EmCore-a5360

EPIC Miniboard

User's Manual

Version 1.1

2008.08

Table of Contents

Chapter 1

Introduction

1.1 Copyright Notice

1.2 About User's Manual

This User's Manual is intended for experienced users and integrators with hardware knowledge of personal computers. If you are not sure about any description in this User's Manual, please consult your vendor before further handling.

1.3 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

1.4 Replacing the lithium battery

Incorrect replacement of the lithium battery may lead to a risk of explosion. The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.
Do not throw lithium batteries into the trashcan. It must be disposed of in accordance with local regulations concerning special waste.

1.5 Technical Support

If you have any technical difficulties, please consult the user's manual first at:

ftp://ftp.arbor.com.tw/pub/manual

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

http://www.arbor.com.tw
E-mail:info@arbor.com.tw

1.6 Warranty

This product is warranted to be in good working order for a period of two years from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantibility and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

1.7 Packing List

1 x EmCore-a5360

1 x Drvier CD

1 x Quick Installation Guide

1 x ATX Cable 300mm

If any of the above items is damaged or missing, contact your vendor immediately.

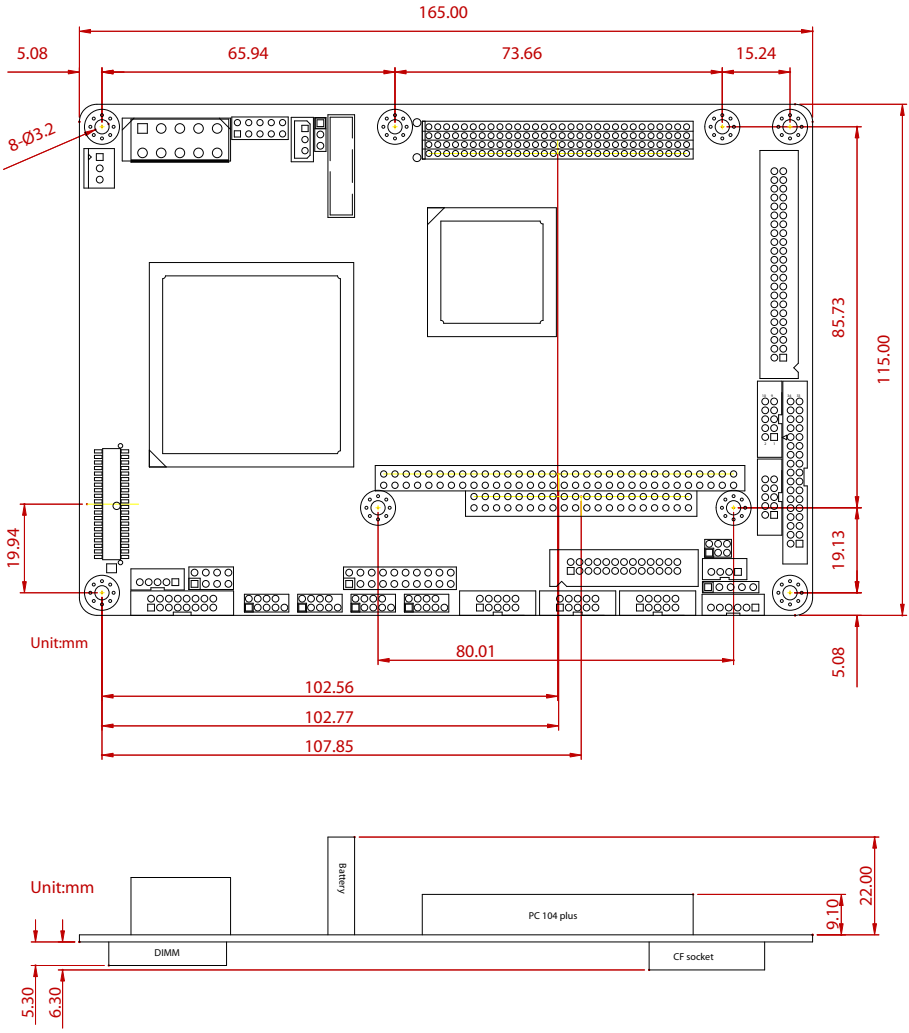
1.8 Ordering Information

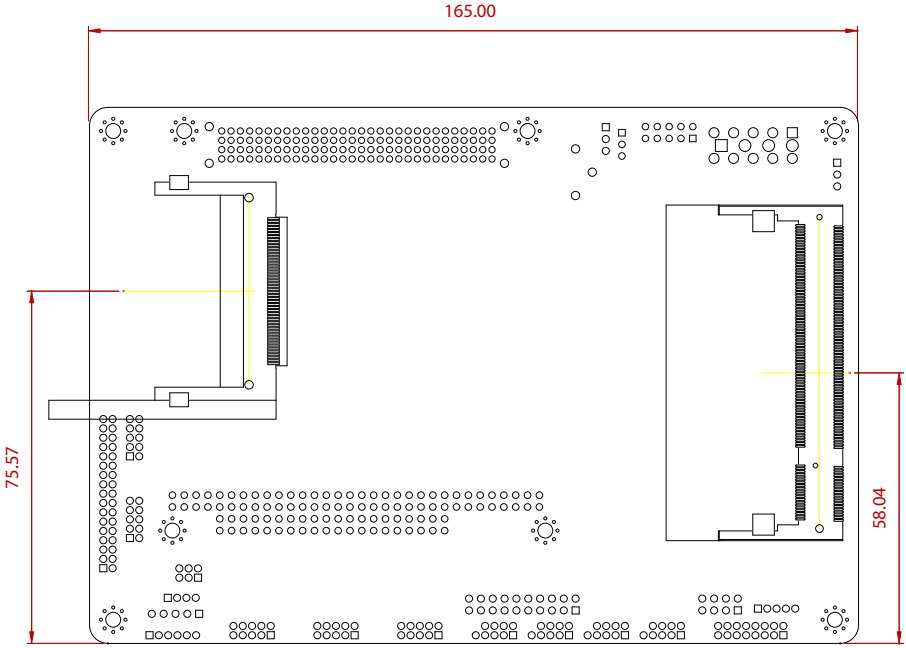
EmCore-a5360VL2R	EPIC Miniboard with LX800 CPU, CRT/LCD, Audio, PC/104 Plus and Dual LAN.
Cable Kit	CBK-14-5360-00 2 x USB Port Cable 1 x Parallel Port Cable 1 x IDE Flat Cable 4 x Serial Port Cable 1 x Audio Cable 1 x FDD Flat Cable 1 x Keyboard / PS2 Mouse Cable 2 x LAN Cable (RJ-45 Cable) 1 x VGA Cable

1.9 Specifications

Form Factor	EPIC Miniboard
Processor	AMD Geode™ LX processor (500MHz)
Chipset	AMD LC800 + CS5536
System Memory	1 x 200-pin DDR SO-DIMM up to 1GB SDRAM
VGA/ LCD Controller	AMD Geode LX series CPU integrated VGA controller with 2D Engine (Shared memory Max. 64MB)
Ethernet	2 x Realtek 8100CL 10/100 base-T Ethernet
LCD	Supports 18/24 bit TTL up to 1280 x 1024
I/O Chips	W83627HG
BIOS	Phoenix-Award PnP Flash BIOS
Audio	Realtek ALC203 AC'97 Codec, supports Mic-in/ Line-in/Line-out
IDE Interface	1 x Ultra DMA 33, support 2 IDE devices.
Serial Port	4 x RS-232 ports COM2: RS-422/RS-422/RS-485 selectable
Parallel Port / Floppy	1 x SPP/EPP/ECP mode 1 x Floopy connector
IrDA	1 x IrDA connector
KBMS	Standard PS/2 Keyboard and Mouse
Universal Serial Bus	4 x USB 2.0 ports
DIO	Digital I/O 16 bit (8 bit In/ 8 bit Out)
PCI to ISA bridge	Winbond W83628
Expansion Bus	1 x 32-bit PCI interface PC/104 plus
Flash Disk	1 x Type II Compact Flash Disk Socket up to 4GB
Hardware Monitor	Integrated in W83627HG
RTC	AMD Geode CS5536 built-in RTC with lithium battery
Power Input Connector	5x2-pin power connector
Operation Temp.	-20 ~ 70ºC (-4 ~ 158ºF)
Watchdog Timer	1 - 255 Level (Sec. or Min.)
Dimension (L x W)	165 x 115 mm (6.5" x 4.5")

