard controller, one hardware monitor, one IrDA port and one parallel port. Two high-performance 16C550-compatible UARTs provide 16-byte transmit/receive FIFOs, and the multi-mode parallel port supports SPP/EPP/ECP functionality. Three Universal Serial Bus (USB) ports provide high-speed data communication between peripherals and the PC. You can also add PCI-type daughter cards to run more I/Os and other functions.

Use of the PICMG standard allows the SBC-815ET-VER to work with a legacy ISA, ISA/PCI or multi-slot, PCI-bus backplanes. The on-board 32-pin DIP socket supports M-systems DiskOnChip 2000 products up to 288MB. The Watch-Dog Timer function can be used to monitor system status. One 6-pin Mini-DIN connector (with Y-Cable) is provided to connect a PS/2 mouse and keyboard. The on-board Flash ROM makes updating the BIOS easier. A standard 5-1/4" drive power connector is reserved to directly get more power for big power applications, and the additional 5-pin shrouded connector is reserved for connecting the keyboard interface on the backplane. One 4-pin header is designed to support ATX power functionality.

What's Included

- ◆ One SBC-815ET-VER single board computer (SBC)
- ◆ One parallel port cable kit
- ◆ One serial port cable to support two interfaces
- ◆ One FDC cable
- ◆ One IDE cable
- ◆ One Y-Cable cable for PS/2 keyboard and mouse
- ◆ One 5-pin to 5-pin keyboard cable for backplane connection
- ◆ One 4-pin ATX power control cable for backplane connection
- ◆ One CD to supply an Intel 82815 GMCH VGA display driver and an Intel 82801BA ICH2 integrated LAN controller driver.

Chapter 2: Specifications

Functional Specifications

Main Processor

- ◆ Intel Celeron and Pentium-III processors
- ◆ CPU bus frequency: 66/100/133 MHz
- ◆ CPU core/bus clock ratio: x2 to x8
- ◆ Standard socket 370 for FC-PGA/FC-PGA2 CPU (No support for PPGA370 Celeron)

BIOS

- ◆ Award system BIOS with 4MB Firmware hub to support DMI, PnP, APM, and ACPI

Main Memory

- ◆ Two 168-pin DIMM sockets, supporting PC133/PC100 SDRAM up to 512MB (No ECC and Registered DIMM Support)

L2 Cache Memory

- ◆ 128KB/256KB L2 Cache built in Celeron and 256KB/512KB built in Pentium-III/Pentium-III-S processor

Chipset

- ◆ Intel 815E B-step Chipset

Bus Interfaces

- ◆ Follows PICMG 1.0 Revision 2.0 standard (32-bit PCI and 16-bit ISA)
- ◆ Complies with PCI Local Bus specification V2.1 (supports 4 master PCI slots)

PCI IDE Interface

- ◆ Supports two enhanced IDE ports up to four HDD devices with PIO mode 4 and Ultra DMA/33/66/100 mode transfer and Bus Master feature

Floppy Drive Interface

- ◆ Supports one FDD port, up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2" (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD

Serial Ports

- ◆ Two high-speed 16C550 compatible UARTs with 16-byte T/R FIFOs

IR Interface

- ◆ One 6-pin header for serial Standard Infrared wireless communication

Parallel Port

- ◆ One parallel port with SPP, EPP and ECP modes

USB Interface

- ◆ Three USB (Universal Serial Bus) 1.1 ports for high-speed I/O peripheral devices

PS/2 Mouse and Keyboard Interface

- ◆ Six-pin mini-DIN connector
- ◆ Five-pin shrouded connector for PS/2 mouse/keyboard connection through Y-Cable and backplane connection

ATX Power Control Interface

- ◆ Four-pin header to support ATX power control with Modem Ring-On and Wake-On-LAN function

Auxiliary I/O Interfaces

- ◆ System-reset switch, external speaker, keyboard lock and HDD-active LED

Real-Time Clock/Calendar (RTC)

- ◆ Real-Time Clock/Calendar with battery backup for seven-year data retention

Watchdog Timer

- ◆ Support 255 intervals from 0.5 sec./min. to 254.5 sec./min. by software programming

Disc-on-Chip (DOC) Feature

- ◆ Reserved one 32-pin socket for M-systems Flash Disk up to 288MB
- ◆ DOS, Windows, Win95, NT (bootable) drivers and utility supported

VGA Display

- ◆ Intel 82815 GMCH integrated graphics controller with 4MB memory

Ethernet

- ◆ Intel 82801BA ICH2 integrated LAN controller to support RJ-45 interface at 10/100 Base-T speed

PCI Device Connector

- ◆ Supports one additional PCI device daughter board

High-Driving Capability

- ◆ 64mA high-driving capability for multi-slot ISA bus

External Power Connector

- ◆ Standard 5-1/4" disk drive power connector enhances power driving

Power Good

- ◆ On-board power good generator with reset time, 300ms ~ 500ms

CPU Cooling Fan

- ◆ Two, 3-pin headers with wafer

System Monitoring

- ◆ Monitors CPU and system temperature, operating voltage, and fan status

Bracket

- ◆ Supports one Mini-DIN, one USB port, one Ethernet port and one VGA port

Mechanical Specifications

Outline Dimension (L x W)

- ◆ 338.5mm (13.33") x 122mm (4.8")

PCB Layout

- ◆ Six layer

Environmental Specifications

Operating Temperature

- ◆ 0°C ~ 55°C (32°F ~ 131°F)

Storage Temperature

- ◆ -20°C ~ 75°C

Relative Humidity

- ◆ 5% ~ 95%, non-condensing

System Architecture

The block diagram in the next section shows you how the SBC-815ET-VER gives you a highly integrated system solution. The architecture includes two main VLSI chips, 82815 GMCH (Graphics and Memory Controller Hub) and 82801BA ICH2 (I/O Controller Hub), to support Celeron/Pentium-III (FC-PGA/FC-PGA2) processor, SDRAM, 3D graphic display, PCI bus interface, APM, ACPI compliant power management, USB port, SMBus communication, and Ultra DMA/33/66/100 IDE Master. The on-board super I/O chip, W83627HF, will support PS/2 Keyboard/Mouse, two UARTs, FDC, Hardware Monitor, Parallel, Watch Dog Timer and Infrared interface. In addition, an Intel 82801BA ICH2 integrated LAN controller provides a competitive fast Ethernet function. The CPU socket is a Socket-370 type to support high availability, reliability, and easy operation in general industry applications.

The 82815 Hub integrates memory controller and graphics capability (AGP). This delivers AGP class graphics performance to PCs at reduced cost. It dynamically allocates and deallocates system memory for complex 3D textures, preserving the benefits of standard AGP addin solutions. Its 64-bit AGTL+ based host bus interface and optimized 64-bit DRAM interface supports two 3.3V DIMMs at the maximum bus frequency of 100/133 MHz. The 32-bit PCI bus interface supports four PCI masters for external backplane support.

The 82801BA hub employs the Accelerated Controller Hub architecture, which makes a direct connection from the graphics and memory to the IDE controllers. It supports 2-channel dedicated Ultra DMA-33/66/100 IDE master interfaces, full Plug-and-Play compatibility, an APIC (Advanced Programmable Interrupt Controller) interface, and an internal real-time clock (RTC) to maintain system time and date. It also supports 3 USB (Universal Serial Bus) 1.1 ports and PCI 2.1 Compliant operation. It fully supports Operating System Directed Power Management according to the Advanced Configuration and Power Interface (ACPI) specification. In addition, it is also linked via a Firmware Hub Link bus to a 82802AB Firmware Hub to support BIOS read/write access. Through the PCI bus, a PC87200 PCI-to-ISA bridge is built in for a highly integrated PCI-to-ISA bridge solution for the best in industrial applications.

The super I/O chip W83627HF integrates two high-speed serial ports, one parallel port, SIR interface, and a Watch Dog Timer (WDT), which is enabled by BIOS settings and triggered by software, hardware monitoring, a FDD interface and a 8042 keyboard controller with PS/2 mouse ports. The parallel port supports one PC-compatible printer port (SPP, bi-direction), Enhanced Parallel Port (EPP), and Extended Capabilities Port (ECP).

The PCI-to-ISA bridge supports a standard 16-bit ISA bus interface, which is useful for all slower I/O operations. It also supports DiskOnChip (DOC) for an M-systems Flash disk and ISA buffer driving for special I/O applications and multi-ISA slots.

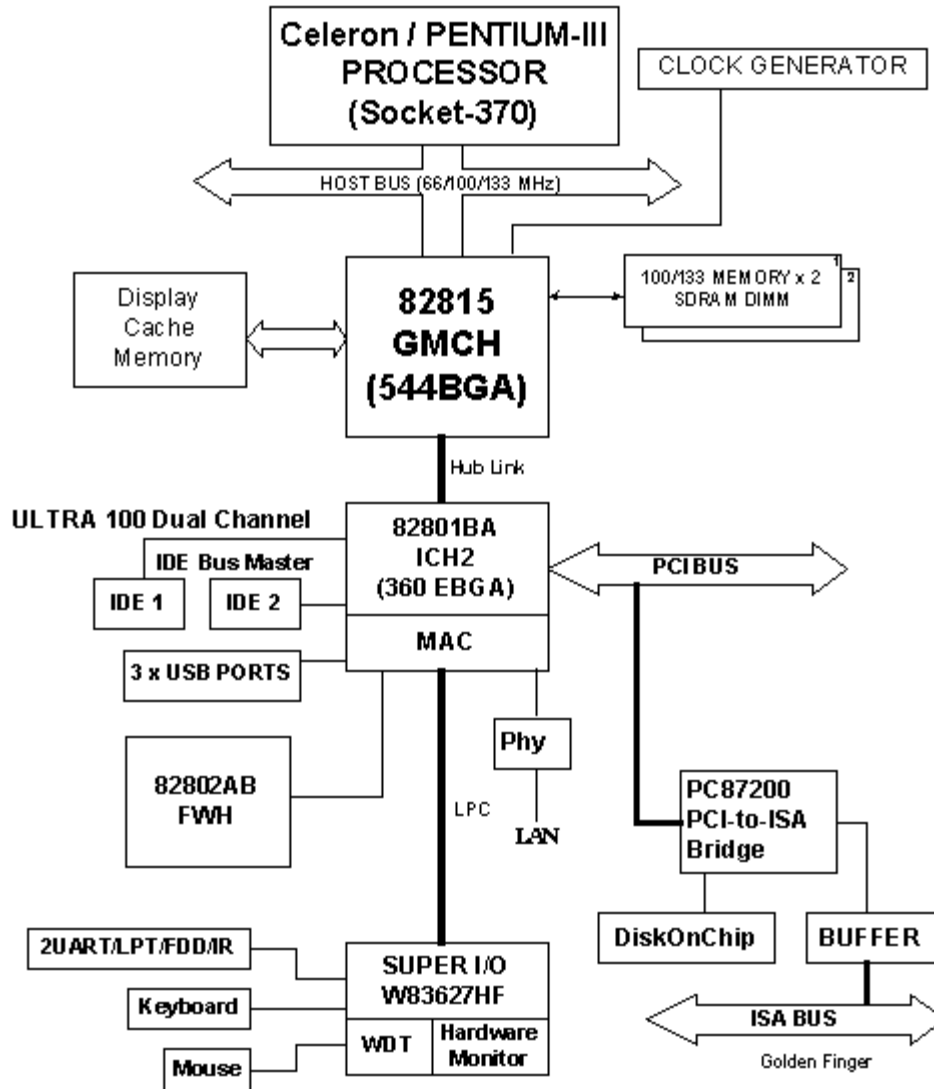
Another advanced feature detects and monitors system temperature, operating voltage, and fan status.

