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SBC81822

Socket 478 Full-size
All-in-One
CPU Card Series

User's Manual

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Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
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Chapter 1
Introduction

1.1 General Description



The **SBC81822** CPU card is an industrial grade CPU card incorporating the Intel® 82845GV ChipSet, 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 Socket478 all-in-one **SBC81822** CPU card is virtually your ultimate one-step solution to various applications.

1.2 Specifications

- **Chipset:** Intel® 82845GV
- **CPU Socket:** Socket478
- **CPU:** Intel® Socket478 Celeron/Pentium 4 FSB400/533MHz
- **L2 Cache:** Integrated in CPU
- **BIOS:** Phoenix AwardBIOS Rev.6.00
- **System Memory:**
  - 2 x 184-pin DDR DIMM sockets
  - Maximum up to 2GB DDR
- **IDE Interface:** 2 bus mastering EIDE up to four devices, Ultra DMA 100 supported
- **FDD Interface:** Supports up to 2 drives
- **Serial Ports:** Two 16550 UARTs ports with 16 byte as two RS-232, and COM2 supports RS422/RS485. (SBC81822VC,VEC,VELC,VCD,VECD,VELCD does not support RS422/RS485)
- **Parallel Ports:** One parallel port with ECP/EPP/SPP supported
- **VGA Controller:**
  - VGA On-chip Intel® 82845GV.
  - Supports up to 2048x1536 at 60 Hz resolution on non-interlaced CRT monitors
  - LVDS LCD interface(Option)
- **Ethernet:**
  - Controller: Integrated in 82801DB I/O Controller Hub (ICH*4) & Intel® 82559 & Intel® 82540
  - Supports triple LAN, each with 10BASE-T, 100BASE-TX and 1000BASE-TX, triple RJ45 output
  - Wake On LAN support

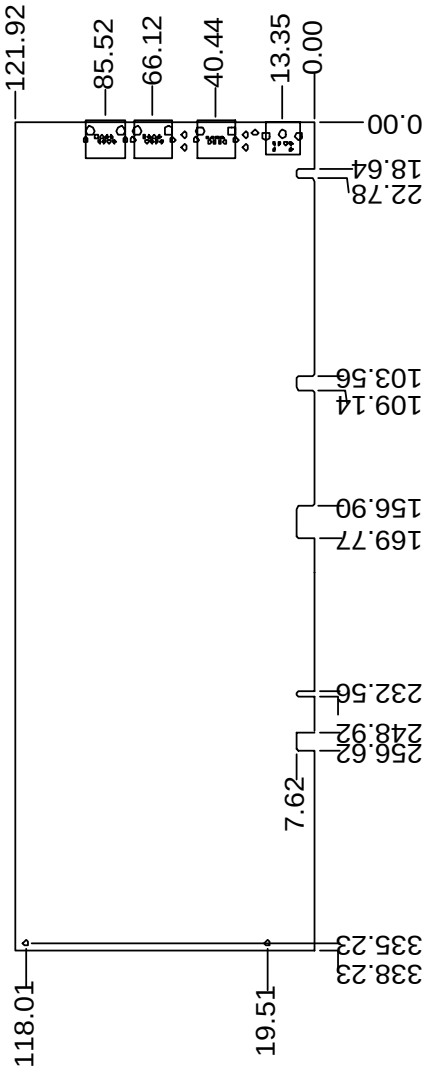
- **USB Interface:** 6 USB ports; USB Spec. Rev. 2.0 compliant. (SBC81822VC,VEC,VELC,VCD,VECD,VELCD, only support 2 USB ports)
- **IrDA:** 1 IrDA pin-header for wireless communication. (SBC81822VC,VEC,VELC,VCD,VECD,VELCD does not support)
- **Hardware Monitoring:** Controller: Winbond W83627HF-AW detection of CPU temperature, System temperature, Power failure 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

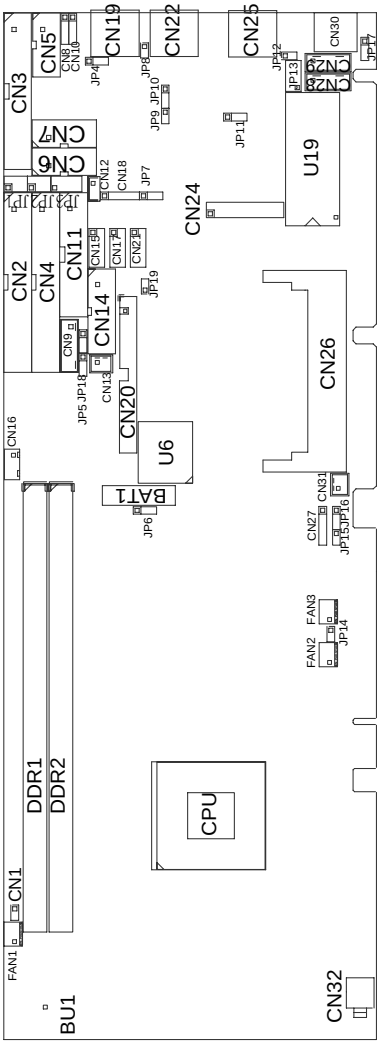
- Intel® 82845 Utility and Drivers
- Ethernet Utility and Drivers
- VGA Drivers

1.4 Board Dimensions



Chapter 2
Jumpers and Connectors

2.1 Board Layout



2.2 Jumper Settings

Making the proper jumper settings configures the **SBC81822** 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	Com 2 Mode Setting:RS232	Short 3-5,4-6
JP2	Com 2 Mode Setting:RS232	Short 3-5,4-6
JP3	Com 2 Mode Setting:RS232	Short 1-2,7-8
JP5	LCD Voltage: None Voltage	Open
JP6	CMOS Clear Jumper: Normal Mode	Short 2-3
JP13	DiskOnChip Memory Segment D0000-D1FFF	Short 1-2
JP16	Watchdog Trigger Mode: Disabled	Open
JP17	Keyboard / Mouse Wake Up: Disabled	Short 1-2

2.2.1 CMOS Clear Jumper: JP6



Options	Settings
Clear CMOS	Short 1-2
Normal (default)	Short 2-3

2.2.2 Watchdog Trigger Mode Setting: JP16

The watchdog timer is an indispensable feature of the **SBC81822**. 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.

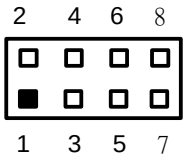
SBC81822VC, VEC, VELC does not support WDT.



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

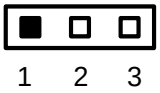
2.2.3 DiskOnChip Memory Segment: JP13

SBC81822VC, VEC, VELC does not support DOC.



Options	Settings
D0000 – D1FFF	Short 1-2 (default)
D2000 – D3FFF	Short 3-4
D4000 – D5FFF	Short 5-6
D6000 – D7FFF	Short 7-8

2.2.4 LCD Voltage Settings: JP5

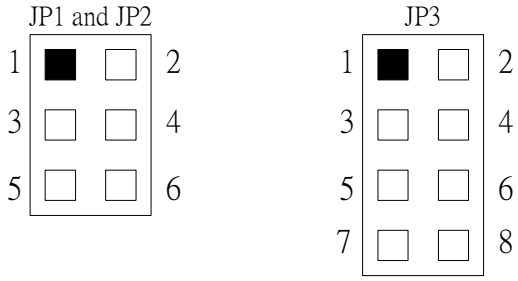


Options	Setting
+5V	Short 1-2
+3.3V	Short 2-3
None Voltage	Open (default)

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

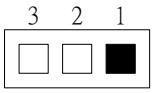
SBC81822VC, VEC, VELC, VCD, VECD, VELCD does not support RS422/485.

