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SBC8163

Socket370 Full-size
All-in-One
CPU Card Series

User's Manual

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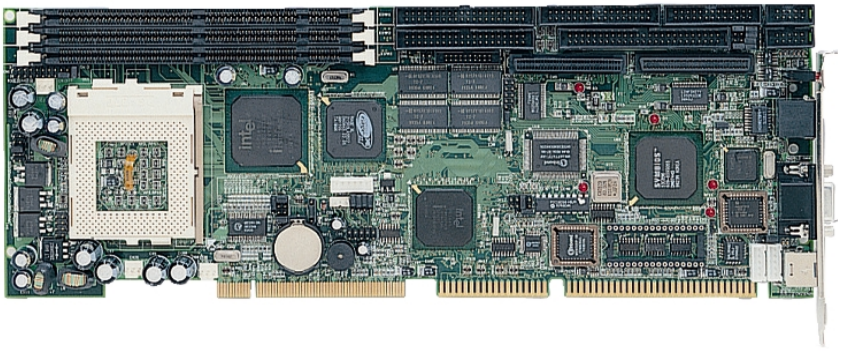
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Chapter 1
Introduction

1.1 General Description



The **SBC8163** CPU card is an industrial grade CPU card incorporating the Intel 440BX AGPset chipset and the ATI Rage XL AGP 2X VGA controller, both ensuring its compatibility with PCI bus passive backplanes. Its 6-layer structure reduces signal noise and built-in power management feature. These advanced concepts along with the PCI Local Bus architecture bring outstanding performance to Windows-based applications.

Designed for the professional embedded developers, the Socket370 all-in-one **SBC8163** CPU card is virtually your ultimate one-step solution to various applications.

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1.2 Specifications

- **Chipset:** Intel 440BX AGPset
- **CPU Socket:** Socket370
- **Bus Clock:** 66/100 MHz
- **CPU:** Intel Socket370 Celeron/Pentium III up to 800MHz
- **L2 Cache:** Integrated in CPU
- **BIOS:** Award 2MB PnP Flash BIOS
- **System Memory:**
  - 3 x 168-pin DIMM sockets
  - Maximum buffered SDRAM 256MB or unbuffered SDRAM 128MB, up to 768MB SDRAM
  - ECC/parity checking
- **IDE Interface:** 2 bus mastering EIDE up to four devices, Ultra DMA/33 supported
- **FDD Interface:** Supports up to 2 drives
- **Serial Ports:** Two 16550 UARTs ports with 16 byte as one RS-232 and one RS-232/422/485
- **Parallel Ports:** One parallel port with ECP/EPP/SPP supported
- **VGA Controller:**
  - AGP interface controller with onboard 8MB SDRAM
  - VGA chipset ATI Rage XL AGP 2X supporting CRT displays
  - Supports up to 1600x1200 16 bit-color resolution on non-interlaced CRT monitors
- **Ethernet:**
  - Intel 82559 PCI Bus 10/100M Base-T
  - Onboard Wake On LAN (via ATX power supply)
  - Onboard RJ-45 connector

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- **Ultra3 Wide SCSI:**
  - LSI Symbios SYM53C1010 PCI Bus Ultra3 Wide SCSI interface
  - Two 68-pin 16-bit differential Ultra3 Wide SCSI ports and one 50-pin 8-bit Ultra SCSI port
  - Connects up to 30 SCSI peripherals whit Ultra3 Wide SCSI feature
  - Provide data transfer rates up to 160MB/sec whit Ultra3 Wide SCSI, 80MB/sec whit Ultra2 Wide SCSI, 40MB/sec whit Ultra Wide SCSI, and 20MB/sec with Ultra SCSI interface
- **USB Interface:** 2 USB ports; USB Spec. Rev. 1.1 compliant
- **IrDA:** 1 IrDA pin-header for wireless communication
- **Hardware Monitoring:** Winbond W83781D controller, monitoring for CPU/System temperature, system voltage, and fan speed
- **Watchdog Timer:**
  - Generates a system reset
  - Software programmable time interval and jumper selectable
  - 64 levels, 0.5~8/5~80/50~800/100~1600 seconds
- **SSD:** Supports M-Systems DiskOnChip 2000 serials
- **Dimensions:** 122(W) x 335(L) mm

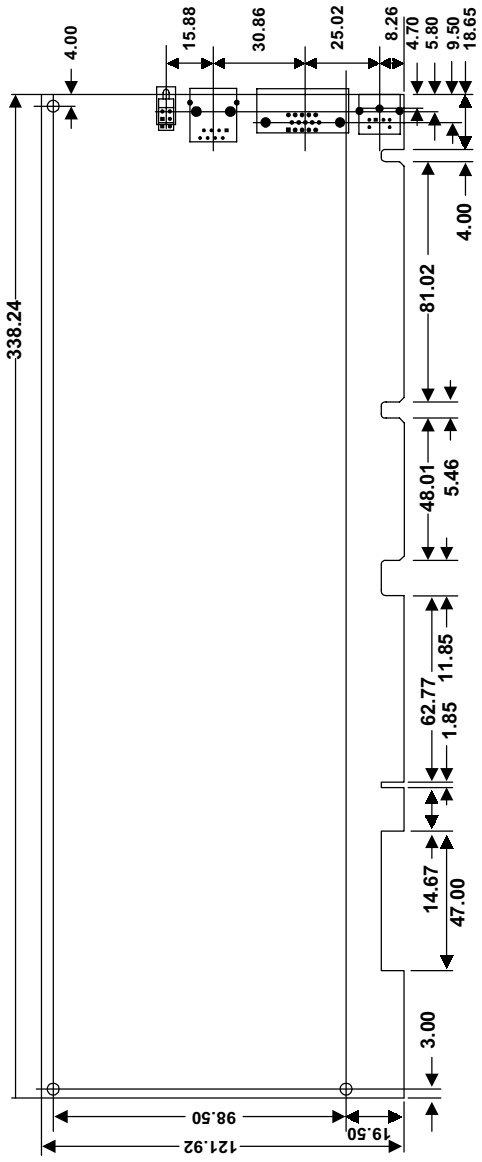
NOTE: *Specifications are subject to change without notice.*

1.3 Utilities Supported

- SCSI Utility and Drivers (SCSI functions only)
- Ethernet Utility and Drivers
- CRT Drivers
- System Doctor

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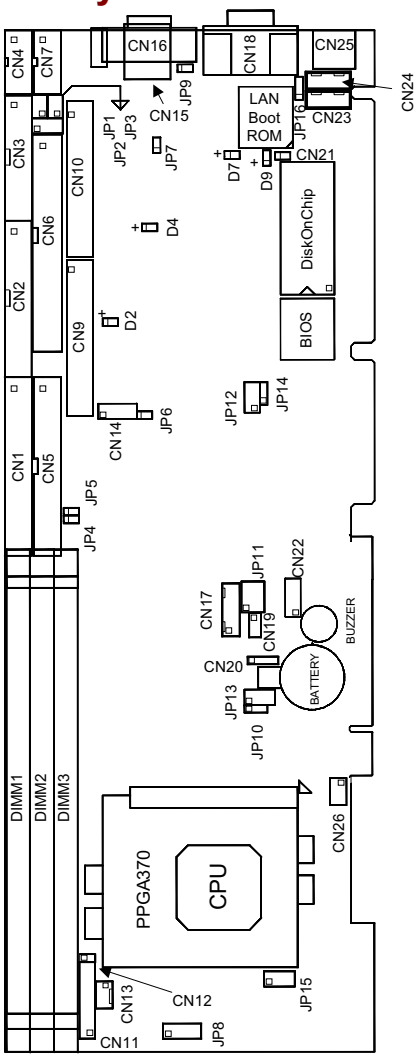
1.4 Board Dimensions



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Chapter 2
Jumpers and Connectors

2.1 Board Layout



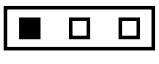
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2.2 Jumper Settings

Making the proper jumper settings configures the **SBC8163** to match the needs of your application. The following summary table lists all onboard jumpers and their corresponding functions and/or default settings.

