User's Manual

Version 1.0

EmCORE-v621

3.5" form factor Embedded VIA Mark
CoreFusion Processor with CRT/LCD,
Dual Fast Ethernet, AC97 3D Audio,
PC/104 and Compact Flash Socket

Table of Contents

Introduction

This SBC is based on VIA Embedded System Platform which combines PC133MHz FSB, DMA 33 IDE technologies and rich 4 x AGP 2D/3D graphics capabilities in a single package. Its onboard Dual 10/100 Base-T Fast Ethernet, CRT/LCD display controller, with VGA / TTL / LVDS Interfaces add communication and multimedia features to its powerfull function.

The new VIA Mark Embedded System Platform will spur the further development of the emerging new generation of quiet running, low profile small factor designs that are being adopted for a myriad of connected information and entertainment systems - ranging from home entertainment devices such as Set Top Boxes, Game Consoles, Personal Video Recorders and Broadband Gateways to commercial applications such as Thin Clients, LCD Web Based Terminals, POS Terminals and Network Attached Servers.

These new designs not only leverage the fundamental strengths of the x86 platform - namely, its software resources, its Internet compatibility, its rapid product innovation cycles, its massive economies of scale, and its open architecture. They also extend the capabilities of the PC and the Internet by allowing people to connect to information and entertainment in an easier, more convenient, and more affordable way.

This board with the new generation of information and entertainment systems is already changing the way that people consume and interact with digital content. It will allow them to view it on a CRT or LCD screen, listen to it on their audio system speakers, store it on a server or Personal Video Recorder so that it can be accessed at a later date, manipulate it on a home media PC, share it with their family over the home network, or send it to their freinds and relatives over the internet.

With its ultra low power, rich levels of integration, advanced multimedia capabilities and communication features, this board is an exciting opportunity for System Integrators and OEMs to develop new generation products that meet the desires and aspirations of the 21th century consumers.

Specifications

General Specifications

- **CPU** : VIA Mark CoreFusion processor (533/800 MHz) with FSB 133 MHz EBGA package.

- **Chipset** : VIA Mark CoreFusion processor with Integrated S3 ProSavage4 AGP 4X Graphics core and VT82C686B Super "South Bridge"

- **BIOS** : AWARD® Flash BIOS

- **Green Function** : Power saving supported in BIOS. DOZE / STANDBY / SUSPEND modes, ACPI & APM

- **L1 Cache** : Integrated on CPU (128 KB)

- **L2 Cache** : Integrated on CPU (64 KB)

- **DRAM Memory** : PC133 SODIMM up to 512MB

- **Enhanced IDE with UltraDMA** : Support 1 port and up to 2 ATAPI devices, Ultra DMA transfer 33 MB/sec. One 44-pin (2.0 pitch) box header.

- **Watchdog Timer** : 127-level timer generates RESET or NMI when your application loses control over the system.

- **Real-time Clock** : Built-in chipset with lithium battery backup. CMOS data backup of BIOS setup and BIOS default.

High Speed Multi I/O

- **Chipset** : VIA VT82C686B + Winbond W83977

- **Serial Ports** : Three high speed RS-232C port (COM1, 3, 4). One high speed RS-232C/422/485 port COM2 (jumper selectable). Both with 16C550 compatible UART and 16 byte FIFO.

- **USB** : 4 onboard USB ver 1.1 ports

- **SIR Interface** : onboard IrDA TX/RX port

- **Floppy Disk Drive Interface** : 2 floppy disk drives, 3½ (720 KB, 1.44 MB or 2.88 MB).

- **Bi-directional Parallel Port** : SPP, EPP and ECP mode.

- **Keyboard and Mouse Connectors** : 6-pin wafer header for PS/2 Keyboard and Mouse

- **Audio Chipset** : VIA VT82C686B, AC97 2.0 compliant, Multistream Direct Sound and Direct Sound 3D acceleration. (Line-in, CD Audio in, MIC in, Speaker out)

Network Interface Controller

- **Chipset** : 2 x Realtek 8100C, 10/100 Mbps

- **Connector** : Two 10-pin onboard header

Display Controller

- **Chipset** : 4 x AGP S3 Graphics ProSavage4 integrated in Mark CoreFusion Processor supports up to 32MB of Shared system memory

- **Display Type** : CRT (VGA, SVGA, XGA, SXGA) and LCD Type with TTL & LVDS interface

- **Connectors** : 16-pin onboard box header

- **Resolution** : LCD support 18/36 bit LVDS up to 1280 x1024

    LCD support 18/24/36 bit TTL up to 1280 x1024

Flash Disk

- **Compact Flash Card (CFC)**

  - **- Compact Flash Socket :** Support Type I/II CFC

  - **- Capacity** : UP to 512MB CFC

Environmental and Power

- **Power Requirements** : +5 V @ 2.04A (Max);(Low Power Embedded) 533MHz and 128MB SDRAM, EmCORE-V621VL2R/E533)

- **System Monitoring and Alarm** : CPU and System temperature, system voltage and cooling fan RPM.

- **Board Dimensions** : 145mm x 102mm

- **Board Weight** : 0.18kg

- **Operating Temperature** : 0 to 60˚C (32 to 140˚F)

Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it :

1. Disconnect your Single Board Computer from the power source when you want to work on the inside

2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry

3. Use a grounded wrist strap when handling computer components.

4. Place components on a grounded antistatic pad or on the bag that came with the Single Board Computer, whenever components are separated from the system

Ordering Codes

EmCORE-v621VL2R/E533   3.5" form factor Embedded VIA Mark 533MHz CPU with CRT / LCD, Dual Fast Ethernet, AC97 3D Audio, PC/104 and Compact Flash Socket

EmCORE-v621VL2R/E800   3.5" form factor Embedded VIA Mark 800MHz
(Optional)   CPU with CRT / LCD, Dual Fast Ethernet, AC97 3D Audio, PC/104 and Compact Flash Socket