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



2.2.6 Keyboard Weak Up Support Settings:JP17

SBC81822 supports keyboard weak up. The function can be enabled or disabled by BIOS and JP7.



Options	Setting
Enable	2-3
Disable	1-2 (default)

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 **SBC81822**.

Connectors	Label	Connectors	Label
Printer Port Connector	CN11	Primary IDE Connector	CN4
COM1	CN6	Secondary IDE Connector	CN2
General Output Connector	CN24	FDD Connector	CN3
USB Port 1, 2 Connector	CN15	IrDA Connector (SBC81822VC,VEC,VELC,VCD, VECD,VELCD without the connector)	CN18
USB Port 3, 4 Connector (SBC81822VC,VEC,VELC,VCD,VECD,VELCD without the connector)	CN17	COM2	CN7
USB Port 5, 6 Connector (SBC81822VC,VEC,VELC,VCD,VECD,VELCD without the connectorl)	CN21	CRT Connector	CN14
Internal Mouse Connector	CN29	Audio Connector (SBC81822V3GAL, VEA Only)	CN5
CD Input Connector (SBC81822V3GAL, VEA Only)	CN8	TV Out 1 (AV) (SBC81822V3GAL Only)	CN13
TV Out 2 (S) (SBC81822V3GAL Only)	CN16	Fan Power Connector 1	FAN1
Fan Power Connector 3	FAN3	Fan Power Connector 2	FAN2
Ethernet Connector 2 (SBC81822V3GAL, VGG, VEE & VGE Only)	CN19	184-Pin DDR Memory Socket 1	DDR1
Ethernet Connector 1 (SBC81822V3GAL, VGG, VEE, VGE, VEA, VE,VEC ,VELC Only)	CN22	184-Pin DDR Memory Socket 2	DDR2

Connectors	Label	Connectors	Label
Ethernet Connector 3 (SBC81822V3GAL Only)	CN25	Socket 478 CPU Socket	U11
ATX SB5V Power Connector	CN9	System BIOS	U6
Mini-PCI Connetcor (SBC81822VC,VEC,VELC,VCD,VECD,VELCD without the connector)	CN26	DiskOnChip® Socket (SBC81822VC,VEC,VELC without the connector)	U19
Internal Keyboard Connector	CN28	Internal Battery	BAT1
Keyboard/Mouse Connector	CN30	Internal Buzzer (SBC81822VC,VEC,VELC,VCD, VECD,VELCD without the connector)	BU1
AXIOMTEK LVDS LCD Interface	CN20	ATX12V CPU Power Connector	CN32
Ethernet 2 External Speed LED (SBC8182V3GAL, V2G, V2E, VGE Only)	JP4	Ethernet 2 External Link/ACT LED (SBC8182V3GAL, V2G, V2E, VGE Only)	JP8
Ethernet 1 External Speed LED (SBC81822V3GAL, V2G, V2E, VGE, VEA, VE, VELC, VEC Only)	JP10	Ethernet 1 External Link/ACT LED (SBC81822V3GAL, V2G, V2E, VGE, VEA, VE,VELC, VEC Only)	JP9
Ethernet 3 External Speed LED (SBC81822V3GAL Only)	JP11	Ethernet 3 External Link/ACT LED (SBC81822V3GAL Only)	JP12

NOTE:

1. *SBC81822VGGGAL lan1, lan2 and lan3 is* Intel® *82540.*
2. *SBC81822VGG lan1 and lan2 is* Intel® *82540.*
3. *SBC81822VGE lan1 is* Intel® *82562EX and lan2 is* Intel® *82540.*
4. *SBC81822VEE lan1 is* Intel® *82562EX and lan2 is* Intel® *82559.*
5. *SBC81822VE, VEL, VEC, VELC, VEA, VECD, VELCD lan1 is* Intel® *82562EX.*
6. *SBC81822VG lan1 is* Intel® *82540.*

Chapter 3
Installation

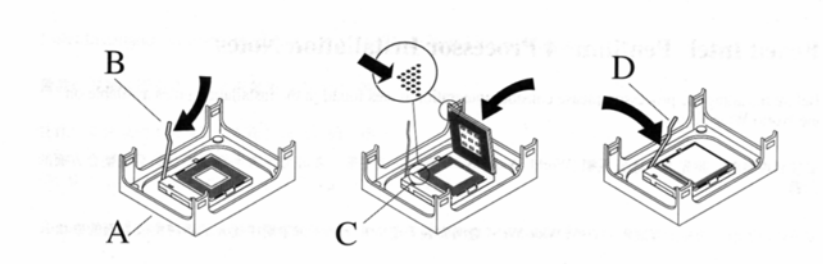
This chapter describes the hardware installation procedures on the **SBC81822** all-in-one Socket478 CPU card. The following is a list of typical peripherals required to build a minimum system:

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

3.1 System Memory

The **SBC81822** industrial CPU card supports two 184-pin DDR socket2 for a maximum total memory up to 2GB.

3.2 CPU Installation



1. Open the socket handle (B). Install the processor by carefully aligning the pins to the socket (C). Close the socket handle (D).
2. Install CPU heatsink on the retention mechanism (A) following the heatsink manufacturer's installation instructions.

3.3 Configuring Power Supply

3.3.1 ATX Power Supply

Follow these instructions if the system has an ATX power supply installed.

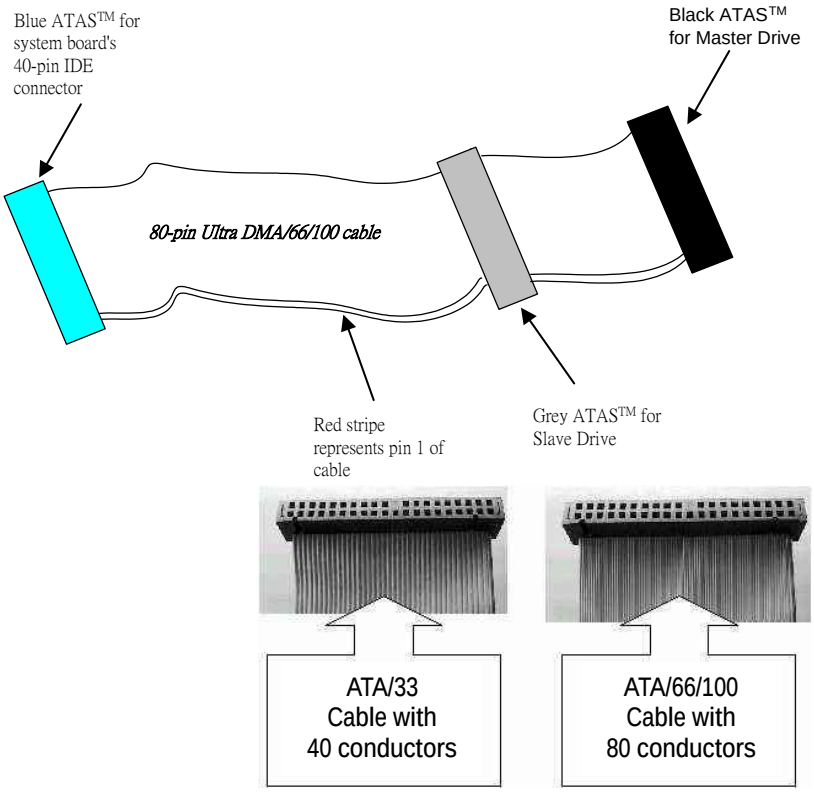
1. Install the ATX Power Control Connector cable to the designated ATX power control connector on your backplane. The ATX Power Control Connector cable is a 6-pin cable that comes with the **AXIOMTEK BACKPLANE** packaging.