The 82802 Firmware Hub stores system BIOS and video BIOS, eliminating a redundant, nonvolatile memory component.

An on-board PCI Fast Ethernet makes this a full functionality SBC. The on-board 68-pin PCI connector supports an additional daughter board for further capability.

The graphics device is the 815E built-in Graphics Controller functioning as a high-end graphics accelerator. It is implemented with 4MB of high performance SDRAM to support resolutions of up to 1600 x 1200 with 256 colors.

Block Diagram



Chapter 3: Hardware Configuration

Hardware Configuration

This chapter gives the definitions and shows the positions of jumpers, headers, and connectors. All of the configuration jumpers are in the proper position. Default settings are indicated with an asterisk (*).

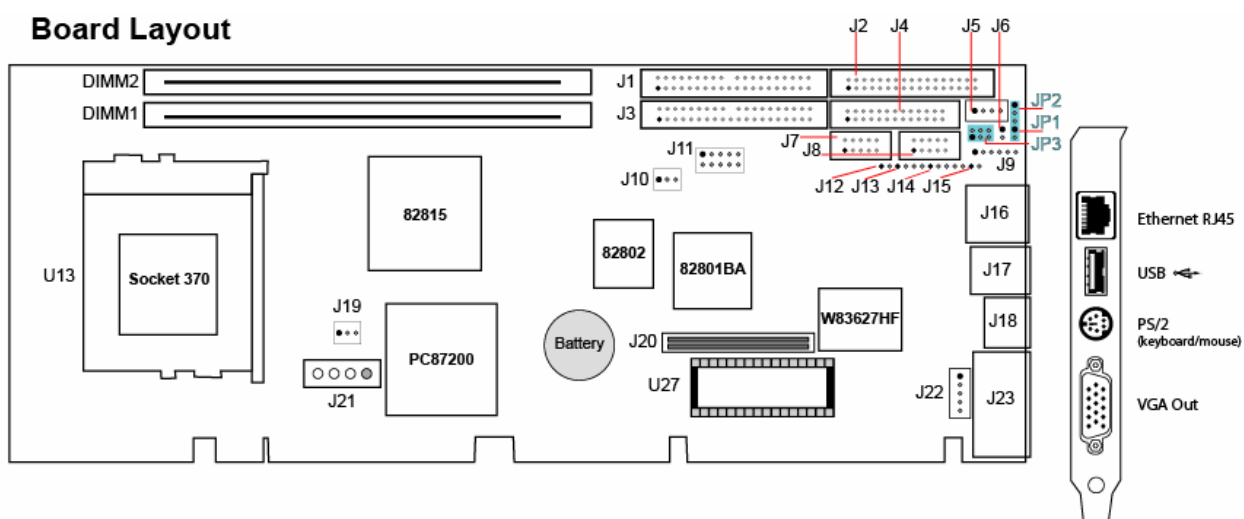


Figure 1: Jumper/Connector Locations

Jumper Settings

In general, jumpers on the single board computer are used to select options for some features. Some jumpers are user-configurable, allowing for system enhancement. The others are for testing purposes only and should not be altered. To select an option, cover the jumper cap over (Short) or remove (NC) it from the jumper pins according to the following instructions. NC stands for "Not Connected".

* represents the default setting.

Safe Mode (JP1)

| JP1 | Function |
|------------|-----------------|
| Short | Enabled |
| NC | Disabled * |

RTC CMOS Clear (JP2)

| JP2 | Function |
|------------|---------------------|
| 1-2 | Normal Operation* |
| 2-3 | Clear CMOS contents |

AT/ATX Power Selection (JP3)

| JP3 | Function |
|------------|--------------------------|
| 3-5,4-6 | Select ATX Power Supply* |
| 1-3, 2-4 | Select AT Power Supply |

Connectors

I/O peripheral devices and the Flash disk are connected to the interface connectors. The DiskOnChip (DOC) socket also is located on the SBC.

Connector Table

| Connector | Function | Connector | Function |
|-----------|------------------------|------------|-----------------------------------|
| J1 | IDE1 (primary) | J14 | Keyboard lock and power indicator |
| J2 | Floppy | J15 | IDE1/IDE2 active status report |
| J3 | IDE2 (secondary) | J16 | Ethernet interface |
| J4 | Parallel Port | J17 | One port USB interface |
| J5 | ATX power control | J18 | PS/2 keyboard/mouse connector |
| J6 | ATX power button | J19 | CPU fan power |
| J7 | COM1 serial port | J20 | 68-pin PCI |
| J8 | COM2 serial port | J21 | Standard 5-1/4" disk-drive power |
| J9 | IrDA (infrared) port | J22 | External keyboard interface |
| J10 | system fan power | J23 | Onboard VGA |
| J11 | Two-port USB interface | U13 | Socket 370 |
| J12 | System reset | U27 | M-systems Flash Disk Socket |
| J13 | External speaker | DIMM 1 & 2 | DIMM socket |

IDE1/IDE2 (J1/J3)

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1 | RESET# | 2 | Ground |
| 3 | Data 7 | 4 | Data 8 |
| 5 | Data 6 | 6 | Data 9 |
| 7 | Data 5 | 8 | Data 10 |
| 9 | Data 4 | 10 | Data 11 |
| 11 | Data 3 | 12 | Data 12 |
| 13 | Data 2 | 14 | Data 13 |
| 15 | Data 1 | 16 | Data 14 |
| 17 | Data 0 | 18 | Data 15 |
| 19 | Ground | 20 | N/C |
| 21 | DMA REQ | 22 | Ground |
| 23 | IOW# | 24 | Ground |
| 25 | IOR# | 26 | Ground |
| 27 | IOCHRDY | 28 | Pull-down |
| 29 | DMA ACK# | 30 | Ground |
| 31 | INT REQ | 32 | N/C |
| 33 | SA1 | 34 | CBLID# |
| 35 | SA0 | 36 | SA2 |
| 37 | HDC CSO# | 38 | HDC CS1# |
| 39 | HDD Active# | 40 | Ground |

Floppy Driver Interface (J2)

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1 | Ground | 2 | Density Select 0 |
| 3 | Ground | 4 | N/C |
| 5 | Ground | 6 | Density Select 1 |
| 7 | Ground | 8 | Index# |
| 9 | Ground | 10 | Motor ENA# |
| 11 | Ground | 12 | Drive Select B# |
| 13 | Ground | 14 | Drive Select A# |
| 15 | Ground | 16 | Motor ENB# |
| 17 | Ground | 18 | Direction# |
| 19 | Ground | 20 | Step# |
| 21 | Ground | 22 | Write Data# |
| 23 | Ground | 24 | Write Gate# |
| 25 | Ground | 26 | Track 0# |
| 27 | Ground | 28 | Write Protect# |
| 29 | Ground | 30 | Read Data# |
| 31 | Ground | 32 | Head Select# |
| 33 | N/C | 34 | Disk Change# |

Parallel Port Connector (J4)

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1 | Strobe# | 14 | Auto Form Feed |
| 2 | Data 0 | 15 | Error # |
| 3 | Data 1 | 16 | Initialization# |
| 4 | Data 2 | 17 | Printer Select IN# |
| 5 | Data3 | 18 | Ground |
| 6 | Data 4 | 19 | Ground |
| 7 | Data 5 | 20 | Ground |
| 8 | Data 6 | 21 | Ground |
| 9 | Data 7 | 22 | Ground |
| 10 | Acknowledge# | 23 | Ground |
| 11 | Busy | 24 | Ground |
| 12 | Paper Empty | 25 | Ground |
| 13 | Printer Select | 26 | NC |

ATX Power Control Connector (J5)

| Pin | Signal Description |
|-----|-----------------------|
| 1 | ATX Power Good Signal |
| 2 | ATX 5V Stand-by |
| 3 | ATX Power On Control |
| 4 | Ground |

ATX Power Button Interface(J6)

| Pin | Signal Description |
|-----|-----------------------------|
| 1 | Pull-high 100 Ohm to +5V |
| 2 | Power Button Control Signal |

Serial Port 1 and 2 (J7 and J8)

This connector is a 2 x 5 shrouded header.

| Pin | Signal Description |
|-----|---------------------------|
| 1 | DCD (Data Carrier Detect) |
| 2 | RXD (Receive Data) |
| 3 | TXD (Transmit Data) |
| 4 | DTR (Data Transmission) |
| 5 | GND (Ground) |
| 6 | DSR (Data Set Ready) |
| 7 | RTS (Request to Send) |
| 8 | CTS (Clear to Send) |
| 9 | RI (Ring Indicator) |
| 10 | N/C |

IrDA Header (J9)

| Pin | Signal Description |
|-----|----------------------------|
| 1 | VCC (+5V) |
| 2 | IOVSB |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |
| 6 | OVCROFF (Over Current Off) |

Chassis/CPU Fan Power (J10, J19)

| PIN | Signal Description |
|-----|--|
| 1 | Ground |
| 2 | +12V |
| 3 | Pull-up 5V (For tachometer sense signal) |

USB Connector (J11)

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1 | +5V | 2 | N/C |
| 3 | SBD2-(USBP2-) | 4 | Ground |
| 5 | SBD2+(USBP2+) | 6 | SBD3+(USBP3+) |
| 7 | Ground# | 8 | SBD3-(USBP3-) |
| 9 | N/C | 10 | +5V |

Reset Header (J12)

| Pin | Signal Description |
|-----|--------------------|
| 1 | Reset |
| 2 | Ground |

External Speaker Header (J13)

| Pin | Signal Description |
|-----|--------------------|
| 1 | Speaker |
| 2 | N/C |
| 3 | Ground |
| 4 | +5V |

Keyboard Lock Header (J14)

| Pin | Signal Description |
|-----|-------------------------------------|
| 1 | +5V (220 Ohm pull-up for power LED) |
| 2 | N/C |
| 3 | Ground |
| 4 | Keyboard inhibit |
| 5 | Ground |

IDE1/IDE2 Active LED Header (J15)

| Pin | Signal Description |
|-----|---|
| 1 | +5V (470 Ohm pull-up for power HDD LED) |
| 2 | HDD Active # (LED cathode terminal) |

Ethernet RJ-45 (J16)

| Pin | Signal Description |
|-----|-----------------------|
| 1 | TX+ |
| 2 | TX- |
| 3 | RX+ |
| 4 | Termination to Ground |
| 5 | Termination to Ground |
| 6 | RX- |
| 7 | Termination to Ground |
| 8 | Termination to Ground |

USB Connector (J17)

Only one USB port (Pin 5, 6, 7, and 8) is available on the bracket by default.