Jumper	Default Setting	Jumper Setting
JP1	COM2 Mode Setting: RS232	Short 3-5, 4-6
JP2	COM2 Mode Setting: RS232	Short 1-2, 7-8
JP3	COM2 Mode Setting: RS232	Short 3-5, 4-6
JP4	VGA Interrupt require: Use Interrupt	Open
JP5	Reserved	Open
JP6	Reserved	Open
JP7	SCSI Function: Use Dual Interrupt	Open
JP8	-----	-----
JP9	Reserved	Open
JP10	Reserved	Short 1-2
JP11	Power Supply Type: AT Power Supply	Short 1-2, 4-5, 7-8, 10-11
JP12	DiskOnChip Memory Segment DC000-DFFFF	Short 7-8
JP13	Reserved	Open
JP14	Watchdog Trigger Mode: Disabled	Open
JP15	-----	-----
JP16	Int. Keyboard Power Select: System Power	Short 1-2

2.2.1 Internal Keyboard Connector Power Selection: JP16



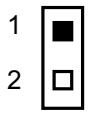
1 2 3

JP16

Power Source	Settings
System Power	Short 1-2 (default)
Suspend Power	Short 2-3

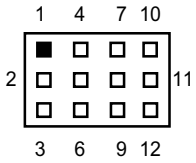
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2.2.2 VGA Controller Interrupt Control: JP4



Options	Settings
Use Interrupt	Open (default)
Non-Interrupt	Short

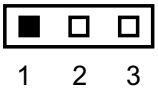
2.2.3 Power Supply Type Selection: JP11



Options	Settings
AT P/S (default)	Short 1-2, 4-5, 7-8, 10-11
ATX P/S	Short 2-3, 5-6, 8-9, 11-12

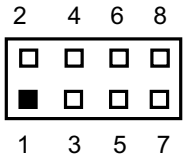
2.2.4 Watchdog Trigger Mode Setting: JP14

The watchdog timer is an indispensable feature of the **SBC8163**. It has a sensitive error detection function and a report function. When the CPU processing comes to a halt, the watchdog either generates a NMI or resets the CPU.



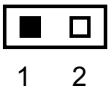
Options	Setting
NMI	Short 1-2
RESET	Short 2-3
Disabled	Open (default)

2.2.5 DiskOnChip Memory Segment: JP12



Options	Settings
D0000 – D3FFF	Short 1-2
D4000 – D7FFF	Short 3-4
D8000 – DBFFF	Short 5-6
DC000 – DFFFF	Short 7-8 (default)

2.2.6 SCSI Function Interrupt Control: JP7



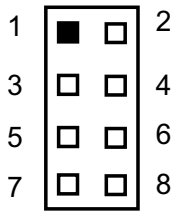
Options	Settings
Use Dual Interrupt	Open (default)
Use One Interrupt	Short

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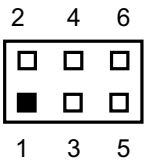
2.2.7 COM2 RS232/422/485 Settings: JP1,JP2,JP3

COM2	JP1	JP2	JP3
RS-232 (default)	Short 3-5, 4-6	Short 1-2, 7-8	Short 3-5, 4-6
RS-422	Short 1-3, 2-4	Short 3-4	Short 1-3, 2-4
RS-485	Short 1-3, 2-4	Short 5-6, 7-8	Short 1-3, 2-4

JP2



JP1 and JP3



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2.3 Connectors

The connectors allow the CPU card to connect with other parts of the system. Some problems encountered by your system may be a result from loose or improper connections. Ensure that all connectors are in place and firmly attached. The following table lists the function of each connector on the **SBC8163**. Their corresponding pin assignments are described in Chapter 4 and Appendix B.

Connectors	Label	Connectors	Label
Primary IDE Connector	CN1	ACPI Connector	CN17
FDD Connector	CN2	VGA Connector	CN18
Printer Port Connector	CN3	Extrnal Battery Connector	CN20
COM1 (SBC8163VES And SBC8163VE Only)	CN4	Reserved	CN21
Secondary IDE Connector	CN5	USB Connector	CN22
50-pin Narrow SCSI Connector	CN6	PS/2 Keyboard Connector	CN23
COM2	CN7	PS/2 Mouse Connector	CN24
-----	CN8	Keyboard/Mouse Connector	CN25
68-pin Ultra3(2) Wide SCSI Connector With Channel 1	CN9	Fan Power Connector 2	CN26
68-pin Ultra3(2) Wide SCSI Connector With Channel 2	CN10	SCSI Channel 1 LVD Mode directives LED Connector	D2
General Output Connector	CN11	SCSI Channel 2 LVD Mode directives LED Connector	D4
Reserved	CN12	Watch-Dog Activity LED Connector	D6
Fan Power Connector 1	CN13	SCSI Channel 2 Activity LED Connector	D7
IrDA Connector	CN14	SCSI Channel 1 Activity LED Connector	D9
Ethernet Connector (SBC8163VES & VE Only)	CN15	Ethernet Boot ROM Socket	U16
COM1 (SBC8163V Only)	CN16	DiskOnChip® Socket	U22
External LAN Card Wake On LAN Connector	CN19		

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Chapter 3
Installation

This chapter describes the hardware installation procedures on the **SBC8163** all-in-one Socket370 CPU card. The following is a list of typical peripherals required to build a minimum system:

- Power supply and passive backplane (optional)
- IBM™ PC/AT keyboard
- Display monitor
- Floppy or hard disk with MS-DOS or Flash Disk emulator

3.1 System Memory

The **SBC8163** industrial CPU card supports one 168-pin DIMM (Dual In-line Memory Module) socket for a maximum total memory of 128MB unbuffer SDRAMs or 256MB buffer SDRAMs. The memory module can come in sizes of 16MB, 32MB, 64MB, 128MB and 256MB (for buffer type) SDRAMs.

NOTE: *Use SDRAM modules with PC100 or PC133 specification when running 100MHz CPU bus speed. With 66MHz CPU bus speed, SDRAM modules with PC66, PC100 or PC133 specification can be used. You have to install the Intel Celeron or Pentium III processor before installing the memory modules.*

3.2 CPU Installation

1. Align pin one (e.g., white dot) of the CPU with pin one of the socket. Pin one of the CPU socket may either be marked on the board or indicated by an arrow head symbol on one corner of the socket. Normally, its diagonal corner distinguishes pin one on the socket.
2. To complete the CPU installation, gently press the CPU into place.
3. Double-check the insertion and orientation of the CPU before applying power. Improper installation will result in permanent damage to the CPU.

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3.3 Completing Installation

To complete the installation, follow the steps listed below.

1. Make sure the power is OFF.
2. Set the configuration jumpers according to the jumper settings on Chapter 2.
3. Install the SBC8163 CPU card into one of the slots on the passive backplane. You may allow the SBC8163 to stand alone as a single board computer.
4. Connect the I/O cables and peripherals, i.e. floppy disk, hard disk, monitor, keyboard, power supply and etc. to the CPU board.

   NOTE: *The color of pin one is usually red or blue, while others are gray.*

5. Turn ON the system power.

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Chapter 4
Hardware Description

This chapter gives a detailed explanation of the hardware features onboard the **SBC8163** all-in-one Socket370 CPU card.

4.1 Microprocessors

The **SBC8163** supports Intel Celeron or Pentium III CPUs. Systems based on these CPUs can be operated under UNIX, OS/2, Linux, Windows NT/2000, Windows 95/98 and MS-DOS environments. The system's performance depends on the installed CPU on the board. When installing a new CPU, the jumpers including CPU type, CPU Clock, CPU Voltage and Bus Clock may need to be adjusted. Make sure all the settings are correct for the installed CPU to prevent any damage to the CPU.

4.2 BIOS

The system BIOS used in **SBC8163** is Award Plug and Play BIOS. The **SBC8163** contains a single 2MB Flash EPROM. For more detailed information, refer to Chapter 8 for a complete description of the BIOS setup utility and the available features accompanying it.

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4.3 I/O Port Address Map

The CPU card communicates via I/O ports. It has a total of 1KB port addresses that can be assigned to other devices via I/O expansion cards.