3.3.2 AT Power Supply

When using an AT power supply in your system, don't need the ATX Power Control Connector cable.

3.4 Ultra DMA/66/100 Drive Installation

To accommodate the fast transfer rate of Ultra DMA/66/100, an 80-conductor cable (with 40 pin connectors on both ends) is necessary when installing Ultra DMA/66/100 drives. The **SBC81822**, on this aspect, can support a total of 2 Ultra DMA/66/100 drives. It is through the IDE Connector (**CN6**) where the 80-conductor cable is connected. The diagram below illustrates the proper installation procedure, including color coding of connectors, of the 80-conductor cable.



3.5 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 **SBC81822** CPU card into one of the slots on the passive backplane. You may allow the **SBC81822** 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.

Chapter 4
Hardware Description

This chapter gives a detailed explanation of the hardware features onboard the **SBC81822** all-in-one Socket478 CPU card.

4.1 Microprocessors

The **SBC81822** supports Intel® Celeron/Pentium 4 CPUs. Systems based on these CPUs can be operated under UNIX, OS/2, Linux, Windows NT/2000/XP, Windows 98/ME and MS-DOS environments. The system's performance depends on the installed CPU on the board.

4.2 BIOS

The system BIOS used in **SBC81822** is Award Plug and Play BIOS. The **SBC81822** contains a single 4MB Flash EPROM. For more detailed information, refer to Chapter 7 for a complete description of the BIOS setup utility and the available features accompanying it.

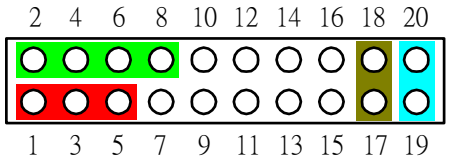
4.3 I/O Port Address Map

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)

4.4 General Output Connector: CN24

CN24



Power LED

This 3-pin connector, designated at ***Pins 1, 3,*** and ***5*** of ***CN24***, 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.

External Speaker and Internal Buzzer Connector

Pins 2, 4, 6, and ***8 of CN24*** 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*** (-).

System Reset Switch

Pins 17 & ***18*** of ***CN24*** 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 CN24*** connect the hard disk drive and the front panel HDD LED. ***Pins 19*** is -, and ***pin 20*** is assigned as +.

Reserved pins

Pins 7 and 9-16 of ***CN24*** are reserved pins.

4.5 Enhanced IDE Interface Connector

The **SBC81822** 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 **CN2** and **CN4**, allows the **SBC81822** to handle 4 IDE drives.

CN2,CN4: IDE Connector Pin Assignment

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	N/C	21	N/C
22	GND	23	IOW #	24	GND
25	IOR #	26	GND	27	IOCHRDY
28	N/C	29	N/C	30	GND-Default
31	Interrupt	32	N/C	33	SA1
34	N/C	35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #	39	HDD Active #
40	GND				

.

4.6 Display Interface

4.6.1 Flat Panel/CRT Interface Controller

The GMCH provides interfaces to a progressive scan analog

monitor and DVO can drive a variety of DVOdevices (LVDS, and TV-Out).

• The GMCH has an integrated 350 MHz RAMDAC that can directly drive a progressive scananalog monitor up to a resolution of 2048x1536 at 60 Hz.

4.6.2 Features

3D Graphics Features

- Full OpenGL* 1.3 ICD (Installable Client Driver)
- Compatible with DirectX* 9.0, 8.x, and 7.x
    - Not all of the new features of DirectX 9.0 are supported
- 32 bpp True Color 3D Support
    - Allows for high quality textures and rendering
- 3D Performance Features
    - 200MHz Core Graphics Clock
    - Support for DDR SDRAM memory improves 3D video memory performance
        - DDR SDRAM gives a large performance boost in 3D, which is even noticeable between PC1600 and PC2100 memory.
        - Since the frame buffer, depth buffer, and textures must all share memory bandwidth, increasing the bandwidth gives large gains in 3D performance.
    - Zone Rendering Technology
        - Renders the 3D scene in pieces to reduce the required memory bandwidth for a given scene

        - Zone Rendering White Paper

- 3D Setup and Render Engine
    - Triangles, Strips, and Fans
    - Pixel Accurate Fast Scissoring and Clipping Operation
    - Backface Culling
    - Anti-aliased Lines (OpenGL only)
    - Sprite Points
- Texture Engine
    - Up to 4 Textures / Pixel on a Single Pass
    - Up to 2048x2048 Texture Size
    - Per Pixel Perspective Corrected Texture Mapping
    - Single Pass Texture Compositing
    - 12 Level of Detail MIP Map Sizes from 1x1 to 2Kx2K
    - All Texture Formats Including 32-bit RGBA and 8-bit Paletted
    - Alpha and Luminance Maps
    - Texture ColorKeying/ChromaKeying
    - Bilinear, Trilinear MIP-Mapped Filtering
    - Anisotropic Filtering
        - High quality views of oblique surfaces
    - Cubic Environment Reflection Mapping

  - Embossed and Environment (DOT3) Bump-Mapping
    - Models realistic surface details
  - Compressed Textures

- Rasterization Features
  - Flat & Gouraud Shading
  - Color Alpha Blending for Transparency
  - Vertex and Programmable Pixel Fog and Atmospheric Effects
  - Color Specular Lighting
  - Line and Full-Scene Anti-aliasing
  - 16-bit and 24-bit Z and W Buffering
    - High precision depth buffer increases overall scene quality
  - 8-bit Stencil Buffering
    - Often used for shadows
  - Double and Triple Render Buffer Support
  - 16-bit and 32-bit Color
  - Transparency / Translucency (alpha blending)
    - Effects like force fields, flames, and plasma beams
  - Destination Alpha
  - Fast Clear Support

2D Graphics Features

- 32 bpp True Color 2D Support
- 256-bit pattern fill and BLT Engine Performance
- Programmable 3-Color Transparent Cursor
- Color Space Conversion
- GDI+* Feature Support
    - Anti-aliased Lines
    - Alpha Blended Cursor
    - Anti-aliased Text
    - Alpha Stretch Blitter
    - 8-bit, 16-bit and 32-bit Color
- Video
    - Dynamic Bob and Weave Support for Video Streams
    - SyncLock* Display and TV-out encoders to video source
- Video Overlay
    - Single High Quality Scalable Overlay
    - Multiple Overlay Functionality Provided via Stretch Blitter
    - 5-tap Horizontal, 3-tap Vertical Filtered Scaling
    - Independent Gamma Correction
    - Independent Brightness/Contrast/Saturation
    - Independent Tint/Hue Support

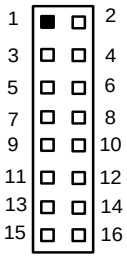
- Destination Colorkeying
- Source Chromakeying

4.6.3 VGA/LVDS Panel Connectors

The **SBC81822 Series** has two connectors that support CRT VGA and LVDS panel displays, individually or simultaneously. **CN14** is a 16-pin pin header connector commonly used for the CRT VGA display, and **CN20** is a 44-pin pin header connector for LVDS panel onnection.

