



***P4 Socket 478  
Motherboard***

***BC845EVL***

**User's Manual**

**<http://www.bcmcom.com>**

Rev. 1.0

## Declaration

### Declaration

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#### References:

This manual is created and written by BCM Technical Dept., but not limited, to the information from the BC845EVL External Production Specifications, and BC845EVL Specifications. If any comments, suggestions, or errors for this manual, please write e-mail to [support@bcmcom.com](mailto:support@bcmcom.com).

## **Compliance & Certificate**

### **Compliance & Certificate**

#### **ISO 9001 Certificate:**

This device was produced in our plant with advanced quality system certified by DNV QA Ltd. in according to ISO 9001. This Certificate is valid for:  
DESIGN & MANUFACTURE OF MOTHERBOARD AND PERSONAL COMPUTERS.

#### **CE Declaration:**

CE marking is a visible declaration by the manufacturer or his authorized representatives that the electrical equipment to which it relates satisfies all the provisions of the 1994 Regulations.

#### **FCC Compliance:**

FCC stands for Federal Communications Commission.

This product complies with FCC Rules Part 15 and has been tested, and complied with the EMI rules by a certified body. In normal operation, there shall be no harmful interference caused by this device nor shall this device accept any interference received, including interference that may cause undesired operation of this product.

## Easy Installation

# Easy Installation

## Easy Installation Steps

The following “Easy Installation” steps are for users accustomed to the assembly of a computer system. For those individuals requiring more specific information, please refer to the more detailed descriptions located within the latter chapters of this manual.

Note: You must keep your power cable unplugged until the following installation steps are completed.



### Getting Started

Touch a grounded metal surface to release static electricity stored in your body before unpacking your motherboard. For details please refer to Precaution section in Chapter 3.

Install the CPU by correctly aligning the CPU with the socket 478 as noted in the motherboard diagram. Once aligned, press down on the CPU gently but firmly and lock it. Next, install the un-buffered DDR SDRAM into the 184 pin DIMM slots. Please see Sec. 3.4.

Plug in any peripheral card(s) that you want to be included in the setup. Please see Sec. 3.5.

Plug in all cables included in the package except for the power cord. Please see Sec. 3.6.

Please recheck all steps to ensure no mistakes have been made and then plug in the power cord and turn on the power to enter the BIOS setup, Chapter 4.

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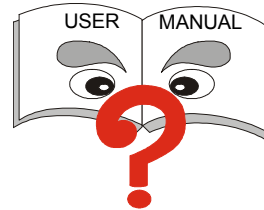
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# Introduction

## 1. Introduction

### 1.1 How To Use This Manual

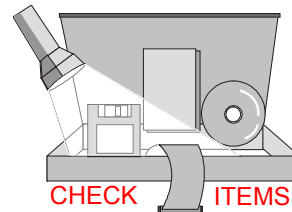
This manual provides information necessary for Original Equipment Manufactures (OEMs) and home users to build an ATX compatible system using Intel mPGA Socket 478 CPU motherboard. Follow the installation procedure presented on the **Easy Installation Page** and refer to the section number following each step if you require more detailed instructions.



### 1.2 Check Your Device Items

The standard package should contain the following items. If you find any of these items be missing or damaged, please contact your retailer.

- 1 BC845EVL motherboard
- 1 DB15 VGA cable (for CRT connection)
- 1 IDE ribbon cable (80-pin for UATA)
- 1 floppy ribbon cable
- 1 Quick user reference guide
- 1 CD with drivers for BC845EVL motherboard and user manual in PDF format.



### **WARNING:**

***Intel i845chipset only support 1.5 volts AGP graphic boards (regardless of 2x or 4x). Therefore the 3.3 volts VGA graphic boards cannot be install in a Pentium 4 system. Wrongfully of plug in a 3.3V graphic board, the graphic board as well as the motherboard will be destroyed after installing a 3.3-volt graphic board.***

# Features

## 2. Features

### 2.1 Features Of The Motherboard

This product is based on the ATX form factor. It features the Intel P4 socket 478 micro PGA socket and provides support for high performance Industrial and workstation. This motherboard incorporates Intel 845E chipset. Providing features such as 2 DDR Memory Slot support up to 2GB of PC2100, Ultra DMA 33/66/100 IDE interface, ACPI Power Management, Intel 10/100Mbps LAN, USB 2.0 connectivity, soft sound support, and unique 2 ISA slot and onboard SMI 722 PCI graphics, supports TFT, LVDS LCD panel & TV Out.

#### Processor

- Single Intel® 478 Pin Micro PGA mechanism for Intel® Pentium 4 FC-PGA2 packages
- 400/533MHz system bus

#### Core Logic Chipset

- Intel® 845E MCH (Memory Controller Hub) in 593 ball FC-BGA package
- Intel 82801DB ICH4 (I/O Controller Hub) in 421 ball EBGA Package
- Intel 82802AB 4Mb FWH (Firmware Hub) or equivalent
- SMI 722 PCI Graphics with 4MB integrated Memory (Optional 8, 16 MB frame buffer available)
- ITE IT8888 CI-to ISA bridge chip in 160-pin PQFP

#### System Memory

- Two 184-pin DIMM socket
- Supporting 2 double-sided DIMMS up to 2GB PC2700/PC2100/PC1600 DDR ECC/Non ECC memory
- Memory Type Support Double Data Rate (DDR) in 64Mb, 128Mb, 256Mb and 512Mb technologies.

#### PCI Bus Master IDE Controller

- Two PCI IDE Connectors (support up to 4 IDE devices)
- Supports Ultra DMA: PIO mode 4, 33/ 66/ 100MB/s

#### LAN Support (Optional)

- ICH4 integrated with LAN controller, with 82562ET/EM (10/100 LAN)

#### Integrated I/O

- Low Pin Count (LPC) 3.3V interface between FWH and ICH4
- 1 Parallel Port (SPP/ECP/EPP/ECP+EPP)
- 2 Serial Port- 2-DB9 (16C550 Fast UART Compatible) port
- 1 PS/2 Keyboard Port, 1 PS/2 Mouse Port
- 1 Floppy connector
- 6 USB 2.0 Ports (2X2 from the front connector and 2 from the back ports)
- 3 Fan connectors
- Hardware Monitor Capability

# Features

## System BIOS

- 4Mb Flash device in FWH
- PC-99 and PnP (Plug 'n Play) compatible
- Supports ACPI (Advanced Configuration and Power Interface), and APM (Advanced Power Management)
- Supports to boot from CD-ROM, SCSI, IDE, FDD, ZIP, and LS-120

## Green Features

- Power Management APM version 1.2
- WOL (Wake On LAN), WOR (Wake On Ring), wake-up are supported.

## Sound System

- AC97 Revision v. 2.1 integrated in ICH2
- 3 Audio Phone Jacks (Line-Out, Line-In, Mic-In) and 1 MIDI/Game port
- Includes one of each: Tel-In, CD-In, and Aux-In

## Expansion Slots

- 1 1.5V 4X AGP slot (**1.5V AGP Only**)
- 4 PCI slots (PCI 2.2 Compliant)
- 1 ISA
- 1 Shared PCI/ISA slot.