Cable Kit   CBK-12-0621-00

Board Layout

LCD2
LCD1
LVDS1
CON1
JVLCD1
JRS1
VGA1
JV1/2
COM1/2
COM3/4
AUDIO1
LAN1
LAN2
LLED1

EATX1
INV1
PWR1
CPUF1
JBAT1
JFRT1
DIO1
LPT1
IDE1
FDD1

KBM1
IR1
PC104
USB2
USB1
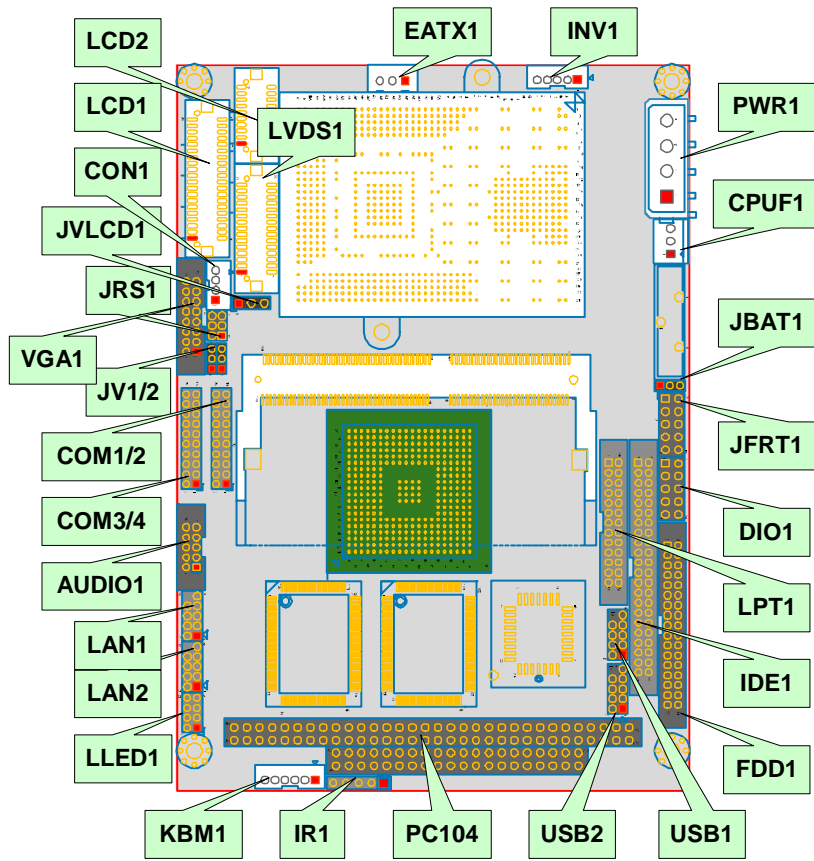
Jumper/Connector Quick Reference

Jumpers

Lable	Function
JBAT1	Clear CMOS
JRS1	COM2 RS-232 / 422 / 485 Select
JV1, JV2	COM1 Power Source Special Support
JVLCD1	LVDS Panel Voltage Selects

Jumper/Connector Quick Reference

Connectors

Lable	Function
EATX1	ATX Feature Connector
SODIM1	144 Pin SDRAM SODIMM Socket
PC104	PC104 for ISA Interface
KBM1	PS/2 Keyboard and Mouse
VGA1	CRT Display
INV1	LCD Inverter Connector
LVDS1	LVDS LCD Panel Connector
LCD1	40 PIN TTL LCD Panel Connector
LCD2	20 PIN TTL LCD Panel Connector
COM1, 2, 3, 4	Serial Port
CON1	RS-422 / 485 Output
IR1	Infrared (IR) Connector
LPT1	Parallel Port
LAN1, 2	Ethernet Connector
LLED1	LAN LED Connector
USB1, 2	USB 1, 2 / 3, 4 Connector
AUDIO1	Audio Interface Port
PWR1	Power Connector
CPUF1	CPU Fan connector
JFRT1	Front Panel (Switches and Indicators)
DIO1	Digital I/O Connector
FDD1	Floppy Disk Drive Connector
IDE1	Primary IDE Connector
CFD1	Compact Flash Socket

CMOS Jumper Settings

Connector: JBAT1

Type: onboard 3-pin header

1 2 3

CMOS	JBAT1		
Keep CMOS	1-2	ON (Default)	
Clear CMOS	2-3	ON	

Serial Port Selection (RS-232/422/485)

Connector: JRS1

5 3 1

6 4 2

Type: onboard 2*3-pin header

The onboard COM2 port can be configured to operate in RS-422 or RS-485 modes. RS-422 modes differ in the way RX/TX is being handled. Jumper JRS1 switches between RS-232 or RS-422/485 mode. All of the modes are available on COM2.

JRS1 Select	1-2	3-4	5-6
RS-232 (Default)	ON	OFF	OFF
RS-422	OFF	ON	OFF
RS-485	OFF	OFF	ON

COM1 Power Source Special Support

Connector: JV1, JV2

Type: onboard 2*3-pin header

COM1 can be configured to operate in standard RS-232C mode or in POS (Point-of-Sale) RS-232C mode. POS devices normally need an additional power supply signal (5V or 12V) to be able to power the device (LCD, cash drawer or printer) without additional writng.

COM1 Power Source Special Support	JV2	JV1
Standard (Default)	1-2	1-2
POS:5V on Pin1	2-3	1-2
POS:12V on Pin9	1-2	2-3
POS:5V on Pin1,12V on Pin9	2-3	2-3

LVDS Panel Voltage Selects

Connector: JVLCD1

Type: onboard 3-pin header

1 2 3
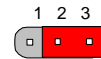
JVLCD1

LCD Voltage	JVLCD1
5V	1-2
3.3V(Default)	2-3

PC104 for ISA Interface

Connector: Standard PC104

LVDS LCD Connector

Connector: LVDS1

Type: onboard DF13 30-pin header

LVDS1
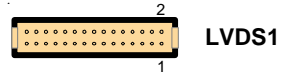
Pin	Description	Pin	Description
1	VDD	2	VDD
3	TX1CLK+	4	TX2CLK+
5	TX1CLK-	6	TX2CLK-
7	GND	8	GND
9	TX1D0+	10	TX2D0+
11	TX1D0-	12	TX2D0-
13	GND	14	GND
15	TX1D1+	16	TX2D1+
17	TX1D1-	18	TX2D1-
19	GND	20	GND
21	TX1D2+	22	TX2D2+
23	TX1D2-	24	TX2D2-
25	GND	26	GND
27	NC	28	NC
29	NC	30	NC

VDD could be selected by JVLCD1 in +5V or +3.3V

Flat Panel Connector

TTL LCD Panel Connector

Connector: LCD2

Type: DF-13 20-pin
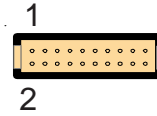
LCD1 connector is defined for TTL panel supporting 36-bit only. LCD2 connector is defined for TTL panel up to 24-bit (More than 24-bit of TTL panel needs to use both connector LCD1 & LCD2).