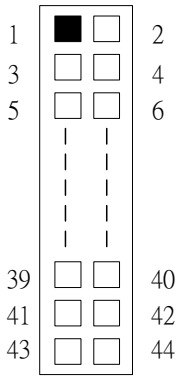
CN6: CRT/VGA Connector Pin Assignment

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	AGND	3	Green
4	N/A	5	Blue	6	AGND
7	N/A	8	DDC DAT	9	GND
10	AGND	11	GND	12	Horizontal Sync
13	AGND	14	Vertical Sync	15	DDC CLK
16	No connector				



CN12: Connector for LVDS Panel

Pin	Description	Pin	Description	Pin	Description
1	12V	2	12V	3	GND
4	GND	5	LCD Power+	6	LCD Power+
7	DIGON	8	BLON	9	GND
10	GND	11	TXU0-	12	TXL0-
13	TXU0+	14	TXL0+	15	GND
16	GND	17	TXU1-	18	TXL1-
19	TXU1+	20	TXL1+	21	GND
22	GND	23	TXU2-	24	TXL2-
25	TXU2+	26	TXL2+	27	GND
28	GND	29	TXU3-	30	TXL3-
31	TXU3+	32	TXL3+	33	GND
34	GND	35	TXUCK-	36	TXLCK-
37	TXUCK+	38	TXLCK+	39	GND
40	GND	41	GND	42	N.C.
43	LCD Power+	44	LCD Power+		



4.6.4 Flat Panel Connector Pin Description

Name	Description
TXU0-3	Channel 1 Data output
TXL0-3	Channel 0 Data output
BLON	Back Light Enable output
DIGON	Indicator Activity output
12V	+12V power controued by chip set
LCD Power+	LCD POWER By JP5
TXUCK	Channel 1 clock output
TV1CK	Channel 0 clock output

4.7 Floppy Disk Connector: CN3

The **SBC81822** provides a 34-pin header type connector, **CN3**, 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.

CN3: Floppy Disk Connector Pin Assignment

Pin	Description	Pin	Description	Pin	Description
1	GND	2	Reduce write Current	3	GND
4	N/C	5	GND	6	N/C
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 #	27	GND
28	Write protect #	29	GND	30	Read data #

31	GND	32	Side 1 select #	33	GND
34	Disk change #				

.

4.8 Parallel Port Interface: CN11

The **SBC81822** onboard **CN11** 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.

CN11 Parallel Port Connector Pin Assignment

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	

4.9 Serial Port Interface

The serial interface onboard **SBC81822** consists of COM1 port (**CN6**) and COM2 (**CN7**) supports RS-232/422/485

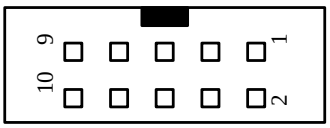
4.9.1 Serial Ports IRQ Selection

SBC81822 uses two 10-pin connectors for COM1 **(CN6)** and COM2 **(CN7)**. Interrupt Requests on COM1 and COM2 are selected via IRQ4 and IRQ3 respectively. Additionally, both ports can be enabled or disabled via BIOS setting.

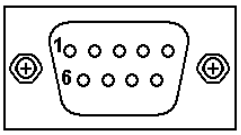
RS-232/422/485 PIN Assignment: CN6,CN7

CN6 CN7	D-SUB 9PIN	Description		
		RS-232	RS-422 (CN7)	RS-485 (CN7)
1	1	Data Carrier Delect(DCD)	TX-	Data -
2	6	Data Set Ready(DSR)	NC	NC
3	2	Receive Date(RXD)	TX+	Data +
4	7	Request to Send(RTS)	NC	NC
5	3	Transmit Data(TXD)	RX+	NC
6	8	Clear to Send(CTS)	NC	NC
7	4	Data Terminal Ready (DTR)	RX-	NC
8	9	Ring Indicator(RI)	NC	NC

9	5	GND	GND	GND
10	X	NC	NC	NC



CN6/CN7



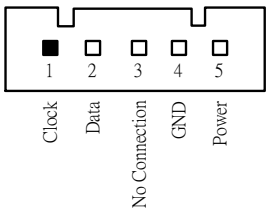
D-SUB 9PIN

RS-485 Receive Data: COM2 RTS Register must be clear.
RS-485 Transmint Data: COM2 RTS Register must be set.

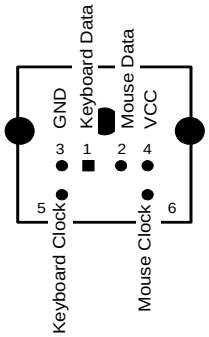
4.10 Keyboard and PS/2 Mouse Connectors

The **SBC81822** provides a keyboard **(CN28)** and Mouse **(CN29)** interface with two 5-pin connectors. **CN24** is a DIN connector for PS/2 keyboard and mouse connection.

CN28/CN29



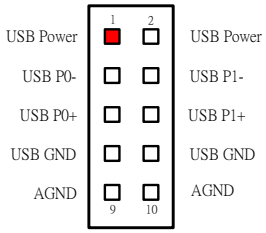
CN24



4.11 USB Connector

The Universal Serial Bus (USB) connector on the **SBC81822** is for installation of peripherals supporting the USB interface. **CN15/CN17/CN21** is the 10-pin USB connector on the **SBC81822**.

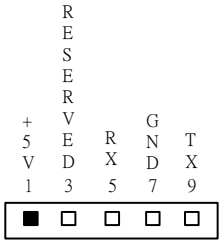
CN15/CN17/CN21



4.12 IrDA Connector

CN18 is a 5-pin IrDA connector for wireless communication.

CN18

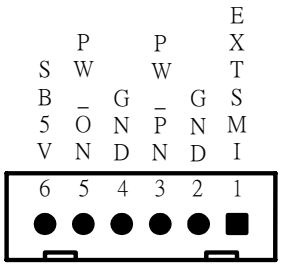


4.13 ATX SB5V Power Connector Connector

The interface enables and supports reliable power anagement 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.

CN9 on the **SBC81822** is a 6-pin header connector that provides **ATX SB5V Power**.

CN10



4.14 ATX12V CPU Power Connector: CN32

This connector connected to an ATX12V power supply and used for CPU Core Voltage.

Important Note: Make sure your ATX12V power supply can provide 12A on the +12V lead and at least 1A on the +5V standby lead (+5VSB). The minimum recommended wattage is 230W or 300W for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.