## Mechanical

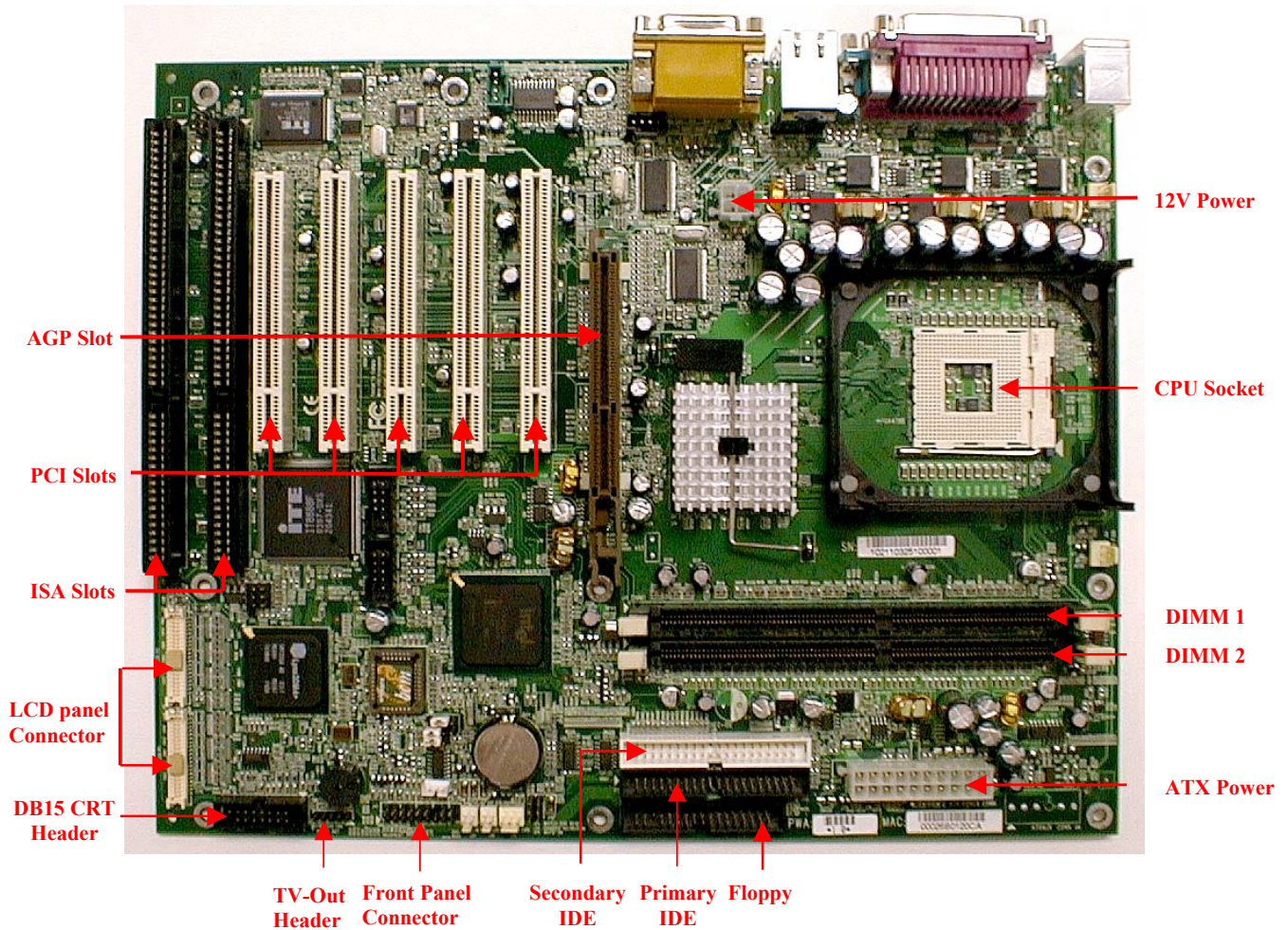
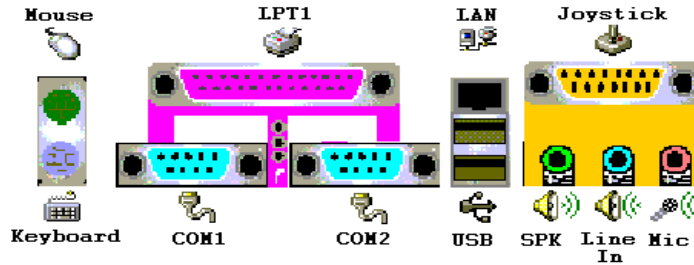
- This motherboard complies with the ATX Form Factor specification and has a four layers with dimensions of 12" x 9.625"



# Installation

## 3. Installation

### 3.1 Motherboard Layout & Main Parts



# Installation

## Significant Parts List

### Expansion Slots

CPU Socket	Refer to Sec. 3.3
System Memory	Refer to Sec. 3.4
Expansion Slots	Refer to Sec. 3.5

### Front Panel Connectors/Back Panel Ports

IrDA Connector (Part of Front Panel Header)	Refer to Sec. 3.6.5
Sleep switch Connector (Part of Front Panel Header)	Refer to Sec. 3.6.5
Power Switch Connector (Part of Front Panel Header)	Refer to Sec. 3.6.5
Reset Switch Connector (Part of Front Panel Header)	Refer to Sec. 3.6.5
HDD LED Connector (Part of Front Panel Header)	Refer to Sec. 3.6.5
Power LED Connector (Part of Front Panel Header)	Refer to Sec. 3.6.5
Keyboard/Mouse Ports	Refer to Sec. 3.6.6
USB/LAN Ports	Refer to Sec. 3.6.6
Printer/VGA/Serial Ports	Refer to Sec. 3.6.6
Game/Sound Ports	Refer to Sec. 3.6.6

### Connectors

Primary IDE Connector	Refer to Sec. 3.6.1
Secondary IDE Connector	Refer to Sec. 3.6.2
Floppy Connector	Refer to Sec. 3.6.3
Power Connector	Refer to Sec. 3.6.4
CD-In (CD-ROM) Connector	Refer to Sec. 3.6.7
WOL (Wake On LAN) Connector	Refer to Sec. 3.6.7
WOR (Wake On Ring) Connector	Refer to Sec. 3.6.7
SCSI LED Connector	Refer to Sec. 3.6.7
Telephony Connector	Refer to Sec. 3.6.7
CPU Fan Connector	Refer to Sec. 3.6.7
FAN 2 Connector	Refer to Sec. 3.6.7
FAN 3 Connector	Refer to Sec. 3.6.7
Chassis Intrusion Connector	Refer to Sec. 3.6.7
Front USB Connector	Refer to Sec. 3.6.7
Mono Out Connector	Refer to Sec. 3.6.7
Serial Port 2 Connector	Refer to Sec. 3.6.7
Speaker Connection (Optional)	Refer to Sec. 3.6.7

# Installation

## Precaution Before Start

### Static Electricity Damage:



Static electricity can easily damage your motherboard. Observing a few basic precautions can help safeguard against damage that could result in expensive repairs. Follow the simple measures below to protect your equipment from static electricity damage.

### **WARNING:**

***Intel i845E chipset only support 1.5 volts AGP graphic boards (regardless of 2x or 4x). Therefore the 3.3 volts VGA graphic boards cannot be install in a Pentium 4 system. Wrongfully of plug in a 3.3V graphic board, the graphic board as well as the motherboard will be destroyed after installing a 3.3-volt graphic board.***

1. Keep the motherboard and other system components in their anti-static packaging until you are ready to install them.
2. Touch a grounded surface before you remove any system component from its protective anti-static packaging. Unpacking and installation should be done on a grounded, anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same points as the anti-static mat.
3. After removing the motherboard from its original packaging, only place it on a grounded, anti-static surface component side up. Immediately inspect the board for damage. Due to shifting during shipping, it is suggested that the installer press down on the entire socket ICs to ensure they are properly seated. Do this only with the board placed on a firm flat surface.
4. During configuration and installation touch a grounded surface frequently to discharge any static electrical charge that may have built up in your body. The best precaution is to wear a grounded wrist strap. Avoid touching the components when handling the motherboard or a peripheral card. Handle the motherboard and peripheral cards either by the edges or by the peripheral card case-mounting bracket.

### Misplaced Jumper Damage:

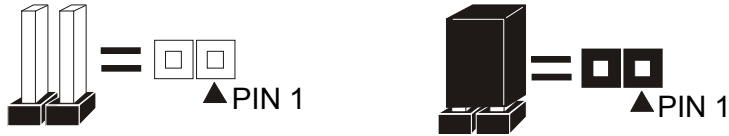


There are critical headers used for connectors or power sources. These are clearly marked separately from the jumpers listed in Motherboard Layout. Incorrect setting jumpers and connectors may lead to damage to your motherboard. Please pay special attention not to connect these headers in wrong directions

# Installation

## 3.2 Connectors and Jumpers

This motherboard requires jumper setting for some features. The following graphic shows you how to set a proper jumper setting.



Note: In the following pages, the triangle ▲ mark stands for pin 1 of the connector or header.