Pin	Description	Pin	Description
1	GND	2	GND
3	FD24	4	FD25
5	FD26	6	FD27
7	FD28	8	FD29
9	FD30	10	FD31
11	FD32	12	FD33
13	FD34	14	FD35
15	GND	16	GND
17	NC	18	NC
19	NC	20	NC

TTL LCD Panel Connector

Connector: LCD1

Type: DF-13 40-pin

1   39

2   40
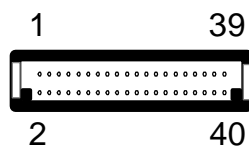
Pin	Description	Pin	Description
1	5V	2	5V
3	GND	4	GND
5	3.3V	6	3.3V
7	VEEP	8	GND
9	FP0	10	FP1
11	FP2	12	FP3
13	FP4	14	FP5
15	FP6	16	FP7
17	FP8	18	FP9
19	FP10	20	FP11
21	FP12	22	FP13
23	FP14	24	FP15
25	FP16	26	FP17
27	FP18	28	FP19
29	FP20	30	FP21
31	FP22	32	FP23
33	GND	34	GND
35	FPSCLK	36	FP_VS
37	FP_DE	38	FP_HS
39	FPVDDEN	40	VBIASEN

LCD Inverter Connector

Connector: INV1

Type: onboard 2.0mm 5-pin wafer

5 4 3 2 1
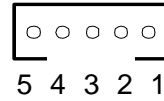
Pin	Description
1	+12V
2	GND
3	Backlight on/off
4	Brightness control
5	GND

Serial Port

Connector: COM1, 2, 3, 4

Type: onboard 2.0mm 2*10-pin box header

19   1
20   2
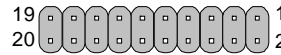
Pin	Description	Pin	Description
1	DCD(+5V)	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI (+12V)	10	NC
11	DCD	12	RXD
13	TXD	14	DTR
15	GND	16	DSR
17	RTS	18	CTS
19	RI	20	NC

RS422/485 Output Connector

Connector: CON1
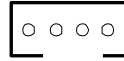
Type: onboard 2.0mm 4-pin wafer

4 3 2 1

Pin	RS-422	RS-485
1	TX+	DATA+
2	TX-	DATA-
3	RX+	N.C
4	RX-	N.C

Infrared (IR) Connector

Connector: IR1

Type: onboard 2.54pitch 5-pin header

1 2 3 4 5

Pin	Description
1	+5V
2	N.C
3	IRRX
4	GND
5	IRTX

Peripheral Port

Parallel Port

Connector: LPT1
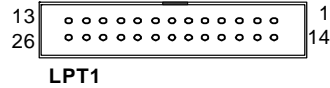
Type: onboard 2*13-pin box header

```
13  o o o o o o o o o o o o o   1
26  o o o o o o o o o o o o o   14
         LPT1
```

Pin	Description	Pin	Description
1	#STROBE	14	#AUTO FEED
2	DATA0	15	#ERROR
3	DATA1	16	#INITIALIZE
4	DATA2	17	#SELECT INPUT
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	#ACKNOWLEDGE	23	GND
11	BUSY	24	GND
12	PAPER EMPTY	25	GND
13	SELECT	26	GND

USB Ports

Connector: USB1, USB2

Type: onboard 2.0mm 10-pin header
for each two USB ports

```
2  4  6  8  10
o  o  o  o  o
o  o  o  o  o
1  3  5  7  9
    USB
```
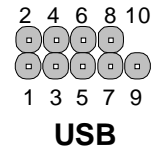
Pin	Description	Pin	Description
1	+5V	2	+5V
3	USBD2-	4	USBD3-
5	USBD2+	6	USBD3+
7	GND	8	GND
9	GND	10	N.C

PS/2 Keyboard and Mouse

Connector: KBM1

Type: onboard 2.0mm 6-pin wafer

6 5 4 3 2 1
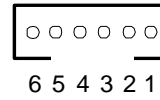
Pin	Description	Pin	Description
1	KB_DAT	2	GND
3	MS_DAT	4	KB_CLK
5	VCC	6	MS_CLK

CRT Display

Connector: VGA1

Type: onboard 2.0mm 2*8-pin box header

2 **VGA** 16

1   15
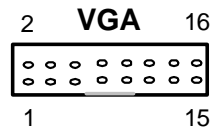
Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	NC (Poly S/W)	10	GND
11	N/C	12	VDDAT
13	HSYNC	14	VSYNC
15	VDCLK	16	N/C

Audio Interface Port

Connector: Audio1

Type: onboard 2.0mm 2*5-pin box header

Audio

1   2
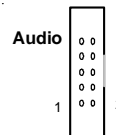
Pin	Description	Pin	Description
1	Line Left in	2	Line Right in
3	GND	4	GND
5	MIC	6	N/C
7	GND	8	GND
9	Speaker LEFT	10	Speaker Right

Ethernet Connector

LAN Port Signals

Connector: LAN1, LAN2

Type: onboard 2.0mm 2*5-pin header
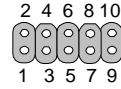
Pin	Description	Pin	Description
1	TX+	2	TX-
3	RX+	4	NC
5	NC	6	RX-
7	NC	8	NC
9	GND	10	Key

LAN LED Connector

Connector: LLED1

Type: onboard 2.0mm 2*4-pin header

Pin	Description	Pin	Description
1	LAL1_Link	2	3VSB
3	LAL1_ACT	4	3VSB
5	LAL2_Link	6	3VSB
7	LAL2_ACT	8	3VSB