4.15 Mini-PCI Connector: CN26

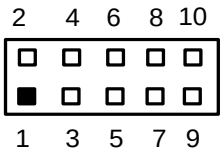
This mini-PCI connector is designed for "on-board" expansion. You don't need back plane to have another SCSI card, gigabit LAN card or IDE control card.

We prepare these types of mini-PCI card and them can be sold as accessories of SBC81822.

For the futher information, please refer the mini-PCI card's manual.

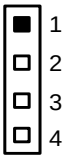
4.16 Audio Connector: CN5

Pin	Signal	Pin	Signal
1	MIC-IN	2	GND
3	Line In L	4	GND
5	Line In R	6	GND
7	Audio Out L	8	GND
9	Audio Out R	10	GND



4.17 CD ROM Input Connector: CN8

Pin	Description
1	CD In Left
2	GND
3	GND
4	CD In Right



4.18 TV Out Connector: CN13, CN16

CVBS Out Connector: CN13

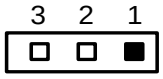
Pin	Description
1	CVBS Out
2	Video GND



4.19 Lan External LED: JP4, JP8, JP9, JP10, JP11, JP12

Lan Speed LED: JP4, JP10, JP11

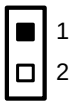
Pin	Description
1	1000 Speed (-)
2	+3.3V
3	100 Speed (-)



If you ues 10Mbps Ethernet, this LED is not work.

Lan Speed LED: JP8, JP9, JP12

Pin	Description
1	+3.3V
2	Active/Link (-)



Chapter 5
Display Drivers

5.1 Introduction

The GMCH provides interfaces to a progressive scan analog monitor and DVO can drive a variety of DVOdevices (LVDS, and TV-Out).

• The GMCH has an integrated 350 MHz RAMDAC that can directly drive a progressive scananalog monitor up to a resolution of 2048x1536 at 60 Hz.

5.2 Driver Disks' Contents

The driver diskettes that come with the **SBC81822 Series** package contains the following installation programs:

- Win98 driver
- NT4.0 diver
- Win2000 driver
- WinXP driver

5.3 Windows 98 VGA Driver Installation

To install or upgrade the DirectX driver

Microsoft DirectX 8.0a must be installed prior to installing the Intel video driver support on the **SBC81822 Series**.
If you've installed a retail version of Windows 98, ME you'll need to install Microsoft DirectX 8.0a. This DirectX driver can be download from http://www.microsoft.com/windows/directx/default.asp

To install video support

If you have installed retail Windows you need to install the Intel video driver. The driver is contained in the \SBC81822\Drivers\VGA subdirectory on the dirvers CD.
To install or upgrade the Intel 82845GV video driver:
1. Run SETUP.EXE from the driver directory on your drivers CD
2. Follow the onscreen directions to complete installation.
Upon successful completion you will be asked to reboot your computer, choose "Yes, I want to restart my computer now" if you have no other drivers to install. Otherwise, choose "No, I will restart my computer later" and continue to next step.

5.4 NT 4.0 VGA Driver Installation

To install Service Pack 6a for retail Windows NT 4.0

If you've installed a retail version of Windows NT 4.0, you'll need to install Service Pack6a. This service pack can be download from http://www.microsoft.com/ntserver/nts/downloads/recommended/sp6a/allsp6a.asp

1. Run the service pack SP6I386.EXE downloaded from the web.
2. Select "Accept the Software License Agreement".
3. Deselect "Backup files" and click Install.
4. When prompted, click Restart.

To install video support

If you have installed retail Windows you need to install the video driver. The driver is contained in the \SBC81822\Drivers\VGA subdirectory on the dirvers CD.

Note You must have NT Service Pack 4 or higher installed prior to this step.

To install or upgrade the video driver:

1. Run SETUP.EXE from the driver directory on your drivers CD
2. Follow the onscreen directions to complete installation.

Upon successful completion you will be asked to reboot your computer, choose YES if you have no other drivers to install. Otherwise, choose NO and continue to next step.

The driver will be installed after the system reboots.

5.5 Windows 2000 VGA Driver Installation

To install or upgrade the DirectX driver

Microsoft DirectX 8.0a must be installed prior to installing the video driver support on the **SBC81822 Series**.
If you've installed a retail version of Windows 2000 you'll need to install Microsoft DirectX 8.0a. This file can be download from http://www.microsoft.com/windows/directx/default.asp

To install video support

If you have installed retail Windows you need to install the video driver. The driver is contained in the \SBC81822\Drivers\VGA subdirectory on the dirvers CD.
To install or upgrade the Intel 82845GV video driver:
1. Run SETUP.EXE from the driver directory on your drivers CD
2. Follow the onscreen directions to complete installation.
3. There may be messages about the driver not having a digital signature, select Yes to all these message boxes.
4. Upon successful completion you will be asked to reboot your computer, choose "Yes, I want to restart my computer now" if you have no other drivers to install. Otherwise, choose "No, I will restart my computer later" and continue to next step.

5.6 Windows XP VGA Driver Installation

To install video support

If you have installed retail Windows you need to install the video driver. The driver is contained in the \SBC81822\Drivers\VGA subdirectory on the dirvers CD.

To install or upgrade the video driver:

1. Run SETUP.EXE from the video driver directory.
2. Follow the onscreen directions to complete the installation.
3. At the end you will be asked to reboot the PC. Choose YES and press FINISH to exit the video driver installation.

This page does not contain any information.

Chapter 6
Ethernet

6.1 Introduction

The **SBC81822** is equipped with the high performance Plug and Play Ethernet interface which is fully compliant with the IEEE 802.3 standard, and consisting of the RJ-45 connector **(CN19, CN22 and CN25)**.

6.2 Features

- 10Mb/s, 100Mb/s and 1000Mb/s operations
- Supports 10Mb/s, 100Mb/s and 1000Mb/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 **SBC81822** 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, 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.*

This page does not contain any information.

Chapter 7
Award BIOS Utility

Chapter 8 describes the different settings available in the Award BIOS that comes with the **SBC81822** CPU card. Also contained here are instructions on how to set up the BIOS configuration.

7.1 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.

7.2 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.

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.

Phoenix – AwardBIOS CMOS Setup Utility	
▸ Standard CMOS Features	▸ Frequency/Voltage Control
▸ Advanced BIOS Features	Load Fail-Safe Defaults
▸ Advanced Chipset Features	Load Optimized Defaults
▸ Integrated Peripherals	Set Supervisor Password
▸ Power Management Setup	Set User Password
▸ PnP/PCI Configurations	Save & Exit Setup
▸ PC Health Status	Exit Without Saving
Esc : Quit F9: Menu in BIOS F10 : Save & Exit Setup	↑ ↓ →← : Select Item
Time, Date, Hard Disk Type…	

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.

7.3 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.

Phoenix – AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Thu, Jun 25 2002	Item Help
Time (hh:mm:ss)	19 : 35 : 59	
		Menu Level ▶
▶ IDE Primary Master		
▶ IDE Primary Slave	None	Change the Day, month, Year and Century
▶ IDE Secondary Master		
▶ IDE Secondary Slave		
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt on	All, But keyboard	
Base Memory	640K	
Extended Memory	65472K	
Total Memory	1024K	

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

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.

- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

- **Time**
  The time format is <hour> <minute> <second> accepting either function key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **Primary Master / Primary Slave / Secondary Master / Secondary Slave**
  The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.
  Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.
  If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the controller of HDD interface is ESDI, select "Type 1".
  If the controller of HDD interface is SCSI, select "None".
  If the controller of HDD interface is CD-ROM, select "None".

CYLS.	number of cylinders	LANDZONE	landing zone
HEADS	number of heads	SECTORS	number of sectors
PRECOMP	write precom	MODE	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Drive A type / Drive B type**
  The category identifies the types of floppy disk drive A or drive B installed in the computer.

None	No floppy drive installed
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

- **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.

7.4 Advanced BIOS Features

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

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning	Disabled	Item Help
CPU L1 & L2 Cache	Enabled	Menu Level ▶
Hyper-Threading Technology	Enable	
Quick Power On Self Test	Enabled	Allows you to
First Boot Device	HDD-0	choose the VIRUS
Second Boot Device	Floppy	warning feature
Third Boot Device	CDROM	for IDE Hard disk
Boot Other Device	Enabled	boot sector
Swap Floppy Drive	Disabled	protection. If this
Boot Up Floppy Seek	Enabled	function is enable
Boot Up NumLock Status	On	and someone
Gate A20 Option	Fast	attempts to write
Typematic Rate Setting	Disabled	data into this area,
Typematic Rate (Chars/Sec)	6	BIOS will show
Typematic Delay (Msec)	250	a warning
Security Option	Setup	message on
APIC Mode	Enabled	screen and alarm
MPS Version Control For OS	1.4	beep
OS Select For DRAM > 64MB	Non-OS2	
Report No FDD For WIN 95	No	
Small Logo(EPA) Show	Disabled	

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help

- **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 L1 & L2 Cache**
  These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

- **Quick Power On Self Test**
  This option speeds up Power On Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

Enabled	Enable Quick POST
Disabled	Normal POST

- **First / Second / Third Boot Device**
  These items allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

- **Boot Other Device**
  This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is ***Enabled***.

- **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**
  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks, installed in the system. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.

- **Boot Up NumLock Status**
  This option enables and disables the numberlock function of the keypad. The default value is *"On"*.

On	Keypad functions confine with numbers
Off	Keypad functions convert to special functions (i.e., left/right arrow keys)

- **Gate A20 Option**
  The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**
  This determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

- **Typematic Rate (Chars/Sec)**
  This option refers to the number of characters the keyboard can type per second. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec)**
  This option sets the display time interval from the first to the second character when holding a key. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

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

NOTE: *To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything, just press <Enter> and it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **APIC Mode**
  This item allows you to enable/disable the APIC 8259 mode.
  The choice: Enabled/Disabled.

- **MPS Version Control For OS**
  This item allows you to select the version of MPS table for NT 4.0.
  The choice: 1.1, 1.4

- **OS Select for DRAM > 64MB**
  This segment is specifically created for OS/2 when DRAM is larger than 64MB. If your operating system is OS/2 and DRAM used is larger the 64MB, you have to select "OS 2", otherwise (under non-OS2), default is NON-OS2. The default value is *"Non-OS2"*.

- **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"*.

7.5 Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.

Phoenix – AwardBIOS CMOS Setup Utility

Advanced Chipset Features

		Item Help
DRAM Timing Selectable	By SPD	
CAS Latency Time	1.5	
Active to Precharge Delay	7	Menu Level ►
DRAM RAS# to CAS# Delay	3	
DRAM RAS# Precharge	3	
Memory Frequency For	Auto	
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Disabled	
Memory Hole At 15M-16M	Disabled	
Delayed Transaction	Enabled	
Delay Prior to Thermal	16 Min	
AGP Aperture Size (MB)	64	
On-chip VGA	Enable	
On-chip Frame Buffer Size	8Mb	
Boot Display	CRT	
Panel Scaling	Auto	
Panel Number	800X600	
TV Standard	NTSC	
Video Connector	Automatic	

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

- **CAS Latency Time**
  When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.
  The Choice: 1.5, 2, 2.5, 3.

- **Active to Precharge Delay**
  This item controls the number of DRAM clocks for TRAS.
  The Choice: 7, 6, 5.

- **DRAM RAS# to CAS# Delay**
  This field let's 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.
  The Choice: 3, 2.

- **DRAM RAS# Precharge**
  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.
  The Choice: 2, 3.

- **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 choice: Enabled, Disabled.

- **Video BIOS Cacheable**
  Select Enabled allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
  The Choice: Enabled, Disabled.

- **Video RAM Cacheable**
  Select Enabled allows caching of the A/B segment, resulting in better system performance.
  The Choice: Enabled, Disabled.

- **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***.

- **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 ***Enable***.

- **Delay Prior to Thermal**
  This item allows you to select the delayed time to enable P4 CPU Thermal function. When enter into NT 4.0, this function must be active to prevent from the system hanged.
  The Choice: 4 Min, 8 Min, 16 Min, 32Min.

- **On-chip VGA**
  The item allows you to make selection to enable or disable the On-chip VGA .
  The Choice: Enable / Disable.

- **On-chip Frame Buffer Size**
  On-chip Frame buffer size can be set to1MB or 8MB.

- **Boot Display**
  Which one is factory default display, while booting.
  The Choice: CRT, TV, EFP (None used), LFP (LCD)

- **Panel Scaling**
  Can set the panel scaling to "auto", "on" or "off"
  The Choice: Auto, ON, OFF.

- **Panel Number**
  To set Panel Resolution
  The Choice: 800x600, 1024x768, 1280x1024, 1400x1050, 1600x1200.

- **TV Standard**
  To set TV type
  The Choice: NTSC, PAL.

- **Video Connector**
  Set connection type for TV Out.
  The Choice: Automatic, Composite (S-Video), Component(AV), Both.

7.6 Integrated Peripherals

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

Phoenix – AwardBIOS CMOS Setup Utility
Integrated Peripherals

		Item Help
On-Chip Primary PCI IDE	Enabled	
IDE Primary Master PIO	Auto	
IDE Primary Slave PIO	Auto	Menu Level ▶
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
On-Chip Secondary PCI IDE	Enabled	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
USB Controller	Enabled	
USB 2.0 Controller	Enable	
USB Keyboard Support	Disabled	
USB Mouse Support	Disable	
AC97 Audio	Auto	
Init Display First	Onboard	
IDE HDD Block Mode	Enabled	
POWER ON Function	BUTTON ONLY	
KB Power On Password	Enter	
Hot Key Power On	Ctrl-F1	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
RxD, TxD Active	Hi, Lo	
IR Transmission delay	Enabled	
UR2 Duplex Mode	Half	
Use IR Pins	IR-RX2TX2	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	
PWRON After PWR-Fail	Off	

↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
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●

- **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.
  The choice: Enabled, Disabled.

- **IDE Primary/Secondary Master/Slave PIO**
  The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
  The choice: 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 98 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 Choice: Auto, Disabled.

- **USB Controller**
  Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.
  The choice: Enabled, Disabled.