### Connectors/Jumpers List

J1: Keyboard, and Mouse Ports	J2: NC
J3: COM2	J4: COM1
J5: USB 1, USB2, and LAN Ports	J6: Telephony (Green)
J7: Smart Card	J8: Line-out, Line-in, Mic-in
J9: Game/MIDI Port	J10: Parallel Port
J11: CD-In (Black)	J12: ISA Slot2
J13: ISA Slot1	J14: LAN Active LED
J15: System Fan	J16: PCI Slot5
J17: PCI Slot4	J18: PCI Slot3
J19: PCI Slot2	J20: PCI Slot1
J21: ATX 12V Connector	J22: AGP Slot
J23: USB1	J24 CPU FAN
J25: USB2	J26: Brightness Adjust (W/ SMI722 Only)
J27: DDR DIMM1	J28: DDR DIMM2
J29: LCD P2 (W/ SMI722 Only)	J30: Secondary IDE
J31: LCD P1 (W/ SMI722 Only)	J32: Primary IDE
J33: Wake On LAN	J34: ATX Power
J35: Chassis Intrusion	J36: NI
J37: Ring In	J38: SCSI LED
J39: Chassis Fan	J40: Floppy
J41: VGA Header (W/ SMI722 Only)	J42: TV-Out
J43: Front Panel	
JP1: BIOS Write Protect	JP2: Clear CMOS
JP3: Operation Mode Select	JP4: Watch Dog Reset
JP5: Auto On	

VR1 Contrast Adjust (W/ SMI722 Only) VR2 Brightness Adjust (W/ SMI722 Only)

# Installation

## 3.3 CPU (Central Processing Unit)

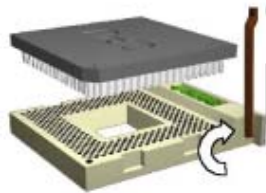
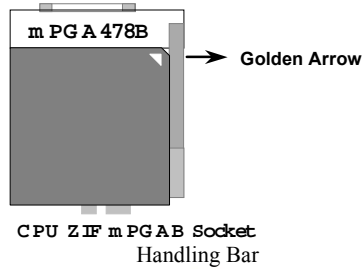
This motherboard supports an mPGA2 478 Pin Intel Pentium 4 processor. To complete CPU installation, please install CPU to socket firmly, presented in Sec. 3.3.1.

### 3.3.1 Install a CPU

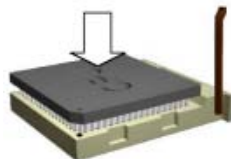
Please follow the below steps to install your CPU.

Step 1: Pull the handling bar of the socket upward to the other end to loosen the socket's openings.

Step 2: Place the CPU on the middle of the socket, orienting its beveled corner to line up with the socket's beveled corner. Make sure the pins of the CPU fit evenly to the socket openings.



Step 1



Step 2

Step 3: Press the handling bar downward to fasten the CPU to the socket.



**Warning:** It is strongly recommended that a heatsink and CPU cooling fan be used to prevent the CPU from overheating. Applying a thermal compound between the CPU and the heatsink/fan will further improve CPU cooling.

# Installation

## 3.4 System Memory (DDR SDRAM)

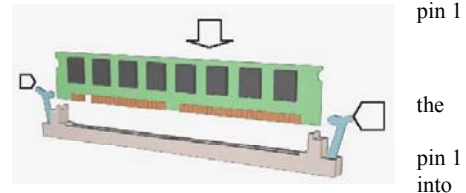
### 3.4.1 DDR DIMM (Double Data Rate Dual Inline Memory Module)

The motherboard features support two 184-pin DIMM, share memory module. You can configure the system memory size from 64MB to 2GB in a variety of ways by using different combinations of the two 184-pin DIMMs.

### 3.4.2 Installation Procedure

Step1: Make sure Pin 1 of the DDR DIMM match with of the DDR DIMM socket.

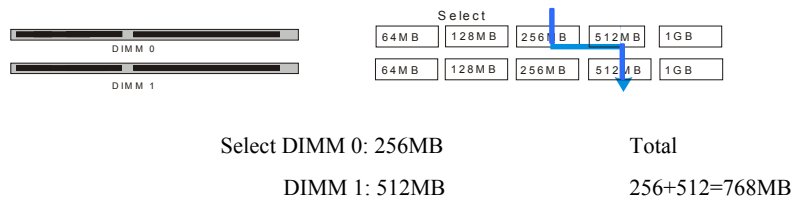
Step2: Insert the DIMM module into the DIMM socket vertically. After inserting the DIMM module completely into socket, push up on the socket latches securing the DIMM into place. If the pin 1 of the DIMM module does not line up with of the socket, the DIMM module will not be inserted correctly the socket.



Be careful not to misfit the DIMM into DIMM socket in wrong direction. This module can be inserted into the socket only one way. To release the memory module, push both latches down and carefully rock the module forward and backward while slowly lifting it upward.

### 3.4.3 DIMM Combinations

Each DIMM socket can be inserted with 64MB, 128MB, 256MB, 512MB and 1GB DDR DIMM. For example, the following figure shows you one way to insert your DIMMs.



Select 1 out of 5 Choices (64MB, 128MB, 256MB, 512MB and 1 GB) in DDR DIMM 0. Then, repeat again in DDR DIMM 1 for 6 choices (Empty, 64 MB, 128MB, 256MB, 512MB and 1GB) to go through your own path.



# Installation

## 3.5 Expansion Slots

This motherboard contains 8 expansion slots.

One AGP

Five 32-bit PCI

Two ISA

### AGP Expansion Slot

The Accelerated Graphics Port (AGP) is a high performance interconnect targeted at 3D graphical display applications and is based on a set of performance extensions or enhancements to the PCI bus. (AGP interface specification Rev. 2.0 compliant.)

**WARNING: THIS MOTHERBOARD SUPPORT VIDEO CARD THAT IS USING 1.5V AGP ONLY.**

Note: The motherboard supports AGP 4X mode.

To install expansion cards, please read the expansion card's documentation for instructions and cautions.

### PCI Expansion Slots

All PCI expansion slots accept PCI bus master cards and are fully supported by the PCI 2.2 specification.

### ISA Expansion Slots

ISA expansion slots accept 16-bit legacy ISA device via ITE IT8888 PCI to ISA Bridge.

# Installation

## 3.6 Connectors, Headers, and Ports

This motherboard contains IDE, floppy, power connector, front panel, and additional connectors.

### 3.6.1 Primary IDE Connector (J32, 39-pin block, Black)

This connector supports two primary channel IDE devices as well as the LS120 floppy, Zip, CD-ROM, and DVD-ROM drives via a ribbon cable. When two IDE devices are installed using the primary IDE connector, make sure that the second IDE device is set to slave mode as indicated in the device's manual.

### 3.6.2 Secondary IDE Connector (J30, 39-pin block, White)

This connector supports two secondary channel IDE devices as well as the LS120 floppy, Zip, CD-ROM, and DVD-ROM drives via a ribbon cable. When two IDE devices are installed using the secondary IDE connector, make sure that the second IDE device is adjusted to slave mode as indicated in the device's manual.

**Warning:** When you connect a ribbon cable to these ports, you must orient the cable connector so that the PIN 1 edge of the cable is at the PIN 1 edge of the on-board connector.

### 3.6.3 Floppy Drive Connector (J40, 33-pin block)

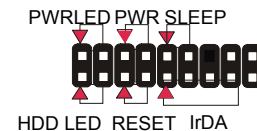
The FDC sub-system can control three types of floppy drives (1.2, 1.44, and 2.88 MB) and/or compatible tape drives. The floppy disk interface includes 48mA current support and inputs on the drive interface.

### 3.6.4 P4 Power Connector (J34, 20-pin and J20, 4-pin block)

This connector supports a P4 ATX power supply, which has a separate 12V connector. When connecting, make sure the lock key matches the hook attached on a power supply cable. The power cord should be unplugged when you connect it.

### 3.6.5 Front Panel Connectors (43, 17-pin block)

Front Panel includes connectors for the following six I/O connectors: Power Switch, Power LED, Reset, Sleep, IrDA, and HDD LED.



#### IrDA Connector (Pins 9, 11, 13, and 15)

The motherboard offers an IrDA infrared connector that supports third party infrared modules. The case must reserve space for the IR module if you want to use the IrDA function. This option supports wireless transmission and reception of infrared data. The module mounts in a small opening on the system case that supports this feature. The efficient distance is 100cm and the transfer rate is 115,200 bits/s.

#### Reset Switch Connector (Pins 5, and 7)

This connector supports the front panel case-mounted reset button. It is advised that the reset switch be used for rebooting the system in order to extend the life of the system's power supply.

#### HDD LED Connector (Pins 1, and 3)

The motherboard supports one 2-pin connector for connecting to front Panel Hard Disk activity LED indicator.

#### Sleep Switch Connector (Pins 10, and 12)

When the APM (Advanced Power Management) feature is enabled in the system BIOS and the operating system's APM driver is loaded, the system can enter the sleep (standby) mode in one of the following ways:

- Optional front panel sleep/resume button
- Prolonged system inactivity using the BIOS inactivity timer feature

The 2-pin connector supports a front panel sleep/resume switch, which must be a momentary SPST type that is normally open

#### Power Switch Connector (Pins 6, and 8)

This connector supports the ATX case-mounted Power Switch, which in turn supports System Suspend function. When the BIOS sets the Power Button function to "Suspend", the system can be set to the suspended mode once you push the power switch for no longer than 4 seconds. If the power switch is pushed down for over 4 seconds, the system will be totally powered off. When this BIOS setting sets to "Instant-off", then Power Switch function work as a regular power switch.