Power Connector

ATX Feature Connector

Connector: EATX1

Type: onboard 3-pin wafer connector

Pin	Description
1	PS-ON
2	GND
3	5VSB

ATX Power Connector

Connector: PWR1

Type: onboard 4-pin wafer connector

Pin	Description	Pin	Description
1	+5V	2	GND
3	GND	4	+12V
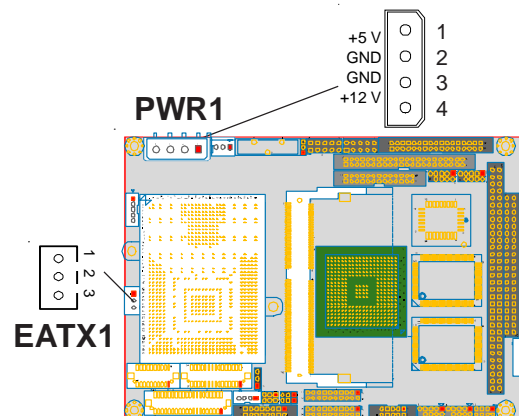
CPU Fan Connector

Connector: CPUF1

Type: onboard 3-pin wafer connector

Pin	Description
1	GND
2	+12V
3	Fan_Detect

Front Panel (Switches and Indicators)

Connector: JFRT1

Type: onboard 2*5-pin header

Pin	Description	Pin	Description
1	RESET+	2	RESET-
3	POWER LED+	4	POWER LED-
5	HD LED+	6	HD LED-
7	SPEAK+	8	SPEAK-
9	PSON+	10	PSON-

Digital I/O Connector

Connector: DIO1

Type: onboard 2.54pitch 2*5-pin header

Pin	Description	Pin	Description
1	DIO0	2	DIO1
3	DIO2	4	DIO3
5	DIO4	6	DIO5
7	DIO6	8	DIO7
9	+5V	10	GND

Interface Connectors HDD, FDD

Floppy Disk Driver Connector

Connector: FDD1

Type: onboard 34-pin header
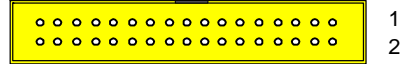
Pin	Description	Pin	Description
1	GND	2	DRIVE DENSITY SELECT 0
3	GND	4	NC
5	GND	6	DRIVE DENSITY SELECT 1
7	GND	8	#INDEX
9	GND	10	#MOTOR ENABLE A
11	GND	12	#DRIVER SELECT B
13	GND	14	#DRIVER SELECT A
15	GND	16	#MOTOR ENABLE B
17	GND	18	#DIRECTION
19	GND	20	#STEP
21	GND	22	#WRITE DATA
23	GND	24	#WRITE GATE
25	GND	26	#TRACK 0
27	GND	28	#WRITE PROTECT
29	GND	30	#READ DATA
31	GND	32	#HEAD SELECT
33	GND	34	#DISK CHANGE

Enhanced IDE Connector

Connector: IDE1
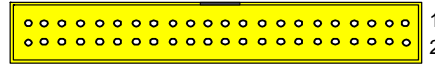
Type: onboard 44-pin box header

Pin	Description	Pin	Description
1	#RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC
21	REQ	22	GND
23	#IOW	24	GND
25	#IOR	26	GND
27	#IORDY	28	IDESEL
29	#DACK	30	GND
31	IRQ	32	NC
33	ADDR1	34	CBLID
35	ADDR0	36	ADDR2
37	#CS0	38	#CS1(#HD SELET1)
39	#ACT	40	GND
41	Vcc	42	Vcc
43	GND	44	GND

System Resources

Interrupt Assignment

IRQ Address	Description
0	System Timer
1	Keyboard (KB output buffer full)
2	Programmable Interrupt Controller
3	Serial Port 2 (COM2)
4	Serial Port 1 (COM1)
5	Resvered
6	Floppy controller
7	Parallel Port 1
8	Real-Time Clock
9	USB
10	Ethernet 1
11	Ethernet 2
12	PS/2 Mouse
13	Numeric data processor
14	Primary IDE Controller
15	Secondary IDE Controller

I/O Address Space

Adress	Description
0000 - 000F	DMA Controller
0010 - 001F	Motherboard Resources
0020 - 0021	PIC
0022 - 003F	Motherboard Resources
0040 - 0043	System Timer
0044 - 005F	Motherboard Resources
0060 - 0060	Keyboard
0061 - 0061	Systems Speaker
0062 - 0063	Motherboard Resources
0064 - 0064	Keyboard
0065 - 006F	Motherboard Resources
0070 - 0071	System CMOS / Real time clock
0072 - 0080	Motherboard Resources

0081 - 0083	DMA Controller
008F - 0091	DMA Controller
00A0 - 00A1	PIC
00A2 - 00BF	Motherboard Resources
00E0 - 00EF	Motherboard Resources
00C0 - 00DF	DMA Controller
00F0 - 00FF	Numeric Data Processor
0170 - 0177	VIA Bus Master PCI IDE Controller
01F0 - 01F7	VIA Bus Master PCI IDE Controller
02F8 - 02FF	Communications Port B
0376 - 0376	VIA Bus Master PCI IDE Controller
0378 - 037F	Printer Port
03F0 - 03F5	Floppy Disk Controller
03F7 - 03F7	Floppy Disk Controller
03F8 - 03FF	C0M1
0400 - 048F	Motherboard Resources
0480 - 048F	Motherboard Resources
04D0 - 04D1	PCI bus

AWARD BIOS Setup

The SBC uses the Award PCI/ISA BIOS ver 6.0 for the system configuration. The Award BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options which could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

To access AWARD PCI/ISA BIOS Setup program, press <Del> key. The Main Menu will be displayed at this time.

```
CMOS Setup Utility - Copyright (C) 1984-2002 Award Software

    ▶ Standard CMOS Features          ▶ PC Health Status

    ▶ Advanced BIOS Features          ▶ Frequency/Voltage Control

    ▶ Advanced Chipset Features          Load Optimized Defaults

    ▶ Integrated Peripherals             Set Password

    ▶ Power Management Setup             Save & Exit Setup

    ▶ PnP/PCI Configurations             Exit Without Saving


 Esc : Quit        F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
 F10 : Save & Exit Setup

                    Time, Date, Hard Disk Type...
```

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features
Use this menu for basic system configuration.

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.

Power Management Setup
Use this menu to specify your settings for power management.

PnP / PCI Configuration
This entry appears if your system supports PnP / PCI.

PC Health Status
This entry appears CPU temperature for the systeml.

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

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

Set Password
Use this menu to set User and Supervisor Passwords.

