

# **SBC-676**

Pentium / Celeron CPU Card with Rage  
Mobility VGA interface, Dual LAN, Dual  
USB & SSD

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1. Collect all the information about the problem encountered. (For example, CPU type and speed, AAEON products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

## Packing list

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Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 SBC-676 All-in-One Single Board Computer
- 1 Quick Installation Guide
- 1 Supporting CD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Drivers and utilities
  - VGA drivers and utilities
  - BIOS files
- 1 Hard disk drive (IDE) interface cable
- 1 Floppy disk drive interface cable
- 1 6-pin mini-DIN dual outlet adapter for keyboard and PS/2 mouse
- 1 mounting bracket contains 1 Parallel port adapter (26 pins) and COM2 adapter (for RS-232/422/485)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

## Notice

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Dear Customer,

Thank you for purchasing the SBC-676 board. This user's manual is designed to help you to get the most out of the SBC-676, please read it thoroughly before you install and use the board. The product that you have purchased comes with a two-year limited warranty, but AAEON will not be responsible for misuse of the product. Therefore, we strongly urge you to first read the manual before using the product.

To receive the latest version of the user manual, please visit our Web site at:

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## General Information

This chapter gives background information on SBC 676.

Sections include:

- Board specifications
- Layout and dimensions

# Introduction

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The SBC-676 is an all-in-one Celeron and Pentium III processor based single board computer (SBC) with a ATI Rage Mobility Flat Panel controller. When using an Intel Celeron processor, the SBC-676 achieves outstanding performance that surpasses any other SBC in its class. Dual Intel 82559GD 10/100 Base-T Ethernet controller ensures quality throughput and connectivity. In addition, the onboard SSD interface supports M-systems DiskOn-Chip 2000 series, memory capacity from 2 MB to 288 MB.

Onboard features include two serial ports (one RS-232, one RS-232/422/485), one multi-mode parallel (ECP/EPP/SPP) port, connector for two USB (Universal Serial Bus) ports, a floppy drive controller, and a keyboard/PS/2 mouse interface. The built-in high speed PCI IDE controller supports Ultra DMA/33 mode. Up to four IDE devices can be connected, including large hard disks, CD-ROM drives, and tape backup drives, etc.

The SBC-676 also features power management to minimize power consumption. It complies with the APM standard and supports three types of power saving features: Doze mode, Standby mode, and Suspend mode. In addition, the board's watchdog timer can be programmed to reset the system or generate an interrupt in case the system stops due to a program bug or EMI.

## Highly integrated SBC

The SBC-676 is a highly integrated SBC that combines video and network functions on a single computer board. It provides up to 8MB SDRAM display memory. Major onboard devices adopt PCI technology to achieve outstanding computing performance when used with Intel Celeron level processors, making the SBC-676 one of the world's best and most powerful all-in-one Single Board Computers.

# Features

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- Supports Intel Celeron up to 766 MHz and Pentium III CPUs up to 850MHz
- Supports DiskOnChip (SSD) up to 288MB
- ATI Rage Mobility Flat Panel Interface
- Supports H/W status monitoring
- Dual Ethernet Intel 82559GD 10/100Base-T Fast Ethernet
- Supports AT/ATX power connector

# Specifications

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## Standard SBC functions

- **CPU:** Intel Celeron 300~800MHz (With system bus frequencies of 66 MHz) and Pentium III 500-850 MHz (With system bus frequencies of 100MHz)
- **Bus interface:** PICMG 2.0 standard
- **ISA driving capacity:** Built-in Address/Data buffer supports driving capacity up to 64mA
- **CPU socket:** 370-pin socket
- **BIOS:** Award 256KB Flash BIOS
- **Chipset:** Intel 440BX
- **I/O chipset:** Winbond W83977EF with fully 16-bit I/O decoded
- **Memory :** Onboard three 168-pin DIMM sockets support up to 768 Mbytes SDRAM
- **Enhanced IDE:** Supports up to four IDE devices. Supports Ultra DMA/33 mode with data transfer rate 33MB/Sec.
- **FDD interface:** Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and/or 3.5" (720KB, 1.44MB, and 2.88MB)
- **Parallel port:** One bi-directional parallel port. Supports SPP, ECP, and EPP modes
- **Serial port:** One RS-232 and one RS-232/422/485 serial port. Ports can be configured as COM1, COM2, COM3, COM4, or disabled individually. (16C550 equivalent)
- **IR interface:** Supports one IrDA Tx/Rx header
- **KB/Mouse connector :** 6-pin mini-DIN connector supports PC/AT keyboard and PS/2 mouse. Additional 5-pin header supports PC/AT keyboard for IPC applications. Additional 4-pin header supports PS/2

mouse for IPC applications.

- **USB connectors:** 5 x 2 header onboard supports dual USB ports
- **Battery:** Lithium battery for data retention
- **Watchdog timer:** Can generate a system reset. Software selectable time-out interval (2 sec. ~ 255 sec., 1 sec./step)
- **DMA:** 7 DMA channels (8237 equivalent)
- **Interrupt:** 15 interrupt levels (8259 equivalent)
- **Power management:** Supports ATX and AT power supply. Supports Wake on LAN, modem ring and keyboard wake-up functions.
- **H/W status monitoring:** Winbond 88W83781D H/W status monitoring IC supports power supply voltages, fan speed, and temperatures monitoring

### **Flat Panel/CRT Interface**

- **Chipset:** ATIRAGE Mobility-M1 AGP-2X
- **Display memory:** Built-in 8MB SDRAM
- **Display type:** Supports non-interlaced CRT and LVDS panel only. Can display both CRT and Flat Panel simultaneously
- **Resolution:** LVDS panel resolution 1600x1200

### **LVDS Interface ( 2 Channel)**

- **Chipset:** ATI Rage Mobility
- **Display type:** Can support 24-bit display capability, single channel

### **SSD Interface**

- One 32-pin DIP socket supports M-Systems DiskOnChip 2000 series up to 288MB

## **Ethernet Interface (Dual Ethernet)**

- Intel 82559GD 10/100 Base-T Fast Ethernet Controller
- Onboard 10/100 Base-T RJ-45 connector. Optional Remote boot ROM function.

## **Mechanical and environmental**

- **Power supply voltage:** +5V (4.75V to 5.25V),  
+12V (11.4V to 12.6V)  
-5V (-4.75 to -5.25V)  
-12V (-11.4 to -12.6V)
- **Typical power requirement:** +5V @ 4A
- **Operating temperature:** 32 to 140°F (0 to 60°C)
- **Board size:** 13.3"(L) x 4.8"(W) (338mm x 122mm)
- **Weight:** 1.2 lb. (0.5 Kg)

## Installation

This chapter describes how to set up the main board hardware, including instructions on setting jumpers and connecting peripherals, switches, and indicators. Be sure to read all the safety precautions before you begin the installation procedure.



## Safety precautions

---

### **Warning!**



*Always completely disconnect the power cord from your chassis whenever you are working on it. Do not make connections while the power is on because sensitive electronic components can be damaged by the sudden rush of power. Only experienced electronics personnel should open the PC chassis.*



**Caution!** *Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

## Removing the CPU

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The SBC-676 all-in-one CPU module supports most Pentium III and Celeron CPUs. The system's performance depends on the CPU you choose. You can install or upgrade the CPU in the board's PGA socket by following the procedures outlined below. If your system has an existing CPU, you need to remove it before installing the new CPU.

### Removing a CPU

1. Disconnect power from the chassis, and unplug all connections to the CPU card. Then, remove the CPU card from the chassis by following the instructions in the user's manual for your chassis.
2. Lift the CPU out of the PGA socket. The old chip may be difficult to remove. You may find spray chip lubricant, designed for pin-grid-array (PGA) devices, and a chip puller helpful. These are available at electronics hobbyists' supply stores.

## Installing A CPU

To install the CPU, follow the instructions that came with it. If no documentation was provided, the general procedures for installing a CPU are outlined below:

1. Lubricate the pins on the CPU with lubricant for PGA devices. This makes the CPU slide in much easier and greatly reduces the chance of damaging the pins and other components.
2. Carefully align the CPU so that it is parallel to the socket. Make sure that the notch on the corner of the CPU matches the notch on the inside of the socket.
3. Gently push the CPU into the socket. There will probably be a small gap between the CPU and the socket even when it is fully seated. **DO NOT USE EXCESSIVE FORCE!**

When you install a new CPU, you may have to adjust other settings on the board, such as CPU type, CPU clock, and PCI speed, to accommodate it. Make sure that the settings are correct for your CPU. **Improper settings may damage the CPU.**

# Installing DRAM (DIMMs)

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## System Memory

The SBC-676 contains three sockets for 168-pin dual inline memory module (DIMM). The socket uses 3.3 V unbuffered synchronous DRAM (SDRAM). DIMM is available in capacities of 16, 32, 64, 128 or 256 MB. The socket can be filled in the DIMM of any size, giving your SBC-676 single board computer between 16 and 512 MB of memory.