1.10 Board Dimensions

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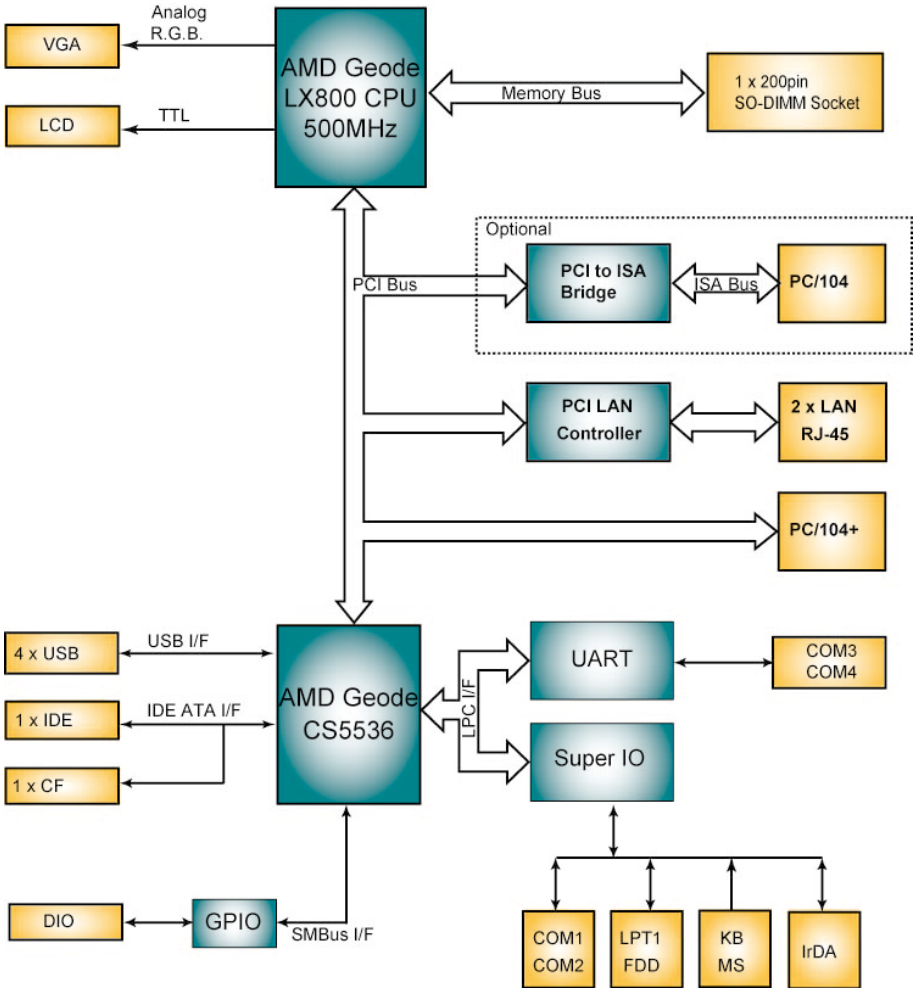
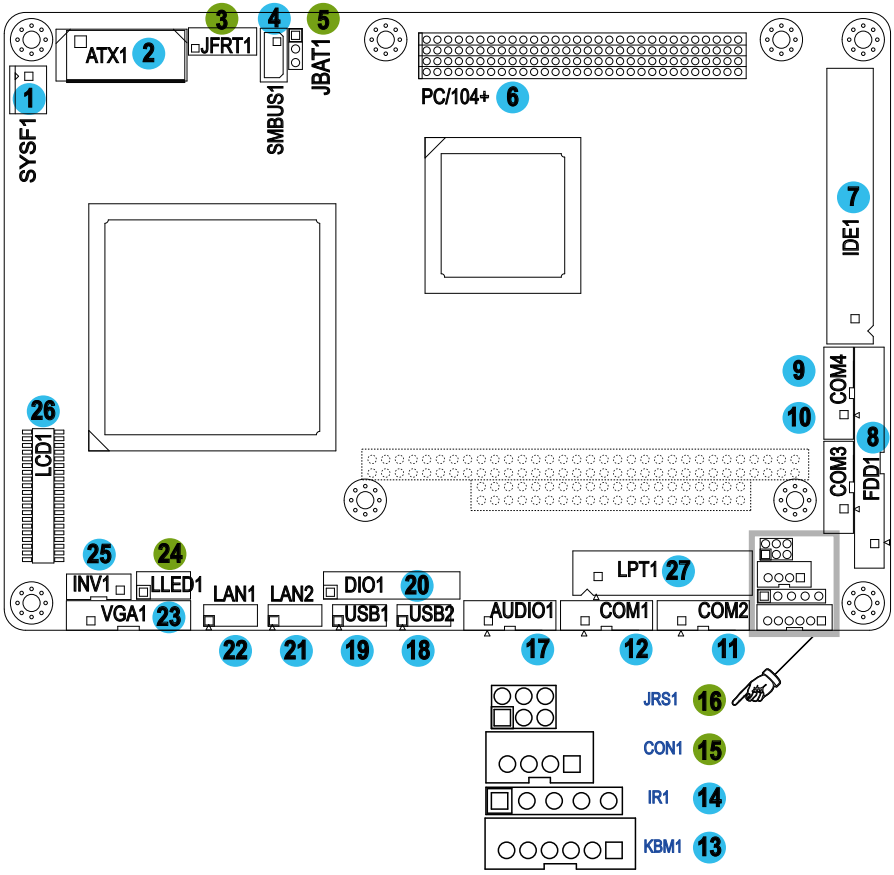
Chapter 2

Installation

2.1 Block Diagrams



2.2 Jumpers and Connectors

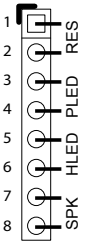


Jumpers

JFRT1: Switches and Indicators (3)

It provides connectors for system indicators that provides light indication of the computer activities and switches to change the computer status.

Pin	Description
1	RESET+
2	GND
3	PWR LED+
4	GND
5	HDD LED+
6	HDD LED-
7	SPK OUT+
8	SPK OUT-



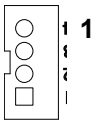
JBAT1: CMOS Setup (5)

Pin	Mode
1-2	Keep CMOS (Default)
2-3	Clear CMOS

CON1: RS-422/ 485 Connector (15)

2.0 mm 4-pin wafer connector

Pin	RS-422	RS-485
1	TX+	Data+
2	TX-	Data-
3	RX+	N/C
4	RX-	N/C



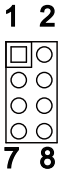
JRS1: COM2 RS-232/422/485 Select (16)

It can be configured COM2 to operate in RS-232, RS-422 or RS-485 mode

Pin	Mode
1-2 (Short)	RS-232 (Default)
3-4 (Short)	RS-422
5-6 (Short)	RS-485

LLED1: LAN LED indicators (24)

Pin	Description	Pin	Description
1	LAN1_LINK-	2	LAN1_LINK+
3	LAN1_ACTIVE-	4	LAN1_ACTIVE+
5	LAN2_LINK-	6	LAN2_LINK+
7	LAN2_ACTIVE-	8	LAN2_ACTIVE+

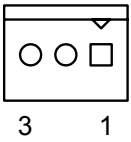


Connectors

SYSF1: Fan Power Connector (1)

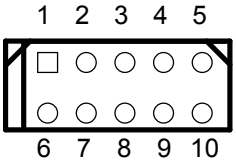
SYSF1 is a 3-pin header for the CPU fan. The fan must be a +12V fan.