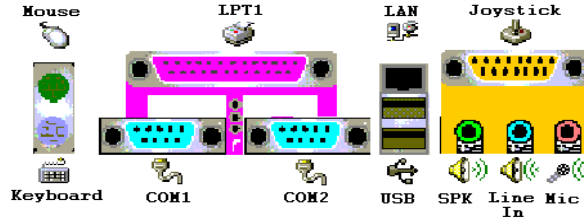


# Installation

## Power LED Connector (Pins 2, and 4)

This connector can be connected to a 2-color LED that will light yellow or green when the computer is in “Suspend” or “Normal” operation.

## 3.6.6 Back Panel Connectors



## PS/2 Keyboard and Mouse Ports (J1)

The motherboard offers 1 PS/2 Keyboard Port and 1 PS/2 Mouse Port.

## USB (Universal Serial Bus) Ports and LAN (Local Area Network) Port (J5)

The motherboard has two USB ports and a LAN port (optional). USB devices provide a more convenient operating environment and improve data transferring capacity. True Plug & Play. This new bus technology will support over 127 different peripherals through a hub. This also supports combination of both low and high speed devices (version 1.1) The LAN port (using RJ-45) provided to hook the system up on a local network or with a DSL (Digital Subscriber Line), or a Cable modem internet boxes.

## Parallel Port (J10)

The motherboard includes a parallel port (SPP, EPP, and ECP compatible). The parallel port is capable of being disabled or remapped to either the secondary LPT address or the primary LPT address through BIOS if another parallel port is installed.

## Serial Port (J3, J4)

The motherboard has 2 serial ports. The electrical characteristics are compliant with the EIA-232-D Serial Communications Specifications. The serial port may be disabled through the BIOS.

Signal	PIN	Signal
	1	DCD
DSR	6	
	2	RxD
RTS	7	
	3	TxD
CTS	8	
	4	DTR
RI	9	
	5	GND

# Installation

## Sound Ports (J8)

The motherboard also provides external sound system through an user accessible stereo jack connector soldered to the PWA. This jack allow the connection of self-amplified speakers, Line-In voice input and Mic-In voice input.

Stereo Jack	
J8-1	Line-Out
J8-2	Line-In
J8-3	Mic-In

## AGP Port (J22)

This product has one 4X AGP slot.

## Game/MIDI Port (J9)

The motherboard integrates a Game/MIDI port. This port can let you plug a joystick or a MIDI device.

### 3.6.7 Additional Connectors and Headers

#### Front USB Connector (J23, J25 10-pin)

The motherboard offers you to hook up front USB ports via chassis.

Signal	PIN #		Signal
VCC	1	2	VCC
USB 2-	3	4	USB 3-
USB 2+	5	6	USB 3+
GND	7	8	GND
Key	9	10	

#### Front Panel Connector (J43, 18-pin)

Signal	PIN #		Signal
HDD+	1	2	GRN/YEL
HDD-	3	4	PWRLED
GND	5	6	PWR
RST	7	8	GND
VCC	9	10	NC
IRRX	11	12	GND
GND	13	14	KEY
IRTX	15	16	VCC
NC	17	18	NC

#### Clear Password Header (JP2, 4-pin)

PIN	Function
1-2	Normal
2-3	Clear CMOS
3-4	Clear Password

#### WOR (Wake On Ring) Connector (J37, 2-pin)

This connector is used for resuming from either the APM sleep mode or the ACPI S1 state. It requires only one call to access the computer. In addition, it detects incoming call similarly for external and internal modems. It also requires modem interrupt to be unmasked for correct operation.

# Installation

## WOL (Wake On LAN) Connector (J33, 3-pin)

This connector is used for remote wakeup of the computer through a network. WOL requires a PCI add-in network interface card (NIC) with remote wakeup capabilities. The remote wakeup connector on the NIC must be connected to the onboard WOL connector. For Wake on LAN, the 5-V standby line for the power supply must be capable of delivering 5V at 720mA.

## Chassis Intrusion Connector (J35, 2-pin)

This connector is for a chassis designed for chassis intrusion detection. After-market toggle switches may also be installed to the chassis panel or on any removable components. Two wires should be available from the chassis to connect to this connector. When any chassis component is removed, the contact should open and the motherboard will record a chassis intrusion event. The event can then be processed by software such as LDCM.

## SCSI LED (J38)

This header is used for a front panel LED to give SCSI HDD Busy Signal (this will work only if SCSI adapter card and at least one SCSI drive is installed.)

## FAN 2 Connector (J39, 3-pin)

This connector is used for chassis fan or power fan if needed.

## FAN 3 Connector (J19, 3-pin)

This connector is used for system fan or power fan if needed.

## CPU Fan Connector (J22, 3-pin)

The CPU may have an attached heatsink and fan; connect the CPU fan assembly power to this connector.

## CD-In Connector (J11, 4-pin, Black)

A connector is available for audio input from CD-ROM drives.

## Telephony Connector (J6, 4-pin, Green)

Access the Telephony connection for audio input from the modem.

## LAN Active (J14, 2-pin)

This connector is for LAN active LED.

## BIOS boot block Lock and write protect Header (JP1, 4-pin)

When enabled, the BIOS boot block will be locked.

JP1 BIOS Write Protect	
1-2	For boot block only
3-4	Write protect for all block
2-3	Un-protected (Default)

## Safe Speed Header (JP3, 3-pin)

Forces the CPU to run at slowest speed in case of bad configuration preventing a boot-up.

JP1 BIOS Write Protect	
1-2	Normal (Default)
2-3	Save mode
Open	Recovery

# Installation

## Onboard SMI PCI Graphics (Optional)

The onboard SMI PCI LynxEM+ is a high performance 2D Graphics and Multimedia Accelerator incorporating 4MB or optional 8MB SDRAM display memory. It supports a wide range of flat panel displays, including 24-bit TFT LCD displays allowing simultaneous viewing of CRT and LCD display. In addition, the dual LCD interfaces support TFT or LVDS LCDs. Making it the perfect solution for high-end Retail / Financial Transaction Terminals, and multimedia POS / KIOSK Terminals.

### J41 VGA-Out Connector

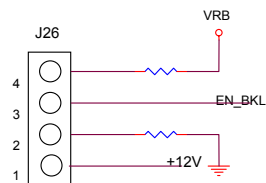
PIN	Signal
1	Red
2	Green
3	Bleu
4	NC
5	GND
6	GND
7	GND
8	GND
9	VCC
10	GND
11	NC
12	DDCDAT
13	H Sync
14	V Sync
15	DDCCL

### J42 TV-Out Connector

PIN	Signal
1	Yout
2	GND
3	Cout
4	GND
5	CVBS

### J26 Brightness ADJ

PIN	Signal
1	VCC 12V
2	GND
3	ENBLK
4	VRB



## *Installation*

# Installation

## Secondary LCD Panel Connector (J29 for LVDS TFT Panel)

Signal	PIN		Signal
VDSAFE5	1	2	VDSAFE5
GND	3	4	GND
VDSAFE3	5	6	VDSAFE3
VCON	7	8	GND
P47	9	10	P25
P26	11	12	P46
P28	13	14	P29
P45	15	16	P31
P32	17	18	P33
P34	19	20	P35
P36	21	22	P37
D3+	23	24	D3-
CLK+	25	26	CLK-
D2+	27	28	D2-
D1+	29	30	D1-
D0+	31	32	D0-
GND	33	34	GND
LVDSCLK	35	36	FLM
M_DE	37	38	LP
ENBK	39	40	ENVEE

# Installation

## Primary LCD Panel Connector (J31 for TFT)

Signal	PIN		Signal
VDSAFE5	1	2	VDSAFE5
GND	3	4	GND
VDSAFE3	5	6	VDSAFE3
VCON	7	8	GND
P0	9	10	P1
P2	11	12	P3
P4	13	14	P5
P6	15	16	P7
P8	17	18	P9
P10	19	20	P11
P12	21	22	P13
P14	23	24	P15
P16	25	26	P17
P18	27	28	P19
P20	29	30	P21
P22	31	32	P23
GND	33	34	GND
SHFCLK	35	36	FLM
MM	37	38	LP
ENBKL	39	40	ENVEE