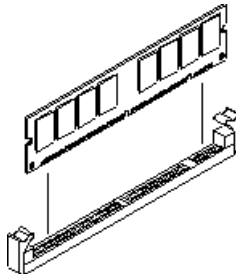
## Supplementary information about DIMM

SBC-676 can accept PC-133 SDRAM DIMM Module(with or without parity).

Single-sided modules are typically 16 or 64 MB; double-sided modules are usually 32, 128 or 256 MB.

## Memory Installation Procedures

To install DIMM, first make sure the two handles of the DIMM socket are in the "open" position. i.e. The handles remain outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket. Then press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the DIMM socket. (See Figure below) To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.



## Jumpers and connectors

---

Connectors on the board link it to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

The following tables list the function of each of the board's jumpers and connectors.

---

### Jumpers

<b>Label</b>	<b>Function</b>
J1	LVDS Voltage Setting
J4	CPU Core Frequency
J5	CMOS Setting
J7	COM2 Setting
J8	COM2 Setting
J9	DOC 2000 Address Setting
JP1	Buzzer Setting

---

# Connectors

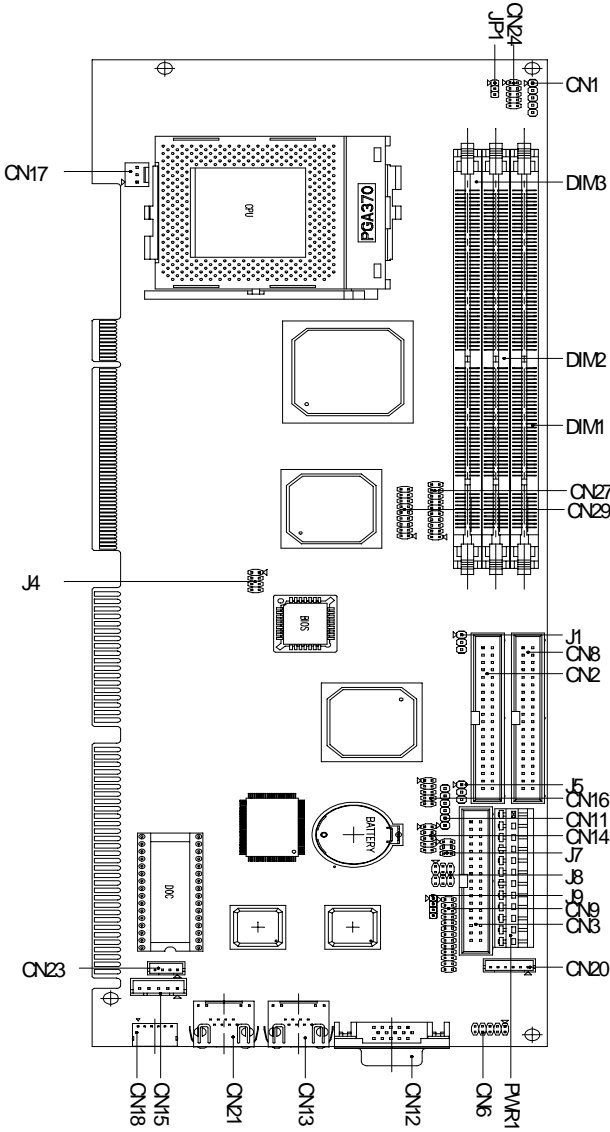
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## Connectors

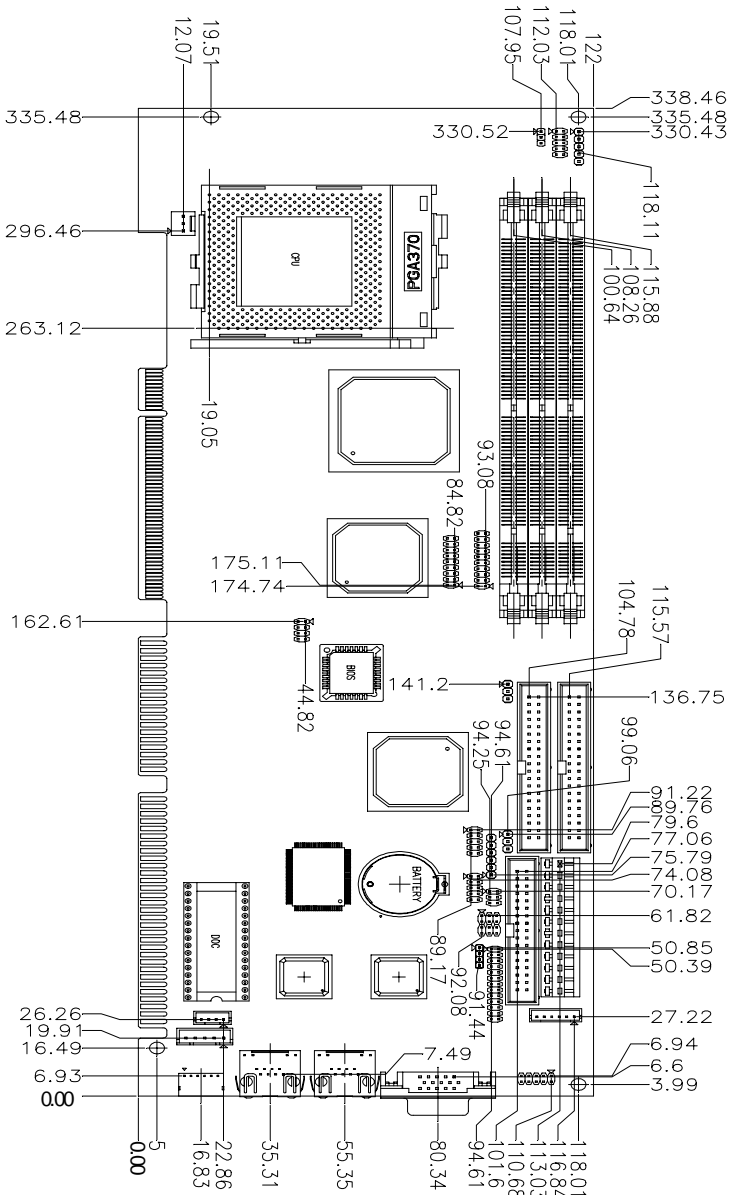
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<b>Label</b>	<b>Function</b>
CN1	Power LED & Key Lock
CN2	Primary IDE
CN3	Floppy Connector
CN6	USB Connector
CN8	Secondary IDE
CN9	Printer Connector
CN11	IR Connector
CN12	VGA Connector
CN13	RJ-45 Ethernet Connector
CN14	COM2
CN15	External Keyboard
CN16	COM1
CN17	Fan Connector
CN18	PS/2 Mouse & Keyboard
CN20	ATX Connector
CN21	RJ-45 Ethernet Connector
CN23	External Mouse
CN24	Front Panel
CN27	LVDS Panel Channel 1
CN29	LVDS Panel Channel 2
U16	DOC 2000 Socket
PWR1	AT Power Connector
DIMM1	SDRAM Socket
DIMM2	SDRAM Socket
DIMM3	SDRAM Socket

# SBC-676 Board Layout



# SBC-676 Board Dimensions



# LVDS Panel Voltage Setting (J1)

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(J1)	
+5V	+3.3V

J1

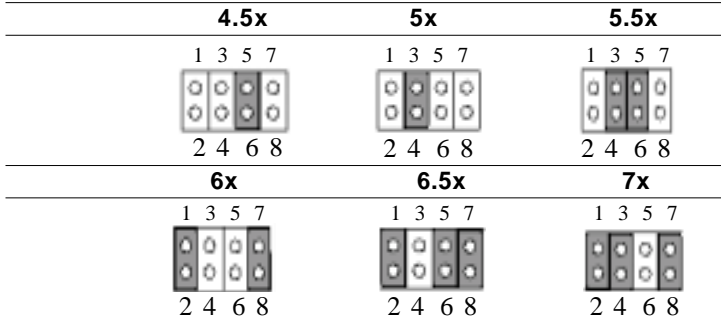




## CPU frequency ratio select (J4)

CPU core frequency = CPU frequency ratio (4.5~7) \* External bus clock (66 or 100 MHz)

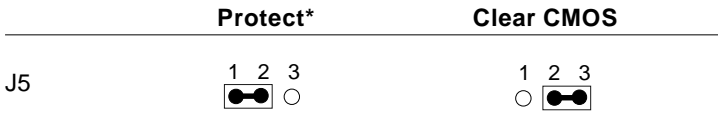
### CPU frequency ratio select (J4)



## Clear CMOS (J5)

You can use J5 to clear the CMOS data if necessary. To reset the CMOS data, set J5 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed.

### Clear CMOS (J5)


















\*default

## COM2 RS-232/422/485 select (J7, J8)

The SBC-676 COM2 serial port can be selected as RS-232, RS-422, or RS-485 by setting J7 & J8.