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1 | +5V | 2 | USBD0+ |
| 3 | USBD0+ | 4 | USBGND0 |
| 5 | +5V | 6 | USBD1- |
| 7 | USBD1+ | 8 | USBGND1 |

PS/2 Keyboard-Mouse (J18)

Six-pin Mini-Din.

| Pin | Signal Description |
|-----|--------------------|
| 1 | Mouse Data |
| 2 | Keyboard Data |
| 3 | Ground |
| 4 | +5V |
| 5 | Mouse Clock |
| 6 | Keyboard Clock |

PCI (J20)

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1 | VCC | 2 | AD0 |
| 3 | AD1 | 4 | AD2 |
| 5 | AD3 | 6 | AD4 |
| 7 | AD5 | 8 | AD6 |
| 9 | AD7 | 10 | GND |
| 11 | VCC | 12 | AD8 |
| 13 | AD9 | 14 | AD10 |
| 15 | AD11 | 16 | AD12 |
| 17 | AD13 | 18 | AD14 |
| 19 | AD15 | 20 | GND |
| 21 | VCC | 22 | AD16 |
| 23 | AD17 | 24 | AD18 |
| 25 | AD19 | 26 | AD20 |
| 27 | AD21 | 28 | AD22 |
| 29 | AD23 | 30 | GND |
| 31 | VCC | 32 | AD24 |
| 33 | AD25 | 34 | AD26 |
| 35 | AD27 | 36 | AD28 |
| 37 | AD29 | 38 | AD30 |
| 39 | AD31 | 40 | GND |
| 41 | VCC | 42 | BE#0 |
| 43 | BE#1 | 44 | BE#2 |
| 45 | BE#3 | 46 | PAR |
| 47 | Frame# | 48 | TRDY# |
| 49 | IRDY# | 50 | GND |
| 51 | VCC | 52 | STOP# |
| 53 | Devsel# | 54 | Reserved for PERR# |
| 55 | SERR# | 56 | REQ#4 |
| 57 | GNT#4 | 58 | Reserved for REQ#3 |
| 59 | Reserved for GNT#3 | 60 | GND |
| 61 | PCI CLOCK1 | 62 | PCI CLOCK2 |
| 63 | PCIRST# | 64 | LOCK# |
| 65 | IRQ#A | 66 | IRQ#B |
| 67 | IRQ#C | 68 | IRQ#D |

Standard 5-1/4 Disk Power (J21)

| Pin | Signal Description |
|-----|--------------------|
| 1 | +12V |
| 2 | GND |
| 3 | GND |
| 4 | +5V |

External Keyboard (J22)

| Pin | Signal Description |
|-----|--------------------|
| 1 | Keyboard clock |
| 2 | Keyboard data |
| 3 | N/C |
| 4 | Ground |
| 5 | +5V |

VGA (J23)

| Pin | Signal Description |
|-----|--------------------|
| 1 | R |
| 2 | G |
| 3 | B |
| 4 | N/C |
| 5 | Ground |
| 6 | Ground |
| 7 | Ground |
| 8 | Ground |
| 9 | N/C |
| 10 | Ground |
| 11 | N/C |
| 12 | MONID1 |
| 13 | HSYNC |
| 14 | VSYNC |
| 15 | MONID2 |

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Chapter 4: System Installation

Overview

This chapter provides instructions to set up your system. Additional information is enclosed to help you configure the M-systems Flash disk, set up an onboard PCI device, and handle WDT operation.

Installing the CPU

1. Lift the lever handle of the CPU socket.
2. Align the processor pins with pinholes on the socket. Make sure that the notched corner or dot mark (Pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. Do not force the CPU into place.
3. Push down the lever to lock processor chip into the socket after installing the CPU into place.

Removing the CPU

To remove the CPU:

1. Unlock the cooling fan.
2. Lift the lever of the CPU socket.
3. Lift the CPU from the socket.
4. Push the lever for the CPU socket down.

Configuring System Bus

The SBC-815ET-VER automatically detects the system bus based on the CPU. However, users may configure CPU core/bus ratio in the BIOS setup menu for engineering sample processors.

Main Memory

The SBC-815ET-VER provides two DIMMs (168-pin Dual In-line Memory Module) to support 3.3V SDRAM (Synchronized DRAM) as the on-board main memory. The maximum memory size is 512MB. The SBC detects the memory clock, based on the processor and SDRAM used. Please refer to the following table for details.

| Processor FSB | PC-100SDRAM | PC-133SDRAM |
|----------------------|--------------------|--------------------|
| 133MHz | 100MHz | 133MHz |
| 100MHz | 100MHz | 100MHz |
| 66MHz | 100MHz | 100MHz |

For system compatibility and stability, don't use unbranded memory modules.

You can also use the single or double-sided DIMM with the ECC feature (but see the note below). Randomly installing a DIMM in any of the DIMM sockets is allowed. You can install different sizes of DRAM modules in DIMM1 and DIMM2 and the system will boot.

Make sure that the memory module is inserted correctly into its socket. Incorrectly mounted memory can impact system reliability. Before locking, make sure that all modules have been fully inserted into the card slots



Note: To maintain system stability, do not change DRAM parameters in the BIOS setup in an attempt to upgrade system performance without acquiring technical information.

Note: Due to Intel 82815 Chipset limitations, ECC functionality is not supported. If you use ECC SDRAM it will act as normal SDRAM without causing errors.

Note: Due to Intel 82815 Chipset limitations, Buffered (Registered) SDRAM is not supported. Buffered SDRAM will simply freeze up the system.

M-Systems Flash Disk

The SBC-815ET-VER reserves one 32-pin DIP socket for installing M-systems Flash disks from 2MB to 288MB. This structure runs as a pure ISA-bus without PnP (Plug and Play) functionality. Before installing, make sure that the I/O address BIOS setting is set correctly to prevent an unworkable system caused by I/O resource conflicts. Remember to follow the DiskOnChip (DOC) installation procedures. Otherwise, you could burn out the Flash chip if it is installed incorrectly.

Installing the Flash Disk

Align the DOC with the pin holes on the socket. Make sure that the notched corner or dot mark (pin 1) of the DOC corresponds to notched corner of the socket. Then press the DOC gently until it fits into place. If the installation procedure is correct, the Flash disk can be viewed as a normal hard disk to read and write data.



WARNING

Please insert the DOC correctly. Placing the DOC in backwards will cause severe damage. A new DOC chip is always a formatted disk. You can plug the chip into the DOC socket and read/write with it immediately.



Installing the SBC

To install the SBC:

1. Make sure that all jumpers are set in their proper positions. (By default, the board comes with the jumpers in their correct positions.)
2. Install and configure the CPU and memory module in their correct positions.
3. Place the SBC into the dedicated position in your system.
4. Attach cables to peripheral devices.



WARNING

Make sure you install your SBC correctly, otherwise the system might be unstable or not work because of a bad contact between the golden fingers and the ISA bus slot. We recommend that you apply the 4-pin 5-1/4" IDE device power connectors from your power supply to the J21 connector to ensure sufficient current supply.



INF Chipset Component Driver

The new Intel 82815 GMCH chipset may not be recognized by older Windows operating systems. To overcome this compatibility issue, install the INF Chipset Component driver before other drivers.

You can find the INF chipset component driver in the "/Chipset/INF" directory of the CD that ships with the product. Execute "infinst_enu.exe" to start installation.

Graphics Controller

The Intel 82815 GMCH chipset is the result of new design approach to optimize the shared memory architecture while maintaining the cost benefits of integration through Direct AGP and Dynamic Video Memory Technology.

With no additional video adapter, this onboard video acts as the system display output. However, the system switches to an off-board video adapter if there is one. If this occurs, the onboard 82815 GMCH graphic features will be disabled.

Driver Support

You will find the Intel 82815 GMCH drivers in “/Video/Intel 810_815” directory of the CD. The drivers support Windows 98SE, Windows NT 4.0, Windows-2000 and Windows XP.

- ◆ Windows 98SE: Please execute “/Video/Intel 810_815/W98/win9xe67.exe”
- ◆ Windows NT 4.0: Please install Windows NT 4.0 Service Pack 4 or above first, then execute “/Video/Intel 810_815/NT40/winnt4e67.exe”
- ◆ Windows 2000 and XP: Please execute “/Video/Intel 810_8152KXP/win2k_xpe67.exe”

Fast Ethernet Controller

No jumpers are available to disable the Intel 828101BA Ethernet controller. The SBC does not require its on-board LAN device to be disabled to work with add-on LAN cards.

Drivers

You can find the Intel Pro LAN drivers in the “/Ethernet/Intel PRO” directory of the CD. The drivers support Windows-NT 4.0, Windows 98SE, Windows 2000 and Windows XP.

In a Windows environment, Intel 82801BA MAC Fast Ethernet should appear as an Intel (R) PRO/100 VE Network Connection.

LAN LED

The SBC provides three LED indicators to report the status of the 82801BA MAC Fast Ethernet interfaces. Please refer to the table below as a quick reference guide.

| Intel 82801BA MAC | LED | Ethernet Port Operation | |
|-------------------|------------------------|---------------------------------|------------|
| | | On | Off |
| LED1 | LAN link Integrity LED | Good link in 10 Mbps or 100Mbps | Bad link |
| LED2 | LAN speed LED | 100 Mbps | 10 Mbps |
| LED3 | LAN active LED | Active | Not active |

PCI Connector

The SBC provides one 68-pin PCI connector that allows you to add additional PCI devices, such as SCSI or Ethernet. If you have a compatible PCI device, plug it onto the connector and secure it with two retention bars.