# Installation

## Signal Description – Primary & Secondary LCD Panel Connector (J29, J31)

P47..0	<p>Flat Panel Data Bit 47 to Bit 0 for single panel implementation.</p> <p>For Dual Panel Implementation</p> <p>Panel 1: P21-16, P13-8, P5-0, panel1data</p> <p>Panel 2: P23, LP2 / HSYNC2</p> <p style="padding-left: 40px;">P22, FLM2 / VSYNC2</p> <p style="padding-left: 40px;">P15, M2</p> <p style="padding-left: 40px;">P47-P24, panel 2 data</p> <p>Note: P14, P7, P6 are not used for Dual Panel Implementation. LVDSCLK used as SHFCLK2.</p> <p>Flat panel data output for 9, 12, 18, 24, 12 x 2, or 18 x 2 bit TFT flat panels. Refer to table below for configurations for various panel types. The flat panel data and control outputs are all on-board controlled for secure power-on/off sequencing</p>
SHFCLK	Shift Clock. Pixel clock for flat panel data
LVDSCLK	This pin is used as SHFCLK2 for dual panel configuration
LP	Latch Pulse. Flat panel equivalent of HSYNC (horizontal synchronization)
FLM	First Line Marker. Flat panel equivalent of VSYNC (vertical synchronization)
M	Multipurpose signal, function depends on panel type. May be used as AC drive control signal or as BLANK# or Display Enable signal
ENBKL	Enable backlight signal. This signal is controlled as a part of the panel power sequencing
ENVVEE	Enable VEE. Signal to control the panel power-on/off sequencing. A high level may turn on the VEE (LCD bias voltage) supply to the panel



# Installation

## Signal Configuration – DSTN & TFT Panel Displays (J31)

Pin name	DSTN		TFT				
	16-bit	24-bit	9-bit	12-bit	18-bit	24-bit	12-bit x 2
P23		UD11				R7	RB3
P22		UD10				R6	RB2
P21		UD9			R5	R5	RB1
P20		UD8			R4	R4	RB0
P19	UD7	UD7		R3	R3	R3	RA3
P18	UD6	UD6	R2	R2	R2	R2	RA2
P17	UD5	UD5	R1	R1	R1	R1	RA1
P16	UD4	UD4	R0	R0	R0	R0	RA0
P15	UD3	UD3				G7	GB3
P14	UD2	UD2				G6	GB2
P13	UD1	UD1			G5	G5	GB1
P12	UD0	UD0			G4	G4	GB0
P11		LD11		G3	G3	G3	GA3
P10		LD10	G2	G2	G2	G2	GA2
P9		LD9	G1	G1	G1	G1	GA1
P8		LD8	G0	G0	G0	G0	GA0
P7	LD7	LD7				B7	BB3
P6	LD6	LD6				B6	BB2
P5	LD5	LD5			B5	B5	BB1
P4	LD4	LD4			B4	B4	BB0
P3	LD3	LD3		B3	B3	B3	BA3
P2	LD2	LD2	B2	B2	B2	B2	BA2
P1	LD1	LD1	B1	B1	B1	B1	BA1
P0	LD0	LD0	B0	B0	B0	B0	BA0

# Installation

## Are You Ready To Turn On The System?

### Check Again

1. Is the CPU installed exactly and firmly into the socket (Sec. 3.3)?
2. Are all the DRAM modules installed properly (Sec. 3.4)?
3. Are all the add-in peripheral seated and configured properly (Sec. 3.5)?
4. Are you sure that all the connectors (described in Sec. 3.6) have been connected to their related devices (Sec. 3.6)?
5. Check both Power J21 and J34 are connected.

### Yes, I have checked and assured the above steps!

Now get ready to turn on your device by following the steps below.

1. **Make sure your AGP graphics board is 1.5V. Wrongfully plug in 3.3V graphics board result a destruction motherboard and graphics board.**
2. Mount your motherboard to the chassis frame and close the case cover.
3. Connect the power supply cord into inlet of the system case.
4. Connect the power supply cord into an outlet of power supply.
5. Connect Monitor signal cable to the system VGA port and the monitor power cord to power outlet.
6. Now turn on the monitor and system power.

**After Power On**, the power LED on the front panel of the system case will light. For ATX power supplies, the system LED will light when the ATX power switch is pressed.

The system will then do a power-on-self-test, and additional messages will appear on screen. If the screen blinks or the tests stop more than 30 seconds, the system may have failed the power-on-self-test. If so, please recheck the above steps or call your retailer for assistance.

If the power-on-self-test goes well, hold down <F2> key on the keyboard to enter BIOS Setup. Next, follow the instructions in the next chapter: **BIOS SETUP**.

## BIOS Setup

### 4. BIOS Setup

The motherboard uses Whizpro BIOS, stored in a flash EEPROM. All of the configuration information is stored in the CMOS.

#### 4.1 BIOS Setup

The Whizpro BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking the system and configuring it through the Power-On-Self-Test (POST). When these preliminaries are finished, the BIOS seek an operation system on the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands over control of system operation to it.

To start Setup, press the <F2> key during boot-up before or while a message similar to this appears briefly at the bottom of the screen during the POST: **Press <F2> key if you want to enter SETUP**

If the above message disappears before you have responded and you still wish to enter Setup, reboot the system to try again by pressing the "RESET" button on the system case. You may also restart by simultaneously pressing the <CTRL>, <ALT> and <DEL> keys.

##### 4.1.1 Setup Keys

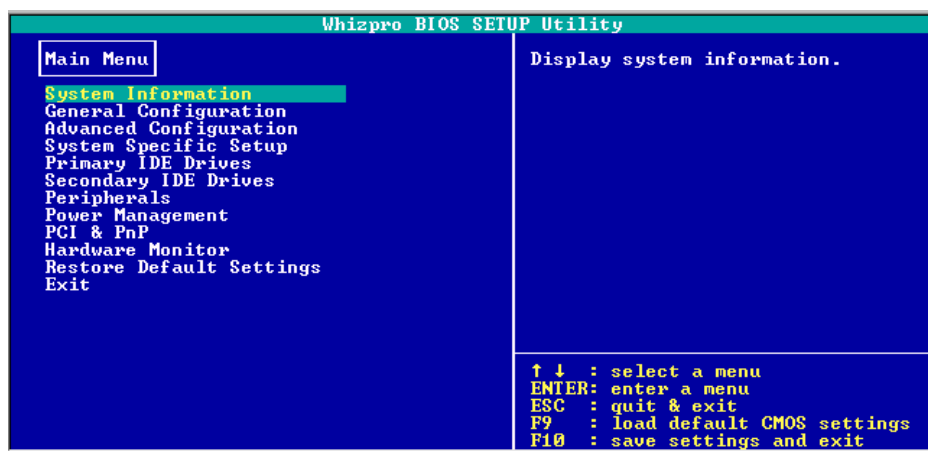
The keys below help you navigate in Setup.

<↑> , <↓>	Move to previous or next item.
<←> , <→>	Change selection.
<ESC>	Main Menu – Quit and Exit CMOS.
<ESC>	Other Pages – Exit current page and return to Main Menu.
<PgUp> / <+>	Increase the numeric value or make changes.
<PgDn> / <->	Decrease the numeric value or make changes.
<Enter>	Enter to the selected Menu.
<F9>	Load default CMOS settings.
<F10>	Save all the CMOS changes, only for Main Menu.

# BIOS Setup

## 4.2 Main Setup Menu

When you enter the Whizpro BIOS CMOS Setup Utility, a Main Menu appears 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> key to enter the sub-menu. A brief description of each highlighted selection appears at the right of the screen.



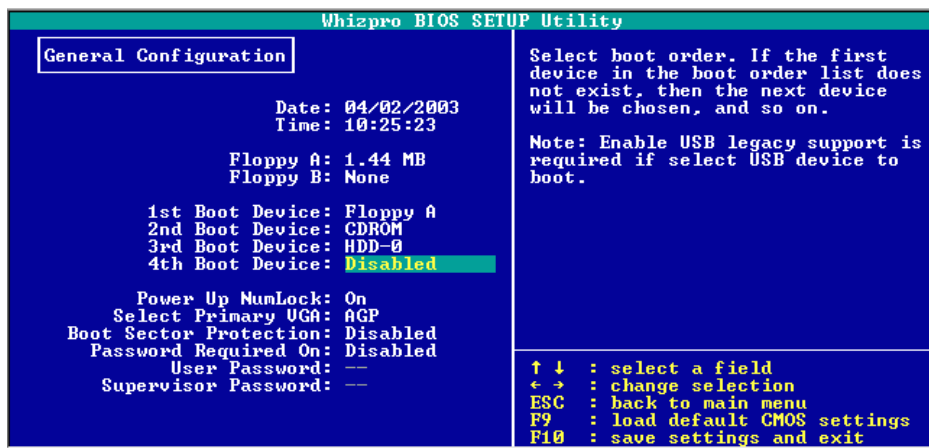
Following is a brief summary of each Setup category.