COM2 Select (J7, J8)

	RS-232*	RS-422	RS-485
J8	12 ○  10	12  ○ 10	12  ○ 10
	9 ○  7	9  ○ 7	9  ○ 7
	6 ○  4	6  ○ 4	6  ○ 4
	3 ○  1	3  ○ 1	3  ○ 1
J7	5 ○ ○ 6	5 ○ ○ 6	5  6
	3 ○ ○ 4	3  4	3 ○ ○ 4
	1  2	1 ○ ○ 2	1 ○ ○ 2

\*default

## DOC address select (J9)

---

The DiskOnChip 2000 occupies an 8 Kbyte window in the upper memory address range of D400 to E000. You should ensure this does not conflict with any other device's memory address. J9 controls the memory address of the Flash disk.

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DiskOnChip 2000 memory address (J9)

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**Memory address (HEX)**

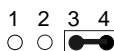
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DISABLE



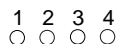
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DC00HfH\_



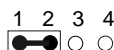
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D400



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D800\*



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\* default

These addresses might conflict with the ROM BIOS of other peripheral boards. Please select the appropriate memory address to avoid memory conflicts.

## Buzzer Setting (JP1)

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(JP1)

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**Internal Buzzer**

**External Buzzer**

---

JP1



## Power connectors (PWR1, CN17)

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### Power connector (PWR1)

The power supply uses 12-pin connector shown below. Make sure you plug in the right direction.

---

AT power connector (PWR1)

---

Pin	Signal
1	N.C.
2	+5V
3	+12V
4	-12V
5	GND
6	GND
7	GND
8	GND
9	-5V
10	+5V
11	+5V
12	+5V

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### CPU fan power connector (CN17)

Plug in the fan cable to the 3-pin fan connector onboard. The fan connector is marked CN17.

---

CPU fan power connector (CN17)

---

Pin	Signal
1	Fan speed sense
2	+12V
3	GND

---

## Power LED and Keylock (CN1)

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You can use an LED to indicate when the CPU card is on. Pin1 of CN1 supplies the LED's power, and Pin3 is the ground.

You can use a switch (or a lock) to disable the keyboard so the PC will not respond to any input. This is useful if you do not want anyone to change or stop a running program. Connect the switch between Pin 4 and 5 of CN1.

---

Power LED and keylock (CN1)

---

<b>Pin</b>	<b>Function</b>
1	LED power (Vcc)
2	N.C.
3	GND
4	Keyboard lock
5	GND

---

## IDE hard drive connector (CN2, CN8)

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You can attach up to four Enhanced Integrated Device Electronics hard disk drives to the mainboard's internal controller. The mainboard's IDE controller uses a PCI local-bus interface. This advanced interface supports faster data transfer and allows the IDE hard drive to exceed 528 MB.

### Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, depending on the drive size.

Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

1. Connect one end of the cable to CN2 or CN8. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drives. (see your hard drive's documentation for the location of the connector).

Connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and the other one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

## IDE hard drive connectors (CN2, CN8)

IDE hard drive connectors (CN2, CN8)

Pin	Signal	Pin	Signal
1	IDE 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 15
19	SIGNAL GND	20	N/C
21	Request	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	ALE
29	Acknowledge	30	GND
31	IRQ14	32	N/C
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	MGND

## Floppy drive connector (CN3)

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You can attach up to two floppy drives to the mainboard controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives).

Wire number 1 on the cable is normally red or blue, and the other wires are usually gray.

### Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN3. Make sure that the red or blue wire corresponds to pin 1 on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number 1. Look for a number printed on the circuit board indicating pin number 1. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number 1 should be on the right. Check the documentation that came with the drive for more information.

If you desire, connect the B: drive to the connectors in the middle of the cable as described above.



## Floppy drive connector (CN3)

Floppy drive connector (CN3)

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N/C
5	GND	6	DRIVE TYPE
7	GND	8	INDEX
9	GND	10	MOTOR 0
11	GND	12	DRIVE SELECT 1
13	GND	14	DRIVE SELECT 2
15	GND	16	MOTOR 1
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	HEAD DELECT
33	GND	34	DISK CHANGE

## USB connector (CN6)

The SBC-676 provides two USB (Universal Serial Bus) interfaces, which give complete plug and play, hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 1.0, and can be disabled in the system BIOS setup.

USB connector (CN6)

Pin	Function	Pin	Function
1	USBV0	6	Chassis GND
2	USBD0-	7	USBG1
3	USBD0+	8	USBD1+
4	USBG0	9	USBD1-
5	Chassis GND	10	USBV1

## Parallel port connector (CN9)

---

Normally, the parallel port is used to connect the board to a printer. The mainboard includes an onboard parallel port, accessed through CN9, a 26-pin flat-cable connector. You need an adapter cable if you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other.

### Parallel port IRQ

The mainboard supports one parallel port. The port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

### Parallel port connector table (CN9)

---

Parallel port connector (CN9)

---

Pin	Signal	Pin	Signal
1	/STROBE	2	\AUTOFD
3	DO	4	ERR
5	D1	6	\INIT
7	D2	8	\SLCTINI
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	\ACK	20	GND
21	BUST	22	GND
23	PE	24	GND
25	SLCT	26	N/C

---

## IrDA connector (CN11)

---

The IrDA connector (CN11) can be configured to support wireless infrared module, with this module and application software such as laplink or Win95 Direct Cable connection, user can transfer files to or from laptops, notebooks, PDA, and printers. This connector supports HPSIR (115.2Kbps, 2 meters), ASK-IR (56Kbps) and Fast IR (4Mbps, 2 meters).

Install infrared module onto IrDA connector and enable infrared function from BIOS setup. Make sure to have correct orientation when you plug onto IrDA connector (CN11).

---

IrDA connector (CN11)

---

<b>Pin</b>	<b>Signal</b>
1	Vcc
2	FIRx
3	IRx
4	GND
5	IRTx
6	ClRx

---

## Display connectors (CN12)

---

The mainboard's PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD, and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

### VGA display connector (CN12)

---

VGA display connector (CN12)

---

Pin	Signal
1	Red video
2	Green video
3	Blue video
4	Not used
5	GND
6	Red return (GND)
7	Green return (GND)
8	Blue return (GND)
9	+5V
10	Sync return (GND)
11	Monitor ID (not used)
12	SDA
13	Horizontal sync
14	Vertical sync
15	SCL
16	Chassis GND
17	Chassis GND

---

## Serial ports (CN16, CN14)

---

The SBC-676 offers two serial ports, one RS-232 (CN16) and one RS-232/422/485 (CN14). These ports allow you to connect them to serial devices (mouse, printers, etc.).

### COM2 RS-232/422/485 serial ports (CN14)

---

COM2 RS-232/422/485 serial port (CN14)

	<b>PIN</b>	<b>SIGNAL</b>	<b>PIN</b>	<b>SIGNAL</b>
<b>COM2</b>	1	RLSD2	2	RX2
	3	TX2	4	DTR2
	5	GND	6	DSR2
	7	RTS2	8	CTS2
	9	RI2	10	NC

---

COM1 RS-232 serial port (CN16)

	<b>PIN</b>	<b>SIGNAL</b>	<b>PIN</b>	<b>SIGNAL</b>
<b>COM1</b>	1	RLSD1	2	RX1
	3	TX1	4	DTR1
	5	GND	6	DSR1
	7	RTS1	8	CTS1
	9	RI1	10	NC

## Keyboard and PS/2 mouse connector (CN18, CN15, CN23)

---

The mainboard provides a keyboard connector which supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on-self-test (POST) after a reset if the keyboard is not present. The mainboard BIOS Advanced setup menu allows you to select "Present" or "Absent" under the "System Keyboard" section. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test).

---

### Keyboard and PS/2 mouse connector (CN18)

---

Pin	Signal
1	KB DATA
2	MS DATA
3	GND
4	Vcc
5	KB CLOCK
6	MS CLOCK

---

---

### Internal keyboard connector (CN15)

---

Pin	Signal
1	KB CLOCK
2	KB DATA
3	N.C.
4	GND
5	N.C.

---

---

### Internal mouse connector (CN23)

---

Pin	Signal
1	MS CLOCK
2	MS DATA
3	GND
4	N.C.

---

## ATX Power Connector (CN20)

---

The SBC-676 has two different power connectors, one 12-pin header (PWR 1) and a 6-pin header (CN20). The 6-pin connector definition is provided below.