Address	Devices
000-01F	DMA controller #1
020-03F	Interrupt controller #1
040-05F	Timer
060-06F	Keyboard controller
070-07F	Real time clock, NMI
080-09F	DMA page register
0A0-0BF	Interrupt controller #2
0F0	Clear math coprocessor busy signal
0C0-0DF	DMA controller #2
0F1	Reset math coprocessor
0F8-0FF	Math processor
120	Disable watchdog timer operation (read)
121	Enable watchdog timer operation (read)
122	Watchdog
1F0-1F8	Fixed disk controller
200-207	Game port
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel port #1
3B0-3BF	MDA video card (including LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port #1 (COM1)
2F8-2FF	Serial port #2 (COM2)

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4.4 Interrupt Controller

The **SBC8163** is a fully PC compatible control board. It consists of 16 ISA interrupt request lines and 4 of the 16 can be either ISA or PCI. The mapping list of the 16 interrupt request lines is shown below;

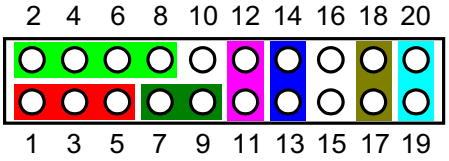
NMI	Parity check error
IRQ0	System timer output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial port #2
IRQ4	Serial port #1
IRQ5	Reserved
IRQ6	Floppy disk controller
IRQ7	Parallel port #1
IRQ8	Real time clock
IRQ9	Reserved (SCSI)
IRQ10	USB
IRQ11	Reserved (VGA/LAN/SCSI)
IRQ12	PS/2 Mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE Channel

NOTE: *The table above displays the standard mapping list of the interrupt controller fpr reference. The displayed mapping list varies for **SBC8163V**, **SBC8163VE**, and **SBC8163VES** board.*

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4.5 General Output Connector

CN11



Power LED

This 3-pin connector, designated at ***Pins 1, 3,*** and ***5*** of ***CN11***, connects the system power LED indicator to its respective switch on the case. ***Pin 1*** is +, and ***pin 5*** is assigned as -. The Power LED lights up when the system is powered ON.

Keyboard Lock

Pins 7 and ***9 of CN11*** connect to the case's keyboard lock connector. When connecting the keyboard lock connector onto ***CN11***, ***pin 7*** is designated as positive (+) pole and ***pin 9*** as the negative (-) pole.

External Speaker and Internal Buzzer Connector

Pins 2, 4, 6, and ***8 of CN11*** connect to the case-mounted speaker unit or internal buzzer. ***Short pins 4-6*** when connecting the CPU card to an internal buzzer. When connecting an external speaker, set these jumpers to ***Open*** and install the speaker cable on ***pin 8*** (+) and ***pin 2*** (-).

External SMI Button Switch

This switch enables the connection between the **SBC8163**-based system and the installed hardware. ***Pins 11*** & ***12*** of ***CN11*** support the SMI switch function.

ATX Power On/Off Button

This 2-pin connector, designated at ***Pins 13*** & ***14*** of ***CN11***, connects the ATX power button of the front panel to the **SBC8163** CPU card - allowing user to control the power on/off state of the ATX power supply. This jumper is only useful when installing an ATX power supply and ***CN17*** cable to the system.

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System Reset Switch

Pins 17 & ***18*** of ***CN11*** connect to the case-mounted reset switch and allow rebooting of your computer instead of turning OFF the power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

HDD Activity LED

This connector extends to the hard drive activity LED on the control panel. This LED will flash when the HDD is being accessed. ***Pins 19*** & ***20 of CN11*** connect the hard disk drive and the front panel HDD LED. ***Pins 19*** is -, and ***pin 20*** is assigned as +.

Reserved pins

Pins 10, 15, and ***16*** of ***CN11*** are reserved pins.

4.6 Enhanced IDE Interface Connector

The **SBC8163** includes a PCI bus enhanced IDE controller that can support master/slave mode and post write transaction mechanisms with 64-byte buffer, and master data transaction. This feature, connected via connector **CN5** and **CN6**, allows the **SBC8163** to handle 4 IDE drives. Refer to Appendix B for the pinout assignments of **CN5** and **CN6**.

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4.7 VGA Interface

4.7.1 CRT Interface Controller

The built-in ATI Rage XL is a high-performance super VGA display controller with onboard 8M bytes VGA RAM. It is capable of driving a wide array of CRT displays. It can also support CRT at a maximum resolution of up to 1600x1200 with 16-bit colors.

4.7.2 Features

- Fully compatible with IBM™ VGA
- CRT monitor can be displayed simultaneously
- Onboard 8M bytes VGA SDRAM
- Supports non-interlaced CRT monitors with resolutions up to 1600x1200 16-bit colors
- Direct interface to Color and Monochrome Dual Drive and Single Drive panels
- SMARTMAP™ intelligent color to gray scale conversion enhances text legibility
- Integrated programmable linear address feature accelerates GUI performance
- Hardware Windows acceleration

4.7.3 VGA Connector: CN18

The **SBC8163** has three connectors that support CRT VGA individually or simultaneously. **CN18** is a standard 15-pin pin header connector commonly used for the CRT VGA display. Configuration of the VGA interface is done via the software utility and no jumper setting is required. The following table is the pin assignments for the CRT/VGA connector.

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CN18: CRT/VGA Connector Pin Assignment

Pin	Description	Pin	Description	Pin	Description
1	Red	2	Green	3	Blue
4	N/A	5	GND	6	AGND
7	AGND	8	AGND	9	N/A
10	GND	11	N/A	12	DDC DAT
13	Horizontal Sync	14	Vertical Sync	15	DDC CLK

4.8 Ethernet Connector

The RJ-45 connector is used for Ethernet. To connect the **SBC8163** to 10-Base-T or 100-Base-T hub, just plug one end of the cable into the **CN15** and connect the other end (phone jack) of the cable to a 10-Base-T hub.

4.9 SCSI Connector

The **SBC8163** provides three SCSI connectors for 160Mbps, 80Mbps, 40Mbps and 20Mbps SCSI devices. This feature is not available on **SBC8163** board.

- **CN10:** Ultra3 Wide SCSI Connector, 68-pin supports up to 160Mbps SCSI devices
- **CN9:** Ultra3 Wide SCSI Connector, 68-pin supports up to 160Mbps SCSI devices
- **CN6:** Narrow SCSI Connector, 50-pin supports 20Mbps SCSI devices

4.10 Floppy Disk Controller

The **SBC8163** provides a 34-pin header type connector, **CN2**, supporting up to two floppy drives. The floppy drives may be any one of the following types: 5.25" 360KB/1.2MB and 3.5" 720KB/1.44MB/2.88MB. The **CN2** pin assignment is listed in Appendix B.

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4.11 Parallel Port Interface

The **SBC8163** onboard **CN3** is a multi-mode parallel port able to support:

- **Standard mode:** IBM PC/XT, PC/AT and PS/2™ compatible with bi-directional parallel port
- **Enhanced mode:** Enhance parallel port (EPP) compatible with EPP 1.7 and EPP 1.9 (IEEE 1284 compliant)
- **High speed mode:** Microsoft and Hewlett Packard extended capabilities port (ECP) IEEE 1284 compliant

The address select of the onboard parallel port in LPT1 (3BCH) or disabled is done by BIOS CMOS setup.

4.12 Serial Port Interface

The serial interface onboard **SBC8163** consists of COM1 port (**CN4 or CN16**) supports RS-232 and COM2 (**CN7**) provide RS-232/422/485 connectivity.

4.12.1 Serial Ports IRQ Selection

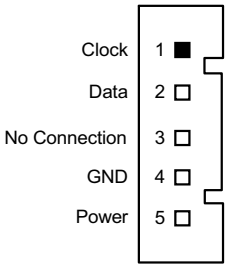
SBC8163 uses a 10-pin connector for COM2 **(CN7)** and a DB9-pin connector for COM1 **(CN16)** on non-Ethernet CPU cards, or a 10-pin for COM1 **(CN4)** with onboard Ethernet CPU card. Interrupt Requests on COM1 and COM2 are selected via IRQ4 and IRQ3 respectively. Additionally, both ports can be enabled or disabled via BIOS setting. The RS-232 pin assignments for COM1 and COM2 along with the RS-485 pin assignments for COM2 are in Appendix B.