Pin	Description
1	GND
2	+12V
3	FAN_Detect



ATX1: Power Supply Connector (2)

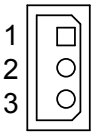
Pin	Description	Pin	Description
1	PS-ON	6	+5VSB
2	GND	7	+5V
3	GND	8	+5V
4	+12V	9	-12V
5	+3.3V	10	GND



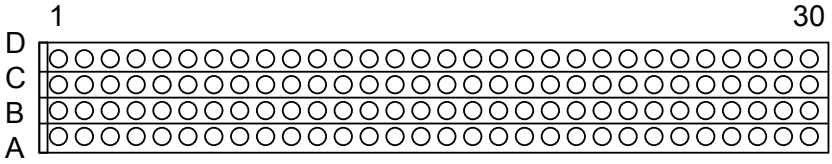
SMBUS1: External SMBUS Connector (4)

Onboard 3-pin wafer.

Pin	Description
1	Data
2	Clock
3	GND



PC/104+: PC/104+ PCI Interface (6)



A1	GND	PME#	B1	C1	+5V	AD0	D1
A2	VI/O	AD2	B2	C2	AD1	+5V	D2
A3	AD5	GND	B3	C3	AD4	AD3	D3
A4	C/BE0#	AD7	B4	C4	GND	AD6	D4
A5	GND	AD9	B5	C5	AD8	GND	D5
A6	AD11	VI/O	B6	C6	AD10	M66EN	D6
A7	AD14	AD13	B7	C7	GND	AD12	D7
A8	+3.3V	C/BE1#	B8	C8	AD15	+3.3V	D8
A9	SERR#	GND	B9	C9	Reserved	PAR	D9
A10	GND	PERR#	B10	C10	+3.3V	Reserved	D10
A11	STOP#	+3.3V	B11	C11	LOCK#	GND	D11
A12	+3.3V	TRDY#	B12	C12	GND	DEVEL#	D12
A13	FRAME#	GND	B13	C13	IRDY#	+3.3V	D13
A14	GND	AD16	B14	C14	+3.3V	C/BE2#	D14
A15	AD18	+3.3V	B15	C15	AD17	GND	D15
A16	AD21	AD20	B16	C16	GND	AD19	D16
A17	+3.3V	AD23	B17	C17	AD22	+3.3V	D17
A18	IDSEL0	GND	B18	C18	IDSEL1	IDSEL2	D18
A19	AD24	C/BE3#	B19	C19	VI/O	IDSEL3	D19
A20	GND	AD26	B20	C20	AD25	GND	D20
A21	AD29	+5V	B21	C21	AD28	AD27	D21
A22	+5V	AD30	B22	C22	GND	AD31	D22
A23	REQ0#	GND	B23	C23	REQ1#	VI/O	D23
A24	GND	REQ2#	B24	C24	+5V	GNT0#	D24
A25	GNT1#	VI/O	B25	C25	GNT2#	GND	D25
A26	+5V	CLK0	B26	C26	GND	CLK1	D26
A27	CLK2	+5V	B27	C27	CLK3	GND	D27
A28	GND	INTD#	B28	C28	+5V	RST#	D28
A29	+12V	INTA#	B29	C29	INTB#	INTC#	D29
A30	-12V	REQ3#	B30	C30	GNT3#	GND	D30

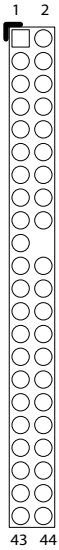
Rotary Switch Setting

Switch	Slot	REQ/GNT	CLK	IDSEL	INT
0/4	1	REQ/GNT0	CLK0	AD19	INTA
1/5	2	REQ/GNT1	CLK1	AD20	INTB
2/6	3	REQ/GNT2	CLK2	AD21	INTC
3/7	4	REQ/GNT3	CLK3	AD22	INTD

Note: Slot 3 & 4 share LAN1, LAN2 REQ/GNT.

IDE1: 44-pin IDE Connector (7)

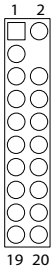
Pin	Description	Pin	Description
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N/C (Key)
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	N/C
29	DACK	30	GND
31	IRQ14	32	N/C
33	ADDR1	34	ATA66 DETECT
35	ADDR0	36	ADDR2
37	CS#2	38	CS#3
39	IDEACTP	40	GND
41	+5V	42	+5V
43	GND	44	N/C



FDD1: 20-pin FDD Connector (8)

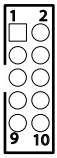
FDD1 is a 20-pin connector.

Pin	Description	Pin	Description
1	GND	2	Drive density Select 0
3	GND	4	N/C (Key)
5	GND	6	Drive Density Select 1
7	Write Data#	8	Index#
9	Write Gate#	10	Motor Enable A#
11	Track 0#	12	Driver Select B#
13	Write Protect#	14	Driver Select A#
15	Read Data#	16	Motor Enable B#
17	Head Select#	18	Direction#
19	Disk Change#	20	Step#



COM1/ 2/ 3/ 4: Serial Port Connector (9), (10), (11), (12)

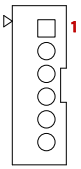
Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N/C



KBM1: Keyboard & Mouse Connector (13)

6-pin Keyboard & Mouse wafer connector

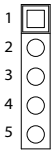
Pin	Description
1	KB_DATA
2	GND
3	MS_DATA
4	KB_CLK
5	KB_VCC
6	MS_CLK



IR1: Infrared Connector (14)

Onboard 2.54mm 5-pin header

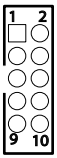
Pin	Voltage
1	+5V
2	N/C
3	IRRX
4	GND
5	IRTX



AUDIO1: AC97 AUDIO Connector (17)

Onboard 2.0 pitch 2x5 box pin header.

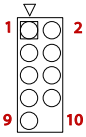
Pin	Description	Pin	Description
1	Line-in Left	2	Line-in Right
3	GND	4	GND
5	MIC	6	N/C
7	GND	8	GND
9	Line-out Left	10	Line-out Right



USB1/ USB2: USB Connector (19), (18)

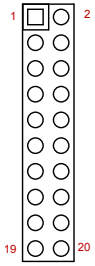
USB1 supports two USB 2.0 w/ 480MB/s by pin header

Pin	Description	Pin	Description
1	+5V	2	+5V
3	USBD-	4	USBD-
5	USBD+	6	USBD+
7	GND	8	GND
9	GND	10	N/C (Key)



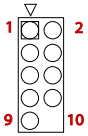
DIO1: 20-pin Digital I/O Connector (20)

Pin	Description	Pin	Description
1	DIO1	2	DIO2
3	DIO3	4	DIO4
5	DIO5	6	DIO6
7	DIO7	8	DIO8
9	GND	10	GND
11	DIO9	12	DIO10
13	DIO11	14	DIO12
15	DIO13	16	DIO14
17	DIO15	18	DIO16
19	+5V	20	+12V



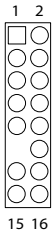
LAN1/ LAN2: Fast Ethernet Connector (21), (22)

Pin	Description	Pin	Description
1	TX+	2	TX-
3	RX+	4	N/C
5	N/C	6	RX-
7	N/C	8	N/C
9	GND	10	N/C (Key)