---

PIN	SIGNAL
1	NC
2	GND
3	NC
4	GND
5	PS-ON
6	5 VSB

---

## Front Panel (CN24)

---

---

Front Panel (CN24)	
GND/Power on Button	
1	□ ○ 2
IDE LED- / IDE LED + 5V	
3	○ ○ 4
Speaker - / Speaker + 5V	
5	○ ○ 6
N.C. / GND	
7	○ ○ 8
Reset Switch- / GND	
9	○ ○ 10

---

## LVDS Connector Channel 1 (CN27)

---

(CN27)

<b>Pin</b>	<b>Signal</b>
1	TXOUT1+
2	TXOUT1-
3	GND
4	GND
5	TXCLK+
6	TXCLK-
7	GND
8	VCC
9	VCC
10	VCC
11	TXOUT2+
12	TXOUT2-
13	GND
14	GND
15	TXOUT0+
16	TXOUT0-
17	TXOUT3+
18	TXOUT3-
19	ENABKL
20	NC



## LVDS connector Channel 2 (CN29)

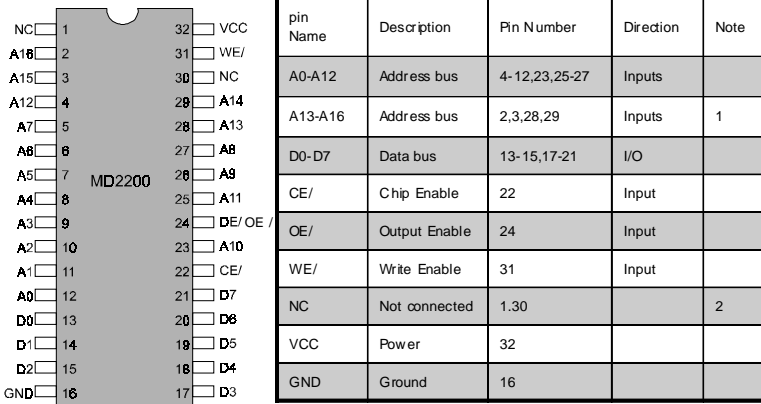
---

(CN29)	
Pin	Signal
1	TXOUT1+
2	TXOUT1-
3	GND
4	GND
5	TXCLK+
6	TXCLK-
7	GND
8	VCC
9	VCC
10	VCC
11	TXOUT2+
12	TXOUT2-
13	GND
14	GND
15	TXOUT0+
16	TXOUT0-
17	TXOUT3+
18	TXOUT3-

## DiskOnChip socket (U16)

The DiskOnChip 2000 family of products provides a single chip solid-state flash disk in a standard 32-pin DIP package. The DiskOnChip 2000 is a solid-state disk with no moving parts, resulting in a significant reduction in power consumption and an increase in reliability. The DiskOnChip is a small plug and play Flash disk. It is easy to use. And it saves integration overhead.

The DiskOnChip 2000 family of products is available in capacities ranging from 2MB up to 144MB, unformatted. In order to manage the disk, the DiskOnChip 2000 includes the TrueFFS, M-Systems Flash File System proprietary software. The DiskOnChip 2000 package is pin-to-pin compatible with a standard 32-pin EPROM device.



Note 1: Pins A13 through A16 are not used by the MD2200. They are kept for socket backward compatibility with ED 1100 (DiskOnChip 1000)

Note 2: Pins 1 and 30 are not used by MD2200

## DiskOnChip (DOC) 2000 Installation

---

When the DOC is installed correctly, a DOC will work like an HDD or an FDD. To install the DOC on the mainboard, follow the instructions below:

1. Plug the DOC into the socket. Make sure pin 1 of the DOC is aligned with pin 1 of the socket.
2. Push the DOC into the socket until it is firmly seated in the socket.

**Caution: the DOC may be permanently damage if it is installed incorrectly.**

3. Set the jumper for the memory address of the DOC.

### **Note:**

**The memory shadow function sometimes will create conflicts with the memory window. You should disable the memory shadow from the BIOS SETUP if the DOC cannot be accessed.**

### **Configure DOC as a boot device**

To configure a DOC as a boot drive, you should copy the operating system files onto the DOC. The following procedure is an example of the initialization process.

1. Install a DOC into your system.
2. Insert a bootable floppy disk in drive A: and boot the system.
3. At the DOS prompt, type **SYS C:** to transfer the DOS system files to the DOC (assuming the DiskOnChip is installed as drive C:). Reboot the system.
4. Go to the BIOS Setup Utility by hitting the <DEL> key. Set the type of Primary Master or C: Drive as *Not Installed*.
5. Remove the floppy disk from the drive A: and leave the BIOS Setup Utility. The system should boot from the DOC.

# CHAPTER 3

## **Award BIOS Setup**

This chapter describes how to configure the BIOS for the system.

## Starting setup

---

The Award BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When these preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands control of system operations to it.

During POST, you can start the Setup program in one of two ways:  
1. By pressing Del immediately after switching the system on, or  
2. By pressing Del or pressing Ctrl-Alt-Esc when the following message appears briefly at the bottom of the screen during POST:

TO ENTER SETUP BEFORE BOOT PRESS DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the RESET button on the system case. You may also restart by simultaneously pressing Ctr-Alt-Del. If you do not press the keys at the correct time and the system does not boot, an error message appears and you are again asked to

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

## Setup keys

---

These keys help you navigate in Award BIOS:

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc	Main Menu: Quit and not save changes into CMOS RAM Other pages: Exit current page and return to Main Menu
PgUP/+	Increase the numeric value or make changes
PgDn/-	Decrease the numeric value or make changes
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Item Help
F3	Reserved
F4	Reserved
F5	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6	Load the default CMOS RAM value from BIOS default table, only for Option Page Setup Menu
F7	Load the default
F8	Reserved
F9	Reserved
F10	Save all the CMOS changes, only for Main Menu

## Getting help

---

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press Esc or the F1 key again.

### In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the **Award BIOS** supports an override to the CMOS settings that resets your system to its default configuration.

You can invoke this override by immediately pressing Insert; when you restart your computer. You can restart by either using the ON/OFF switch, the RESET button or by pressing Ctrl-Alt-Delete.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset screen without a good reason. The Chipset defaults have been carefully chosen by Award Software or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup may cause the system to become unstable.

# Main Setup Menu



## Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

## Advanced BIOS Features

Use this menu to set the advanced features available on your system.

## Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

## Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

## Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)



## **PnP/PCI Configuration**

This entry appears if your system supports PnP/PCI.

## **PC Health Status**

This menu allows you to monitor the CPU temperature, CPU fan speed, CPU voltage and system voltage for your system.

## **Frequency/Voltage Control**

Use this menu to specify your settings for frequency/ voltage control.

## **Load Fail-Safe Defaults**

Use this menu to load the BIOS default values for the minimal/ stable performance for your system to operate.

## **Load Optimized Defaults**

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

## **Set Supervisor/User Password**

Use this menu to set User and Supervisor Passwords.

## **Save and Exit Setup**

Save CMOS value changes to CMOS and exit setup.

## **Exit Without Saving**

Abandon all CMOS value changes and exit setup.

# Standard CMOS Features

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software Standard CMOS Features		Item Help
Date (mm:dd:yy)	Mon, Jul 23 2001	Menu Level → Change the day, month, year and century
Time (hh:mm:ss)	16 : 11 : 9	
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]	
LCD&CRT	[Both]	
Panel	[1024X768SAMSUNG LVDS]	
Halt On	[All , But Keyboard]	
Base Memory	640K	
Extended Memory	65472K	
Total Memory	1024K	

This standard setup menu allows users to configure system components such as the date, time, hard disk drive, floppy drive, display, and memory. Online help for each field can be accessed by pressing F1.

## Date and Time Configuration

The BIOS determines the day of the week from the other date information. This field is for information only.

Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp/- or PgDn/+ key to increment the setting, or type the desired value into the field.

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00 hours. Press the left or right arrow key to move to the desired field. Press the PgUp/- or PgDn/+ key to increment the setting, or type the desired value into the field.

## HARD DISKS

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives.

*NOTE: We recommend that you select type AUTO for all drives.*

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type AUTO for a hard drive, the BIOS detects its specifications

If you do not want to select drive type AUTO, other methods of selecting the drive type are available:

1. **NONE**- No drive type to be selected
2. **Manual**-This will allow you to manually set the drive type you are using in your system. (See Below)

### **ACCESS Mode:** Auto, Large, CHS or LBA

- **Auto:** The BIOS automatically determines the optimal mode.
- **CHS:** This allows the user to enter their own hardware values
- **Large:** For drives that do not support LBA and have more than 1024 cylinders.
- **LBA** (Logical Block Addressing): During drive access, the IDE controller transforms the data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.

Here is a brief explanation of drive specifications:

**Type:** The BIOS contains a table of predefined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any predefined type are classified as type USER.

**Size:** Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.

**Cyls:** Number of cylinders

**Head:** Number of heads

**Precomp:** Write precompensation cylinder

**Landz:** Landing zone

**Sector:** Number of sectors

## Drive A

## Drive B

Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 mega byte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 mega byte capacity

## LCD&CRT

SBC-676 can be used with various visual display peripherals. It can also display the same image on both a CRT and LCD monitor simultaneously. This function allows the end user to select the type of visual display peripheral they are incorporating with this single board computer.

**The choices:** LCD, CRT, and Both

## Panel

SBC-676 can be used with various display panels. Please select the type of panel you are incorporating with our single board computer. Consult your panel manual for detail information.

