

USER'S GUIDE

CB648X-BX Main Board

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FCC DECLARATION OF CONFORMITY

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions : (1) this device may not harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Trade Name/Model : DAEWOO CB648X-BX

Responsible Party : DATUS INC.

Address : 70 Las Colinas Lane
San Jose, CA 95119

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Equipment Classification : FCC Class B Subassembly - CPU Board
Type of Product : AGP/PCI/ISA ATX Motherboard
CPU/Processor(s) : Intel Pentium II
CPU Frequencies : 450MHz MMx™
Main Chipset : Intel / 440BX
Manufacturer : DAEWOO TELECOM LTD.
Address : Daewoo Bldg., 8th Fl., 14-34 Yoido-Dong
Youngdungpo-Gu 150-010, Seoul, KOREA

We hereby declare that the equipment bearing the trade name and model number specified above was tested conforming to the applicable FCC Rules under the most accurate measurement standards possible, and that all the nessary steps have been taken and are in force to accure that production units of the same equipment will continue to comply with the Commision's requirements.

Signature

Mr. Lee, Young Jin
Full Name

Seoul, KOREA Dec.28, 1998

Place & Date

Managing Director
Position



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Instruction

1.1 Overview

The CB648X-BX motherboard integrates the latest advances in processor, memory and I/O technologies into an ATX formfactor (304.8 x 190mm) that combines performance, flexibility and ease of use into high integrated capable of meeting a variety of price/performance levels.

The CB648X-BX supports not only FSB(Front Side Bus) 66MHz but also FSB 100MHz.

Pentium II 350MHz~450MHz and Pentium III 450MHz~600MHz with FSB 100MHz can be supported for the higher performance level.

The CB648X-BX motherboard supports Intel Pentium II/III processor based on the Intel 440BX AGPset (82443BX and 82371EB). Four standard 168-pin unbuffered DIMM sockets with memory size up to 512MB support synchronous DRAM modules.

The CB648X-BX has Intel 82371EB PCI-to-ISA/IDE Xcelerator(PIIX4E) which provides an integrated Bus Master IDE controller and Ultra DMA/33 with high performance IDE interfaces for up to four devices.

In addition, the CB648X-BX comes with an AGP (Accelerated Graphics Port) bus slot which runs with 66MHz so that faster than the current 33MHz PCI bus. The AGP bus provides a direct connection between graphics subsystem and system memory.

The CB648X-BX provides two USB(Universal Serial Bus) ports to fit today and tomorrow's requirements.

The CB648X-BX integrated Creative AudioPCI 64V which has three jacks (Line-out, Line-in and Mic-in), MIDI/Game port and internal connectors.(option)

Caution :

There is the danger of an explosion if the battery is incorrectly replaced. Replace the battery with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the battery manufacturer's instructions.

1.2 Main Features

■ Processor

- Slot 1 connector
- Supports Intel Pentium II - 350/400/450MHz processor with FSB 100MHz
- Supports Intel Pentium III - 450/500/550/600MHz Processor with FSB 100MHz
- Supports Intel Pentium II - 233/266/300/333MHz processor with FSB 66MHz
- Supports Intel Celeron processor

■ Main Chipset

- Intel's 82443BX PCI/AGP Controller
- Intel's 82371EB PCI-to-ISA/IDE Xcelerator

■ BIOS

- Award System BIOS
 - 2 Mbits Flash ROM
- Supports PnP, APM, ACPI, DMI & CD-ROM booting

■ Main Memory

- Four 168-pin DIMM Sockets
- Supports up to 512MB for synchronous DRAM and 1GB for registered DRAM
 - 3.3V EDO(Extended Data Out) memory
 - Unbuffered SDRAM(Synchronous DRAM) memory

■ I/O Features

- ITE, IT8671F Super I/O Controller
- Standard I/O Functions
 - One Floppy Disk Drive Connector
 - One SPP/EPP/ECP Compatible Parallel Port
 - Two 16C550 UART Compatible Serial Ports
 - One IrDA Compatible Port (Internal)
- Integrated Keyboard Controller into IT8671F