VGA1: CRT Connector (23)

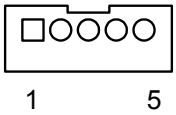
Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	N/C	10	GND
11	N/C (Key)	12	DA
13	HSYNC	14	VSYNC
15	CL	16	N/C



INV1: LCD Inverter Connector (25)

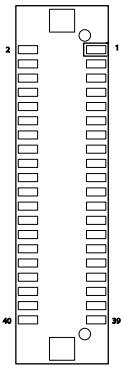
Onboard 5-pin mini box pin header

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



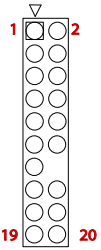
LCD1: TTL LCD Connector (26)

Pin	Description	Pin	Description
2	5V_SAFE	1	5V_SAFE
4	GND	3	GND
6	3V_SAFE	5	3V_SAFE
8	GND	7	Vcon
10	PD1	9	PD0
12	PD3	11	PD2
14	PD5	13	PD4
16	PD7	15	PD6
18	PD9	17	PD8
20	PD11	19	PD10
22	PD13	21	PD12
24	PD15	23	PD14
26	PD17	25	PD16
28	PD19	27	PD18
30	PD21	29	PD20
32	PD23	31	PD22
34	GND	33	GND
36	FILM	35	SHIFT CLOCK
38	LP	37	M
40	ENAVEE	39	ENABLK



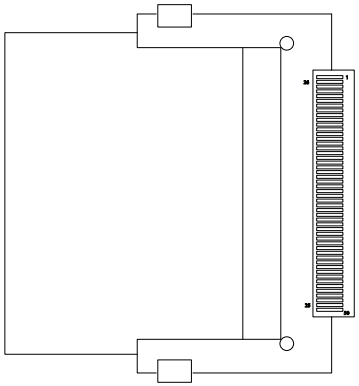
LPT1: 20-pin Parallel Port Connector (27)

Pin	Description	Pin	Description
1	STROBE	2	AFD
3	PTD0	4	ERROR
5	PTD1	6	INIT
7	PTD2	8	SLIN
9	PTD3	10	GND
11	PTD4	12	GND
13	PTD5	14	GND (Key)
15	PTD6	16	BUSY
17	PTD7	18	PE
19	ACK	20	SELECT



CFD1: CompactFlash II Socket

After hot-swapping CF II, you must restart your system for device detecting. Default setting: IDE slave.



2.3 The Installation Paths of CD Driver

Driver	Path
CHIPSET	\Driver\LX800

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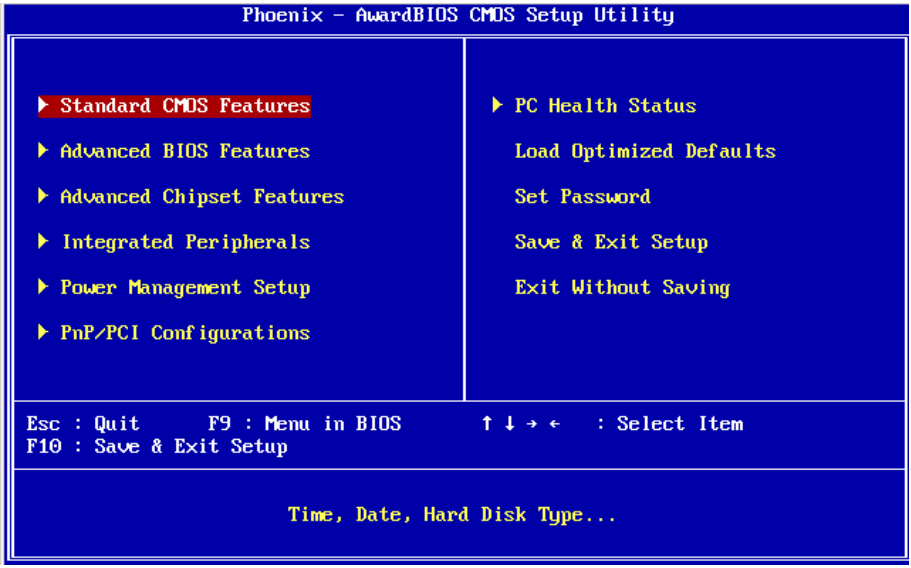
Chapter 3

BIOS

3.1 BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's. The BIOS provides for a standard device such as disk drives, serial ports and parallel ports. It also adds password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.



3.2 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.

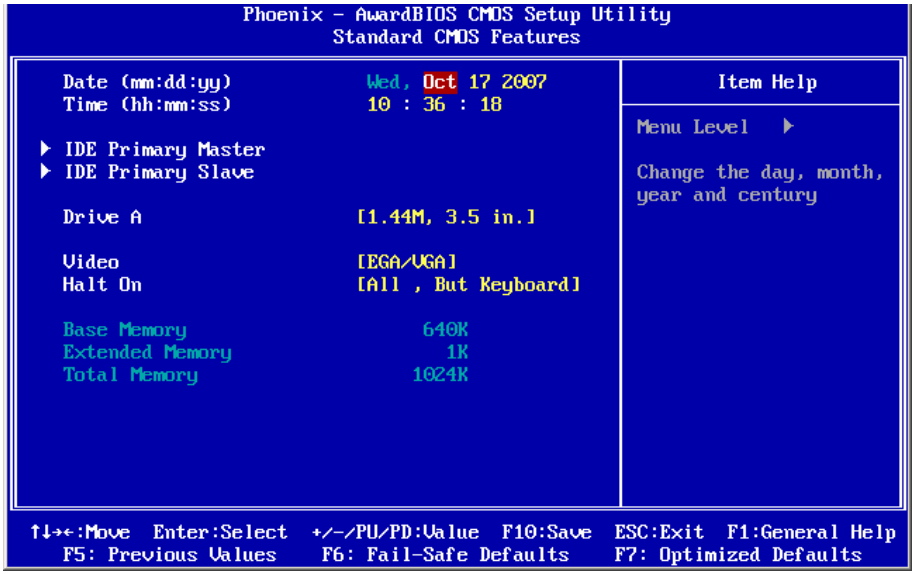
When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you a little bit late press the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. 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.

3.3 Standard CMOS Features



"Standard CMOS Features" allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the CPU card 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, such as onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Date

The date format is:

Day : Sun to Sat
Month : 1 to 12
Date : 1 to 31
Year : 1999 to 2099

Time

The time format is:

Hour : 00 to 23
Minute : 00 to 59
Second : 00 to 59

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

IDE Primary HDDs / IDE Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices.
Each channel can support up to two hard disks; the first is the “Master” and the second is the “Slave”.
Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select ‘Manual’ to define the drive information manually.
You will be asked to enter the following items.

Cylinder:	Number of cylinders
Head:	Number of read/write heads
Precomp:	Write precompensation
Landing Zone:	Landing zone
Sector:	Number of sectors

The Access Mode selections are as follows:

CHS	(HD < 528MB)
LBA	(HD > 528MB and supports Logical Block Addressing)
Large	(for MS-DOS only)
Auto	

Drive A / Drive B

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

None	360K, 5.25 in.	1.2M, 5.25 in.
720K, 3.5 in.	1.44M, 3.5 in.	2.88M, 3.5 in.