## Halt On

During the power-on-self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

**No errors:** POST does not stop for any errors.

**All errors If:** the BIOS detects any nonfatal error, POST stops and prompts you to take corrective action.

**All, But Keyboard:** POST does not stop for a keyboard error, but stops for all other errors

**All, But Diskette:** POST does not stop for diskette drive errors, but stops for all other errors.

**All, But Disk/Key:** POST does not stop for a keyboard or disk error, but stops for all other errors.

# Advanced BIOS Features

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software  
Advanced BIOS Features

Virus Warning	[Disabled]
CPU Internal Cache	[Enabled]
External Cache	[Enabled]
CPU L2 Cache ECC Checking	[Enabled]
Processor Number Feature	[Enabled]
Quick Power On Self Test	[Enabled]
First Boot Device	[Floppy]
Second Boot Device	[HDD-0]
Third Boot Device	[LS120]
Boot Other Device	[Enabled]
Swap Floppy Drive	[Disabled]
Boot Up Floppy Seek	[Enabled]
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]
OS Select For DRAM > 64MB	[Non-OS2]

## Item Help

Menu Level ▶

Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep

The displayed configuration is based on the manufacturer's SETUP DEFAULTS settings.

## Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

*NOTE: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.*

## **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.

The External Cache field may not appear if your system does not have external cache memory.

## **CPU L2 Cache ECC Checking**

When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

## **Processor Number Feature**

This option is for Pentium III processor. During Enabled, this will check the CPU Serial number. Disabled this option if you don't want the system to know the serial number.

## **Quick Power On Self Test**

Select Enabled to reduce the amount of time required to run the power-on-self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

## **First/Second/Third Boot Device**

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

**The choices: Floppy, LS120, HDD0, HDD1, HDD2, HDD3, SCSI, CDROM, LAN, Disabled.**



## **Boot Other Device**

If your boot device is not included in the following choices Floppy, LS120, HDD0, HDD1, HDD2, HDD3, SCSI, CDROM, LAN, you may **set First/Second/Third Boot devices to Disable and enable the BOOT Other Device function**. The system will automatically boot the other device.

## **Swap Floppy Drive**

This field is effective only in systems with two floppy drives. Selecting enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

## **Boot Up Floppy Seek**

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

## **Boot Up NumLock Status**

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

## **Gate A20 Option**

Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

## **Typematic Rate Setting**

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled

## **Typematic Delay**

When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

## **Typematic Rate**

When the typematic rate setting is enabled, you can select a typematic rate ( the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, 30.

## **Security Option**

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

## **OS Select For DRAM>64MB**

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

The choice: Non-OS2, OS2

## **Report No FDD For WIN 95**

Report no FDD for Win 95 or not. The choice: Yes, no

## **Shadow**

Software that resides in a read only memory (ROM) chip on a device is called firmware. The Award BIOS permits shadowing of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar ROM firmware for expansion peripherals, but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory are C0000-C7FFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

## **Small Logo (EPA) Show**

The choices: Enabled, disabled

## **Onboard 1st & 2nd LAN Function**

Enable the onboard 1st and 2nd LAN functions.

## Advanced Chipset Features

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software Advanced Chipset Features		
Auto Configuration	[Enabled]	Item Help
EDO DRAM Speed Selection	[60ns]	
EDO CASx# MA Wait State	1	Menu Level ▶
EDO RASx# Wait State	1	
SDRAM RAS-to-CAS Delay	[3]	
SDRAM RAS Precharge Time	[3]	
SDRAM CAS latency Time	[3]	
SDRAM Precharge Control	[Disabled]	
DRAM Data Integrity Mode	[Non-ECC]	
System BIOS Cacheable	[Disabled]	
Video BIOS Cacheable	[Disabled]	
Video RAM Cacheable	[Disabled]	
8 Bit I/O Recovery Time	[1]	
16 Bit I/O Recovery Time	[1]	
Memory Hole At 15M-16M	[Disabled]	
Passive Release	[Enabled]	
Delayed Transaction	[Disabled]	
AGP Aperture Size (MB)	[64]	

### Auto Configuration

Auto configuration selects predetermined optimal values of chipset parameters. When disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.

### EDO DRAM Speed Selection

This value in this field must correspond to the speed of the DRAM installed in your system. DO NOT change the default setting of this field, as determined by the system board manufacturer for the installed DRAM. This value is access speed, so a lower value means a faster system. This field applies only if EDO DRAM is installed in the system.

## **SDRAM RAS-to-CAS Delay**

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; and slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

## **SDRAM RAS PrechargeTime**

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

## **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.

## **SDRAM Precharge Control**

When enabled, all CPU cycles to SDRAM result in an All Banks Precharge Command on the SDRAM interface.

## **DRAM Data Integrity Mode**

Select Parity or ECC (error correcting code), according to the type of installed DRAM.

## Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory.

**The choices:** 15-16 M, disabled

## System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance.

However, if any program writes to this memory area, a system error may result.

**The choices:** Enabled, Disabled

## Video BIOS 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 system error may result.

## **Video RAM Cacheable**

Selecting Enabled, you receive a warning message if a program attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

## **8-16 Bit I/O Recovery Time**

The I/O recovery mechanism adds bus clock cycles between PCI originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is much faster than the ISA bus.

These two fields let you add recovery time for 16-bit and 8-bit I/O.

## **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.

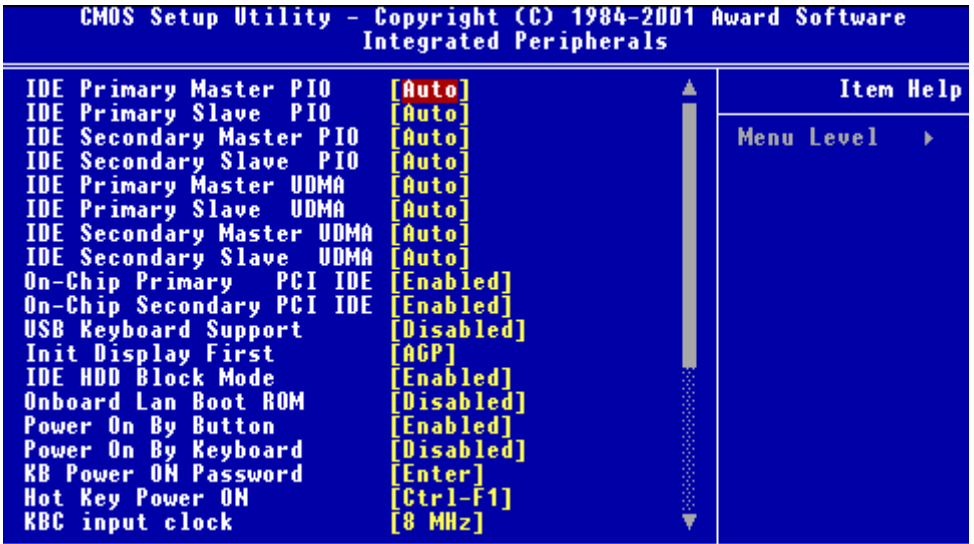
## **Delayed Transaction**

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select enabled to support compliance with PCI specifications version 2.1.

## **AGP Aperature Size (MB)**

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that have the aperture range are forwarded to the AGP without any translation.

## Integrated Peripherals



### IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmable Input/Output) fields let you set a PIO mode (0-1) 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 choices: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.**

### IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 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, select Auto to enable BIOS support.

**The choices: Auto, disable**



## **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 controller and you have a USB keyboard.

## **Init Display First**

This item allows you to active PCI slot or onboard first.

The choice: PCI slot, onboard

## **IDE HDD Block Mode**

Select Enabled only if your hard drives support block mode.

## **Onboard LAN Boot ROM**

Decides whether to invoke the boot ROM of the onboard LAN chip. The choices: Enabled, Disabled

## **Power On By Button**

This function can be enabled or disabled.

## **Power On By Keyboard**

The keyboard can be set to power on the system. The settings are hotkey, any key, disabled, and password.

## **Hot Key Power On**

Simply pressing on the pre-selected keyboard key the system will power on.

## **KB Power on Password**

The system will ask for a password, after entering the correct password the keyboard can then be used.

## **Onboard FDC/FDD 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 an add-in FDC or the system has no floppy drive, select Disabled in this field.

## **UART 2 Mode**

Select an operating mode for the second serial port:

Normal	RS-232C serial port
Standard	RS-232C serial port
IrDA 1.0	Infrared port compliant with IrDA 1.0 specification
IrDA SIR	IrDA-compliant serial infrared port
IrDA MIR	1 MB/sec infrared port
IrDA FIR	Fast infrared standard
FIR	Fast Infrared standard
MIR 0.57M	0.57-MB/sec infrared port
MIR 1.15M	1.15-MB/sec infrared port
Sharp IR	4-MB/sec data transmission
HPSIR	IrDA-compliant serial infrared port
ASK IR	Amplitude shift keyed infrared port

## **Onboard Serial Ports (1, 2)**

Normally, the main board's I/O chips will occupy a certain portion of memory space. For each I/O device the computer provides an I/O address. The more devices attached the more address needed to organize the memory storage areas. If all the I/O devices were run through the same address, your devices would come to a near halt. By providing the end user with four serial ports this allows devices to run more efficiently if needed. Also the corresponding interrupt needs to be selected.