Save & Exit Setup
Save CMOS value changes to CMOS and exit setup.

Exit Without Save
Abandon all CMOS value changes and exit setup.

Standard CMOS Setup

```
       CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
                         Standard CMOS Features
    ┌─────────────────────────────────────────────────┬──────────────────────┐
    │  Date (mm:dd:yy)          Tue, Sep 10 2002       │     Item Help        │
    │  Time (hh:mm:ss)           17 : 54 : 49          ├──────────────────────┤
    │                                                  │  Menu Level    ▶     │
    │ ▶ IDE Primary Master                             │                      │
    │ ▶ IDE Primary Slave                              │  Change the day, month,│
    │ ▶ IDE Secondary Master    [ None]                │  year and century    │
    │ ▶ IDE Secondary Slave                            │                      │
    │                                                  │                      │
    │  Drive A                  [1.44M, 3.5 in.]       │                      │
    │  Drive B                  [None]                 │                      │
    │                                                  │                      │
    │  Video                    [EGA/VGA]              │                      │
    │  Halt On                  [All Errors]           │                      │
    │  Panel Type               [1024*768 TFT]         │                      │
    │  Boot Device Select       [CRT]                  │                      │
    │                                                  │                      │
    │  Base Memory                  640K               │                      │
    │  Extended Memory             65535K              │                      │
    │  Total Memory                1024K               │                      │
    ├──────────────────────────────────────────────────────────────────────────┤
    │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
    │            F5:Previous Values                    F7: Optimized Defaults    │
    └──────────────────────────────────────────────────────────────────────────┘
```

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

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

Time
The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the « or (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.

IDE Primary Master/Slave
IDE Secondary Master/Slave
Options are in sub menu (see page 31)

Drive A, 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
1.2M ;	5.25 in 5-1/4 inch AT-type high-density drive
720K ;	3.5 in 3-1/2 inch double-sided drive
1.44M ;	3.5 in 3-1/2 inch double-sided drive
2.88M ;	3.5 in 3-1/2 inch double-sided drive

Video   Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

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 non-fatal 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.

Panel Type Select the different panel type to run the system. Four various resolutions for TFT type and two for DSTN.

Boot Device   This item allows you to select the different devices for boot up function

IDE Harddisk Setup (submenu)

```
        CMOS SETUP UTILITY - Copyright (C) 1984-2001 Award Software
                          IDE Primary Master

 IDE HDD Auto-Detection   Press Enter                  Item Help


 IDE Primary Master       [Auto]             Menu Level ▶▶
 Access Mode              [Auto]

 Capacity                 0 MB

 Cylinder                 0
 Head                     0
 Precomp                  0
 Landing Zone             0
 Sector                   0




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

IDE HDD Auto-detection
Press Enter to auto-detect the HDD on this channel. If detection is success-
ful, it fills the remaining fields on this menu.

IDE Primary Master
Selecting 'manual' lets you set the remaining fields on this screen. Selects
the type of fixed disk. "User Type" will let you select the number of cylin-
ders, heads, etc. Note: PRECOMP=65535 means NONE !

Capacity
Disk drive capacity (Approximated). Note that this size is usually slightly
greater than the size of a formatted disk given by a disk checking program.

Access Mode
Normal, LBA, Large or Auto Choose the access mode for this hard disk

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'

Cylinder   Min = 0 Max = 65535
Set the number of cylinders for this hard disk.

Head   Min = 0 Max = 255
Set the number of read/write heads

Precomp   Min = 0 Max = 65535
**** Warning: Setting a value of 65535 means no hard disk

Landing zone   Min = 0 Max = 65535
**** Warning: Setting a value of 65535 means no hard disk

Sector   Min = 0 Max = 255
Number of sectors per track

We recommend that you select Type "AUTO" for all drives. The BIOS will auto-detect the hard disk drive and CD-ROM drive at the POST stage.

If your hard disk drive is a SCSI device, please select "None" for your hard drive setting.

BIOS Features Setup

```
                Phoenix - AwardBIOS CMOS Setup Utility
                       Advanced BIOS Features
┌──────────────────────────────────────────────┬────────────────────────┐
│  Virus Warning              [Disabled]        │      Item Help         │
│  CPU Internal Cache         [Enabled]         │                        │
│  External Cache             [Enabled]         │  Menu Level    ►       │
│  CPU L2 Cache ECC Checking  [Enabled]         │                        │
│  Processor Number Feature   [Enabled]         │  Allows you to choose  │
│  Quick Power On Self Test   [Enabled]         │  the VIRUS warning     │
│  First Boot Device          [HDD-0]           │  feature for IDE Hard  │
│  Second Boot Device         [HDD-1]           │  Disk boot sector      │
│  Third Boot Device          [Floppy]          │  protection. If this   │
│  Boot Other Device          [Enabled]         │  function is enabled   │
│  Swap Floppy Drive          [Disabled]        │  and someone attempt to│
│  Boot Up Floppy Seek        [Enabled]         │  write data into this  │
│  Boot Up NumLock Status     [On]              │  area , BIOS will show │
│  Security Option            [Setup]           │  a warning message on  │
│  EEPROM Write Protect       [Enabled]         │  screen and alarm beep │
│                                               │                        │
│                                               │                        │
├──────────────────────────────────────────────┴────────────────────────┤
│ ↑↓←→:Move  Enter:Select +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│            F5:Previous Values              F7: Optimized Defaults       │
└────────────────────────────────────────────────────────────────────────┘
```

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

Virus Warning

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 beep.

Enabled   Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Disabled No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU Internal Cache
External Cache
These two categories speed up memory access. However, it depends on CPU/chipset design. Enabled : Enable cache, Disabled : Disable cache

CPU L2 Cache ECC Checking
This item allows you to enable/disable CPU L2 Cache ECC checking. The choice: Enabled, Disabled.

Processor Number Feature
This feature appears when a a Pentium III processor is installed. It enables you enables you to control whether the Pentium III's serial number can be read by external programs. The choice : Enabled. Disabled

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

First/Second/Third/Other Boot Device
The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The choices are : Floppy, LS/ZIP, HDD, SCSI, CDROM, USB Interface and Disabled.

Swap Floppy Drive
If the system has two floppy drives, you can swap the logical drive name assignments. The choice: Enabled/Disabled.

Boot Up Floppy Seek
Seeks disk drives during boot up. Disabling speeds boot up. The choice: Enabled/Disabled.

Boot Up NumLock Status
Select power on state for NumLock. The choice: Enabled/Disabled.

Security Option
Select whether the password is required every time the system boots or only when you enter setup.

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

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

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

Advanced Chipset Features

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                         Advanced Chipset Features
 ┌─────────────────────────────────────────────────┬──────────────────────┐
 │  DRAM Timing By SPD        [Enabled]             │      Item Help       │
 │ x DRAM Clock                Host CLK             │                      │
 │ x SDRAM Cycle Length        3                    │  Menu Level    ►     │
 │ x Bank Interleave           Disabled             │                      │
 │  Memory Hole               [Disabled]            │                      │
 │  System BIOS Cacheable     [Enabled]             │                      │
 │  Video RAM Cacheable       [Enabled]             │                      │
 │  Frame Buffer Size         [8M]                  │                      │
 │  AGP Aperture Size         [64M]                 │                      │
 │  AGP-4X Mode               [Enabled]             │                      │
 │  OnChip Sound              [Auto]                │                      │
 │                                                  │                      │
 │                                                  │                      │
 │                                                  │                      │
 │                                                  │                      │
 │                                                  │                      │
 ├─────────────────────────────────────────────────┴──────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │           F5:Previous Values              F7: Optimized Defaults         │
 └─────────────────────────────────────────────────────────────────────────┘
```