Clearing the CMOS

The following table indicates how to enable/disable the CMOS Clear Function hardware circuit by setting the jumper at its proper position.

| JP2 | Function |
|------------|---------------------|
| 1-2 | Normal Operation* |
| 2-3 | Clear CMOS contents |

To run the CMOS Clear function:

1. Turn off the system.
2. Move the JP2 jumper to 2-3 position (this does not consume any power).

To clear the CMOS:

1. Turn the power on and off again for an AT system. Press the toggle switch a few times for an ATX system.
2. Move JP2 back to the 1-2 position (Normal Operation) and restart the system. The system will produce a "CMOS Check Sum Error" message and hold up. Users can then follow the displayed message to load the BIOS default setting.

Programming the Watchdog Timer

The enable and disable options are available in the Watch Dog Timer Select subsection of the Integrated Peripherals portion of the BIOS Setup Utility. Apart from enable and disable options, there are other options such as 10 sec, 20 sec, 30 sec, 40 sec, 1min, 2 min and 4 min.

There is one programming guide (source code in Assembly language) and test program on the CD. Please refer to the programming guide to create your own Watch Dog Timer application.

Chapter 5: BIOS

Overview

The SBC-815ET-VER comes with AWARD BIOS stored in Flash ROM. This BIOS has a setup program that allows users to modify the system configuration. System settings are stored in the CMOS RAM so they are retained during power-off periods. When the system is turned on, the system communicates with peripheral devices and checks its hardware resources against the configuration information stored in the CMOS memory. If errors are detected, or when the CMOS parameters need to be initially defined, the diagnostic program prompts the user to enter the SETUP program. Some errors are significant enough to abort start-up.

Entering Setup

Turn on or reboot the computer. When the message "Hit if you want to run SETUP" appears, press the key immediately to enter the BIOS Setup program. If the message disappears before you respond, but you still wish to enter Setup, please restart the system by performing a "COLD START" again by turning it OFF and then ON, or touch the "RESET" button. You also may restart from a "WARM START" by pressing the <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot, an error message appears, and you will be asked again to: Press <F1> to Run SETUP or Resume.

In the HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The following table shows keystroke functions available in the BIOS Setup.

| Key | Functions |
|-------------|--|
| Up Arrow | Move to the previous item |
| Down Arrow | Move to the next item |
| Left Arrow | Move to the item on the left (menu bar) |
| Right Arrow | Move to the item on the right (menu bar) |
| Move Enter | Move to the item you desired |
| PgUp key | Increase the numeric value or make changes |
| PgDn key | Decrease the numeric value or make changes |
| + key | Increase the numeric value or make changes |
| - key | Decrease the numeric value or make changes |
| Esc key | Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu |
| F1 key | General help on Setup navigation keys |
| F5 key | Load previous values from CMOS |
| F6 key | Load the fail-safe defaults from BIOS default table |
| F7 key | Load the optimized defaults |
| F10 key | Save all the CMOS changes and exit |

Main Menu

After you enter SBC-815ET-VER AWARD BIOS CMOS Setup Utility, go to the Main Menu. The Main Menu allows you to select from 11 setup functions and two exit choices. Use the arrow keys to switch among items and press the <Enter> key to accept or bring up the submenu.

CMOS Setup Utility - Copyright (C) 1984-2001

| | |
|--------------------------------|---------------------------|
| Standard CMOS Features | Frequency/Voltage Control |
| Advanced BIOS Features | Load Fail-Safe Defaults |
| Advanced Chipset Features | Load Optimized Defaults |
| Integrated Peripherals | Set Supervisor Password |
| Power Management Setup | Set User Password |
| PnP/PCI Configurations | Save & Exit Setup |
| PC Health Status | Exit Without Saving |
| Esc : Quit | ↑ ↓ ← → : Select Item |
| F10 : Save & Exit Setup | |
| Time, Date, Hard Disk Type.... | |



Note: Kontron recommends that you reload the Optimized Settings if the CMOS is lost or the BIOS is updated.

Standard CMOS Features Setup Menu

This setup page includes all the items in a standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Use the command keys in CMOS Setup table to change the Date, Time, Drive type, and Boot Sector Virus Protection Status.

Screen Shot

| Standard CMOS Features | | Item Help |
|---|-------------------|-----------|
| Date: | Mon, Oct 2 1999 | |
| Time: | 16:51:13 | |
| ➤ IDE Primary Master | None | |
| ➤ IDE Primary Slave | None | |
| ➤ IDE Secondary Master | None | |
| ➤ IDE Secondary Slave | None | |
| Drive A | 1.44M, 3.5 in. | |
| Drive B | None | |
| Floppy 3 Mode Support | Disabled | |
| Video | EGA/VGA | |
| Halt On | All, But Keyboard | |
| Based Memory | 640K | |
| Extended Memory | 260096K | |
| Total Memory | 261120K | |
| ↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults | | |

Menu Selections

| Item | Options | Description |
|-----------------------|--|---|
| Date | Mm:dd:yy | Set the system date. Note that the 'Day' automatically changes when you set the date |
| Time | Ffli:mm:ss | Set the system time |
| IDE Primary Master | Options are in its sub menu (described in 4.4 Table) | Press <Enter> to enter the sub menu of detailed options |
| IDE Primary Slave | Options are in its sub menu (described in 4.4 Table) | Press <Enter> to enter the sub menu of detailed options |
| IDE Secondary Master | Options are in its sub menu (described in 4.4 Table) | Press <Enter> to enter the sub menu of detailed options |
| IDE Secondary Slave | Options are in its sub menu (described in 4.4 Table) | Press <Enter> to enter the sub menu of detailed options |
| Drive A Drive B | None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in | Select the type of floppy disk drive installed in your system |
| Floppy 3 Mode Support | Disabled Drive A Drive B Both | Select which drive you would like to set to floppy 3 mode. |
| Video | EGA/VGA CGA40 CGA80 MONO | Select the default video device |
| Halt On | All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key | Select the situation in which you want the BIOS to stop the POST process and notify you |
| Base Memory | N/A | Displays the amount of conventional memory detected during boot up |
| Extended Memory | N/A | Displays the amount of extended memory detected during boot up |
| Total Memory | N/A | Displays the total memory available in the system |

IDE Adapters Setup Menu

IDE adapters control IDE devices such as hard-disk drives or the CD drive. You can use a submenu to configure each hard disk drive.

Screen Shot

| CMOS Setup Utility - Copyright © 1984-2001 Award Software | | |
|---|-------------|--|
| IDE Primary Master | | |
| IDE HDD Auto-Detection | Press Enter | Item Help |
| IDE Primary Master Access Mode | Auto | _____ |
| Cylinder | 20491 MB | _____ |
| Cylinder Head | 39/03 | Menu Level >> |
| Precomp | 16 | |
| Landing Zone | 0 | |
| Sector | 39/02 | |
| | 63 | To auto-detect the HDD's size, head... on this channel |
| ↑↓←→Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults | | |

Menu Selections

| Item | Options | Description |
|---|---|---|
| IDE HDD Auto-detection | Press Enter | Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu. |
| IDE Primary Master | None Auto Manual | Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE ! |
| Access Mode | CHS LBA Large Auto | Choose the access mode for this hard disk |
| Capacity | Auto Display your disk drive size | Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program. |
| The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual' | | |
| Cylinder | Min = 0 Max = 65535 | Set the number of cylinders for this hard disk. |
| Head | Min = 0 Max = 255 | Set the number of read/write heads |
| Precomp | Min = 0 Max = 65535 | **** Warning: Setting a value of 65535 means no hard disk |
| Landing zone | Min = 0 Max = 65535 | **** |
| Sector | Min = 0 Max = 255 | Number of sectors per track |

Advanced BIOS Features

This section allows you to configure a system for operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Screen Shot

| CMOS Setup Utility – Copyright © 1984 – 2001 Award Software | | |
|---|----------|--------------|
| Advanced BIOS Features | | |
| Virus Warning | Disabled | Item Help |
| L1 Cache | Enabled | |
| L2 Cache | Enabled | |
| Quick Power On Self Test | Enabled | |
| First Boot Device | | Menu Level > |
| HDD-0 | | |
| Second Boot Device | Floppy | |
| Third Boot Device | | |
| CDROM | | |
| Fourth Boot Device | ZIP100 | |
| Boot Up NumLock Status | On | |
| Security Option | Setup | |
| PS/2 Mouse Function Control | Enabled | |
| OS Select For DRAM > 64MB | | |
| Non-OS2 | | |
| HDD S.M.A.R.T. Capability | Disabled | |
| ↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults | | |

Virus Warning

| | |
|-----------------|---|
| Enabled | Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table. |
| Disabled | No warning message will appear when anything attempts to access the boot sector or hard disk partition table. |

L1 Cache / L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

| | |
|-----------------|----------------|
| Enabled | Enable cache. |
| Disabled | Disable cache. |

Quick Power on Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

| | |
|-----------------|---------------------|
| Enabled | Enabled quick POST. |
| Disabled | Normal POST. |

First/Second/Third/Fourth Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

Options: Floppy, LS120, ZIP100, HDD, SCSI, CDROM, LAN, and Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

Options: Off/On.

Security Option

Select whether a password is required every time the system boots or only when entering setup.

| | |
|---------------|---|
| System | The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. |
| Setup | The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt. |



Note: To disable security, select PASSWORD SETTING in the Main Menu and then will enter a password. Do not type anything; press <Enter>, which disables security. After the security is disabled, the system boots and you can enter Setup freely.

PS/2 Mouse Function Control

Disabled prevents an installed PS/2 mouse from functioning but frees up IRQ 12.

Enabled allows the operating system to determine whether to enable or disable the mouse.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

Options: Non-OS2, OS2.

HDD S.M.A.R.T. Capability

This option allows users to enable/disable the PC to predict the future failure of hard drive.

Options: Enabled, Disabled.

Advanced Chipset Features

This section allows you to configure the system based on the specific features of the Intel 82815 GMCH chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM (SDRAM) and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. These items usually do not need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Screen Shot

| CMOS Setup Utility – Copyright © 1984 – 2000 Award Software | | |
|---|----------|--------------|
| Advanced Chipset Features | | |
| SDRAM CAS Latency Time | 3 | Item Help |
| SDRAM Cycle Time Tras/Trc | Auto | |
| SDRAM RAS-to-CAS Delay | Auto | |
| SDRAM RAS Precharge Time | Auto | Menu Level > |
| System BIOS Cacheable | Enabled | |
| Video BIOS Cacheable | Enabled | |
| Memory Hole AT 15-16M | Disabled | |
| Delayed Transaction | Enabled | |
| Display Cache Frequency | 100 MHz | |
| System Memory Frequency | Auto | |
| On-Chip Video Window Size | 64 MB | |
| * Onboard Display Cache Setting * | | |
| CAS# Latency | 3 | |
| Paging Mode Control | Open | |
| RAS-toCAS Override | by | |
| CAS# LT | | |
| RAS# Timing | Fast | |
| RAS# Percentage Timing | Fast | |
| ↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults | | |

These chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

SDRAM CAS Latency Time

This option controls the number of SCLKs between the time a read command is sampled by the SDRAMs and the time the GMCH samples correspondent data from the SDRAMs.