System Information	System Device Information
General Configuration	Options in the original PC AT-compatible BIOS.
Advanced Configuration	Options specific to system onboard chipset and devices.
System Specific Setup	Select PCI and DIMM clock Signals
Primary IDE Drivers	Setup IDE Device & Hard Disk Geometry Data.
Secondary IDE Drives	Setup IDE Device & Hard Disk Geometry Data.
Peripherals	Enable or Disable On-board peripherals devices.
Power Management Setup	Display the fan speed and voltage for your system.
PCI & PnP	PnP OS flag, PnP configure date, ISA memory & IRQ reservation. Assign PCI Slots IRQ.
Hardware Monitor	Display the voltage & temperature of your CPU and system
Restore Default Settings	Setup defaults that are factory settings for optimal performance system operations.
Exit	Save CMOS settings & Exit, Discard changes & Exit.

# BIOS Setup

## 4.3 General Configuration Menu

In the Standard CMOS Menu, you can set the system clock and calendar, record disk drive parameters and the video subsystem type, and select the type of errors that stop the BIOS POST.



### 4.3.1 Date

The BIOS determines the day of the week from the other date information. This field is for information only. Press the left or right arrow key to move to the desired field (date, month, year). Press <PgUp> or <PgDn> key to increment the setting, or type the desired value into the field.

### 4.3.2 Time

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

### 4.3.3 Drive A/B type

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 AT-type standard drive; 360 kilobyte capacity.
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity.
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity.
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity.
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity.

## **BIOS Setup**

### **4.3.4 First Boot Device**

This option sets the type of device for the first boot drives that the BIOS attempts to boot from after BIOS Post completes.

### **4.3.5 Second Boot Device**

This option sets the type of device for the second boot drives that the BIOS attempts to boot from after BIOS Post completes.

### **4.3.6 Third Boot Device**

This option sets the type of device for the third boot drives that the BIOS attempts to boot from after BIOS Post completes.

### **4.3.7 Fourth Boot Device**

This option sets the type of device for the third boot drives that the BIOS attempts to boot from after BIOS Post completes.

### **4.3.8 Power Up NumLock**

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

### **4.3.9 Select Primary VGA**

Select Primary display type.

### **4.3.10 Boot Sector Protection**

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

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

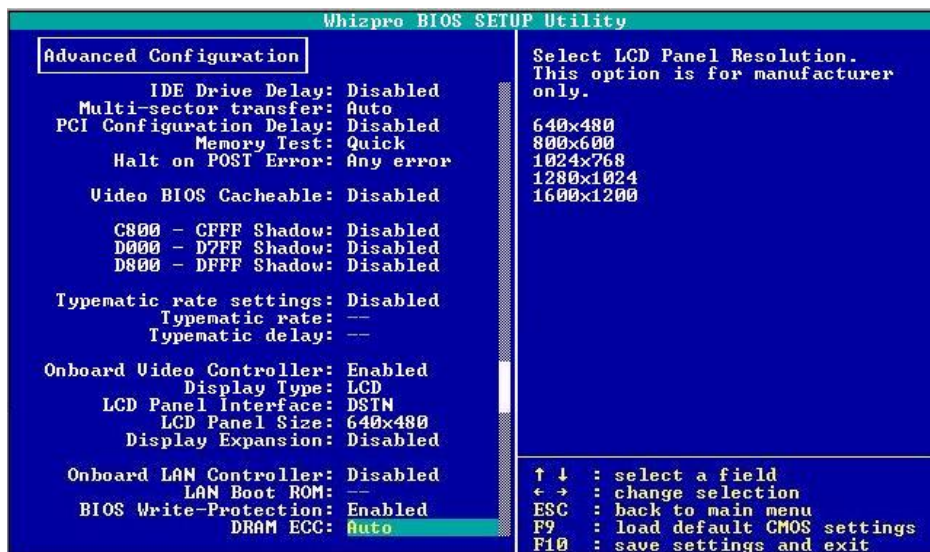
### **4.3.11 Password Required on**

Enable Password protection to system setup.

# BIOS Setup

## 4.4 Advanced Configuration Menu

These screens contain industry-standard options additional to the core PC AT BIOS. This section describes all fields offered by Whizpro Software in this screen. Some fields may vary from those in your Setup program. Your system builder may omit or modify some fields.



### 4.4.1 IDE Drive Delay

Configure IDE drive delay. Default Disable

### 4.4.2 Multi-sector Transfer

Configure Multi-sector transfer. Default Disable.

### 4.4.3 Quick Memory Test

Select enable allow system to skip extensive memory test during POST.

### 4.4.4 Video BIOS Cacheable

Select Enabled allows caching of the Video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

### 4.4.5 C800-CFFF Shadow

These options specify how the ROM at C000h copy to RAM, enable will allow the ROM area from C800-CFFF copy to RAM.

### 4.4.6 D000-D7FF Shadow

These options specify how the ROM at D000h copy to RAM, enable will allow the ROM area from D000-D7FF copy to RAM.

## **BIOS Setup**

### **4.4.11 D800-DFFF Shadow**

These options specify how the ROM at D800h copy to RAM, enable will allow the ROM area from D000-DFFF copy to RAM.

### **4.4.12 Typematic Rate Setting**

When disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system. When enabled, you can select a typematic rate and typematic delay.

### **4.4.13 Typematic Rate (Chars/Sec)**

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

### **4.4.14 Typematic Delay (Msec)**

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

### **4.4.15 Onboard LAN Controller**

Enable allow Onboard LAN function to be enable.

### **4.4.16 LAN Boot ROM**

Enable allow a Boot on LAN ROM to be enable.



# BIOS Setup

## 4.5 System Specific Setup



### 4.5.1 CPU Frequency Ratio

Select CPU frequency multiplier. CPU core frequency = system bus x ratio. Must RESET system if a new ratio is selected.

### 4.5.2 Unused PCI Slot Clock

Turn on or off the clock for unused PCI slots.

### 4.5.3 Unused DIMM Socket clock

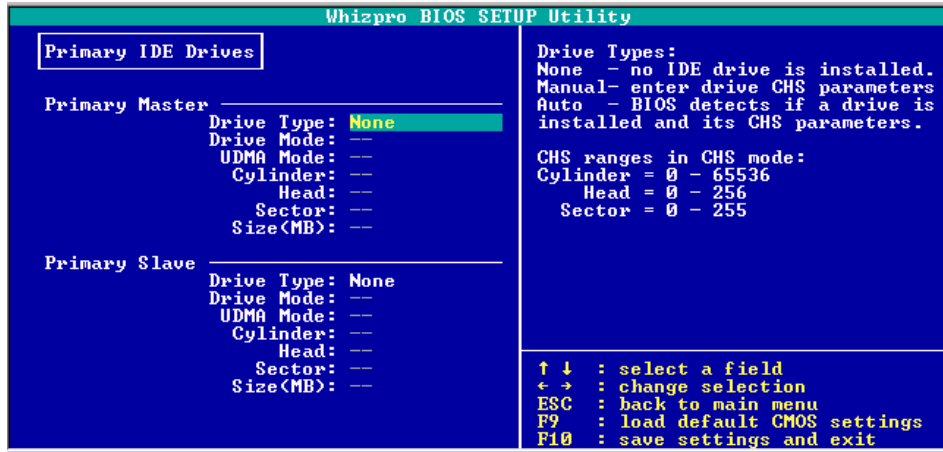
Turn on or off the clock for unused DIMM sockets.

### 4.5.4 Spread Spectrum

Select Spread Spectrum method. Default is Off.

# BIOS Setup

## 4.6 Primary IDE Drives



### 4.6.1 Primary Master

Select Auto BIOS will detects if a drive is installed and its CHS parameters. If Manual is select, CHS parameters needs to be insert manually. Select None for no IDE drive installed.

#### Drive Type:

None	No IDE drive is installed
Manual	Enter drive CHS parameters
Auto	BIOS detects if a drive is installed and its CHS parameters

#### Mode:

Auto	BIOS check if the drive supports LBA mode, if so LBA mode is enable and used, otherwise CHS mode is use
CHS	Enter drive Cylinder, Head, Sector manually.