Selections of logical COM port addresses are as follows. ( 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3)

## **Onboard Parallel Port**

Select a logical LPT port address and corresponding interrupt for the physical parallel port

The Choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, disabled

## **Parallel Port EPP Type**

Select EPP port type 1.7 or 1.9.

## **Parallel Port Mode**

Two bidirectional parallel ports.

**Supports** Normal, ECP, EPP, ECP + EPP.

## **ECP Mode Use DMA**

Select a DMA channel for the port.

## **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 an add-in FDC or the system has no floppy drive, select Disabled in this field.

## **UART2 Duplex Mode**

In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port

## **RxD, TxD Active**

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

## **IR Transmission Delay**

This setting lets you enable or disable the IR transmission delay.

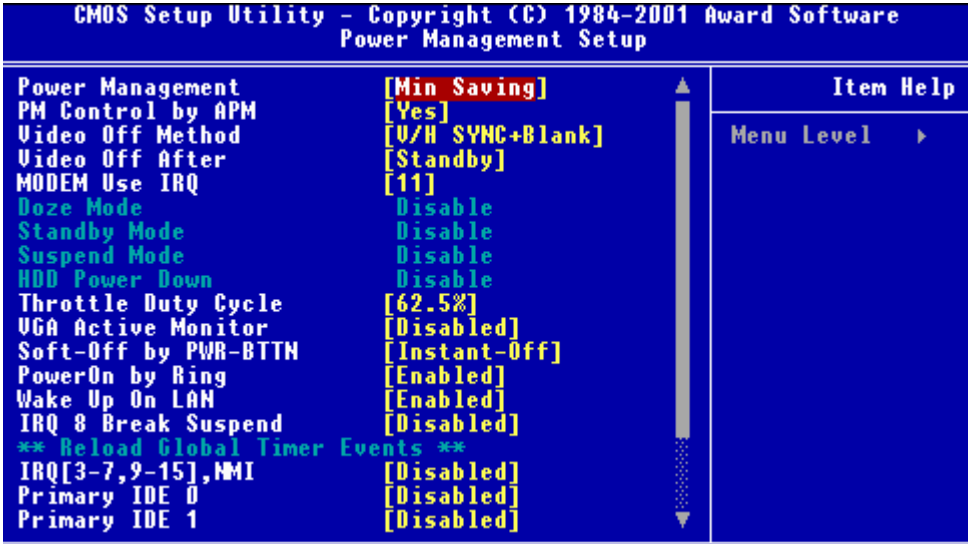
## **EPP Mode Select**

The setting for this function are EPP1.7 or EPP1.9.

## **Watch Dog Timer**

You can enable the system watchdog timer, a hardware timer that generates either an NMI or a reset when the software that it monitors does not respond as expected each time the watch dog polls it ( select the time period in a separate field ) The choice: **Disabled, 10 sec, 20 sec, 30 sec, 40 sec, 1 min, 2 min, 4 min.**

# Power Management Setup



## Power Management

This category allows you to select the type ( or degree ) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

### Maximum Saving (Reference Table)

1. HDD - 1~15 minutes or Disable
2. Doze Mode - 1 Minute
3. Suspend Mode - 1 Minute

### **Minimum Saving**

1. HDD - 1~15 minutes or Disable
2. Doze Mode - 1 Hour
3. Suspend Mode - 1 Hour

### **User Define**

1. HDD - 1~15 minutes or Disable
2. Doze Mode - 1 min, 2 min, 4 min, 6 min, 8 min, 10 min, 20 min, 30 min, 40 min, 1 hour.
3. Suspend Mode - 1 min, 2 min, 4 min, 6 min, 8 min, 10 min, 20 min, 30 min, 40 min, 1 hour.

## **PM Control by APM**

If advanced power management is installed on your system, selecting Yes gives better power savings.

## **Video Off Method**

This determines the manner in which the monitor is blanked.

## **Video Off After**

This determines the manner in which the monitor is blanked.

The settings are: Suspend, Doze, Standby, and NA

## **Throttle Duty Cycle**

When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

## **VGA Active Monitor**

When enabled, any video activity restarts the global timer for standby mode.

## **Soft-Off by PWR-BTTN**

When enabled, turning the system off with the on/off button place the system in a very low power usage state, with only enough circuitry receiving power to detect power button activity.

## **Power On by Ring**

During disabled, the system will ignore any incoming call from the modem. During enabled, the system will boot up if there is an incoming call from the modem.

## **Wake Up on LAN**

To use this function, you need a LAN add-on card which support power on functions. It should also support the wake-up on LAN jumper (JWOL1).

Enabled	Wake up on LAN supported
Disabled	Wake up on LAN not supported

## **IRQ 8 Break Suspend**

You can enable or disable monitoring of IRQ8 so it does not awaken the system from Suspend mode.

## **\*Reload Global Timer Events\***

Reload Global Timer 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 which occurs to a device which is configured as Enabled, even when the system is in a power down mode.

## **IRQ [3-7, 9-15], NMI**

**Primary IDE0**

**Primary IDE1**

**Floppy Disk**

**Serial Port**

**Parallel Port**



## PnP/PCI Configurations

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software  
PnP/PCI Configurations

		Item Help
PNP OS Installed	[No]	
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Manual]	
▶ IRQ Resources	[Press Enter]	
▶ DMA Resources	[Press Enter]	
▶ Memory Resources	[Press Enter]	
PCI/UGA Palette Snoop	[Disabled]	
		Menu Level ▶
		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

### PNP OS installed

Select Yes if the system operating environment is Plug and Play aware, for example Windows 95.

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 and the system reconfiguration has caused such a serious conflict that the operating system can not boot. **The choices: Enabled, Disabled**

## Resources 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. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field ( a sub menu is preceded by a “>”. **The choices: Reserved, Manual.**

## IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

## DMA Resources

When resources are controlled manually, assign each DMA channel a type, depending on the type of device using the DMA channel.

## Memory Resources

Select a base address and length for the memory area used by any peripheral that requires high memory.

## PCI/VGA Palette Snoop

Leave this field at Disabled. **Choices: Enabled, Disabled.**

## PC Health Status

---

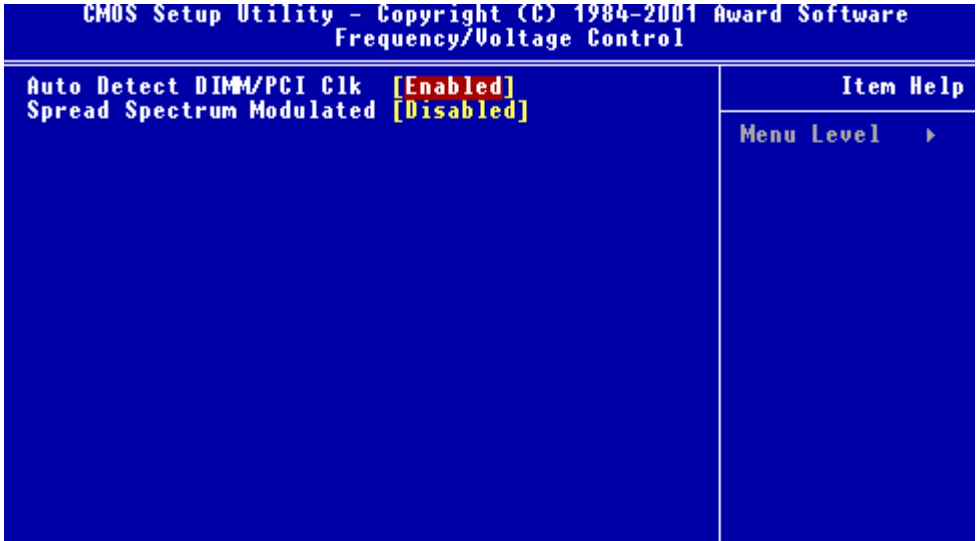
CMOS Setup Utility - Copyright (C) 1984-2001 Award Software	
PC Health Status	
Current CPU Temperature	Item Help
Current CPUFAN Speed	
CPUcore	Menu Level ▶
CPUi/o	
+3.3V	
+ 5 V	
+12 V	
-12 V	-
- 5 V	-

### PC Health Status

Your system does not allow you to alter any of the setting in this menu however you can monitor these settings. The system engineer has already designated the correct setting for SBC-676.

# Frequency/Voltage Control

---



## Auto Detect DIMM/PCI CLK

This item allows you to enable/disable auto detect DIMM/PCI clock.