Options: 2, 3 SCLKs.

SDRAM Cycle Time T_{ras}/T_{rc}

This option controls the number of SDRAM clocks used per access cycle.

Options: 5/7, 7/9 or Auto.

SDRAM RAS-to-CAS Delay

This option controls the number of SCLKs (SDRAM Clock) from a row activate command to a read or write command. If your system has quality SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. Normally, the option is set to Auto.

Options: 2, 3 SCLKs or Auto.

SDRAM RAS Precharge Time

This option controls the number of SCLKs for RAS# precharge. If your system installs has quality SDRAM, you can set this option to "3 SCLKs" to obtain better memory performance. It is set to auto normally.

Options: 2, 3 SCLKs or Auto.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better performance. However, if a program writes to this memory area, a system error can result.

Options: Enabled/Disabled.

Video BIOS Cacheable

Select "Enabled" to enable caching VGA BIOS into L2 cache to get higher display performance. "Disabled" will ignore this BIOS caching function.

Options: Enabled/Disabled

Memory Hole At 15-16M

To improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

Options: Enabled/Disabled.

Delayed Transaction

Select "Enabled" to enable delay transaction. This enhances performance for data transmission between different PCI buses.

Options: Enabled/Disabled.

Display Cache Frequency

This option allows users to configure the display cache frequency. The default setting is 100MHz.

Options: 100MHz/133MHz.

System Memory Frequency

This option allows users to configure the system memory frequency. The default setting is Auto.

Options: 100MHz, 133MHz and Auto.

On-Chip Video Window Size

This option allows you to select the size of mapped memory for AGP graphic data.

Options: 64MB/Disabled.

CAS# Latency

This option selects in units of local memory clock periods.

Options: 2, 3 SCLKs.

Paging Mode Control

This option controls GMCH memory controller tends to leave pages open or closed.

Options: Open / Close.

RAS-to-CAS Override

This option selects in units of display cache clock periods indicates the RAS#-to-CAS# delay.

Options: by CAS# LT / Override(2).

RAS# Timing

This option controls RAS# active to precharge, and refresh to RAS# active delay.

Options: Fast / Slow.

RAS# Precharge Timing

This option controls RAS# precharge in local memory clocks.

Options: Fast / Slow.

Integrated Peripherals

Screen Shot

| CMOS Setup Utility – Copyright © 1984 – 2001 Award Software | | |
|--|-------------|--------------|
| Integrated Peripherals | | |
| | | Item Help |
| On-Chip Primary PCIIDE | Enabled | Menu Level ➤ |
| On-Chip Secondary PCIIDE | Enabled | |
| IDE Primary Master PIO | Auto | |
| IDE Primary Salve PIO | Auto | |
| IDE Secondary Master PIO | Auto | |
| IDE Secondary Salve PIO | Auto | |
| IDE Primary Master UDMA | Auto | |
| IDE Primary Salve UDMA | Auto | |
| IDE Secondary Master UDMA | Auto | |
| IDE Secondary Salve UDMA | Auto | |
| USB Controller | Enabled | |
| USB Keyboard Support | Enabled | |
| Init Display First | PCI Slot | |
| IDE HDD Block Mode | Enabled | |
| POWER ON Function | BUTTON ONLY | |
| KB Power On Password | Enter | |
| Hot Key Power On | Ctrl-F1 | |
| Onboard FDC Controller | Enabled | |
| Onboard Serial Port 1 | Auto | |
| Onboard Serial Port 2 | Auto | |
| UART Mode Select | Normal | |
| RxD , TxD Active | Hi,Lo | |
| IR Transmission Delay | Enabled | |
| UR2 Duplex Mode | Half | |
| Onboard Parallel Port | 378/IRQ7 | |
| Parallel Port Mode | ECP | |
| EPP Mode Select | EPP1.7 | |
| ECP Mode Use DMA | 3 | |
| PWRON After PWR-Fail | off | |
| Watch Dog Timer Select | Disabled | |
| DOC Memory Address Range | D8000-D9FFF | |
| ↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults | | |

OnChip Primary/Secondary PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

Options: Enabled/Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system determines the best mode for each device.

Options: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

Options: Auto, Disabled.

USB Controller

This item allows you to enable/disable USB (Universal Serial Bus) function.

Options: Enabled/Disabled

USB Keyboard Support

This item allows you to enable USB keyboard function under POST, BIOS setup menu, DOS, or Windows-NT with no USB driver loaded.

Options: Enabled/Disabled

Init Display First

This item allows you to select the first display port to be initialized.

Options: PCI Slot (off-board video adaptor), Onboard/AGP

IDE HDD Block Mode

This item allows you to enable/disable IDE HDD Block Mode. The function is to collect the data that is nearby the one being read and leave them in the system buffer. Buffered data can be used with faster transmission rate so as to enhance system performance.

Options: Enabled/Disabled

Power On Function

This item allows you to select different power on scheme using ATX power supply.

| | |
|--------------------|---|
| Button Only | Power on by power button |
| Keyboard 98 | Power on by keyboard 98 |
| Password | Power on using customized password string |
| Hot Key | Power on using special customized key |
| Mouse Left | Power on using mouse left click |
| Mouse Right | Power on using mouse right click |
| Any Key | Power on using any keyboard key |

Keyboard Power On Password

In the event of "Power On Function" being configured as "Password", this item will be enabled for tuning. Press "Enter" key to enter a customized password, and confirm again when being asked. In the case that the confirmed password does not match the configured one, the message of "Password Disabled - Press any key to continue..." will be prompted.

Hot Key Power On

In the event of "Power On Function" being configured as "Hot Key", this item will be enabled for tuning.

Options: Ctrl-F1 to Ctrl-F12.

Onboard FDC Controller

This item allows you to enable or disable the Floppy disk controller.

Options: Enabled/Disabled

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows users to select the infrared transmission mode.

| | |
|---------------|---------------------------------|
| Normal | Disable Infrared function. |
| IrDA | Select IrDA mode transmission. |
| ASKIR | Select ASKIR mode transmission. |

As Infrared transmission function shares onboard Serial Port 2. COM2 needs to be enabled.

RxD, TxD Active

This item is to configure Infrared transmission rate. Four options are available:

| | |
|---------------|---|
| Hi | High rate for receiving / High rate for transmitting. |
| Hi, Lo | High rate for receiving / Low rate for transmitting. |
| Lo, Hi | Low rate for receiving / High rate for transmitting |
| Lo, lo | Low rate for receiving / Low rate for transmitting |

Onboard Parallel Port

This item allows you to configure I/O address of the onboard parallel port.

Options: Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7

Parallel Port Mode

There are four different modes for the onboard parallel port:

| | |
|------------------|---------------------------|
| SPP | Switch to SPP mode. |
| EPP | Switch to EPP mode. |
| ECP | Switch to ECP mode. |
| ECP + EPP | Switch to ECP + EPP mode. |
| Normal | Switch to normal mode. |

EPP Mode Select

Select different version of EPP mode.

Options: EPP1.7/EPP1.9

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

Options: 3/1

PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a power loss.

| | |
|-------------------|--|
| On | System automatically restores power. |
| Off | System stays at power -off. |
| Former-Sts | System restores back to previous status (On or Off). |

Watch Dog Timer Select

This option enables or disables the Watch Dog Timer. The options are 10 sec, 20 sec, 30 sec, 40 sec, 1 min, 2 min, 4 min and disabled.

DOC Memory Address Range

Force the system to use certain DOC Memory Address Range. Ranges available include D8000-D9FFF, DA000-DBFFF, DC000-DDFFF and DE000-DFFFF.

Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Screen Shot

| CMOS Setup Utility – Copyright © 1984 –2001 Award Software | | |
|--|-------------|--------------|
| Power Management Setup | | |
| ACPI function | Enabled | Item Help |
| ACPI Suspend Type | S1(POS) | |
| Power Management | User Define | Menu Level > |
| Video Off Method | DPMS | |
| Video Off In Suspend | Yes | |
| Suspend Type | Stop Grant | |
| Suspend Mode | Disabled | |
| HDD Power Down | Disabled | |
| Soft-Off by PWR-BTTN | Instant-Off | |
| Wake-Up on LAN | Disabled | |
| Resume On Ring | Enabled | |
| CPU Thermal-Throttling | 50.0% | |
| Resume by Alarm | Disabled | |
| Date(of Month) Alarm | 0 | |
| Time(hh:mm:ss) Alarm | 0 0 0 | |
| ** Reload Global Timer Events ** | | |
| Primary IDE 0 | Disabled | |
| Primary IDE 1 | Disabled | |
| Secondary IDE 0 | Disabled | |
| Secondary IDE 1 | Disabled | |
| FDD,COM,LPT Port | Disabled | |
| ↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5: Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults | | |

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

Options: Enabled/Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to "HDD Power Down", "Suspend Mode".

There are three selections for Power Management, three of which have fixed mode settings.

| | |
|--------------------------|--|
| Min. Power Saving | Minimum power management. Suspend Mode = 1 hr., and HDD Power Down = 15 min. |
| Max. Power Saving | Maximum power management. Suspend Mode = 1 min., and HDD Power Down = 1 min. |
| User Defined | Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 hr. and HDD Power Down ranges from 1 min. to 15 min. |

Video Off Method

This determines the manner in which the monitor is blanked.

| | |
|-----------------------|--|
| V/H SYNC+Blank | This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer. |
| Blank Screen | This option only writes blanks to the video buffer. |
| DPMS | Initial display power management signaling. |

Video Off In Suspend

This allows users to enable/disable video off in suspend mode.

Options: Yes/No

Suspend Type

Two options are available: Stop Grant and Power On Suspend.

Suspend Mode

When enabled and after a set time, of system inactivity, all devices except the CPU will shut off.

HDD Power Down

When enabled and after the set time of system inactivity, the hard-disk drive will be powered down while all other devices remain active.

Soft-Off by PWR-BTTN

This item allows users to set the time to remove the power after the power button is pressed.

Options: Instant-Off/Delay 4 Sec.

Wake-Up On LAN

The options available are enabled/disabled. A system that is at soft-off mode will be alert by a Wake-On-LAN signal if the "Enabled" option is selected.