- **USB 2.0 Controller**
  Select Enabled if your system contains a Universal Serial Bus V2.0 (USB2.0) controller and you have USB2.0 peripherals.
  The choice: Enabled, Disabled.

- **USB Keyboard Support**
  Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
  The choice: Enabled, Disabled.

- **USB Mouse Support**
  Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB Mouse.
  The choice: Enabled, Disabled.

- **AC97 Audio**
  Select Enabled if your system contains a AC97 Audio Codec controller and you have AC97 peripherals.
  The choice: Enabled, Disabled.

- **Init Display First**
  This item allows you to decide to active whether PCI Slot or on-chip VGA first.
  The choice: PCI Slot, Onboard.

- **IDE HDD Block Mode**
  Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
  The choice: Enabled, Disabled

- **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.

- **KB Power ON Password**
  This item allows you to set the keyboard power on password.

- **Hot Key Power On**
  This item allows you to select the hot key of the keyboard power on.
  The choice: Ctrl-F1~F12.

- **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 choice: Enabled, Disabled.

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

- **UART Mode Select**
  This item allows you to select UART mode.
  The choice: IrDA, ASKIR, Normal.

- **RxD, TxD Active**
  This item allows you to determine the active of RxD, TxD.
  The Choice: "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".

- **IR Transmission delay**
  This item allows you to enable/disable IR transmission delay.
  The choice: Enabled, Disabled.

- **UR2 Duplex Mode**
  This item allows you to select the IR half/full duplex funcion.
  The choice: Half, Full.

- **Use IR Pins**
  This item allows you to select IR transmission routes, one is RxD2m, TxD2 (COM Port) and the other is IR-Rx2Tx2.
  The choice: IR-Rx2Tx2, RxD2,TxD2.

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

- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select *Normal, Compatible,* or *SPP* unless you are certain your hardware and software both support one of the other available modes.
  The choice: SPP, EPP, ECP, ECP+EPP.

- **EPP Mode Select**
  Select EPP port type 1.7 or 1.9.
  The choice: EPP1.7, 1.9.

- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port for use during ECP mode.
  The choice: 3, 1.

- **PWRON After PWR-Fail**
  This item allows you to select if you want to power on the system after power failure.
  The choice: Off, On, Former-Sts.

7.7 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.

Phoenix – AwardBIOS CMOS Setup Utility

Power Management Setup

ACPI Function	Disabled	Item Help
ACPI Suspend Type	S1(POS)	
Run VGABIOS if S3 Resume	Auto	Menu Level ►
Power Management	Min Saving	
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
MODEM Use IRQ	3	
Suspend Mode	1 Hour	
HDD Power Down	15 Min	
Soft-Off by PWR-BTTN	Instant-Off	
CPU THRM-Throttling	50.0%	
Wake-up by PCI card	Enabled	
Power On by Ring	Enabled	
USB KB Wakeup From S3	Disabled	
Resume by Alarm	Disabled	
Date(of Month) Alarm	0	
Time(hh:mm:ss) Alarm	0 : 0 : 0	
** Reload Global Timer Events **		
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
FDD, COM, LPT Port	Disabled	
PCI PIRQ[A-D]#	Disabled	

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

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

- **ACPI Suspend Type**
  This item allows you to select the APCI suspend type.
  S1 (POS) => Power On Suspend, S3 (STR) => Suspend To DRAM
  The choice: S1 (POS), S3 (STR).

- **Power Management**
  This item allows you to select the Power Management mode.
  The choice: User Define, Min Saving, Max Saving.

- **Video Off Method**
  In suspending, this item allows you to select the CRT closed method under APM mode.
  The choice: Blank Screen, V/H SYNC+Blank, DPMS

- **Video Off In Suspend**
  In suspending, this item allows you to select if you want to close the CRT under APM mode.
  The choice: Enabled, Disabled.

- **Suspend Type**
  This item allows you to select the suspend type. Stop Grant means wake up by IRQ, and PowerOn Suspend means wake up by ACPI wake up event.
  The choice: Stop Grant, PwrOn Suspend.

- **MODEM Use IRQ**
  APM 1.2 function used only.
  The choice: NA, 3, 4, 5, 7, 9, 10, 11

- **Suspend Mode**
  When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.
  The choice: Enabled, Disabled.

- **HDD Power Down**
  When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
  The choice: Enabled, Disabled.

- **Soft-Off by PWR-BTTN**
  Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."
  The choice: Delay 4 Sec, Instant-Off.

- **CPU THRM-Throttling**
  Select the CPU THRM-Throttling rate.
  The choice: 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0%, 87.5%.
- **Power On 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.
  The choice: Enabled, Disabled.
- **USB KB Wakeup From S3 (S4)**
  This item will enable you to wake-up the system by USB keyboard when you shut down the computer in S3 mode.
  The choice: Enabled, Disabled.
- **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.
  The choice: Enabled, 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*".
- **FDD, COM, LPT Port** The default value is "*Disabled*".
- **PCI PIRQ[A-D]#** The default value is "*Disabled*".

7.8 PNP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

Phoenix – AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		Item Help
PNP OS Installed	No	
Reset Configuration Data	Disabled	Menu Level ►
Resources Controlled By	Auto (ESCD)	
X IRQ Resources	Press Enter	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
X DMA Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	

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

- **PNP OS Installed**
  This item allows you to determine install PnP OS or not. The options available are Yes and No.

- **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.

- **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®98. The options available are Auto and Manual.
- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.
- **PCI / VGA Palette Snoop**
  Leave this field at *Disabled*.
  The choice: Enabled, Disabled.

7.9 PC Health Status

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.

CMOS Setup Utility-Copyright © 1984-2001 Award Software PC Health Status	
Current System Temp. Current CPU2 Temperature Current CPUFAN1 Speed Current CPUFAN2 Speed Vcore +3.3V +5V +12V -12V -5V	Menu Level ▶
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

- **Current System Temp.**
  Show you the current system temperature.
- **Current CPU2 Temperature**
  Show you the current CPU1 temperature.
- **Current CPUFAN1/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.
- **+3.3V/+5V/+12V/-12V/-5V**
  Show you the voltage of +3.3V/+5V/+12V/-12V/-5V.

7.10 Frequency/Voltage Control

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.