Video

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

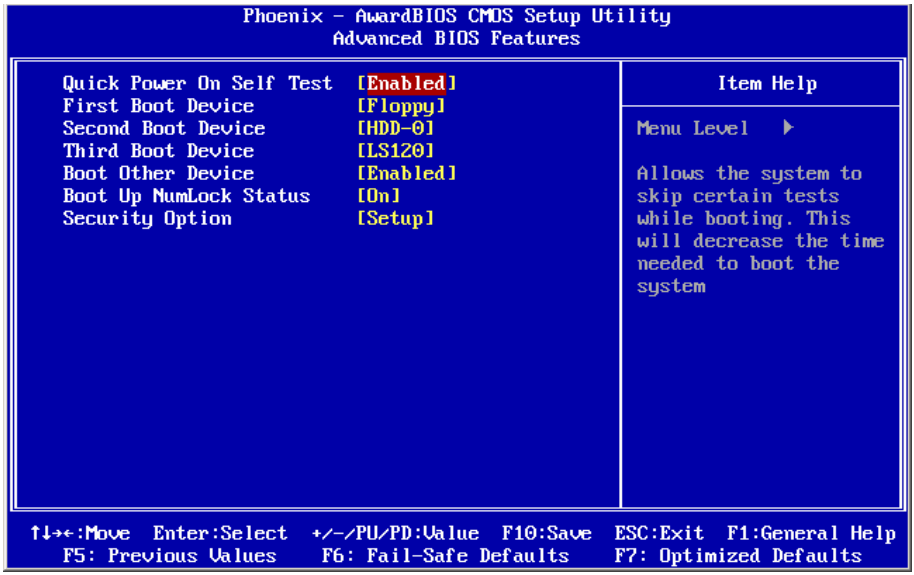
EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

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

3.4 Advanced BIOS Features



Quick Power On Self Test

When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on.
If it is set to Enabled, BIOS will skip some items.
Setting: Enabled (Default), Disabled.

First/ Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system. The options available include
Setting: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN and Disabled.

Boot Other Device

It allows the system to search for an OS from other devices other than the ones selected in the First/ Second/ Third Boot Device.
Setting: Enabled (Default), Disabled.

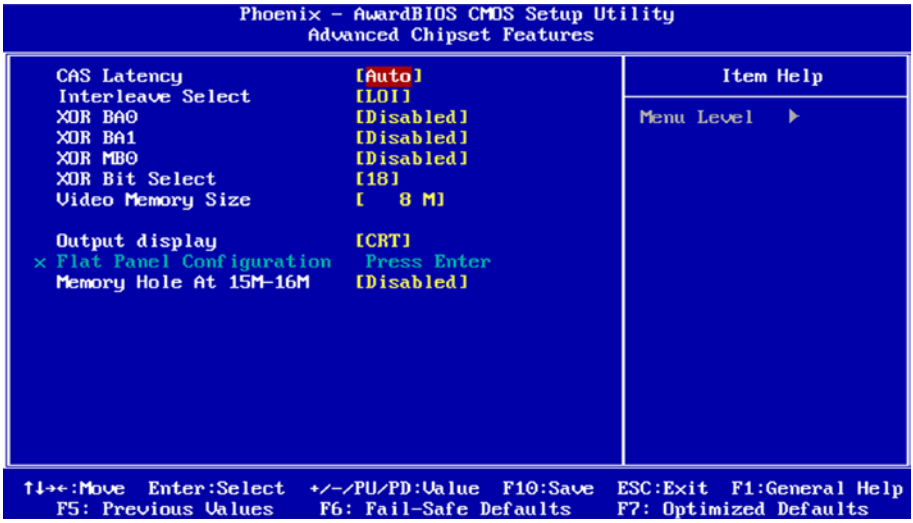
Boot Up NumLock Status

It allows you to activate the NumLock function after you power up the system.
Setting: On (Default), Off.

Security Option

It allows you to limit access to the System and Setup.
When you select System, the system prompts for the User Password every time you boot up.
When you select Setup, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.
Setting: Setup (Default), System.

3.5 Advanced Chipset Features



CAS Latency Time

It allows CAS latency time in HCLKs as 2 or 2.5. The system board designer should set the values in this field, depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or CPU.
Setting: 2.5 (Default), 2.

Interleave Select

It allows you to Use the Interleave Select option to specify how the cache memory is interleaved.
Setting: LOI (Default), HOI.

XOR BA0

Setting: Disabled (Default), Enabled.

XOR BA1

Setting: Disabled (Default), Enabled.

XOR MB0

Setting: Disabled (Default), Enabled.

XOR Bit Select

Setting: 18 (Default), 19, 20, 21.

Video Memory Size

In order to determine how much memory is allocated to the video graphics device.
Setting: None, 8M (Default), 16M, 32M, 64M, 128M, 254M.

Output display

In order to specify the display devices the system is connected to.
Setting: Flat Panel, CRT (Default), Panel & CRT.

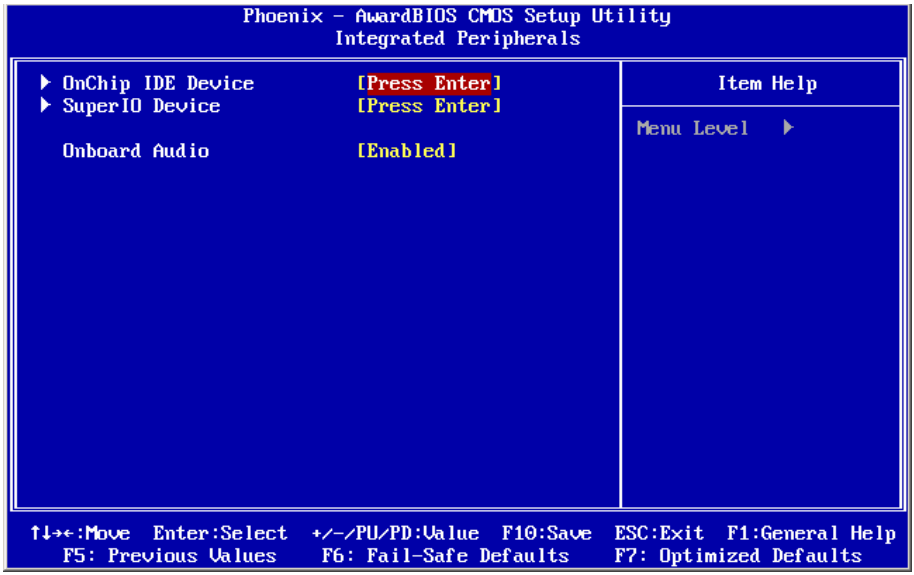
Flat Panel Configuration

It allows you to open the Flat Panel Configuration menu.

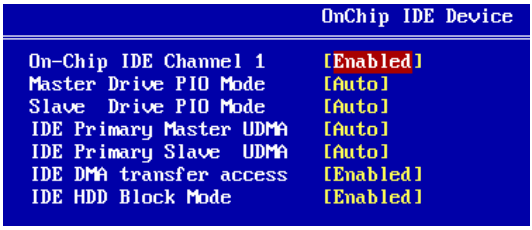
Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.
Setting: Disabled (Default), Enabled.

3.6 Integrated Peripherals



OnChip IDE Devicev >>>



On-Chip IDE Channel 1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. Setting: Disabled, Enabled (Default).

IDE Primary Master/Slave PIO

It allows your system HDD controller to run faster.
Rather than having the BIOS issue with a series of commands that transferring to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.
When Auto is selected, the BIOS will select the best available mode.
Setting: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary Master/Slave UDMA

It allows your system to improve disk I/O throughput to 33MB/sec with the Ultra DMA33 feature.
Setting: Disabled, Auto.

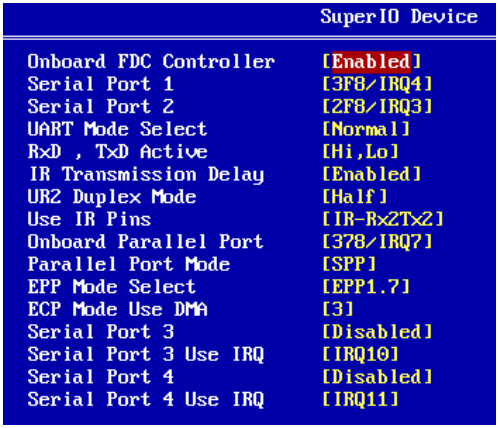
IDE DMA Transfer Access

Setting: Disabled, Enabled (Default).