Resume On Ring

"Enabled" allows a system that is at soft-off mode to be alerted by a Wake-On-Modem signal.

Options: Enabled/Disabled

Resume by Alarm

This item allows users to enable/disable the resume by alarm function. When "Enabled" is selected, system using ATX power supply can be powered on if a customized time and day is used.

Date (of Month) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

Options: 0 ~ 31

Time (hh:mm:ss) Alarm

When "Resume by Alarm" is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

Options: hh (0~23), mm (0~59), ss (0 ~59)

Primary/Secondary IDE 0/1

This item is to configure IDE devices being monitored by system so as to keep system out of suspend mode if the associated device is busy.

Options: Enabled/Disabled

FDD, COM, LPT Port

This item is to configure floppy device, COM ports, and parallel port being monitored by system so as to keep system out of suspend mode if the associated device is busy.

Options: Enabled/Disabled

PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Screen Shot

| CMOS Setup Utility – Copyright © 1984–2001 Award Software | | |
|---|-------------|------------------------|
| PnP/PCI Configurations | | |
| PNP OS Installed | No | Item Help |
| Reset Configuration Data | Disabled | ----- |
| Resources Controlled By | | Menu Level > |
| Auto(ESCD) | | |
| > IRQ Resources | | BIOS can automatically |
| Press Enter | | configure all the |
| > DMA Resources | Press Enter | boot and Plug and Play |
| | | compatible devices. |
| | | If you choose Auto, |
| | | you cannot select IRQ |
| | | DMA and memory base |
| | | address fields, since |
| | | BIOS automatically |
| | | assigns them |
| PCI/VGA Palette Snoop | | |
| Disabled | | |
| Assign IRQ For VGA | Enabled | |
| Assign IRQ For USB | Enabled | |
| PCI Slot4 IRQ Assign | Auto | |
| PCI Slot1 IRQ Assign | Auto | |
| PCI Slot2 IRQ Assign | Auto | |
| PCI Slot3 IRQ Assign | Auto | |
| ↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General | | |
| Help | | |
| F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults | | |

PNP OS Installed

Select Yes if you are using a Plug and Play capable operating system. Select No if you need the BIOS to configure non-boot devices.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

Option: Enabled, Disabled.

Resource Controlled By

The Award Plug and Play BIOS has the capacity to configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a submenu is preceded by a "Ø").

Options: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt. It allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

Options: "Legacy ISA" and "PCI/ISA PnP"

DMA Resources

When resources are controlled manually, assign each DMA channel a type, depending on the device using the DM channel. Use Legacy ISA for devices compliant with the original PC AT bus specification. Choose PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

Options: "Legacy ISA" and "PCI/ISA PnP"

PCI/VGA Palette Snoop

Leave this field at Disabled.

Options: Enabled/Disabled.

Assign IRQ For VGA/USB

To enable VGA/USB IRQ, select enabled.

PCI Slot4/1/2/3 IRQ Assign

This BIOS option helps users assign IRQ numbers to particular slots. Available IRQ numbers include: 3, 4, 5, 7, 9, 10, 11, 12, 14 and 15. Auto is the default value for each slot.

PC Health Status

Screen Shot

| CMOS Setup Utility – Copyright © 1984-2001 Award Software | | |
|--|------------|--------------|
| PC Health Status | | |
| Current System Temperature | 38°C/100 | Item Help |
| °F | | ----- |
| Current CPU Temperature | 43°C/109°F | Menu Level > |
| System Fan(J10)Speed | 0 RPM | |
| CPU Fan(J19)Speed | 5314 RPM | |
| Vcore | 1.63 V | |
| Vcc1.8 | 1.85 V | |
| Vcc3.3 | 3.31 V | |
| + 5 V | 4.94 V | |
| +12 V | 11.97 V | |
| -12 V | 12.36 V | |
| - 5 V | 5.04 V | |
| VBAT(V) | 3.15 V | |
| 5VSB(V) | 4.87 V | |
| ↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General | | |
| Help | | |
| F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults | | |

Frequency/Voltage Control

Screen Shot

| CMOS Setup Utility – Copyright © 1984–2000 Award Software | | |
|---|----------|--------------|
| Frequency/Voltage Control | | |
| Auto Detect DIMM CLK | Enabled | Item Help |
| System Spectrum | Disabled | ----- |
| CPU HOST/PCI Clock/PC133 | Default | Menu Level > |
| CPU Clock Ratio | x 5.5 | |

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General
Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Auto Detect DIMM CLK

This item allows you to enable/disable auto detect DIMM Clock

Options: Enabled, Disabled

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate

Options: Enabled, Disabled

CPU HOST/PCI Clock/PC133

This item allows you to select the CPU host and the corresponding PCI clock. Because the CPU host and PC133 will be detected, different combinations of CPU and DIMM produce different option tables. Refer to the following table as a quick reference guide. Based on the FSB of the processor used, the default value of the CPU host will be detected as 66MHz, 100MHz or 133MHz.

The PCI Clock default is always 33MHz. Users can change the CPU Host and PCI Clock from the default 66/100MHz, 100/33MHz or 133/33MHz, up to 83/42MHz, 115/38MHz or 166/42MHz.

Unless the PC-133 DIMM and the 133MHz FSB processor are used at the same time, the PC133 will always be "No" because only the PC-133 DIMM and the 133MHz FSB processor can boost a 133MHz memory clock.

| CPU Host/PCI Clock/PC133 | Non PC-133 DIMM | PC-133 DIMM |
|---|---|--|
| 66MHz Processor FC-PGA Celeron | Default 67/33Mhz/No 68/34Mhz/No 70/35Mhz/No 75/38Mhz/No 80/40Mhz/No 83/42Mhz/No | Default 67/33Mhz/No 68/34Mhz/No 70/35Mhz/No 75/38Mhz/No 80/40Mhz/No 83/42Mhz/No |
| 100MHz Processor PIII-550E~PIII-1.1G E | Default 100/33Mhz/No 103/34Mhz/No 105/35Mhz/No 110/37Mhz/No 115/38Mhz/No | Default 100/33Mhz/No 103/34Mhz/No 105/35Mhz/No 110/37Mhz/No 115/38Mhz/No |
| 133MHz Processor PIII-667EB~PIII-1.26G EB | Default 133/33Mhz/No 137/34Mhz/No 140/35Mhz/No 145/36Mhz/No 150/37Mhz/No 160/38Mhz/No 166/42Mhz/No | Default 133/33Mhz/Yes 137/34Mhz/Yes 140/35Mhz/Yes 145/36Mhz/Yes 150/37Mhz/Yes 160/38Mhz/Yes 166/42Mhz/Yes |

Only this CPU/DIMM combination creates 133MHz memory clock

Only the Engineering Sample Processor is allowed to be configured with a different system clock.

CPU Clock Ratio

This item allows you to select the CPU core/bus ratio.

Options: 3 ~ 8

Default Menu

Selecting "Defaults" from the main menu shows you two options which are described below.

Load Fail-Safe Defaults

When you press <Enter>, a confirmation dialog box with the following message appears:

Load Fail-Safe Defaults (Y/N)? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)? N

Pressing 'Y' loads default factory values that optimize system operations.

Supervisor/User Password Setting

You can set either supervisor or user password, or both of them. The differences between them are:

- ◆ Supervisor password: Allows supervisors to enter the BIOS setup utility and change the options of the setup menus.
- ◆ User password: Prevents unauthorized users to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Enter Password

Type a password, up to eight characters in length, and press <Enter>. The password clears password from the CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disabled

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing the system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This prevents unauthorized use of your computer.

You can determine when a password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System," the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS - a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message. If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

There are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that a DRAM error has occurred. This beep code consists of a single long beep repeatedly.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED

CMOS battery is no longer functional. Replace it.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA Configuration Checksum Error

PLEASE RUN EISA CONFIGURATION UTILITY

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete

PLEASE RUN EISA CONFIGURATION UTILITY

The slot configuration information stored in the EISA non-volatile memory is incomplete.



Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

The hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Make sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

The controller cannot be initialized. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration

PLEASE RUN EISA CONFIGURATION UTILITY

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.



Note: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a non-maskable Interrupt condition during boot, this allows you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

Should Be Empty But EISA Board Found

PLEASE RUN EISA CONFIGURATION UTILITY

A valid board ID was found in a slot that was configured as having no board ID.



Note: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Should Have EISA Board But Not Found

PLEASE RUN EISA CONFIGURATION UTILITY

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.



Note: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Slot Not Empty

Indicates a slot designated as empty by the EISA Configuration Utility actually contains a board.



Note: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

Wrong Board In Slot

PLEASE RUN EISA CONFIGURATION UTILITY

The board ID does not match the ID stored in the EISA non-volatile memory. The board ID does not match the ID stored in the EISA non-volatile memory.



Note: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

FLOPPY DISK(S) fail (80) ® Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40) ® Floppy Type mismatch.

Hard Disk(s) fail (80) ® HDD reset failed

Hard Disk(s) fail (40) ® HDD controller diagnostics failed.

Hard Disk(s) fail (20) ® HDD initialization error.

Hard Disk(s) fail (10) ® Unable to recalibrate fixed disk.

Hard Disk(s) fail (08) ® Sector Verify failed.

Keyboard is locked out - Unlock the key.

Keyboard error or no keyboard present.

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

BIOS ROM checksum error - System halted.

The checksum of ROM address F0000H-FFFFFFH is bad.

Memory test fail.

BIOS reports the memory test fail if the onboard memory is tested error.

BIOS POST Check Point List

AWARDBIOS provides all IBM standard Power On Self Test (POST) routines as well as enhanced AWARDBIOS POST routines. The POST routines support CPU internal diagnostics. The POST checkpoint codes are accessible via the Manufacturing Test Port (I/O port 80h).

Whenever a recoverable error occurs during the POST, the system BIOS displays an error message explaining the problem and offers a solution.

During the POST, the BIOS signals a checkpoint by issuing one code to I/O address 80H. This code can be used to establish how far the BIOS has executed through the power-on sequence and what test is being performed. This is done to help troubleshoot a faulty board.