#### UDMA:

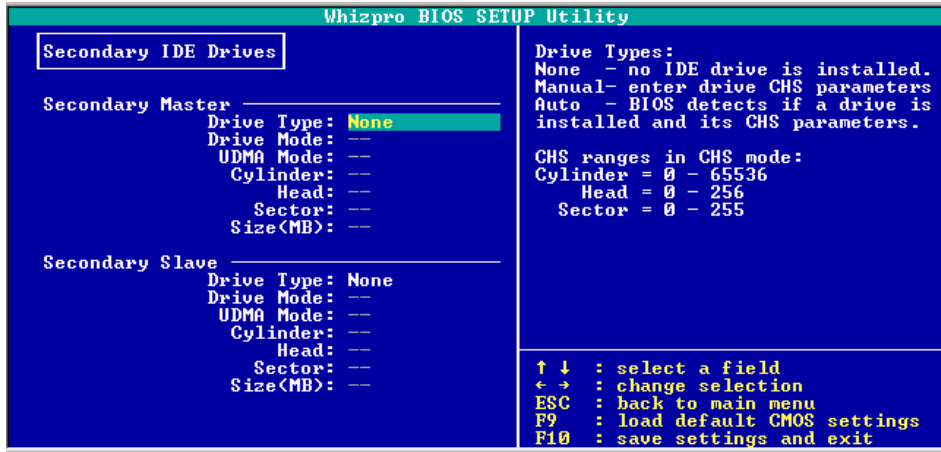
Configure PIO or UDMA modes of the IDE device.

### 4.6.2 Primary Slave

Select Auto BIOS will detects if a drive is installed and its CHS parameters. If Manual is select, CHS parameters needs to be insert manually. Select None for no IDE drive installed. See description above for available options.

# BIOS Setup

## 4.7 Secondary IDE Drives



### 4.7.1 Secondary Master

Select Auto BIOS will detects if a drive is installed and its CHS parameters. If Manual is select, CHS parameters needs to be manually insert. Select None for no IDE drive installed

#### Drive Type:

None	No IDE drive is installed
Manual	Enter drive CHS parameters
Auto	BIOS detects if a drive is installed and its CHS parameters

#### Mode:

Auto	BIOS check if the drive supports LBA mode, if so LBA mode is enable and used, otherwise CHS mode is use
CHS	Enter drive Cylinder, Head, Sector manually.

#### UDMA:

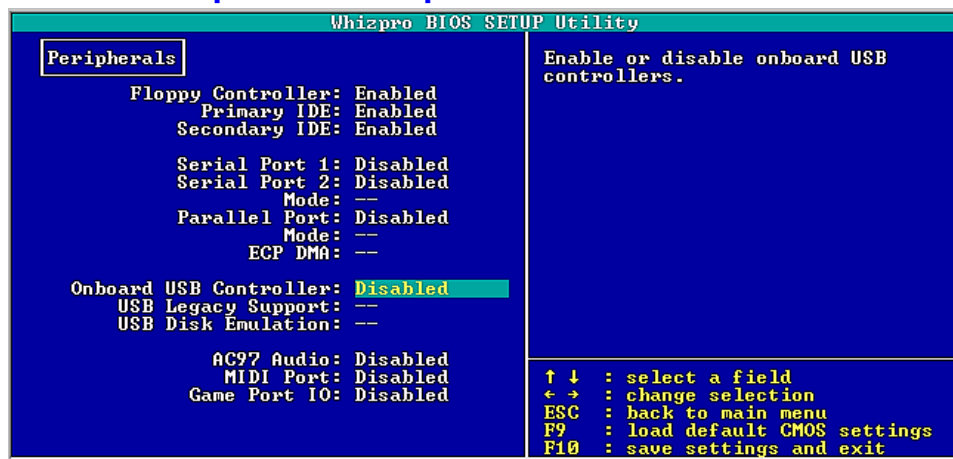
Configure PIO or UDMA modes of the IDE device.

### 4.7.2 Secondary Slave

Select Auto BIOS will detects if a drive is installed and its CHS parameters. If Manual is select, CHS parameters needs to be manually insert. Select None for no IDE drive installed. See description above for available options.

# BIOS Setup

## 4.8 Peripherals Setup Menu



### 4.8.1 Floppy Controller

Set this option to enable to invoke the floppy drive controller on the motherboard.

### 4.8.2 Primary IDE

Set this option to enable to invoke the Primary IDE channel on the motherboard.

### 4.8.3 Secondary IDE

Set this option to enable to invoke the Secondary IDE channel on the motherboard.

### 4.8.4 Onboard USB Controller

This option allows enabling Rear USB, Front USB or Both.

### 4.8.5 USB Legacy Support

This option allows enable or disable USB legacy device support.

### 4.8.6 AC97 Audio

This option allows enable or disable onboard AC97 audio device.

### 4.8.7 Game Port I/O

Disable or configure the Game Port I/O address.

# BIOS Setup

## 4.9 Power Management Setup Menu

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.



### 4.9.1 Power Management

Disable	No power management.
APM	Allows operating system to use APM (Advanced Power Management) mode for power management.
ACPI	ACPI (Advanced Configuration and Power Interface) evolves the existing motherboard configuration interfaces to support these advanced architectures in a more robust, and potentially more efficient manner.
APM+ACPI	Allows operating system to use either APM or ACPI mode for power management

### 4.9.2 Suspend Type

Set ACPI Suspend type to S1 or S3. The choices are: S1 (POS), and S3 (STR).

### 4.9.3 S3 Video Init

Perform S3 initialization during S3 (STR) resume.

### 4.9.4 Stand-by Timer

Set system inactivity time period before BIOS enters the system into stand-by state in APM mode.

### 4.9.5 Suspend Timer

Set system inactivity time period before BIOS enters the system into suspend state in APM mode.

## **BIOS Setup**

### **4.9.6 Hard Disk Power Down**

Set system inactivity time period before BIOS shutdown IDE drive in APM mode.

### **4.9.7 Video Off**

Set system inactivity time period before BIOS turn off video in APM mode.

### **4.9.8 Power Button**

In case of computer being “hung”: Instant-Off allows the power button to shut down the system instantly by the push of the button; Delay 4 Sec. allows the power button to shut down the system after holding the button for 4 seconds.

### **4.9.9 MODEM Uses IRQ**

Determines which IRQ the MODEM can use. The choices are: 3, 4, 5, 7, 9, 10, 11, and N/A.

### **4.9.10 Wake On LAN**

When enable, an input signal from the local area network line will awaken the system from the soft-off state.

### **4.9.11 Wake On PME**

When enable, BIOS will enable PCI device to drive PME signal to awaken the system.

### **4.9.12 Wake ON RI**

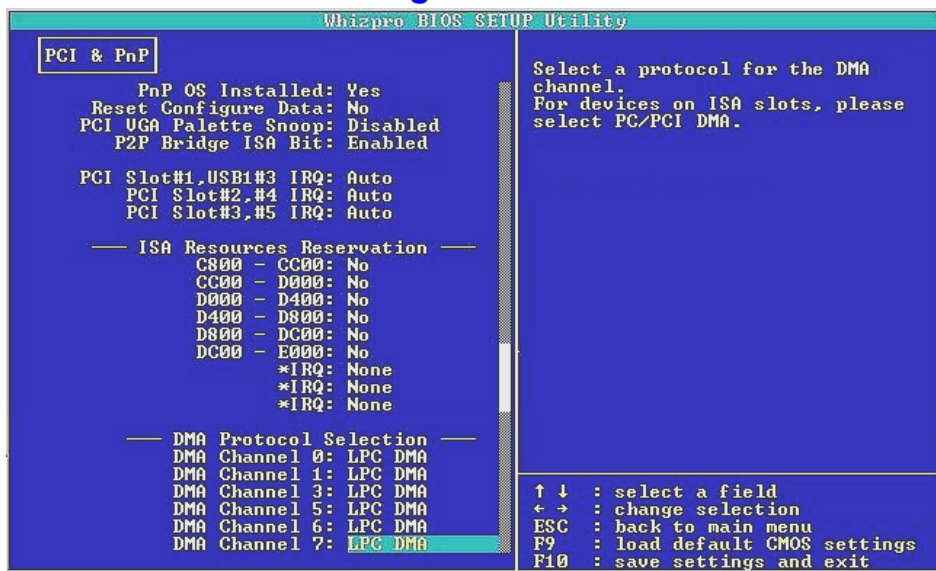
When enable, an input signal from Ring Indicator (RI) line < an incoming call from modem> will awaken the system from the soft-off state.