DRAM Clock

This item allows you to set the DRAM Clock. Options are Host CLK, HCLK+33M or HCLK-33M. Please set the item according to the Host (CPU) Clock and DRAM Clock.

SDRAM Cycle Length

This feature is similar to SDRAM CAS Latency Time. It controls the time delay (in clock cycles - CLKs) that passes before the SDRAM starts to carry out a read command after receiving it. This also determines the number of CLKs for the completion of the first part of a burst transfer. Thus, the lower the cycle length, the faster the transaction. However, some SDRAM cannot handle the lower cycle length and may become unstable. So, set the SDRAM Cycle Length to 2 for optimal performance if possible but increase it to 3 if your system becomes unstable.

Bank Interleave

This feature enables you to set the interleave mode of the SDRAM interface. Interleaving allows banks of SDRAM to alternate their refresh and access cycles. One bank will undergo its refresh cycle while another is being accessed. This improves performance of the SDRAM by masking the refresh time of each bank. A closer examination of interleaving will reveal that since the refresh cycles of all the SDRAM banks are staggered, this produces a kind of pipelining effect. If there are 4 banks in the system, the CPU can ideally send one data request to each of the SDRAM banks in consecutive clock cycles. This means in the first clock cycle, the CPU will send an address to Bank 0 and then send the next address to Bank 1 in the second clock cycle before sending the third and fourth addresses to Banks 2 and 3 in the third and fourth clock cycles respectively. Each SDRAM DIMM consists of either 2 banks or 4 banks. 2-bank SDRAM DIMMs use 16Mbit SDRAM chips and are usually 32MB or less in size. 4-bank SDRAM DIMMs, on the other hand, usually use 64Mbit SDRAM chips though the SDRAM density may be up to 256Mbit per chip. All SDRAM DIMMs of at least 64MB in size or greater are 4-banked in nature.

If you are using a single 2-bank SDRAM DIMM, set this feature to 2-Bank. But if you are using two 2-bank SDRAM DIMMs, you can use the 4-Bank option as well. With 4-bank SDRAM DIMMs, you can use either interleave options. Naturally, 4-bank interleave is better than 2-bank interleave so if possible, set it to 4-Bank. Use 2-Bank only if you are using a single 2-bank SDRAM DIMM. Notethat it is recommends that SDRAM bank interleaving be disabled if 16Mbit SDRAM DIMMs are used.

Memory Hole

Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB.

System BIOS Cacheable

Allows the system BIOS to be cached for faster system performance.

Video RAM Cacheable

This item allows you to "Enabled" or "Disabled" on Video RAM Cacheable.

Frame Buffer Size

This item defines the amount of system memory that will be shared and uses as video memory.

AGP Aperture Size
Options : 4, 8, 16, 32, 64, 128

This option selects the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated as graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without need for translation. This size also determines the maximum amount of system RAM that can be allocated to the graphics card for texture storage.

AGP Aperture size is set by the formula : maximum usable AGP memory size x 2 plus 12MB. That means that usable AGP memory size is less than half of the AGP aperture size. That's because the system needs AGP memory (uncached) plus an equal amount of write combined memory area and an additional 12MB for virtual addressing. This is address space, not physical memory used. The physical memory is allocated and released as needed only when Direct3D makes a "create non-local surface" call.

AGP-4X Mode
Set to Enabled if your AGP card supports the 4X mode, which transfers video data at 1066MB/s.