If the BIOS detects a terminal error condition, it will halt the POST process and attempt to display the checkpoint code written to port 80H. If the system hangs before the BIOS detects the terminal error, the value at port 80H will be the last test performed. In this case, the terminal error cannot be displayed on the screen. The following POST checkpoint codes are valid for all AWARDBIOS products with a core BIOS date of 07/15/95 version 6.27 (Enhanced).

| Code | Description |
|-------------|--|
| CFh | Test CMOS R/W functionality. |
| COh | Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers |
| CIh | Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below) |
| C3h | Expand compressed BIOS code to DRAM |
| C5h | Call chipset hook to copy BIOS back to E000 & F000 shadow RAM. |
| Ohl | Expand the Xgroup codes locating in physical address 1000:0 |
| 02h | Reserved |
| 03h | Initial Superio Early Init switch. |
| 04h | Reserved |
| 05h | 1. Blank out screen 2. Clear CMOS error flag |
| 06h | Reserved |
| 07h | 1. Clear 8042 interface 2. Initialize 8042 self-test |
| 08h | 1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface. |
| 09h | Reserved |
| OAh | Disable PS/2 mouse interface (optional). Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). Reset keyboard for Winbond 977 series Super I/O chips. |
| OBh | Reserved |

| Code | Description |
|-------------|--|
| OCh | Reserved |
| ODh | Reserved |
| OEh | Test F000h segment shadow to see whether it is RAV-able or not. If test fails, keep beeping the speaker. |
| OFh | Reserved |
| IOh | Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support. |
| IIh | Reserved |
| 12h | Use walking I's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override. |
| 13h | Reserved |
| 14h | Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers. |
| 15h | Reserved |
| 16h | Initial Early Init Onboard Generator switch. |
| 17h | Reserved |
| 18h | Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686). |
| 19h | Reserved |
| IAh | Reserved |
| IBh | Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS INT HDLR&S/W interrupts to SPURIOUS soft HDLR. |
| ICh | Reserved |
| IDh | Initial EARLY PM INIT switch. |
| IEh | Reserved |
| IFh | Load keyboard matrix (notebook platform) |
| 20h | Reserved |
| 21h | HPM initialization (notebook platform) |
| 22h | Reserved |
| 23h | 1. Check validity of RTC value: e.g. a value of 5 Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0. |
| 24h | Reserved |
| 25h | Reserved |
| 26h | Reserved |
| 27h | Initialize INT 09 buffer |

| Code | Description |
|-------------|--|
| 28h | Reserved |
| 29h | Program CPU internal MTRR (P6 & PII) for 0-640K memory address. Initialize the APIC for Pentium class CPU. Program early chipset according to CMOS setup. Example: onboard IDE controller. Measure CPU speed. Invoke video BIOS. |
| 2Ah | Reserved |
| 2Bh | Reserved |
| 2Ch | Reserved |
| 2Dh | Initialize multi-language. Put information on screen display, including Award title, CPU type, CPU speed.... |
| 2Eh | Reserved |
| 2Fh | Reserved |
| 30h | Reserved |
| 31h | Reserved |
| 32h | Reserved |
| 33h | Reset keyboard except Winbond 977 series Super I/O chips. |
| 34h | Reserved |
| 35h | Reserved |
| 36h | Reserved |
| 37h | Reserved |
| 38h | Reserved |
| 39h | Reserved |
| 3Ah | Reserved |
| 3Bh | Reserved |
| 3Ch | Test 8254 |
| 3Dh | Reserved |
| 3Eh | Test 8259 interrupt mask bits for channel 1. |
| 3Fh | Reserved |
| 40h | Test 8259 interrupt mask bits for channel 2. |
| 41h | Reserved |
| 42h | Reserved |
| 43h | Test 8259 functionality. |
| 44h | Reserved |
| 45h | Reserved |
| 46h | Reserved |
| 47h | Initialize EISA slot |
| 48h | Reserved |
| 49h | 1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMD K5 CPU. |
| 4Ah | Reserved |
| 4Bh | Reserved |

| Code | Description |
|-------------|---|
| 4Ch | Reserved |
| 4Dh | Reserved |
| 4Eh | 1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical. |
| 4Fh | Reserved |
| 50h | Initialize USB |
| 51h | Reserved |
| 52h | Test all memory (clear all extended memory to 0) |
| 53h | Reserved |
| 54h | Reserved |
| 55h | Display number of processors (multi-processor platform) |
| 56h | Reserved |
| 57h | 1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device. |
| 58h | Reserved |
| 59h | Initialize the combined Trend Anti-Virus code. |
| 5Ah | Reserved |
| 5Bh | (Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional) |
| 5Ch | Reserved |
| 5Dh | 1. Initialize Init Onboard Super IO switch. 2. Initialize Init Onboard AUDIO switch. |
| 5Eh | Reserved |
| 5Fh | Reserved |
| 60h | Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility. |
| 61h | Reserved |
| 62h | Reserved |
| 63h | Reserved |
| 64h | Reserved |
| 65h | Initialize PS/2 Mouse |
| 66h | Reserved |
| 67h | Prepare memory size information for function call: INT15hax=E820h |
| 68h | Reserved |
| 69h | Turn on L2 cache |
| 6Ah | Reserved |
| 6Bh | Program chipset registers according to items described in Setup & Auto-configuration table. |
| 6Ch | Reserved |

| Code | Description |
|-------------|---|
| 6Dh | 1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO". |
| 6Eh | Reserved |
| 6Fh | 1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware. |
| 70h | Reserved |
| 71h | Reserved |
| 72h | Reserved |
| 73h | (Optional Feature) Enter AWDFLASH.EXE if: -AWDFLASH is found in floppy drive. -ALT+F2 is pressed |
| 74h | Reserved |
| 75h | Detect & install all IDE devices: HDD, LS120, ZIP, CDROM..... |
| 76h | Reserved |
| 77h | Detect serial ports & parallel ports. |
| 78h | Reserved |
| 79h | Reserved |
| 7Ah | Detect & install co-processor |
| 7Bh | Reserved |
| 7Ch | Reserved |
| 7Dh | Reserved |
| 7Eh | Reserved |
| 7Fh | 1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ◆Clear EPA or customization logo. |
| 80h | Reserved |
| 81h | Reserved |
| 82h | 1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password. |
| 83h | Save all data in stack back to CMOS |
| 84h | Initialize ISA PnP boot devices |
| 85h | 1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs. |
| 86h | Reserved |
| 87h | Reserved |
| 88h | Reserved |
| 89h | Reserved |
| 90h | Reserved |
| 91h | Reserved |
| 92h | Reserved |
| 93h | Read HDD boot sector information for Trend Anti-Virus code |

| Code | Description |
|------|---|
| 94h | 1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining |
| 95h | 1. Program daylight saving 2. Update keyboard LED & typematic rate |
| 96h | 1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table. |
| FFh | Boot attempt (INT 19h) |

BIOS Flash Utility

Utilize the AWARD Flash BIOS programming utility to update the BIOS with new versions.



Note: Remove installed Memory Management Utility files (such as HIMEM.SYS, EMM386.EXE, or QEMM.EXE) in the CONFIG.SYS file before running the Flash programming utility.

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Appendix B: Troubleshooting

Overview

This chapter provides tips to get your SBC-815ET-VER board running. This chapter will focus on system-integration issues such as backplane setup, BIOS settings, and OS diagnostics.

Backplane Setup

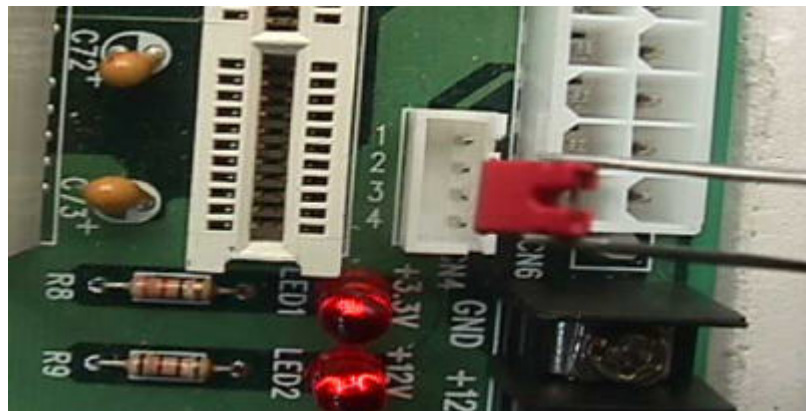
Backplane

The SBC-815ET-VER is a full-sized SBC, and therefore is able to run on any PICMG backplane, active or passive.

ATX Power

The SBC-815ET-VER is designed to support ATX mode. Please refer to the following instruction to apply ATX power on your SBC-815ET-VER and backplane.

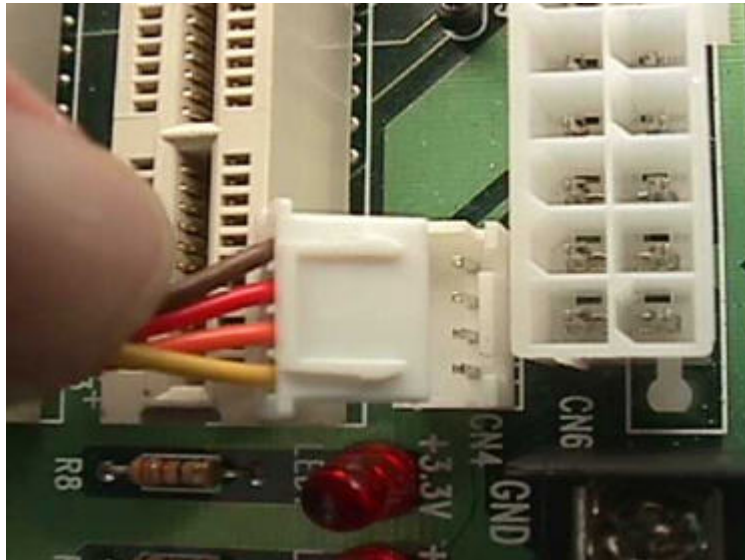
1. Remove the jumper on Pin 3 and Pin 4 of CN4 ATX P/S CONTROL CONNECTOR, 4-pin) connector (see the figure below). The CN4 connector is on the lower-left side of the CN7 (ATX POWER CONNECTOR) on the backplane.



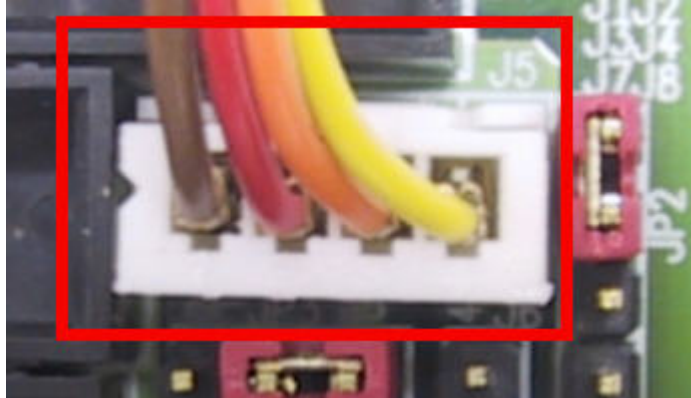
2. Connect the 20-pin power cable of the ATX POWER with the CN7 (ATX POWER CONNECTOR, 20-pin) connector on the backplane. The CN7, which is white, is located on the upper right side of the backplane.