IDE HDD Block Mode

It allows your HDD controller to use the fast block mode to transfer data to and from your HDD drive.
Setting: Disabled, Enabled (Default).

SuperIO Device >>>



Onboard FDC Controller

Select “Enabled” if you wish to use it. Select “Disabled” if you don’t wish to use it.
Setting: Disabled, Enabled (Default).

Serial/ Onboard Parallel Port

It allows you to select the onboard serial and parallel ports with their addresses.

Setting:		
	Serial Port 1	3F8/IRQ4 (Default)
	Serial Port 2	2F8/IRQ3 (Default)
	Parallel Port	378H/IRQ7 (Default)

UART Mode Select

It determines the UART 2 mode in your computer.
Setting: IrDA, ASKIR, Normal (Default).

RxD, TxD Active

Setting: Hi,Hi , Hi,Lo (Default) , Lo,Hi , Lo,Lo.

IR Transmission Delay

Setting: Disabled, Enabled (Default).

UR2 Duplex Mode

Setting: Full, Half (Default).

Use IR Pins

Setting: RxD2,TxD2 ， IR-Rx2Tx2 (Default).

Parallel Port Mode

Setting: SPP (Default)
EPP
ECP
ECP+EPP
Normal

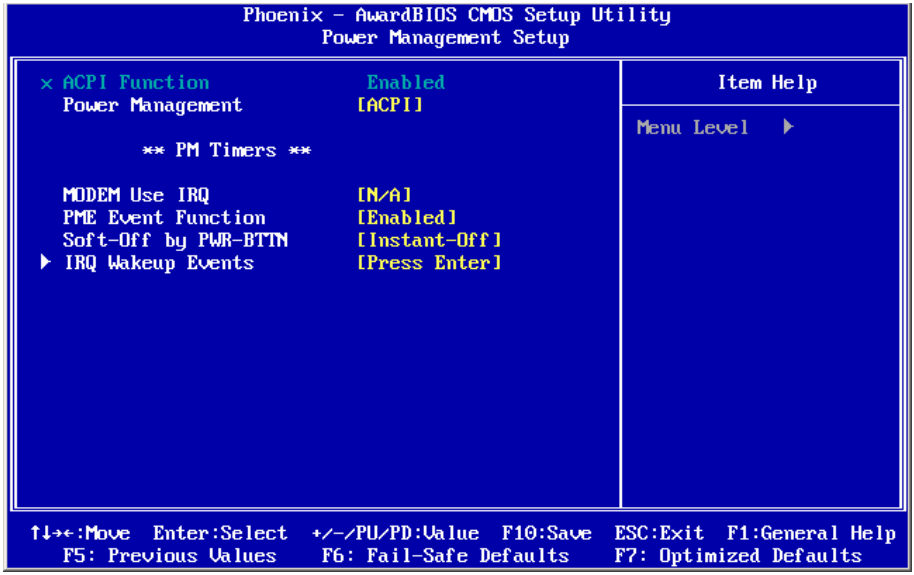
EPP Mode Select

Setting: EPP1.9, EPP1.7 (Default)

ECP Mode Use DMA

Setting: 1, 3 (Default).

3.7 Power Management Setup



Power Management

It allows you to select the type of power saving management modes.
Setting: APM Advanced power management (APM)
ACPI (Default) Advanced Configuration and Power Interface (ACPI)

Modem Use IRQ

It sets the IRQ used by the Modem.
Setting: N/A (Default), 3, 4, 5, 7, 9, 10, 11.

PME Event Function

Setting: Disabled, Enabled (Default).

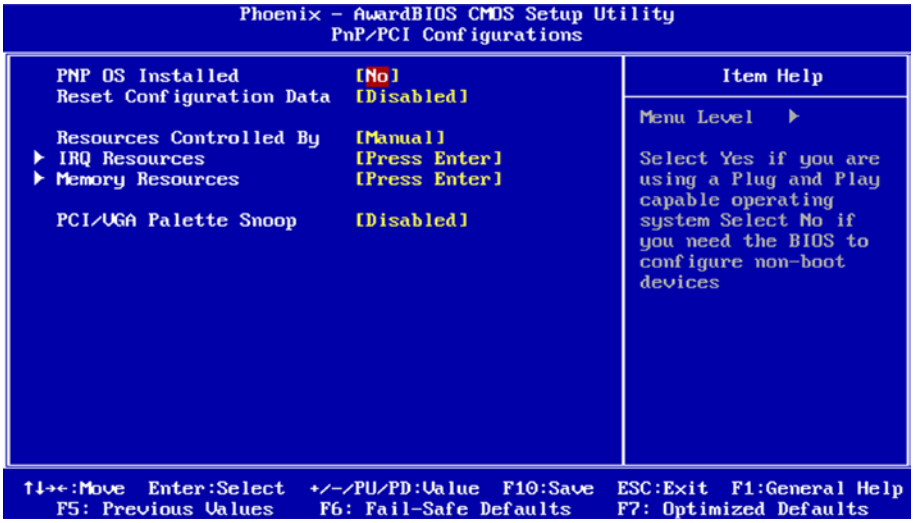
Soft-Off by PWR-BTTN

It defines the power-off mode when using an ATX power supply.
In the Instant Off mode, It allows powering off immediately upon pressing the power button.
In the Delay 4 Sec mode, the system powers off when the power button is pressed for more than 4 seconds or enters the suspend mode when pressed for less than 4 seconds.
Setting: Instant-off (Default), Delay 4 Sec. .

IRQ Wakeup Events

The HDD, FDD, COM, LPT Ports, and PCI PIRQ are I/O events that can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

3.8 PNP/PCI Configurations



PNP OS Installed

It allows you to enable the PNP OS Install option if it is supported by the OS installed.
Setting: No (Default), Yes.

Reset Configuration Data

It allows you to determine whether to reset the configuration data or not.
Setting: Disabled (Default), Enabled.

Resources Controlled By

This PnP BIOS can configure all of the boot and compatible devices with the use of a PnP operating system.
Setting: Auto(ESCD) (Default), Manual.

IRQ Resources

It allows you to configure the IRQ / DMA Resources.

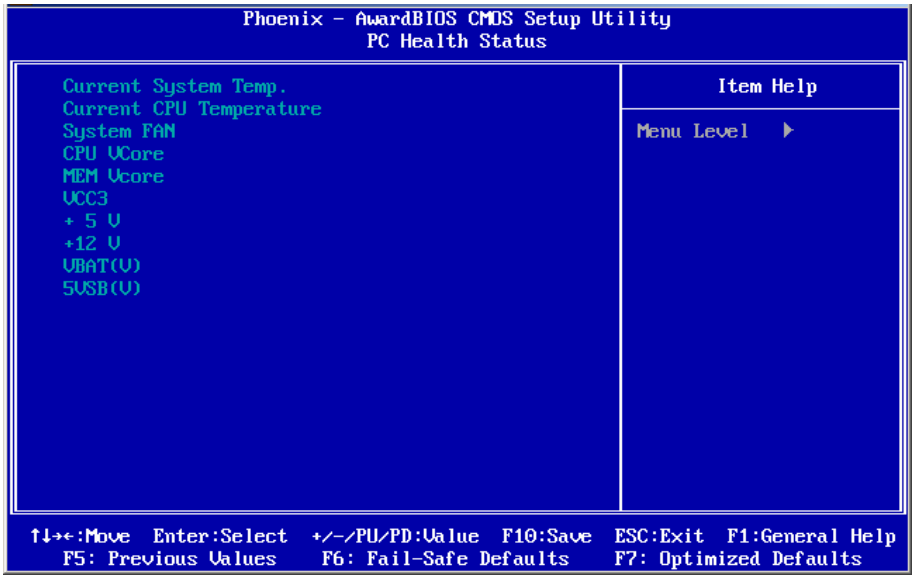
Memory Resources

It allows you to configure the Memory Resources.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly.
It allows you to set whether or not MPEG ISA/VESA VGA cards can display with PCI/VGA.
When “Enabled”, a PCI/VGA can display with an MPEG ISA/VESA VGA card.
When “Disabled”, a PCI/VGA can not display with an MPEG ISA/VESA VGA card.
Setting: Disabled (Default), Enabled.