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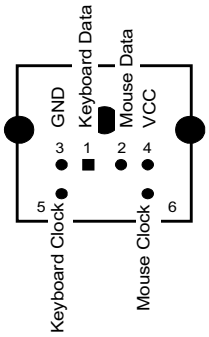
4.13 Keyboard and PS/2 Mouse Connectors

The **SBC8163** provides a keyboard **(CN23)** and PS/2 mouse **(CN24)** interface with a 5-pin connector. **CN25** is a DIN connector for PS/2 keyboard connection.

CN23/24



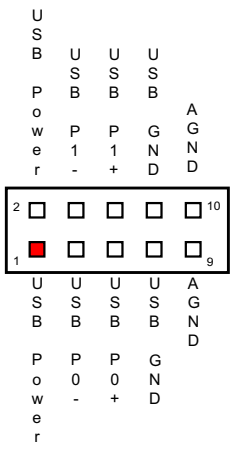
CN25



4.14 USB Connector

The Universal Serial Bus (USB) connector on the **SBC8163** is for installation of peripherals supporting the USB interface. **CN22** is the 10-pin USB connector on the **SBC8163**.

CN22

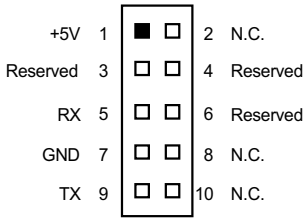


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4.15 IrDA Connector

CN14 is a 10-pin IrDA connector for wireless communication.

CN14

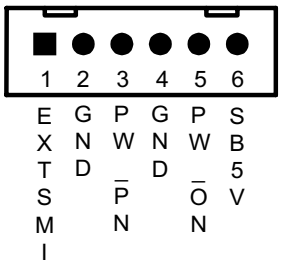


4.16 ACPI Connector

Advanced Configuration and Power Interface (ACPI) defines a flexible and extensible interface that allows system designers to select appropriate cost/feature trade-offs for power management. The interface enables and supports reliable power management through improved hardware and operating system coordination. The specification enables new power management technology to evolve independently in operating systems and hardware while ensuring that they continue to work together.

CN17 on the **SBC8163** is a 6-pin header connector that provides ACPI interface.

CN17



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Chapter 5
Display Drivers

5.1 Introduction

The VGA chipset used on the **SBC8163** that can drive a wide range of monochrome and color flat panels including Single-Drive (SS) and Dual-Panel, Dual Drive (DD) passive STN and active matrix TFT / MIM LCD, EL, and Plasma panels. The 69000 supports an additional 256Kx16 DRAM providing a 32-bit video memory bus. The 69000 accelerator can support up to 64 gray scales on monochrome panels, up to 226, 981 colors on passive STN LCDs, and up to 16M colors on 24-bit active matrix LCDs. It also offers a variety of programmable features to optimize display quality, including tall font stretching, fast vertical centering and programmable vertical stretching in graphics for handling modes with less than 480 lines.

5.2 Features

- AGP interface controller with onboard 8MB SDRAM
- VGA chipset ATI Rage XL AGP 2X supporting CRT displays
- Display memory supports up to 1600x1200 16 bit-color resolution on non-interlaced CRT monitors

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5.3 Drivers Supported

The Rage XL is fully compatible with the VGA graphics standard at the register, gate, and BIOS levels. The manufacturer supplies fully VGA-compatible BIOS, end-user utilities and drivers for common application programs (e.g., Microsoft Windows™). ATI's drivers for Windows include a Big Cursor setting and fast panning / scrolling capabilities.

Make sure you know the version of the application for which you are installing drivers. Your *Display Driver Folders* in the Product Information CD-ROM contain drivers for several versions of certain applications. For your driver to operate properly, you must install the driver for your version of the application program.

NOTE: *Before you begin the driver software installation, please see the detail of installation procedure from the driver utility in the Product Information CD-ROM.*

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Chapter 6
Ethernet

6.1 Introduction

The **SBC8163** is equipped with a high performance Plug and Play Ethernet interface which is fully compliant with the IEEE 802.3 standard, and consisting of a RJ-45 connector **(CN25)**.

6.2 Features

- 10Mb/s and 100Mb/s operations
- Supports 10Mb/s and 100Mb/s N-Way auto negotiation
- Full duplex capability
- Full compliance with PCI Revision 2.1
- PCI Bus Master data transfers

6.3 Drivers Supported

Bundled with popular software drivers, the **SBC8163** Ethernet interface allows great flexibility to work with all major networking operating systems including Novell NetWare v2.x, v3.x, v4.x, Microsoft LAN Manager, Win3.1, Win NT, Win95, IBM LAN Server, SCO UNIX or other ODI, NDIS and Packet drive compliant operating systems.

NOTE: *Before you begin the driver software installation, please see the detailed installation procedure from the Product Information CD-ROM and be sure to make installation and backup copies of the driver files.*

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This page does not contain any information.

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Chapter 7
SCSI Controller

7.1 Introduction

The onboard LSI integrated Duak Channel Ultra2 SCSI provides two SCSI-3 interfaces that require BIOS support. The dual channel LSI integrated SCSI provides 16-bit Low Voltage Differential (LVD) and Single-Ended (SE) SCSI solutions for your computer. This supports legacy Fast SCSI devices, Ultra SCSI devices, Ultra2 SCSI devices, and the newest Ultra160 devices. PCI SCSI Device Management System (SDMS™) software operates the chipset, but the design of the chipset does not prevent other software to be used with it. BIOS support for this chipset is incorporated in the **SBC8163** CPU card BIOS.

7.2 Features

- Two separate SCSI channels
- 16-bit SE/LVD
- Automatically enabled termination
- One 68-pin high-density for channel A
- One 68-pin high-density and one 50-pin header for channel B
- Fast, Ultra, and Ultra2 data transfer capability
- SCSI Plug and Play
- SCAM (SCSI Configured AutoMatically)
- Serial NVRAM (Non Volatile Random Access Module) on each channel for user configuration utility and SCAM information storage
- 4 LED connectors for display of SCSI channel state

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7.3 Driver Support

LSI Logic currently provides Symbios PCI to SCSI device drivers for the MS-DOS6.0/Windows 3.1, Windows 95/98, Windows NT 3.5x/4.0, Windows 2000, SCO UNIX Open Server Release 5, UnixWare 2.1.x and 7, Solaris 7, Linux, NetWare 3.12/4.11/5.

NOTE: *Before you begin the driver software installation, please see the detail of installation procedure from the driver utility in the Product Information CD-ROM and be sure to make installation and backup copies of the SCSI Driver Diskettes. Refer to the SCSI User's Manual provided in the Product Information CD-ROM for more information.*

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Chapter 8
Award BIOS Utility

Chapter 8 describes the different settings available in the Award BIOS that comes with the **SBC8163** CPU card. Also contained here are instructions on how to set up the BIOS configuration.

8.1 BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel Celeron processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

8.2 BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn ON the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system OFF and back ON again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

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When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

The section below the setup items of the Main Menu displays the control keys for this menu. Another section located at the bottom of the Main Menu, just below the control keys section, displays information on the currently highlighted item in the list.

NOTE: *If you find that your computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

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8.3 Standard CMOS Setup

"Standard CMOS Setup" allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Sat, Jul 1 2000
Time (hh:mm:ss) : 00 : 00 : 00

HARD DISK	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master :	0	0	0	0	0	0	0	CHS
Primary Slave :	0	0	0	0	0	0	0	CHS
Secondary Master :	0	0	0	0	0	0	0	CHS
Secondary Slave: :	0	0	0	0	0	0	0	CHS

Drive A : 1.44M,3.5 in
Drive B : None

Video : : EGA / VGA
Halt On : : All Errors

Base Memory	:	640K
Extended Memory	:	15360K
Other Memory	:	384K
Total Memory	:	16384K

ESC : Quit ↑ ↓ → ← : Select Item PU / PD / + / - : Modify
F1 : Help (Shift) F2 : Change Color

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following pages describe each item of this menu.