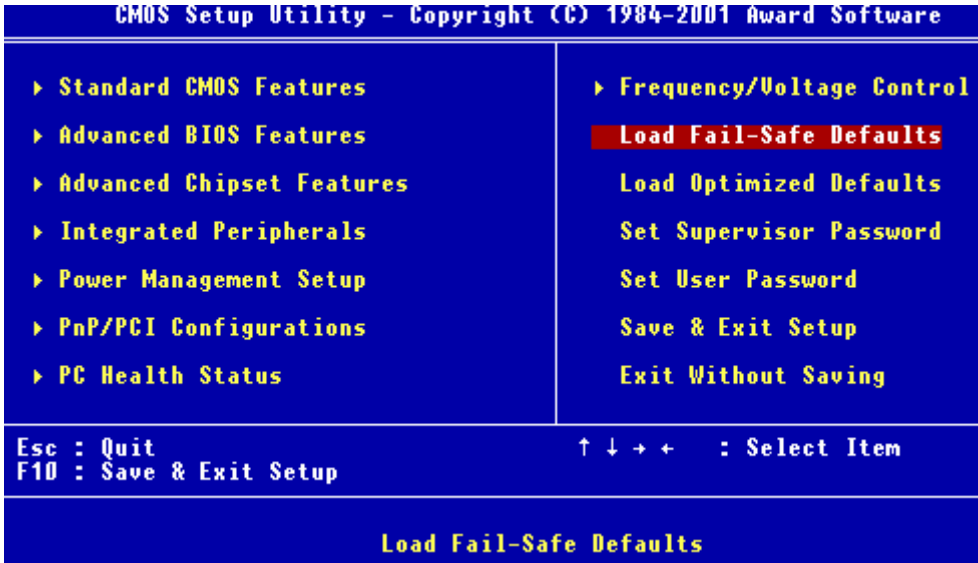
**The choices:** Enable, Disable

## Spread Spectrum

This allows you to enable/disable the spread spectrum modulate. When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme pulse spikes to flat curves thus reducing EMI.

**The choices:** Enable, Disable

## Load Fail-Safe Defaults



### Load Fail-Safe Defaults

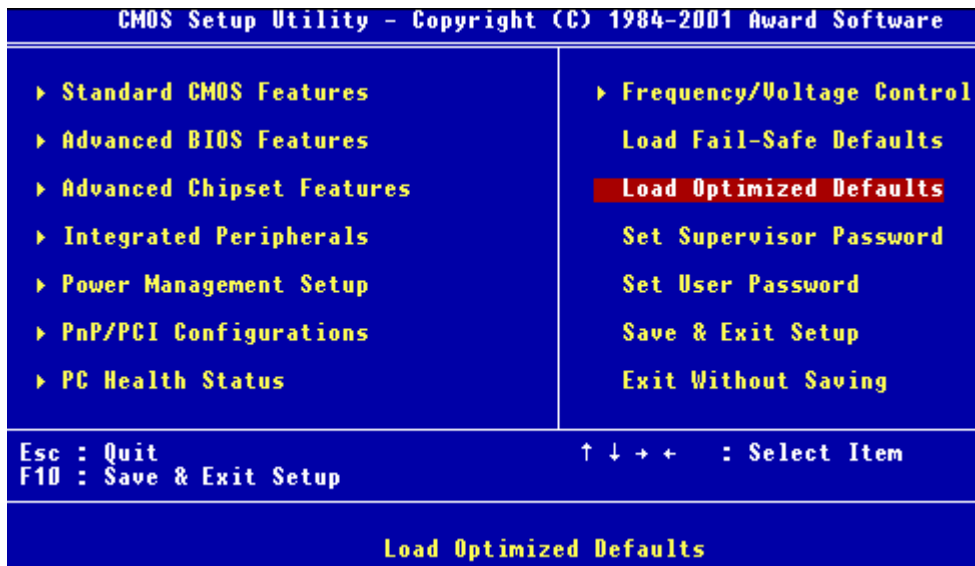
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

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

## Load Optimized Default

---



### Load Optimized Default

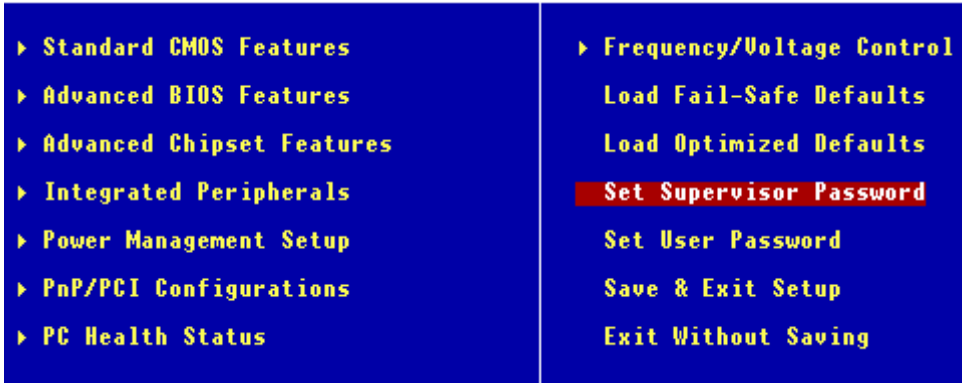
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing “Y” loads the default values that are factory settings for optimal performance system operations

## Set Supervisor Password

---



When you select this function, a message appears at the center of the screen:

### ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

### CONFIRM PASSWORD:

Again, type the password and press Enter.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

**System** Enter a password each time the system boots and when ever you enter Setup.

**Setup** Enter a password when ever you enter Setup.

***NOTE:** To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.*

# Set User Password

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>▶ Standard CMOS Features</li><li>▶ Advanced BIOS Features</li><li>▶ Advanced Chipset Features</li><li>▶ Integrated Peripherals</li><li>▶ Power Management Setup</li><li>▶ PnP/PCI Configurations</li><li>▶ PC Health Status</li></ul> | <ul style="list-style-type: none"><li>▶ Frequency/Voltage Control</li><li>Load Fail-Safe Defaults</li><li>Load Optimized Defaults</li><li>Set Supervisor Password</li><li><b>Set User Password</b></li><li>Save &amp; Exit Setup</li><li>Exit Without Saving</li></ul> |
|---|--|

When you select this function, a message appears at the center of the screen:

## ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

## CONFIRM PASSWORD:

Again, type the password and press Enter.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

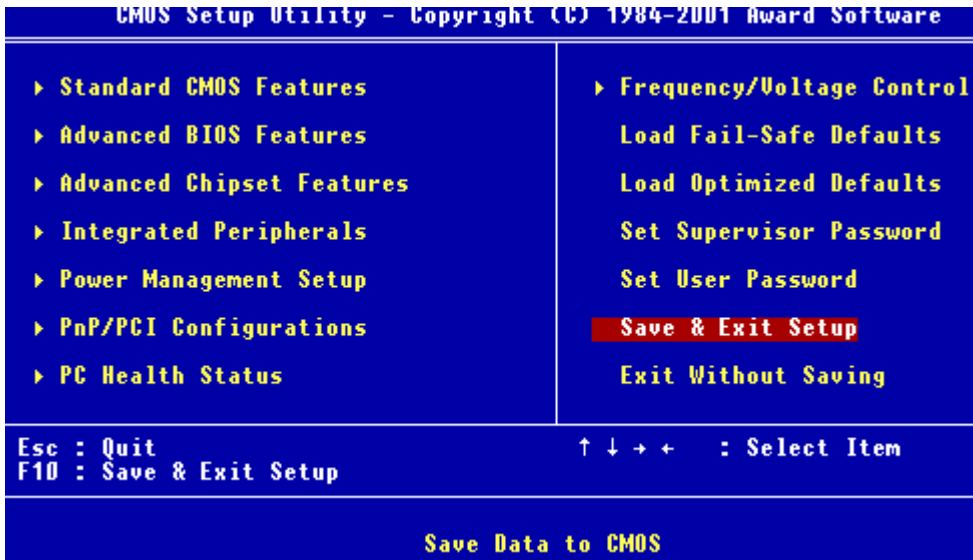
**System** Enter a password each time the system boots and when ever you enter Setup.

**Setup** Enter a password when ever you enter Setup.

*NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.*



## Save to CMOS and EXIT



## Save to CMOS and EXIT

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and Exit (Y/N)?

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

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>▶ Standard CMOS Features</li><li>▶ Advanced BIOS Features</li><li>▶ Advanced Chipset Features</li><li>▶ Integrated Peripherals</li><li>▶ Power Management Setup</li><li>▶ PnP/PCI Configurations</li><li>▶ PC Health Status</li></ul> | <ul style="list-style-type: none"><li>▶ Frequency/Voltage Control</li><li>Load Fail-Safe Defaults</li><li>Load Optimized Defaults</li><li>Set Supervisor Password</li><li>Set User Password</li><li>Save &amp; Exit Setup</li><li><b>Exit Without Saving</b></li></ul> |
|---|--|

Esc : Quit

F10 : Save & Exit Setup

↑ ↓ → ← : Select Item

**Abandon all Data**

### Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit Without Saving (Y/N)?