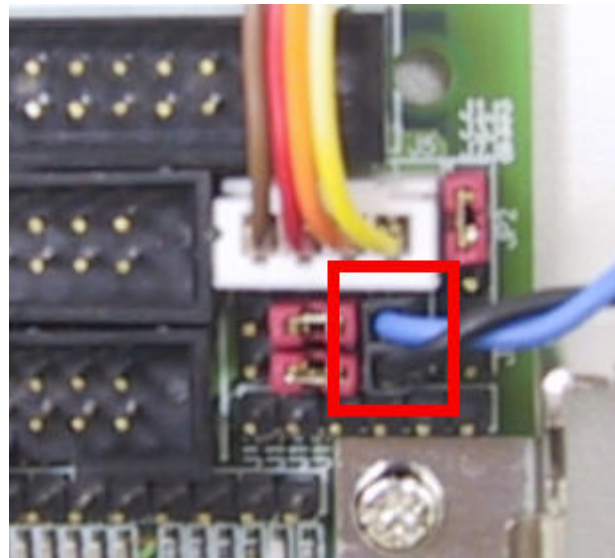
3. Use a 4-pin power cable to connect the CN4 (ATX P/S CONTROL CONNECTOR, 4 pin) connector on the backplane.



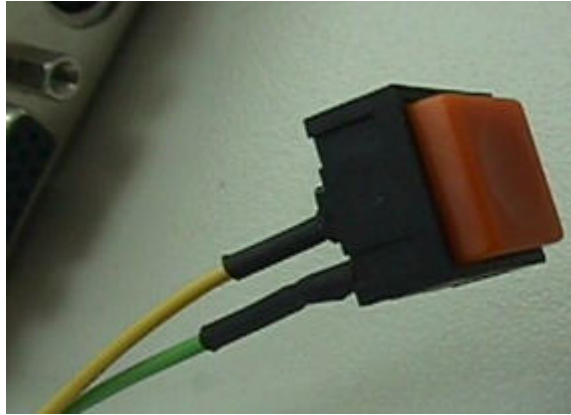
4. Please find the J5 4-pin header on the center part of the SBC in white. You also will see a mark with "J5" at the right top corner of the J5 header. Connect the 4-pin power control cable to this J5 header.



5. Connect the TOGGLE SWITCH with the J6 connector. The J6 connector (2 pin) is located just on the right side of the JP3 jumper.



6. The figure below is the TOGGLE SWITCH, which is used to switch the ATX Power on/off for the SBC. Usually the TOGGLE SWITCH is located on the chassis front panel. Press the switch once to turn it on. Press the switch again to turn it off.



ATX FAQs

Q: Is there anything to do to finish up an ATX system?

A: Yes. the SBC needs to be configured to support ATX function for the above cabling. Move jumper JP3 to 3-5 short and 4-6 short (support ATX function).

Q: How can I build an AT system using an ATX power supply?

A: Do not forget to move JP3 back to 1-3 short and 2-4 short, which will support the AT function. If the ATX power supply has a switch, such as ORION-300ATX, leave the jumper of backplane connector (CN4) in step 1 and use the power supply switch as the system power on switch. In all cases, users can apply a 2-pin AT (on/off) switch over Pin 3 and Pin 4 of the backplane connector (CN4) in Step 1. However, the power supply switch needs to be moved to "on", if there is one.

Hardware Installation

Q: How do I connect my keyboard and mouse?

A: Users can always adopt the PS/2 keyboard and mouse over the PS/2 interface (through Ycable), J18. However, it is also OK to adopt a standard keyboard over the standard keyboard connector on the backplane, if provided. Users need to adopt a 5-pin keyboard connection cable to line up the keyboard interface, J22, with the 5-pin keyboard connector on the backplane.

Q: OK. I have finished up hardware installation, but nothing happens when I power on the system. Why?

A: Try the following solutions.

1. Check jumper JP3. For AT power supply or ATX power supply used for AT system, JP3 needs to be at 1-3 and 2-4. Otherwise, it needs to be at 3-5 and 4-6. Incorrect power settings will not allow you to power on the system.
2. Double check whether every connector is attached with the correct cable.
3. If you have changed processor with different system clock, please move JP2 (CMOS clear Jumper) to 2-3, power on the system to clear CMOS, power off the system, move JP2 back to 1-2, and power on again.

Q: I power on the system, but the CPU speed is not correct. Why?

A: This applies to Engineering Sample processor ONLY. If you have ever loaded the BIOS optimal default, thank you for doing so. However, this will force the BIOS to pick up the default CPU core/bus ratio as well. It needs to be emphasized again that this SBC does not have switch or jumper to configure CPU core/bus ratio. This is done through your BIOS setting. Please check in the "Frequency/Voltage Control" section of the BIOS chapter to adjust this core/bus ratio.

Q: I connect two IDE devices over one IDE flat cable, but the system either does not start or hangs. Why?

A: Make sure that you have configured the two IDE devices as master and slave, respectively.

Q: I am using an ATA-66 hard drive, how can I know that ATA-66 function is started?

A: You need to use the 80-pin ATA-66 IDE flat cable to have this function ready. During POST, you can see ATA-66 message while the hard drive is being detected.

BIOS Settings

It is assumed that users have correctly adopted modules and connected all the device cables required before turning on AT power. CPU, CPU fan, CPU fan power cable, 168-pin SDRAM, keyboard, mouse, floppy drive, IDE hard disk, printer, VGA connector, device power cables, ATX accessories or P8/P9 power cable are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of a device. To make sure that you have a successful start, it is recommended that when going with the bootup sequence, to hit "DEL" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading Default Optimal Setting

When prompted with the main setup menu, please scroll down to "Load Optimal Defaults", press "Enter" and "Y" to load in default optimal BIOS setup. This forces your BIOS setting back to the initial factory configuration. Do this to make sure that system is running with the BIOS setting. Users can load the default BIOS settings when the system appears unstable during boot up.

Auto Detect Hard Disks

In the BIOS => Standard CMOS setup menu, pick one from Primary/Secondary Master/Slave IDE ports, and press "Enter". Set up the IDE port and its access mode to "Auto". This forces the system to pick up the IDE devices that are being connected each time the system is booted.

Improper Disabling

Check the BIOS settings to make sure that the devices or ports you need are not disabled. These include the floppy drive, COM1/COM2 ports, parallel port, USB ports, external cache, on-board VGA and Ethernet.

It is also very common that users disable a device/port to release IRQ resource. A few good examples are:

- ◆ Disable COM1 serial port to release IRQ #4
- ◆ Disable COM2 serial port to release IRQ #3
- ◆ Disable parallel port to release IRQ #7
- ◆ Disable PS/2 mouse to release IRQ #12

It is very easy to find out which IRQ resource is ready for additional peripherals. If there are not enough IRQ resources, disable some devices listed above to release more. A quick review of the basic IRQ mapping is given below for your reference.

| IRQ | Description |
|------------|------------------------------|
| 0 | System counter |
| 1 | Keyboard |
| 2 | Programmed controller |
| 3 | COM2 |
| 4 | COM1 |
| 5 | Nothing |
| 6 | Floppy disk controller |
| 7 | Printer Port (Parallel Port) |
| 8 | CMOS clock |
| 9 | Nothing |
| 10 | USB |
| 11 | Nothing |
| 12 | PS/2 mouse |
| 13 | Data processor |
| 14 | Primary IDE controller |
| 15 | Secondary IDE controller |

OS Diagnostics

What will be presented here is a brief guide to properly house-in the driver for any Windows 95/98/NT device. For other operating systems, please refer to OS manual/guidebook.

Booting

Users may find that Windows 95/98 hangs in loading sequence. The Windows logo remains, or does not display. If this occurs:

1. Restart your system and hit "F5" when loading the Windows system and enter "Safe mode". Users can always enter "Safe mode" to remove devices that are not properly running or installed.
2. Restart Windows. Removed devices will be automatically detected again and drivers will be loaded in if drivers have been copied in the system database, or you will be asked to provide driver source for installation.

For Windows NT 4.0 users, it is always recommended to not change your hardware configuration after your first installation. However, if such a change is needed, please note that sometimes Windows NT 4.0 will stop loading and prompt you with a whole page of error messages. Please note that reinstallation of this NT hard disk is inevitable. You have to backup your data stored in this hard disk because it is almost impossible to switch back this system unless booting up with another hard disk. If this NT hard disk is installed with FAT16 disk format, please boot up your system with any Windows OS. You will then be able to see this NT hard disk and retrieve any data you have interest in. However, if this NT hard disk is installed with NTFS disk format, there is only NTFS that allows you to retrieve this NT hard disk again.

Display Setup

By default, any Windows OS starts with 640 x 480 by 16 colors display. Please load in the display driver provided in the CD to maximize the VGA performance. If you are using a monitor that Windows cannot identify, you also will need to set from the display setup menu a system monitor to correctly retrieve display output. This SBC provides a Direct AGP on-board display feature. Windows NT 4.0 users need Service Pack 4.0 or above to activate this display feature.

Network Setup

Windows 95/98

1. Apply an ISA/PCI network card over ISA/PCI slot.
2. Start Windows 95/98 and let Windows 95/98 detect your network adapter.
3. Provide the driver and complete installation.

4. Restart your windows system is required.
5. After you return to Windows, please go to Control Panel -> System -> Device Manager to see if your network adapter has been installed properly. A warning sign appears if the network adaptor is not properly installed.
6. Please remove this network device from the system setup menu and restart Windows to detect your network adapter again.
7. After hardware installation finishes, go to Control Panel -> Network to set your networking configuration. You will need to add DNS, IP, and Gateway information. Appropriate protocols are required for networking activities. Refer to your system administrator for assistance.

Windows NT 4.0

1. Please install your network adapter manually in Control Panel -> Network -> Adapter. Drivers are required at this stage.
2. Proceed to "Binding" after you load in the driver.
3. Change to Protocol label and load in the protocols that you have need (generally, TCP/IP). Configuring IP, gateway and DNS is required for TCP/IP protocol.
4. Proceed again to "Binding" after you complete the protocol loading.
5. Restart your system.
6. If your installed network adapter is not working, or an old network driver remains, remove all network adapters and protocols from the network setup menu and reinstall drivers and implement the correct protocols again. Network setup within Windows –NT 4.0 is not as easy as Windows 95/98. Special familiarity and care are required to come out with a successful installation.

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