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- **Date**
  The date format is:

Day	the day of week, from Sun to Sat, determined by the BIOS, is read only
Month	the month, Jan (1) through Dec (12)
Date	the date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
Year	the year, from 1994 to 2079

  To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

- **Time**
  The time format is:

Hour	From 00 to 23
Minute	From 00 to 59
Second	From 00 to 59

  To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

- **Primary/Secondary Master/Slave Hard Drives**
  The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".
  To enter the specifications for a hard disk drive, you must select first a "Type". There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Types 1 to 45 are predefined. Type "User" is user-definable. For the Primary Master/Slave as well as Secondary Master/Slave, you can select "Auto" under the TYPE and MODE fields. This will enable auto detection of your IDE drives and CD-ROM drive during POST. Press <PgUp>/<PgDn> to select a numbered hard disk type or type the number and press the <Enter> key. The hard disk will not work properly if you enter incorrect information for this field. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually. If you select Type User, the utility will ask you to enter the information on the following table.

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CYLS	number of cylinders
HEAD	number of read/write heads
PRECOMP	write precompensation
LANDZ	landing zone
SECTOR	number of sectors
SIZE	Automatically adjust according to the configuration
MODE (for IDE HDD only):	Auto Normal (HD < 528MB) Large (for MS-DOS only) LBA (HD > 528MB and supports Logical Block Addressing)

NOTE: *The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in these fields. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.*

- **Drive A / Drive B**
  These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360K, 5.25 in	5.25 inch PC-type standard drive; 360Kb capacity
1.2M, 5.25 in	5.25 inch AT-type high-density drive; 1.2MB capacity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb capacity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB capacity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB capacity

- **Video**
  This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	For Hercules or MDS adapters, includes high resolution monochrome adapters

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- **Halt On**
  This field determines whether the system will halt if an error is detected during power up.

No errors	The system boot will halt on any error detected. (default)
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

8.4 BIOS Features Setup

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

ROM / PCI ISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Processor Number Feature	: Enabled	D4000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot Sequence	: C,A,SCSI	DC000-DFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Disabled		
Boot Up NumLock Status	: On		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PS/2 mouse function control	: Enabled	ESC : Quit	↑ ↓ → ← : Select Item
PCI /VGA Palette Snoop	: Disabled	F1 : Help	PU/PD/+/- : Modify
OS Select For DRAM>64MB	: Non-OS2	F5 : Old Values	(Shift) F2 : Color
Report No FDD For WIN 95	: Yes	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

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- **Virus Warning**
  This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

  NOTE: *Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. If you will run such a program, disable the Virus Warning feature.*

- **CPU Internal Cache / External Cache**
  Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these are ***Enabled***.

- **CPU L2 Cache ECC Checking**
  When enabled, this allows ECC checking of the CPU's L2 cache. By default, this field is ***Enabled***.

- **Quick Power On Self Test**
  When enabled, this field speeds up the Power On Self Test (POST) after the system is turned ON. If it is set to *Enabled*, BIOS will skip some items.

- **Boot Sequence**
  This field determines the drive that the system searches first for an operating system. The available options are:

  - **A, C, SCSI**
  - **C, CDROM, A**
  - **D, A, SCSI**
  - **C only**
  - **SCSI, A, C**
  - **C, A, SCSI**
  - **CDROM, C, A**
  - **SCSI, C, A**
  - **LS/ZIP, C**

  The default value is ***A, C, SCSI***.

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- **Swap Floppy Drive**
  This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to ***Disabled.***

- **Boot Up Floppy Seek**
  When enabled, the BIOS seeks for number of track (40 or 80) of the installed floppy drive. 360K type has 40 tracks while 760K, 1.2M and 1.44M have 80 tracks. By default, this field is set to ***Enabled.***

- **Boot Up NumLock Status**
  This activates the NumLock function after powering up the system. By default, the system boots up with ***NumLock*** ON.

- **Gate A20 Option**
  This you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB. The default setting is ***Fast.***

- **Typematic Rate Setting**
  When disabled, continually holding down any key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

- **Typematic Rate (Chars/Sec)**
  When the typematic rate is enabled, the system registers repeated keystrokes speeds. You can select speed range from 6 to 30 characters per second. By default, this item is set to ***6.***

- **Typematic Delay (Msec)**
  When typematic rate is enabled, this item allows you to set the time interval between the display of the first and second characters. By default, this item is set to ***250msec****.*

- **Security Option**
  This allows you to limit access to the System and Setup. The default value is ***Setup***. When set to *System,* the system prompts for the User Password every boot up. Selecting *Setup* always boots up and prompts for Supervisor Password only when Setup utility is called up.

- **PS/2 mouse function control**
  This item allows you to determine to enable the hardware PS/2 mouse function or not. The available choices are *Enabled* and *Disabled*.

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- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This field allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card. When disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.
- **OS Select for DRAM > 64MB**
  This allows system to access more than 64MB of DRAM memory when used with OS/2 depends on certain BIOS calls to access memory. The default setting is ***Non-OS/2***.
- **Report No FDD For WIN 95**
  This option allows Windows 95 to share IRQ6 (assigned to a floppy disk drive) with other peripherals in case the drive is not existing. The default setting is ***No***.
- **Video BIOS Shadow**
  This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.
- **C8000 - CBFFF Shadow/DC000 - DFFFF Shadow**
  Shadowing ROM reduces available memory between 640KB and 1024KB. These fields determine whether optional ROM is copied to RAM or not.

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8.5 Chipset Features Setup

This Setup menu controls the configuration of the motherboard chipset.

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

SDRAM RAS-to-CAS Delay	: 3	Auto Detect DIMM/PCI Clk	: Enabled
SDRAM RAS Precharge Time	: 3	Spread Spectrum	: Disabled
SDRAM CAS latency Time	: 3	CPU Host Clock	: Default
SDRAM Precharge Control	: Disabled	CPU Warning Temperature	: Disabled
DRAM Data Integrity Mode	: Non-ECC	Current System Temp.	: 49°C/120°F
System BIOS Cacheable	: Disabled	Current CPU Temperature	: 49°C/120°F
Video BIOS Cacheable	: Disabled	Current CPU FAN1 Speed	: 0RPM
Video RAM Cacheable	: Disabled	Current CPU FAN2 Speed	: 0RPM
8 Bit I/O Recovery Time	: 1	Vcore(V): 1.63V	VTT(V) : 1.50V
16 Bit I/O Recovery Time	: 1	3.3V: 3.37V	+5V : 5.05V
Memory Hole At 15M-16M	: Disabled	+12V: 12.34V	-12V : -11.78V
Passive Release	: Enabled	-5V: -5.16V	
Delayed Transaction	: Disabled		
AGP Aperture Size (MB)	: 64		

ESC : Quit	↑ ↓ → ← : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift)F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

- **SDRAM RAS-to-CAS Delay**
  During DRAM refresh, both rows and columns are addressed separately. This field allows you to determine the timing of transition from Row Address Strobe (RAS) to Column Address Strobe (CAS). The default setting is ***3***.

- **SDRAM RAS Precharge Time**
  The precharge time is the number of cycles for the RAS to accumulate its charge before DRAM refreshes. If time is insufficient, refresh may be incomplete and the DRAM may fail to retain data. The default setting is ***3***.

- **SDRAM CAS Latency Time**
  When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. The default setting is ***3***.

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- **DRAM Data Integrity Mode**
  This option sets the data integrity mode of the DRAM installed in the system. The default setting is ***Non-ECC***.
- **System BIOS Cacheable**
  When enabled, access to the system BIOS ROM addressed at F0000H-FFFFFH is cached, provided that the cache controller is disabled.
- **Video BIOS Cacheable**
  When enabled, access to video BIOS addressed at C0000H to C7FFFH is cached, provided that the cache controller is disabled.
- **Video RAM Cacheable**
  Selecting *Enabled* allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result.
- **8 Bit I/O Recovery Time**
  This option specifies the length of the delay (in sysclks) inserted between consecutive 8-bit I/O operations. The settings are 1, 2, 3, 4, 5, 6, 7, or 8. The default setting is ***3***.
- **16 Bit I/O Recovery Time**
  This option specifies the length of the delay (in sysclks) inserted between consecutive 16-bit I/O operations. The settings are 1, 2, 3, 4, 5, 6, 7, or 8. The default setting is ***2***.
- **Memory Hole at 15MB - 16MB**
  In order to improve performance, certain space in memory can be reserved for ISA cards. This field allows you to reserve 15MB to 16MB memory address space to ISA expansion cards. This makes memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. By default, this field is set to ***Disabled***.
- **Passive Release**
  When enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.
- **Delayed Transaction**
  The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select *Enabled* to support compliance with PCI specification version 2.1. The default setting is ***Disabled***.