3.9 PC Health Status



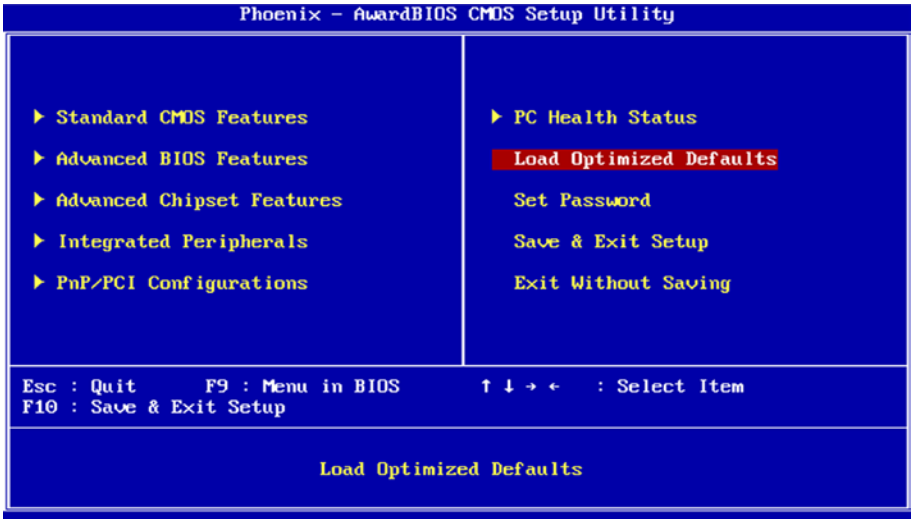
Current System/ CPU Temperature

System FAN

CPU/ MEM VCore

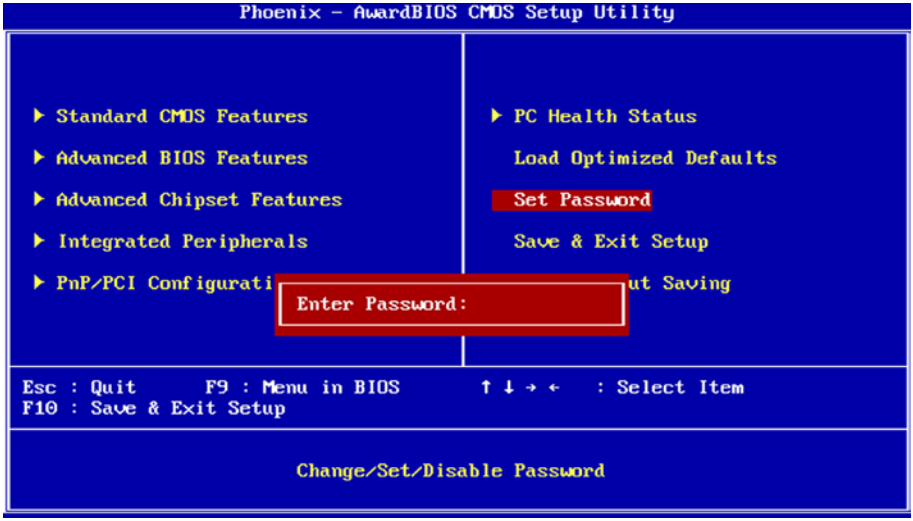
VCC3/ +5V/ +12V/ VBAT(V)/ 5VSB

3.10 Load Optimized Defaults



It allows you to load the default values to your system configuration. The default setting is optimal and enabled all high performance features.

3.11 Set Password

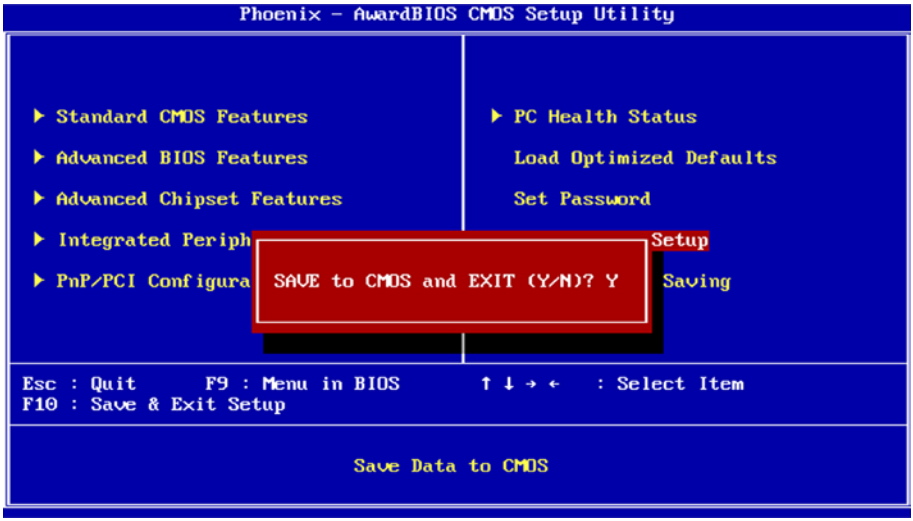


Using Password to set a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>.

The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. And the system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

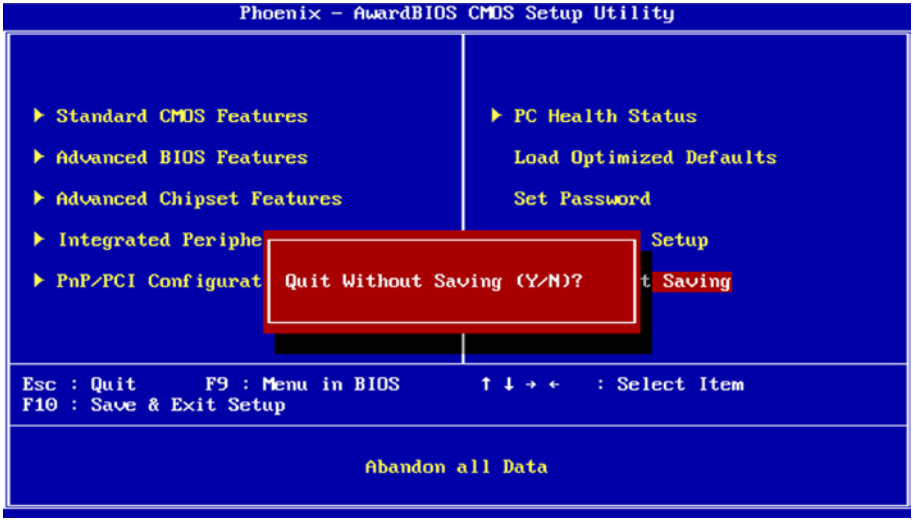
To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot, then you can enter BIOS Setup freely.

3.12 Save & Exit Setup



Typing “Y”, you will quit the setup utility and save all the changes into the CMOS memory.
Typing “N”, you will return to Setup utility.

3.13 Exit Without Saving



Typing “Y” will quit the Setup utility without saving the modifications.
Typing “N” will return you to Setup utility.