OnChip Sound
This menu can access the sound controller automaticlly

Integrated Peripherals

```
              Phoenix - AwardBIOS CMOS Setup Utility
                    Integrated Peripherals

  OnChip IDE Channel0         [Enabled]          ▲      Item Help
  OnChip IDE Channel1         [Enabled]
  IDE Prefetch Mode           [Enabled]              Menu Level   ▶
  Primary Master    PIO       [Auto]
  Primary Slave     PIO       [Auto]
  Secondary Master PIO        [Auto]
  Secondary Slave  PIO        [Auto]
  Primary Master    UDMA      [Auto]
  Primary Slave     UDMA      [Auto]
  Secondary Master UDMA       [Disable]
  Secondary Slave  UDMA       [Disable]
  Init Display First          [PCI Slot]
  OnChip USB                  [Enabled]
  USB Legacy Support          [Disabled]
  USB Mouse Support           [Disabled]
  Onboard Lan Boot ROM        [Disabled]
  Onboard FDD Controller      [Enabled]
  Onboard Serial Port 1       [3F8/IRQ4]
  Onboard Serial Port 2       [2F8/IRQ3]          ▼

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

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

OnChip IDE Channel 0/1
Select "Enabled" to activate each on-board IDE channel separately, Select "Disabled", if you install an add-on IDE Control card

IDE Prefetch Mode
Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does appear when the Internal PCI/IDE filed, above, is Disabled.

Primary & Secondary Master/Slave PIO
These four PIO fields let you set a PIO mode (0-4) for each of four IDE devices. When under "Auto" mode, the system automatically set the best mode for each device

Primary & Secondary Master/Slave UDMA
When set to "Auto" mode, the system will detect if the hard drive supports Ultra DMA mode.

Init Display First
Select "AGP" or "PCI Slot" for system to detect first when boot-up.

OnChip USB
If your system contains a Universal Serial Bus controller and you have a USB peripheral, select Enabled. The next option will become available.

Onboard LAN Boot ROM
This feature allows you to run LAN Boot function. Select "Disabled" not to access this function

Onboard FDD Controller
Select "Enabled" to activate the on-board FDD
Select "Disabled" to activate an add-on FDD

Onboard Serial Port 1 & 2
Select an address and corresponding interrupt for the first/second serial port. The default value for the first serial port is "3F8/IRQ4" and the second serial port is "2F8/IRQ3".

Onboard Parallel Port
Select address and interrupt for the Parallel port.

Onboard Parallel Mode
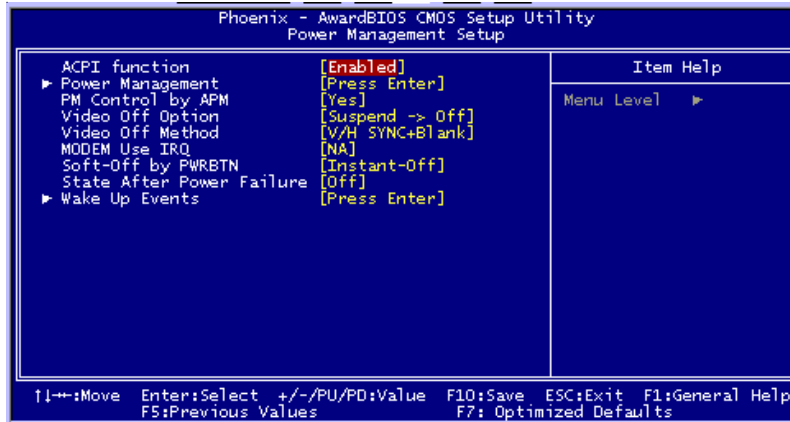Select an operating mode for the parallel port. Mode options are Normal, EPP, ECP, ECP/EPP.

ECP Mode Use DMA
Select a DMA channel if parallel Mode is set as ECP, ECP/EPP.

Parallel Port EPP Type
Select a EPP Type if parallel Port is set as EPP, ECP/EPP.

Power Management Setup

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Power Management Setup
 ┌──────────────────────────────────────────┬──────────────────────────┐
 │ ACPI function              [Enabled]      │        Item Help         │
 │ ▶ Power Management         [Press Enter]  │                          │
 │ PM Control by APM          [Yes]          │ Menu Level    ▶          │
 │ Video Off Option           [Suspend -> Off]                          │
 │ Video Off Method           [V/H SYNC+Blank]                          │
 │ MODEM Use IRQ              [NA]           │                          │
 │ Soft-Off by PWRBTN         [Instant-Off]  │                          │
 │ State After Power Failure  [Off]          │                          │
 │ ▶ Wake Up Events           [Press Enter]  │                          │
 │                                           │                          │
 │                                           │                          │
 │                                           │                          │
 │                                           │                          │
 │                                           │                          │
 │                                           │                          │
 ├───────────────────────────────────────────────────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │        F5:Previous Values               F7: Optimized Defaults      │
 └───────────────────────────────────────────────────────────────────┘
```

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

Power Management

There are 4 selections for Power Management, 3 of which have fixed mode :

Disabled (default)   No power management. Disables all four modes.

Min. Power Saving   Minimum power management. Doze Mode = 1 hr.,
                        Standby Mode = 1 hr., Suspend Mode = 1 hr.,

Max. Power Saving   Maximum power management -- ONLY AVAILABLE FOR
                        SL CPU's.. Doze Mode = 1 min., Standby Mode = 1 min.,
                        Suspend Mode = 1 min.

User Defined   Allows you to set each mode individually. When not
                        disabled, each of the ranges are from 1 min. to 1 hr.

HDD Power Down is always set independently

PM Control By APM
When enabled, an Advanced power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If the Max. Power Saving is not enabled, this will be preset to No.

Video Off Option
Controls what causes the display to be switched off
Suspend -> Off   Always On   All Mode -> Off

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

V/H SYNC+Blank	cause the system to turn off the vertical and horizontal synchronization signals and writes blanks to the screen.
Blank Screen	This option only writes blanks to the screen.
DPMS	Initial display power management signaling.

Modem Use IRQ
Name the interrupt request (IRQ) assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Soft-Off By PWRBTN
The field defines the power-off mode when using an ATX power supply. The Instant-Off mode means powering off immediately when pressing the power button. In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than four seconds or places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or resume by ring activity when press for less than four seconds. The default is 'Instant-Off'.

State After Power Failure
This item allows you to select three status after the power failure. The choices are ON, OFF and Auto.

Wake Up Events

Setting an event on each device listed to awaken the system from a soft off state.
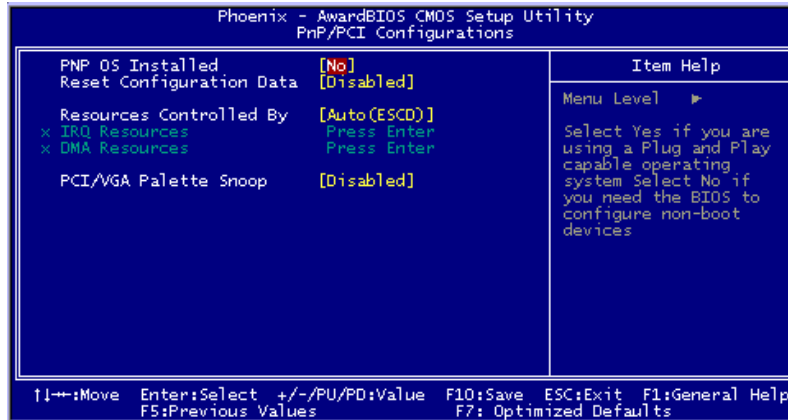
VGA

LPT & COM

HDD & FDD

PCI Master

Primary INTR

IRQs Activity Monitoring

PnP/PCI Configuration

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                          PnP/PCI Configurations

   PNP OS Installed          [No]                    Item Help
   Reset Configuration Data  [Disabled]
                                                Menu Level   ▶
   Resources Controlled By   [Auto(ESCD)]
 x IRQ Resources              Press Enter        Select Yes if you are
 x DMA Resources              Press Enter        using a Plug and Play
                                                 capable operating
   PCI/VGA Palette Snoop     [Disabled]          system Select No if
                                                 you need the BIOS to
                                                 configure non-boot
                                                 devices




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

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

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.