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- **AGP Aperture Size (MB)**
  The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The options available are 4M, 8M, 16M, 32M, 64M, 128M and 256M. The default setting is ***64M***.

- **CPU Warning Temperature**
  This field sets the threshold temperature at which an alert is sounded through the system's speaker. An onboard thermal sensor monitors the CPU temperature to prevent CPU overheating.

- **Current System/CPU Temp.**
  These read-only fields reflect the functions of the hardware thermal sensor that monitors the chip blocks and system temperatures to ensure the system is stable.

- **Current CPU Fan1/Fan2 Speed**
  These optional and read-only fields show the current speeds in RPM (revolution per minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.

- **Vcore(V)/VTT(V)/3.3V/+12V/-12V/+5V/-5V**
  These optional and read-only fields show the current voltages in the voltage regulators and power supply as monitored by the hardware monitoring IC.

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8.6 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.

ROM PCI/ISA BIOS
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

ACPI function	: Disabled	** Reload Global Timer **	
Power Management	: User Define	IRQ[3-7,9-15],NMI	: Disabled
PM Control by APM	: Yes	Primary IDE 0	: Disabled
Video Off Method	: V/H SYNC +Blank	Primary IDE 1	: Disabled
Video Off After	: Standby	Secondary IDE 0	: Disabled
MODEM Use IRQ	: 3	Secondary IDE 1	: Disabled
Doze Mode	: Disable	Floppy Disk	: Disabled
Standby Mode	: Disable	Serial Port	: Enabled
Suspend Mode	: Disable	Parallel Port	: Disabled
HDD Power Down	: Disable		
Throttle Duty Cycle	: 62.5%		
PCI/VGA Act-Monitor	: Disabled		
Soft-Off by PWR-BTTN	: Instant-Off		
PowerOn by Ring	: Enabled		
Resume by Alarm	: Disabled		
Onboard LAN Wakeup	: Enabled	ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
PCI LAN Card Wakeup	: Enabled	F5 : Old Values	(Shift)F2 : Color
IRQ 8 Break Suspend	: Disabled	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The options available are Enabled, Disabled.

- **Power Management**
  This category allows you to select the type (or degree) of power saving and is directly related to the following modes:
  - HDD Power Down
  - Doze Mode
  - Suspend Mode

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

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Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU'S**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Define	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

NOTE: *In order to enable the CPU overheat protection feature, the Power Management field should not be set to Disabled.*

- **PM Control by APM**
  When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings. If the Max. Power Saving is not enabled, this will be preset to *No*.

- **Video Off Method**
  This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This causes the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.
Blank Screen	This option only writes blanks to the video buffer.

- **Video Off After**
  When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the system enters the Suspend mode.
Susp,Stby --> Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

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- **Modem Use IRQ**
  This field names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity on the selected IRQ always awakens the system. The available choices are 3, 4, 5, 7, 9, 10, 11, and NA. By default, the IRQ is set to ***3***.

8.6.1 PM Timers

The following four modes are Green PC power saving functions that are only user configurable when *User Defined* Power Management is selected. See above for available selections.

- **Doze Mode**
  When enabled, and after the set time of system inactivity, the CPU clock runs at a slower speed while all other devices operate at full speed.
- **Standby Mode**
  After the set period of system inactivity expires, the fixed disk drive and the video shut OFF while all other devices operate at full speed.
- **Suspend Mode**
  When enabled, and after the set time of system inactivity, all devices except the CPU will be shut OFF.
- **HDD Power Down**
  When enabled, and after the set time of system inactivity, the hard disk drive is powered down while all other devices remain active.
- **Throttle Duty Cycle**
  When system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

8.6.2 PM Events

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything that occurs to a device that is configured as *On*, even when the system is in power down mode.

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- **PCI/VGA Act-Monitor**
  When *Enabled*, any video activity restarts the global timer for Standby mode. The default value is *"Disabled"*.

- **Soft-Off by PWR-BTTN**
  This only works with systems using an ATX power supply. It also allows tser to define the type of soft power OFF sequence the system will follow.

Instant-Off (default)	This option follows the conventional manner systems perform when power is turned OFF. Instant-Off is a soft power OFF sequence requiring only the switching of the power supply button to OFF.
Delay 4 Sec.	Upon turning OFF system from the power switch, this option will delay the complete system power OFF sequence by approximately 4 seconds. Within this delay period, system will temporarily enter into Suspend Mode enabling you to restart the system at once.

- **PowerOn by Ring**
  An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

- **Resume by Alarm**
  When *Enabled,* your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

- **PCI LAN Card/Onboard LAN Wakeup**
  Wake On LAN alows your computer to be booted from another computer via a network by sending a wakeup frame or signal. These options enables or disables the wakeup function connected to the Onboard LAN chip or external LAN card connector (PCI LAN Card Wakeup).

- **IRQ 8 Break Suspend**
  You can turn on or off monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode. The default value is *"Disabled"*.

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8.6.3 Reload Global Timer Events

When *Enabled*, an event occurring on each device listed below restarts the global time for Standby mode.

- **IRQ3 -7, 9-15, NMI** The default value is "*Disabled*".
  Primary IDE 0 The default value is "*Disabled*".
  Primary IDE 1 The default value is "*Disabled*".
  Secondary IDE 0 The default value is "*Disabled*".
  Secondary IDE 1 The default value is "*Disabled*".
  Floppy Disk The default value is "*Disabled*".
  Serial Port The default value is "*Enabled*".
  Parallel Port The default value is "*Disabled*".

8.7 PNP/PCI Configuration

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

ROM PCI/ISA BIOS
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed	: No	Assign IRQ For VGA	: Enabled
Resources Controlled by	: Auto		
Reset Configuration Data	: Disabled	Assign IRQ For USB	: Enabled
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

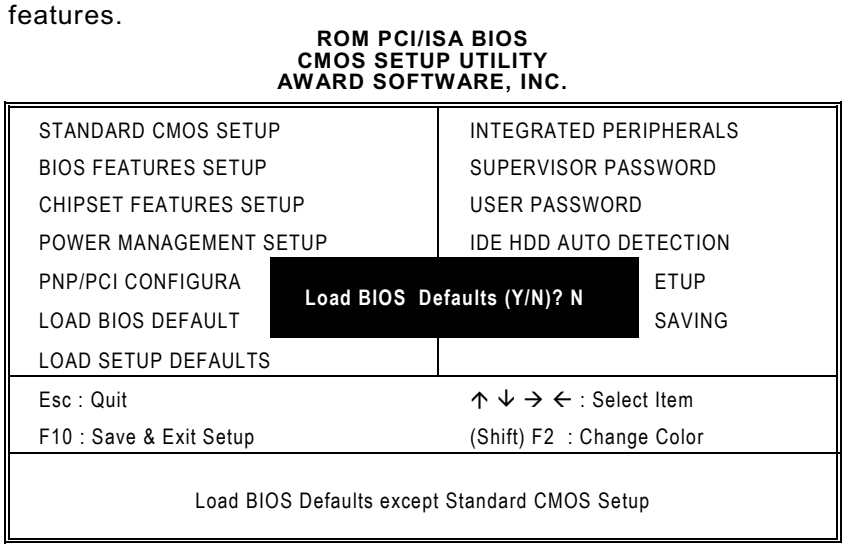
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- **PNP OS Installed**
  This item allows you to determine install PnP OS or not. The options available are Yes and No.
- **Resource controlled by**
  The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. The options available are Auto and Manual.
- **Reset Configuration Data**
  Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The options available are Enabled and Disabled.
- **Assign IRQ For USB/VGA**
  Enable/Disable to assign IRQ for USB/VGA. The options available are Enabled, Disabled

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8.8 Load BIOS Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