3.14 BIOS Beep Sound code list

Beep Sound	Message
1 short (Beep)	System booting is normally
2 short (Beep)	CMOS setting error
1 long - 1 short (Beep)	DRAM error
1 long - 2 short (Beep)	Display card or monitor connected error
1 long - 3 short (Beep)	Keyboard error
1 long - 9 short (Beep)	ROM error
Long (Beep) continuous	DRAM hasn't inset correctly
Short (Beep) continuous	POWER supply has problem

3.15 BIOS memory mapping

Address	Device Description
E000:0000h - F000:FFFFh	System BIOS Area
D000:2000h - D000:FFFFh	Free space
D000:0000h - D000:1FFFh	LAN ROM
C000:E000h - CF00:FFFFh	Free space
C000:0000h - C000:DFFFh	VGA BIOS
A000:0000h - B000:FFFFh	VGA RAM
0000:0000h - 9000:FFFFh	DOS 640K

3.16 Award BIOS Post Codes

CFh	Test CMOS read/write functionality
C0h	Early chipset initialization: Disable shadow RAM, L2 cache (socket 7 and below), program basic chipset registers
C1h	Detect memory: Auto detection of DRAM size, type and ECC, auto detection of L2 cache (socket 7 and below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM
01h	Expand the Xgroup codes located in physical memory address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch
04h	Reserved
05h	Blank out screen; Clear CMOS error flag
06h	Reserved
07h	Clear 8042 interface; Initialize 8042 self test
08h	Test special keyboard controller for Winbond 977 series Super I/O chips; Enable keyboard interface
09h	Reserved
0Ah	Disable PS/2 mouse interface (optional); Auto detect ports for keyboard & mouse followed by a port & interface swap (optional); Reset keyboard for Winbond 977 series Super I/O chips
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is read/write capable or not. If test fails, keep beeping the speaker
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash read/write codes into the run time area in F000 for ESCD & DMI support
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real time clock power status and then check for overrride
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686)
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)

20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	Check validity of RTC value; Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead; Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information; Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots; Early PCI initialization - Enumerate PCI bus number, assign memory & I/O resource, search for a valid VGA device & VGA BIOS, and put it into C000:0
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	Program CPU internal MTRR (P6 & PII) for 0-640K memory address; Initialize the APIC for Pentium class CPU; Program early chipset according to CMOS setup; Measure CPU speed; Invoke video BIOS
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	Initialize multilanguage; Put information on screen display, including Award title, CPU type, CPU speed, etc...
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1
3Fh	Reserved
40h	Test 9259 interrupt mask bits for channel 2
41h	Reserved
42h	Reserved
43h	Test 8259 functionality
44h	Reserved
45h	Reserved
46h	Reserved

47h	Initialize EISA slot
48h	Reserved
49h	Calculate total memory by testing the last double last word of each 64K page; Program writes allocation for AMD K5 CPU
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	Program MTRR of M1 CPU; initialize L2 cache for P6 class CPU & program cacheable range; Initialize the APIC for P6 class CPU; On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	Display PnP logo; Early ISA PnP initialization and assign CSN to every ISA PnP device
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code
5Ah	Reserved
5Bh	Show message for entering AWDFLASH.EXE from FDD (optional feature)
5Ch	Reserved
5Dh	Initialize Init_Onboard_Super_IO switch; Initialize Init_Onboard_ AUDIO switch
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-Configuration table
6Ch	Reserved
6Dh	Assign resources to all ISA PnP devices; Auto assign ports to onboard COM ports if the corresponding item in Setup is set to “AUTO”
6Eh	Reserved
6Fh	Initialize floppy controller; Setup floppy related fields in 40:hardware

70h	Reserved
71h	Reserved
72h	Reserved
73h	Enter AWDFLASH.EXE if: AWDFLASH.EXE is found in floppy dive and ALT+F2 is pressed
74h	Reserved
75h	Detect and install all IDE devices: HDD, LS120, ZIP, CDROM...
76h	Reserved
77h	Detect serial ports and parallel ports
78h	Reserved
79h	Reserved
7Ah	Detect and install coprocessor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	Switch back to text mode if full screen logo is supported: if errors occur, report errors & wait for keys, if no errors occur or F1 key is pressed continue - Clear EPA or customization logo
80h	Reserved
81h	Reserved
82H	Call chipset power management hook: Recover the text fond used by EPA logo (not for full screen logo), If password is set, ask for password
83H	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	Final USB initialization; NET PC: Build SYSID structure; Switch screen back to text mode; Set up ACPI table at top of memory; Invoke ISA adapter ROM's; Assign IRQ's to PCI devices; Initialize APM; Clear noise of IRQ's
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	Enable L2 cache; Program boot up speed; Chipset final initialization; Power management final initialization; Clear screen and display summary table; Program K6 write allocation; Program P6 class write combining
95h	Program daylight saving; Update keyboard LED and typematic rate
96h	Build MP table; Build and update ESCD; Set CMOS century to 20h or 19h; Load CMOS time into DOS timer tick; Build MSIRQ routing table
FFh	Boot attempt (INT 19h)

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Chapter 4

Appendix

4.1 I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device.
The following table lists the I/O port addresses used.

Address	Device Description
00000000 - 00000CF7	PCI Bus
00000000 - FFFFFFFF	ISAPNP Read Data Port
00000060 - 00000060	PC/AT Enhanced PS/2 Keyboard
00000064 - 00000064	PC/AT Enhanced PS/2 Keyboard
00000070 - 00000073	System CMOS/Real Time Clock
00000170 - 00000177	Secondary IDE Channel
000001F0 - 000001F7	Primary IDE Channel
00000274 - 00000277	ISAPNP Read Data Port
00000279 - 00000279	ISAPNP Read Data Port
000002F8 -000002FF	Communications Port
00000376 - 00000376	Secondary IDE Channel
00000378 - 0000037F	Printer Port
000003B0 - 000003BA	Advanced Micro Devices Win XP Graphics Driver
000003C0 - 000003DF	Advanced Micro Devices Win XP Graphics Driver
000003F0 - 000003F5	Standard Floppy Disk Controller
000003F6 - 000003F6	Primary IDE Channel
000003F7 - 000003F7	Standard Floppy Disk Controller
000003F8 - 000003FF	Communications Port
00000778 - 0000077B	Printer Port
00000D00 - 0000AC17	PCI Bus
0000AC20 - 0000FFFF	PCI Bus
0000E000 - 0000EFFF	PCI Standard PCI-to-PCI Bridge
0000EC00 - 0000FCFF	Realtek RTL8139/810x family Fast Ethernet NIC
0000EC00 - 0000FEFF	Realtek RTL8139/810x family Fast Ethernet NIC
0000FE00 - 0000FE7F	GEODE - GX3 Audio Driver (WDM)
0000FF00 - 0000FF0F	Standard Dual Channel PCI IDE Controller

4.2 Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 01	PC/AT Enhanced PS/2 Keyboard
IRQ 03	Communications Port
IRQ 04	Communications Port
IRQ 05	Advanced Micro Devices Win XP Graphics Driver
IRQ 05	Geode GX3 AES Crypto Driver
IRQ 06	Standard Floppy Disk Controller
IRQ 08	System CMOS/real time clock
IRQ 09	Microsoft ACPI-Compliant System
IRQ 10	Standard OpenHCD USB Host Controller
IRQ 10	Standard Enhanced PCI to USB Host Controller
IRQ 10	Realtek RTL8139 Family PCI Fast Ethernet NIC
IRQ 11	Realtek RTL8139 Family PCI Fast Ethernet NIC
IRQ 11	GEODE - GX3 Audio Driver (WDM)
IRQ 12	Microsoft PS/2 Mouse
IRQ 14	Primary IDE Channel