PnP OS Installed
Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

Reset Configuration Data
Normally, you leave this field Disabled. Select Enabled to reset ESCD (Extended System Configuration Date) 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 cannot boot.

Resource Controlled By
The Award Play and Play BIOS can automatically configure all the boot and Plug-and-Play compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

IRQ Resources

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt :

Legacy ISA   Devices compliant with the original PC/AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP   Device compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

DMA Resources

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the DMA :

Legacy ISA   Devices compliant with the original PC/AT bus specification, requiring a specific DMA channel.

PCI/ISA PnP   Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

PCI/VGA Palette Snoop [Disable/Enable]

Normally this option is always Disabled! Nonstandard VGA display adapters such as overlay cards or MPEG video cards may not show colors properly. Setting Enabled should correct this problem. If this field set Enabled, any I/O access on the ISA bus to the VGA card's palette registers will be reflected on the PCI bus. This will allow overlay cards to adapt to the changing palette colors.

PC Health Status

```
         CMOS Setup Utility - Copyright (C) 1984-2002 Award Software
                              PC Health Status
     ┌──────────────────────────────────────────┬─────────────────────────┐
     │  Current CPU Temp.                         │       Item Help         │
     │  Current System Temp.                      │                         │
     │  Current CPUFAN1 Speed                     │   Menu Level    ▶       │
     │  Vcore                                     │                         │
     │   2.5V                                     │                         │
     │   3.3V                                     │                         │
     │    5V                                      │                         │
     │   12V                                      │                         │
     │                                            │                         │
     │                                            │                         │
     │                                            │                         │
     │                                            │                         │
     │                                            │                         │
     │                                            │                         │
     └──────────────────────────────────────────┴─────────────────────────┘
     ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value   F10:Save  ESC:Exit  F1:General Help
               F5:Previous Values                 F7: Optimized Defaults
```

Current CPU Temperature
Show you the current CPU temperature

Current System Temperature
Show you the current system temperature

Current CPUFAN Speed
Show you the current CPUFAN operating speed

Vcore
Show you one type of CPU voltage

+2.5, +3.3V, +5V, +12V
 Show you the different voltage can be used for the system

Frequency/Voltage Control

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                        Frequency/Voltage Control

   Auto Detect DIMM/PCI Clk   [Enabled]              Item Help
   Spread Spectrum            [Disabled]
   CPU Host Clock (CPU/PCI)   [Default]       Menu Level    ▶
   Auto Detect DIMM/PCI Clk   [Enabled]
   CPU Host Clock (CPU/PCI)   [Default]








 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values                 F7: Optimized Defaults
```
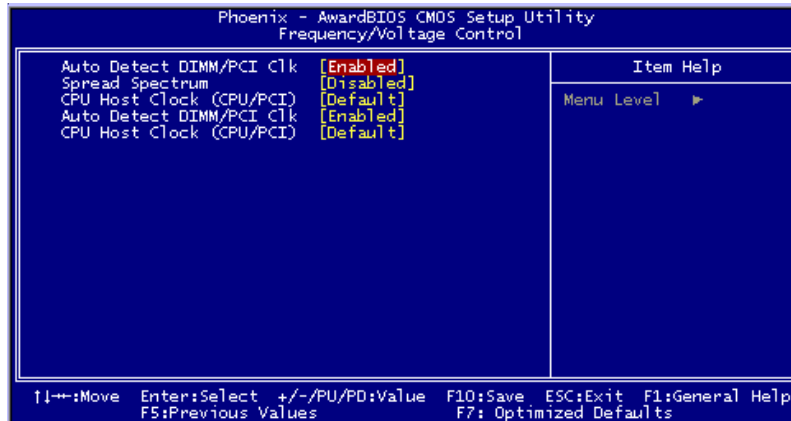
This section describes Frequency and Voltage control for the system.

Auto Detect DIMM/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.

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

CPU Host Clock (CPU/PCI)
This item allows you to select the CPU Host Clock.

What if things go wrong

If you use the wrong Flash BIOS or if the writing process gets interrupted, there is a fat chance that your computer won't boot anymore.

How can you recover a corrupt BIOS ?

Boot-block booting (this works only for Award BIOS)

Modern motherboards based on Award BIOS have a boot-block BIOS. This is small area of the BIOS that doesn't get overwritten when you flash a BIOS. The boot-block BIOS only has support for the floppy drive. If you have the AGP video enabled you won't see anything on the screen because the boot-block BIOS only supports an ISA videocard.

If you do not want to change your AGP video setting than proceed as follows:

The boot-block BIOS will execute an AUTOEXEC.BAT file on a bootable diskette. Copy an Award flasher & the correct BIOS *.bin file on the floppy and execute it automatically by putting awdflash *.bin in the AUTOEXEC.BAT file.

Solution 2: Hot-swapping

1. Replace the corrupt chip by a working one. The working BIOS doesn't have to be written for your board, it just has to give you a chance of booting to DOS.

BIOSs for the same chipset mostly work. (Chipsets that not differ too much also mostly work. (e.g. Triton FX chipset and Triton HX chipset)

2. Boot the system to DOS (with floppy or HD)

3. Be sure that the System BIOS cacheable option in your BIOS is enabled! If so replace (while the computer is powered on) the BIOS chip with the corrupt one. This should work fine with most boards because the BIOS is shadowed in RAM.

4. Flash an appropriate BIOS to the corrupt chip and reboot.

NOTE: Use a flasher from MRBIOS (**http://www.mrbios.com**). Utilities that come with your motherboard often use specific BIOS-hooks. Because you have booted with a BIOS not written for your motherboard they usually don't work. The MR Flash utilities communicate directly with your Flash Rom and always work. In most cases they flash a non-MRBIOS to your BIOS chip without problems.