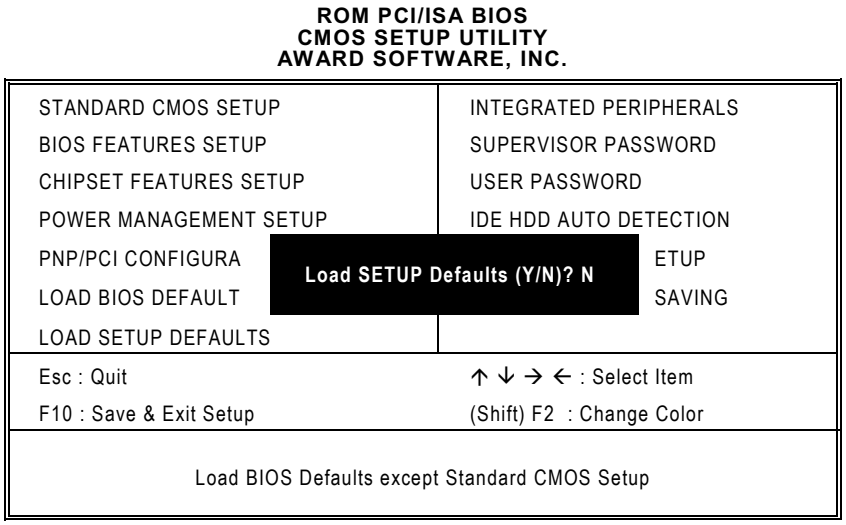


To load BIOS defaults value to CMOS SRAM, enter "Y". If not, enter "N".

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8.9 Load Setup Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.



To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

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8.10 Integrated Peripherals

This option sets your hard disk configuration, mode and port.

ROM PCI/ISA BIOS
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Onboard Serial Port 1	: 3F8/IRQ4
IDE Primary Master PIO	: Auto	Onboard Serial Port 2	: 2F8/IRQ3
IDE Primary Slave PIO	: Auto	UART Mode Select	: Normal
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto	IR Transmission delay	: Enabled
IDE Primary Slave UDMA	: Auto	Onboard Parallel Port	: 378/IRQ7
IDE Secondary Master UDMA	: Auto	Parallel Port Mode	: SPP
IDE Secondary Slave UDMA	: Auto	ECP Mode Use DMA	: 3
On-Chip Primary PCI IDE	: Enabled	EPP Mode Select	: EPP1.7
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Init Display First	: PCI Slot		
POWER ON Function	: BUTTON ONLY		
KBC input clock	: 8 MHz	ESC : Quit	↑ ↓ → ← : Select Item
Onboard FDC Controller	: Enabled	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

- **IDE HDD Block Mode**
  This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.
- **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 automatically determines the best mode for each device. The options available are Auto, Mode 0, Mode 1, Mode 2, Mode 3, and Mode 4.

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- **IDE Primary/Secondary Master/Slave UDMA**
  Ultra DMA/66 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, select Auto to enable BIOS support. The options available are Auto, Mode 0, Mode 1, and Mode 2.
- **On-Chip Primary/Secondary PCI IDE**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.
- **USB Keyboard Support**
  Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The options available are Enabled, Disabled.
- **Init Display First**
  This item allows you to decide to active whether PCI Slot or AGP first. The options available are PCI Slot, AGP.
- **POWER ON Function**
  This option allows users to select the type of power ON sequence for the system to follow. The default value is *"Button-Only"*.

BUTTON-ONLY	Follows the conventional way of turning OFF system power (via power button).
Password	Upon selecting this option, the KB POWER ON Password line appears. Press <Enter> and you'll be prompted to enter and confirm a password of your choice. After setting the password, succeeding attempts to power ON the system will result to null. For system to activate, user must input the password via keyboard then press <Enter>.
Hot KEY	This option is very similar with that of Password. Hot-key combinations range from Ctrl-F1 to Ctrl-F12. User may define this combination from the Hot key Power ON option.
Mouse Left	This allows system to POWER ON by clicking the left mouse button. To enable, user must reboot and allow system to finish booting up otherwise the setting will not take effect.
Mouse Right	This allows system to POWER ON by clicking the right mouse button. To enable this setting, user must reboot and allow system to finish the boot up process otherwise the setting will not take effect.

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- **KBC input clock**
  This item sets the input clock for the keyboard controller. The default value is *"8 MHz"*.

- **Onboard FDC Controller**
  Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. The options available are Enabled, Disabled.

- **Onboard Serial Port 1/Port 2**
  Select an address and corresponding interrupt for the first and second serial ports. The options available are 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

- **UART Mode Select**
  The second serial port offers these infrared interface modes:
  - IrDA
  - ASKIR IrDA-compliant serial infrared port
  - Normal (default value)

  NOTE: *The UART Mode Select will not appear on the menu once you disable the setting of Onboard Serial Port 2.*

  When UART Mode Select is set as ASKIR or IrDA, the options RxD, TxD Active and IR Transmittion delay will appear.

- **IR Transmission delay**
  Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. If no infrared port is present in the system, select Disabled. The default value is *"Enabled"*.

- **Onboard Parallel Port**
  This item allows you to determine access onboard parallel port controller with which I/O address. The options available are 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.

- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field. The options available are EPP1.9, ECP, SPP, ECPEPP1.7, EPP1.7.

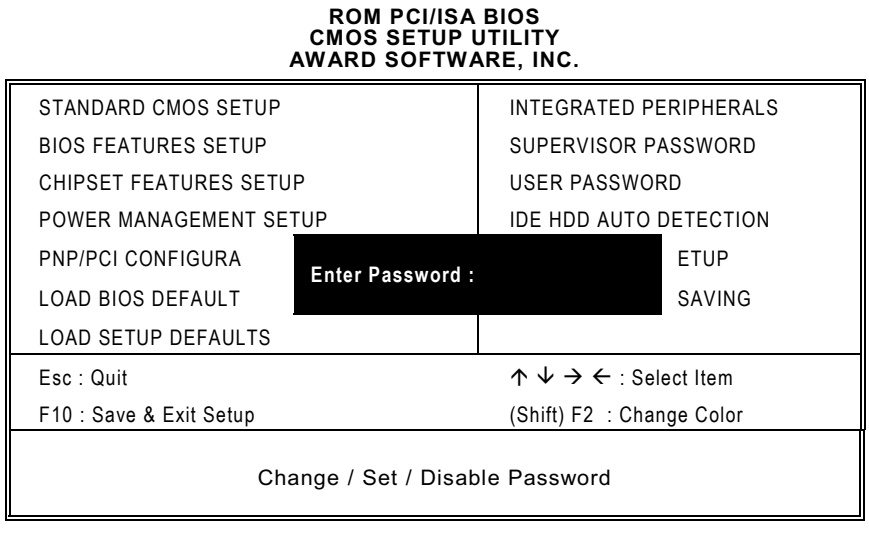
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- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port for use during ECP mode. The available choices are *3* and *1*.
- **EPP Mode Select**
  Select EPP port type 1.7 or 1.9.

8.11 Supervisor / User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

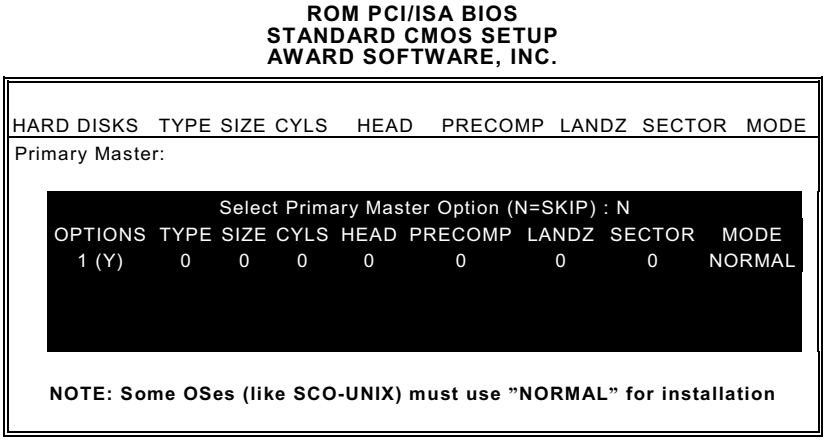
To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.



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8.12 IDE HDD Auto Detection

This option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.