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.

# CHAPTER 4

## **DRIVERS INSTALLATION**

This PCM-676 is equipped with a VGA and LAN interface. This chapter provides instructions for installing the software drivers on these peripherals.

# ---Notice---

For your information:

SBC-676 offers an AT and an ATX power connector. When utilizing the AT power connector along with Windows 98 operating system, you will notice a slight difference when shutting down your system.

Your system *will not* display the image you are familiar with IT IS NOW SAFE TO SHUT DOWN YOUR COMPUTER. The computer screen will fade to black by itself and then you can shutdown the computer via the power switch.

## Software drivers

---

This chapter describes the operation and installation of the display drivers supplied on the *Supporting CD-ROM* that are shipped with your product.

The onboard VGA adapter is fully IBM VGA compatible. This controller offers a large set of extended functions and higher resolutions. If you intend to use your VGA adapter in standard VGA modes only, you do not need to install any of these drivers. Since your VGA adapter is fully compatible, it does not require any special drivers to operate in standard modes.

The purpose of the enclosed software drivers is to take advantage of the extended features of the VGA Flat Panel/CRT controller.

### Hardware configuration

Some of the high-resolution drivers provided in this package will work only in certain system configurations. If a driver does not display correctly, try the following:

1. Change the display controller to CRT-only mode, rather than flat panel or simultaneous display mode. Some high-resolution drivers will display correctly only in CRT mode.
2. If a high-resolution mode is not supported on your system, try using a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode is supported on most.

## Necessary prerequisites

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver or utility, you should:

- Know how to copy files from a CD-ROM to a directory on the hard disk
- Understand the MS-DOS directory structure

If you are uncertain about any of these concepts, please refer to the DOS or OS/2 user reference guides for more information *before* you proceed with the installation.

## Before you begin

Make sure you know the version of the application for which you are installing drivers. The *Supporting 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.

## **VGA Driver Installation for Windows OS**

---

- =>Insert the **SBC-676 CD Diskette** into the CD ROM Drive.
- =>Select **My Computer** ICON on your desktop
- =>Select **CD-ROM** drive
- =>Find the **Rage Mobility** or **VGA** file, double click
- =>Find the **Setup** ICON, double click
- =>Click on **Next**
- =>Click on **Yes**
- =>Select the **Express** option
- =>Shut down your computer and restart the system

## **Intel 82559GD Driver Installation for WIN. OS**

---

**\*The ethernet driver installation procedure is included on the SBC-676 CDROM.**

**However this software packet must be copied onto a floppy disk in order to carry out the driver installation process\***

=>Insert the **SBC-676 CD Diskette** into the CD ROM Drive.

=>Find the **Make disk file**, double click

=>Find and select **Operating System** you are using

=>Copy this file to a 3.5" diskette

=>When you initially power up the SBC-676, the system will detect the Dual LAN Chipset. The system will ask you to provide a form of ethernet driver. Select drive A:\ or your 3.5" disk drive. Insert the diskette you have copied from the CDROM and follow the corresponding directions.





APPENDIX

A

## Watchdog Timer

## Watchdog Timer

---

SBC-676 contains a watchdog timer reset pin. (GP16)

All reference material can be found on the following pages.

## What the decoded address of the W83977 ?

The decoded address of the W83977 is 3F0h.

## How to enter or exit the configuration mode ?

In order to enter the configuration mode, you must write the value **87h** to the configuration port **3F1h** **2 times each**.

In order to exit the configuration mode, you must write the value **AAh** to the configuration port **3F1h**.

## How to enable or disable the Watchdog Timer ?

In order to enable the Watchdog Timer, you must write the value **01h** to the register 30 (**CR30**) of the Logic Device 7.

In order to disable the Watchdog Timer, you must write the value **00h** to the register 30 (**CR30**) of the Logic Device 7

## How to set time-out value ?

In order to set time-out value, you must write a value which is between 01h and FFh to the register F2 (**CRF2**) of the Logic Device 8.  
For example,

01h : Time-out occurs after 32 seconds (16 seconds for the

02h : Time-out occurs after 1 minute and 32 seconds

FFh : Time-out occurs after 254 minutes and 32 seconds

**And the following pages show watchdog timer setup Utility program for your reference.**

```

=====**
** Title : WatchDog Timer Setup Utility (for W83977 GP16) **
** Company : AAEON Technology Inc. **
** Compiler : Borland C ++ Version 3.0 **
**=====*/

```

```

#include <dos.h>
#include <io.h>
#include <bios.h>
#include <stdio.h>
#include <stdlib.h>
#include <conio.h>

```

```

/* Set I/O Address : 370/371 or 3F0/3F1 */

```

```

#define IO_INDEX_PORT 0x3f0
#define IO_DATA_PORT 0x3f1

```

```

/* Set Watchdog reset pin : 12/13/16 */

```

```

#define watch_dog_output_GP 16

```

```

#define UNLOCK_DATA 0x87
#define LOCK_DATA 0xAA
#define DEVICE_REGISTER 0x07

```

```

void EnterConfigMode()

```

```

{
    outportb(IO_INDEX_PORT, UNLOCK_DATA);
    outportb(IO_INDEX_PORT, UNLOCK_DATA);
}

```

```

void ExitConfigMode()

```

```

{
    outportb(IO_INDEX_PORT, LOCK_DATA);
}

```

```

void SelectDevice(unsigned char device)
{
    outportb(IO_INDEX_PORT, DEVICE_REGISTER);
    outportb(IO_DATA_PORT, device);
}

unsigned char ReadAData(short int reg)
{
    outportb(IO_INDEX_PORT, reg);
    return (inportb(IO_DATA_PORT));
}

void WriteAData(unsigned char reg, unsigned char data)
{
    outportb(IO_INDEX_PORT, reg);
    outportb(IO_DATA_PORT, data);
}

void SetWatchDogTime(unsigned char time_val)
{
    EnterConfigMode();
    SelectDevice(8);
    //Set Register F2
    //Set Watch-Dog Timer 1~ 256
    WriteAData(0xF2, time_val);
    // set counter counts in second (or minute)
    // Register F4 Bit 6 = 0/1 (minutes/seconds)
    // For w83977EF only
    WriteAData(0xF4, 0x40);
    ExitConfigMode();
}

```

```

void init_w83977f_aw_watchdog()
{
    short int value;

    //Enter W83977 Configure Mode
    EnterConfigMode();

    //Select Device 7
    SelectDevice(7);
    //Set Device Active
    WriteAData(0x30, 0x01);

    //caution:skip this step will be a mistake!!
    if (watch_dog_output_GP==12)
    {
        //Set Register E2 to define GP12
        WriteAData(0xE2, 0x0A);
    }
    else if(watch_dog_output_GP==13)
    {
        //Set Register E3 to define GP13
        WriteAData(0xE3, 0x0A);
    }
    else if(watch_dog_output_GP==16)
    {
        //Set Register E6 to define GP16
        WriteAData(0xE6, 0x0A);
    }

    //Select Device 8
    SelectDevice(8);
    //Set Register F3
    //keyboard and mouse interrupt reset Enable
    //When Watch-Dog Time-out occurs,Enable POWER LED
output
    WriteAData(0xF3, 0x0E);
}

```



```

//caution:skip this step will be a mistake!!
if (watch_dog_output_GP==12)
{
//Set Register 2A (PIN 57) Bit 7 = 0/1 (KBLOCK/GP12)
//set to GP12 for WD Rst
WriteAData(0x2A,ReadAData(0x2A)|0x80);
}
else if(watch_dog_output_GP==13)
{
//Set Register 2B (PIN 58) Bit 0 = 0/1 (KBLOCK/GP13)
//set to GP13 for WD Rst
WriteAData(0x2B,ReadAData(0x2B)|0x01);
}
else if(watch_dog_output_GP==16)
{
//Set Register 2C (PIN 119) Bit 5-4 = 01 (GP16)
//set to GP16 for WD Rst
WriteAData(0x2C,ReadAData(0x2C)|0x10);
}

//Exit W83977 Configure mode
ExitConfigMode();
}

void main(int argc, char* argv[])
{
    int time_value=0;
    char *ptr;
    printf("WinBond 83977 WatchDog Timer Setup Utility
Version 1.0 \n");
    printf("Copyright (c) 2000 AAEON Technology Inc.\n");
    printf("This version only for W83977 that using GP%d to
Reset System.\n",watch_dog_output_GP);
}

```

```

if (argc == 1)
{
    printf("\n Syntax: WATCHDOG [time] \n");
    printf(" time range : 1 ~ 256 \n\n");
    return ;
}
if (argc > 1)
{
    ptr = argv[1];
    time_value = atoi(ptr);
}
if (time_value > 0 && time_value < 256)
{
    SetWatchDogTime((unsigned char) time_value);
    init_w83977tf_aw_watchdog();
    printf("Watch Dog Timer set up : %d \n",time_value);
}
}

```