### **4.9.13 PWRON After PWR-Fail**

Sets PWRON After PWR-Fail as Last State, on, or off.

# BIOS Setup

## 4.10 PCI /PnP Configurations Menu



### 4.10.1 PnP OS Installed

Set this option to “Yes” to inform BIOS the operating system can handle plug and play (PnP) devices.

### 4.10.2 Reset Configure Data

Select Enabled to reset Extended System Configuration Date (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

### 4.10.3 PCI/VGA Palette Snoop

Some display cards that are not standard VGA card such as graphics accelerators or MPEG cards may not show the correct colors. This setting can correct this problem once you set it to enable. To default setting, leaves at Disabled.

### 4.10.4 Assign PCI Slots IRQ

Select PCI IRQ to an available IRQ when device can not share IRQ with other devices, Default is set to “AUTO”.

### 4.10.5 Reserved ISA Memory Device

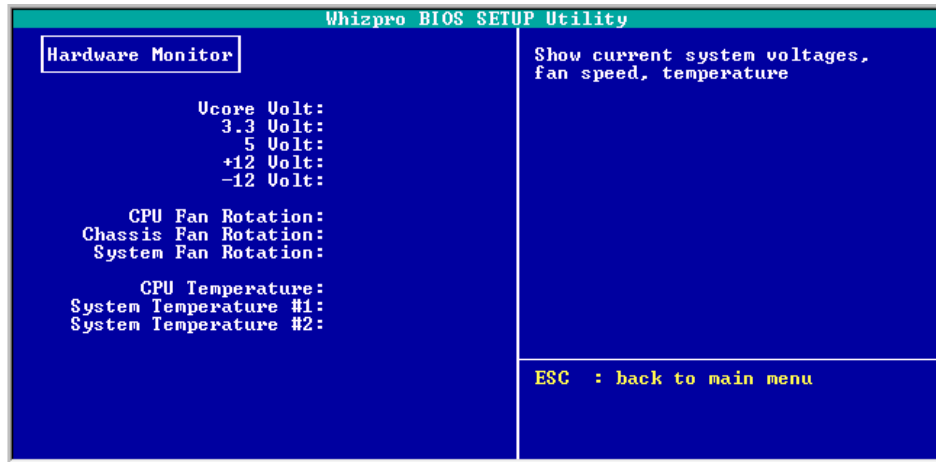
Select “Yes” will enable that ISA memory address space reserved.

### 4.10.6 Reserved IRQ To ISA Space

Select “Yes” will enable that IRQ to ISA space reserved.

# BIOS Setup

## 4.11 Hardware Monitor



### 4.11.1 Vcore Voltage

Display current CPU Vcore voltage.

### 4.11.2 3.3 Volt

Display current 3.3 volt.

### 4.11.3 5.0 Volt

Display current 5 volt.

### 4.11.4 12 Volt

Display current 12 volt.

### 4.11.5 -12 Volt

Display current -12 volt.

### 4.11.6 CPU FAN Rotation

Display current CPU FAN speed on Rotations per minutes (RPM).

### 4.11.7 CPU Temperature

Display current CPU temperature.

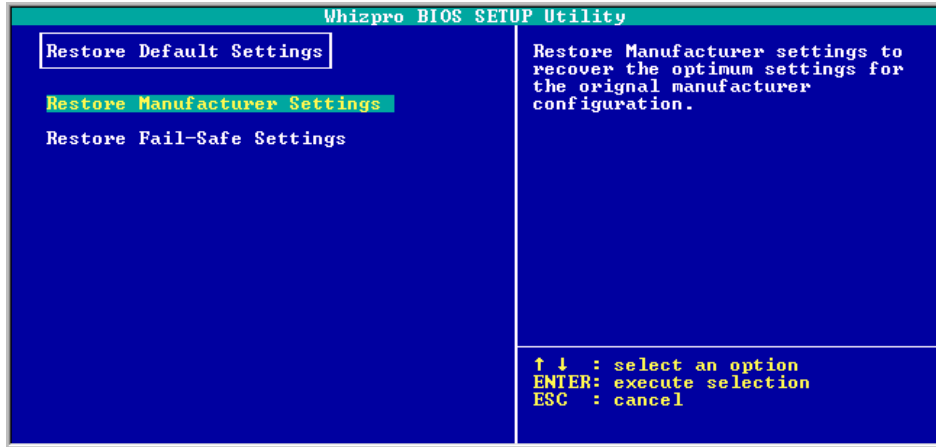
### 4.11.9 System Temperature

Display current system temperature.



# BIOS Setup

## 4.12 Restore Default Settings



### 4.12.1 Restore Manufacture Settings

Restore manufacture settings to recover the optimum settings for the original manufacture configuration.

### 4.12.2 Restore Fail-Safe Settings

Load Fail-Safe settings when you can not boot the system to operating system after change/ add/ remove hardware parts or peripherals.

## 4.13 Exit

Options are Save CMOS and Exit, Discard Change and Exit, Back to Setup.

## Troubleshooting

# 5. Troubleshooting

## 5.1 General Troubleshooting Tips

- 1) Is your system properly assembled and configured?
  - a. Make sure the BIOS setup is set to default/optimal settings. Pressing <F2> key to enter the setup, select Default or Optimal settings, then save and exit the setup.
  - b. For Windows 2000 that requires ACPI support make sure your ACPI + APM is selected at Power Management in your BIOS.
  - c. Is your board jumper set according to the manual/"Jumpers" in the website?
  - d. Is all or any of your peripherals seated properly, that includes CPU, memory, video card etc.. You may even want to try re-seating them.
  - e. Is your power supply switched on for those have an on/off switch on the back of the power supply and plugged in. Is your power supply set for proper voltage (115 or 120 for US, 220 or 230 for Europe)? For Europe, if your power supply is set at 115 or 120 and accidentally plugged with 220 or 230 volt power outlet, your system may be already damaged, in that case, consult your vendor.
  - f. Some problems and/or conflict can be resolved as simple as by flashing the BIOS with the latest version downloadable from our website.
- 2) Is there any conflict with hardware and/or drivers?
  - a. Make sure your BIOS setup is in default settings.
  - b. Make sure the drivers for the installed peripherals that you have are the latest version.
  - c. Windows may have some old lingering drivers from an old setup and/or an old motherboard you upgraded from. These older drivers may be causing problems and/or conflicts in your system. The best step is to back up your data and re-install Windows on clean drive. **WARNING:** Only experienced people should do this, as data loss may be possible.
- 3) Have you verified all of your system components for functionality?
  - a. If you have problem running your system, and unsure of which component is at fault, please do a component inspection:
    - i. CPU
    - ii. Memory
    - iii. Hard Drive
    - iv. Video Card (if the motherboard does not equip with onboard video)
    - v. Sound Card (if the motherboard does not equip with onboard sound)
    - vi. Network Card (if the motherboard does not equip with onboard network)
    - vii. Modem Card and/or AMR
    - viii. SCSI Card (if the motherboard does not equip with onboard SCSI)
    - ix. Any other peripherals
  - b. If you have extra peripherals or components, please do some swapping at a bare setup to narrow down the fault.
  - c. If the fault is the motherboard and you are certain of it and with all exhaustive

## Troubleshooting

attempts to get it to work even at bare minimum and with slowest speed setup, then it may require a repair or a replacement. You can get it repaired or replaced for free if within warranty of your reseller and/or BCM's. Check your reseller for the warranty and exchange policies. Please note that BCM DO NOT BACK reseller's warranty if it EXCEEDS BCM's current warranty policy which is one year from the date of manufacture and the board is PAST BCM's warranty period. If your reseller is out of business or no longer in service, then the BCM's warranty policy applies. Please also note that if the reseller is still in the business, BCM will IGNORE ALL RMA requests associated with this reseller. First: To determine how old your board is: Look for the label matches to this 14 digits barcode. The break-up of 14 digits barcode is: First Set – 5 digits = Part Number; Second Set – 2 digits = Year (98 = 1998, 00 = 2000, and so forth); Third Set – 2 digits = Week (45 = 45<sup>th</sup> week of that year); Forth Set – 5 digits = Serial Number. You will need to determine the age of the board yourself.

You may wish to go into discussion board to submit your statement or request and/or to read other people's input that may be of some help to you, please go to: [www.bcmcom.com](http://www.bcmcom.com) >> Support >> Discussion Board

- 4) Drivers update can be found at the following web address:

SMI (Video driver) [www.smi.com](http://www.smi.com)