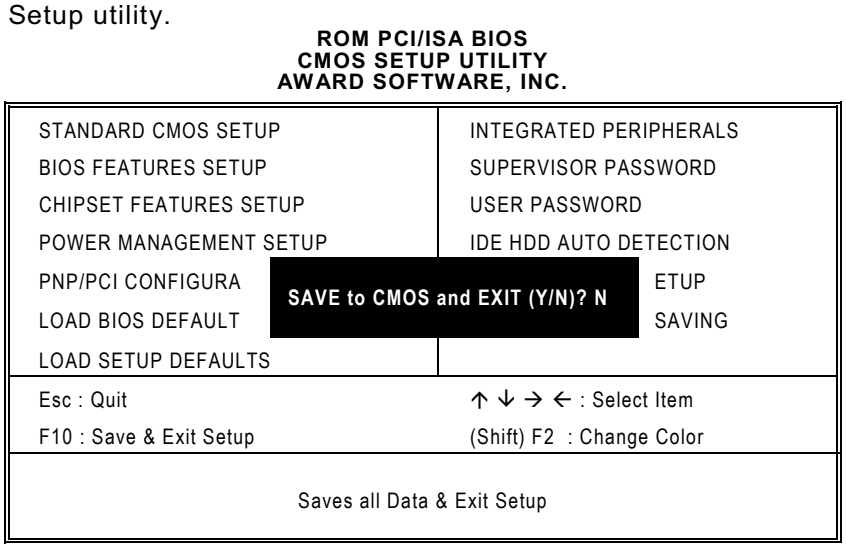


Up to four IDE drives can be detected, with parameters for each appearing in sequence inside a box. To accept the displayed entries, press the "Y" key; to skip to the next drive, press the "N" key. If you accept the values, the parameters will appear listed beside the drive letter on the screen.

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8.13 Save & Exit Setup

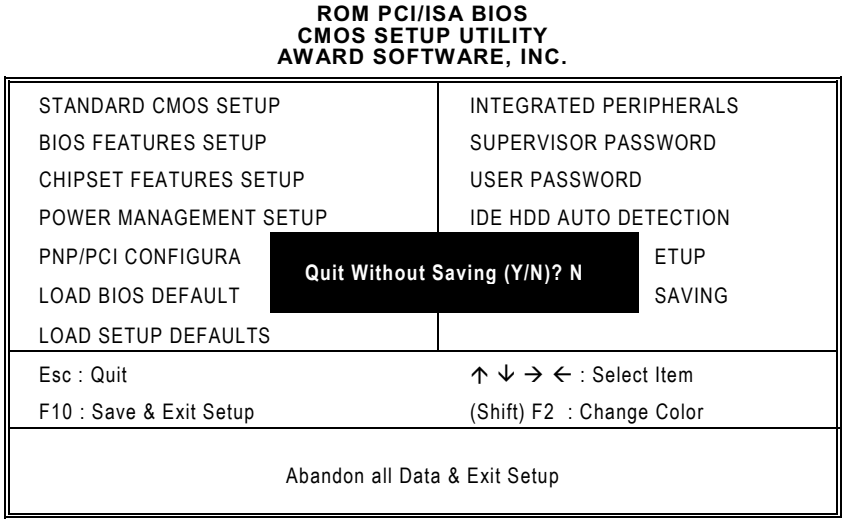
This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs you back to Setup utility.



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8.14 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.



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This page does not contain any information.

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Appendix A
Watchdog Timer

Using the Watchdog Function

The **SBC8163** CPU card uses version 2.0 of the watchdog timer. This onboard WDT generates either a system reset or non-maskable interrupt (NMI), depending on the settings made on jumper **JP12** of **SBC8163**. Follow the steps below to enable and program the watchdog function of **SBC8163**.

Start

↓

Un-Lock WDT	:	**OUT 120H 0AH ; enter WDT function** **OUT 120H 0BH ; enable WDT function**

↓

Set multiple (1~4)	:	**OUT 120 0NH ; N=1,2,3 or 4**

↓

Set base timer (0~F)	:	**OUT 121 0MH ; M=0,1,2,...F**

↓

WDT counting

↓

re-set timer	:	**OUT 121 0MH ; M=0,1,2,...F**

↓

IF No re-set timer	:	**WDT time-out, generate RESET or NMI**

↓

IF to disable WDT	:	**OUT 120 00H ; Can be disable at any time**

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M	N			
	1	2	3	4
0	0.5 sec.	5 secs.	50 secs.	100 secs.
1	1 sec.	10 secs.	100 secs.	200 secs.
2	1.5 secs.	15 secs.	150 secs.	300 secs.
3	2 secs.	20 secs.	200 secs.	400 secs.
4	2.5 secs.	25 secs.	250 secs.	500 secs.
5	3 secs.	30 secs.	300 secs.	600 secs.
6	3.5 secs.	35 secs.	350 secs.	700 secs.
7	4 secs.	40 secs.	400 secs.	800 secs.
8	4.5 secs.	45 secs.	450 secs.	900 secs.
9	5 secs.	50 secs.	500 secs.	1000 secs.
A	5.5 secs.	55 secs.	550 secs.	1100 secs.
B	6 secs.	60 secs.	600 secs.	1200 secs.
C	6.5 secs.	65 secs.	650 secs.	1300 secs.
D	7 secs.	70 secs.	700 secs.	1400 secs.
E	7.5 secs.	75 secs.	750 secs.	1500 secs.
F	8 secs.	80 secs.	800 secs.	1600 secs.

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Appendix B
Connector Pin Assignments

40-pin IDE Interface Connector: CN6

Pin	Description	Pin	Description	Pin	Description
1	Reset #	2	GND	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 16
19	GND	20	No connector	21	No connector
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	No connector	29	No connector	30	GND-Default
31	Interrupt	32	No connector	33	SA1
34	No connector	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND				

Floppy Disk Connector: CN2

Pin	Description	Pin	Description	Pin	Description
1	GND	2	Reduce write current	3	GND
4	No connector	5	GND	6	No connector
7	GND	8	Index#	9	GND
10	Motor enable A#	11	GND	12	Drive select B#
13	GND	14	Drive select A#	15	GND
16	Motor enable B#	17	GND	18	Direction#
19	GND	20	STEP#	21	GND
22	Write data#	23	GND	24	Write gate#
25	GND	26	Track 0 #	27	GND
28	Write protect#	29	GND	30	Read data#
31	GND	32	Side 1 select#	33	GND
34	Disk change#				

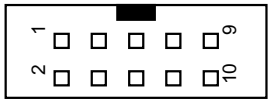
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Parallel Port Connector: CN3

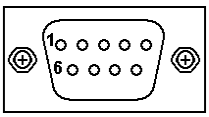
Pin	Description	Pin	Description
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialize#
4	Data 2	17	Printer Select In#
5	Data 3	18	GND
6	Data 4	19	GND
7	Data 5	20	GND
8	Data 6	21	GND
9	Data 7	22	GND
10	Acknowledge#	23	GND
11	Busy	24	GND
12	Paper Empty#	25	GND
13	Printer Select	26	

Serial Ports Pin Assignment

CN16 Pin	CN4/7 Pin	Description
1	1	Data Carrier Detect (DCD)/5V/12V
6	2	Data Set Ready (DSR)
2	3	Receive Data (RXD)
7	4	Request to Send (RTS)
3	5	Transmit Data (TXD)
8	6	Clear to Send (CTS)
4	7	Data Terminal Ready (DTR)
9	8	Ring Indicator (RI)/5V/12V
5	9	Ground (GND)
X	10	GND



CN4 / CN7



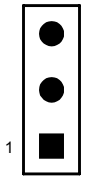
CN16

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USB Connector: CN10

Pin	Description	Pin	Description
1	USB Vcc	2	USB Vcc
3	USB P0-	4	USB P1-
5	USB P0+	6	USB P1+
7	GND	8	GND
9	No connector	10	No connector

Case Fan Connector: CN23



Pin	Description
1	Speed Sensor
2	+12V
3	GND

CPU Fan Connector: CN24



Pin	Description
1	Speed Sensor
2	+12V
3	GND

WAKE ON LAN Connector: CN4

Pin	Description
1	5VSB
2	GND
3	WOL

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