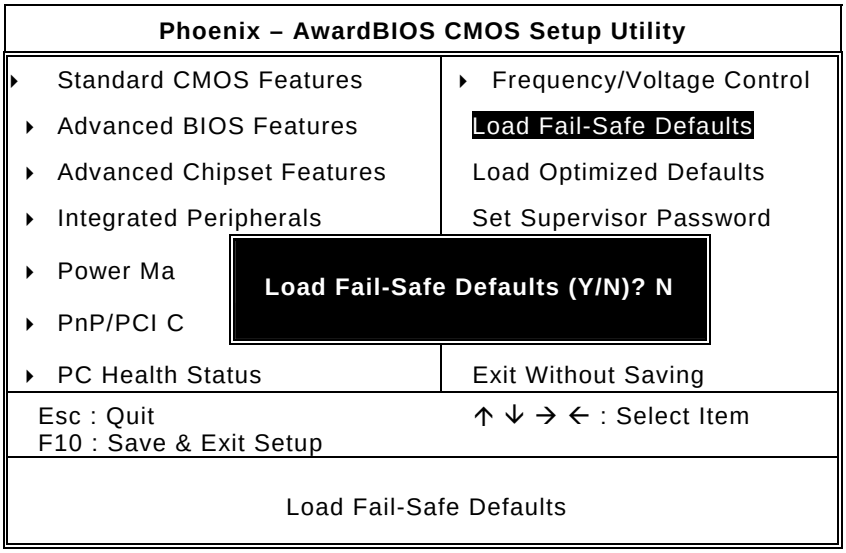
CMOS Setup Utility-Copyright © 1984-2001 Award Software Frequency/Voltage Control		
CPU Clock Ratio	8 X	
Auto Detect PCI Clk	Enabled	Menu Level ►
Spread Spectrum Modulated	Disabled	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

- **Auto Detect PCI Clk**
  When enabled, this item will auto detect if the DIMM and PCI socket have devices and will send clock signal to DIMM and PCI devices. When disabled, it will send the clock signal to all DIMM and PCI socket.
  The choice: Enabled, Disabled.

- **Spread Spectrum Modulated**
  This item allows you to enable/disable the spread spectrum modulate.
  The choice: Enabled, Disabled.

7.11 Load Fail-Safe Defaults

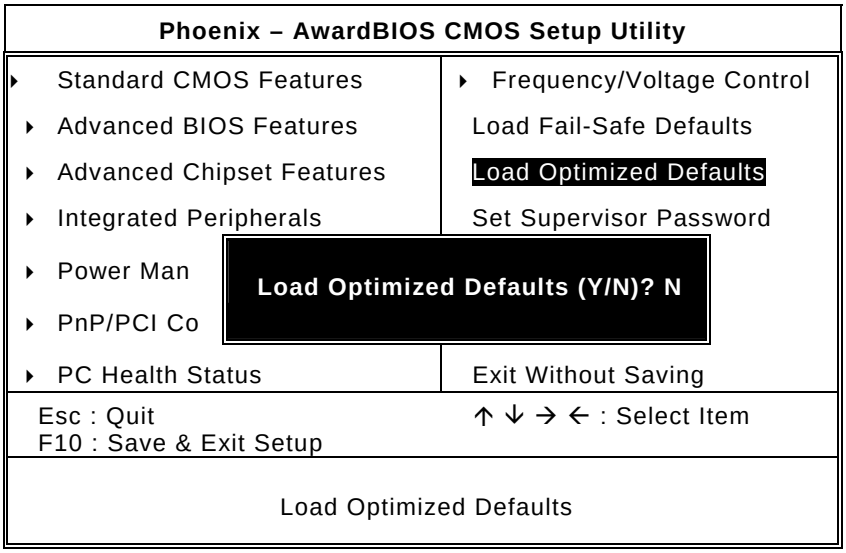
This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.



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

7.12 Load Optimized 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".

7.13 Set Supervisor/User Password

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

supervisor password: can enter and change the options of the setup menus.
user password: just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password with eight characters at most, and press <Enter>. The password typed will now clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED.

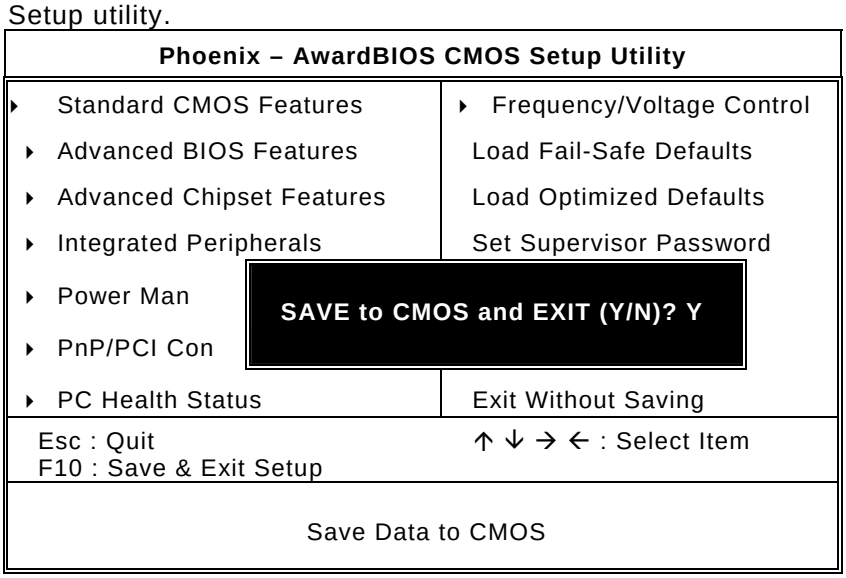
When a password is enabled, you have to type it every time you enter Setup. This prevents any unauthorized person from changing your system configuration.

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

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.

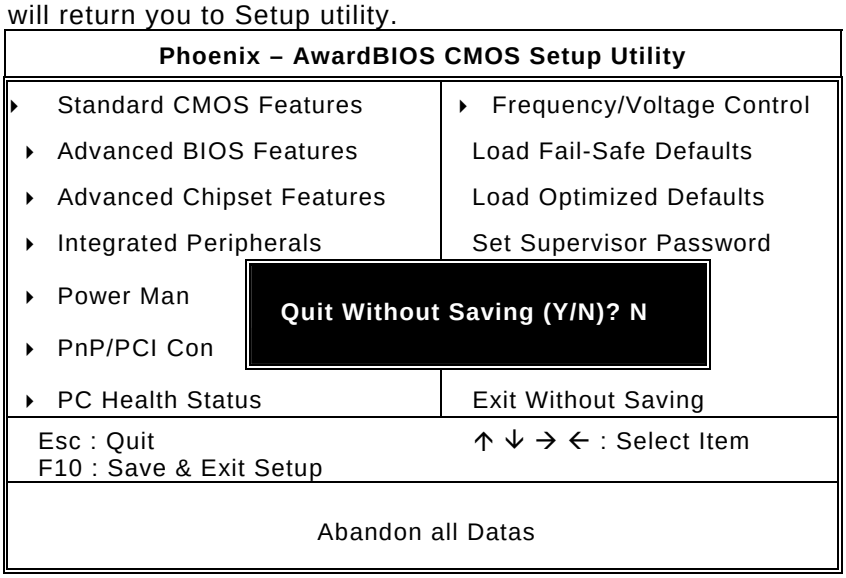
7.14 Save & Exit Setup

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.



7.15 Quit 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.



Appendix A
Watchdog Timer

Using the Watchdog Function

The **SBC81822** 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 **JP16** of **SBC81822**. Follow the steps below to enable and program the watchdog function of **SBC81822**.

```
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
```

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.

Appendix B
PCI IRQ Routing

PICMG PCI IRQ Routing

Device	ID	Slot	Int
PCI Slot 0	31	0	BCDA
PCI Slot 1	30	1	CDAB
PCI Slot 2	29	2	DABC
PCI Slot 3	28	3	ABCD

On Board Device IRQ Routing

Device	ID	Slot	Int
Mini-PCI 1	26	0	BC
LAN 1	20	4	G
LAN 2	21	3	F
LAN 3	23	2	H
PCI-ISA Bridge	22	5	

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