■ Expansion SLOTS

- One 32-bit AGP Slot
 - AGP Specification revision 2.0
- Four 32-bit PCI Slots
 - PCI Specification version 2.2 compliant
- Two 16-bit ISA Slots (1 shared)

■ Input/Output Ports

- PS/2 Keyboard and PS/2 Mouse
 - Integrated into IT8671F Super I/O Controller
 - Provide Double Height PS/2 Style Keyboard and Mouse Connector
- Serial/Parallel Ports
 - One multi-mode parallel port with chip-protect circuitry supports standard, EPP and ECP modes (25-pin D-sub)
 - Two high speed 16C550 UART compatible buffer serial ports (9-pin D-sub)
- USB Ports
 - Provide two USB ports
 - Fully supports UHCI(Universal Host Controller Interface) and uses UHCI compatible software drivers.
- IrDA
 - Supports an optional Infrared port module for wireless interface(5-pin Header)

■ Enhanced IDE

- Provides two independent bus mastering PCI IDE interfaces (40-pin Boxed Headers)
- Supports PIO mode 4 and Ultra DMA /33
- The BIOS detects IDE devices, transfer rates and translation modes automatically

■ FDD

- Provides One 34-pin Boxed Header
- Supports 360K/720K/1.2M/1.44M/2.88M or 3 mode floppy drives.

■ Audio Subsystem(Optional)

- Creative AudioPCI 64V System
 - 64 voice wavetable synthesis
 - DOS Game Compatibility
 - 3 Stereo inputs and 3 mono inputs can be mixed into the output stream.
 - Direct I/O space access of the control registers.
 - External I2S input
- Provide Line-Out, Line-In and Microphone-In Jacks
- One MIDI/Game Port

■ Power-On Function

- Power Button
- Keyboard Password Power On
- Keyboard Hotkey Power On
- PC98 Keyboard Power On

■ Hardware Monitoring

- Onboard LM78 hardware monitor
 - Supports two FAN speed monitoring and Alarm, Temperature monitoring and Alert, Voltage monitoring and Alert
 - Optional Intel(R) LANDesk Client Manager (LDCM) software.

■ Type

- 304.8mm(W) x 190mm(D), ATX Form Factor

Chapter 2.

Installation

This Chapter provides information on how to install and configure the CB648X-BX motherboard.

2.1 Check List

The standard packing of the CB648X-BX should include :

- ☒ CB648X-BX Motherboard
- ☒ 1 IDE Cable
- ☒ 1 Floppy Cable
- ☒ CB648X-BX User's Manual
- ☒ Universal Retention Mechanism Kit
- ☒ Device Driver CD

2.2 Installation Steps

Installing of the CB648X-BX motherboard depends on the type of case what you use.

The CB648X-BX motherboard is designed for the ATX form factor and must be installed in an ATX case(chassis).

Before start your computer, you should complete the following steps:

1. Set Jumpers
2. Install DRAM Modules
3. Install the CPU
4. Connect Cables

2.3 Set Jumpers

Several hardware settings are made through the use of jumper caps to connect jumper pins (JP) on the motherboard. Refer to motherboard layout on following page. The jumper settings will be described numerically such as [1-2], [2-3] for connect pins 1&2, connect pins 2&3 respectively, or [ON(Short)], [OFF(Open)]

Warning!

Computer motherboards and Add-on cards contain very delicate IC chips.

To protect them against damage from electricity, you should follow some precaution whenever you work on your computer.

1. Unplug your computer when working on the inside.
2. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
3. Hold components by the edges and try not to touch such the IC chips, leads or connectors, or other components.
4. Place components on a grounded anti-static pad or on the bag that came with the component whenever the components are separated from the system.

2.4 Mother Board Diagram

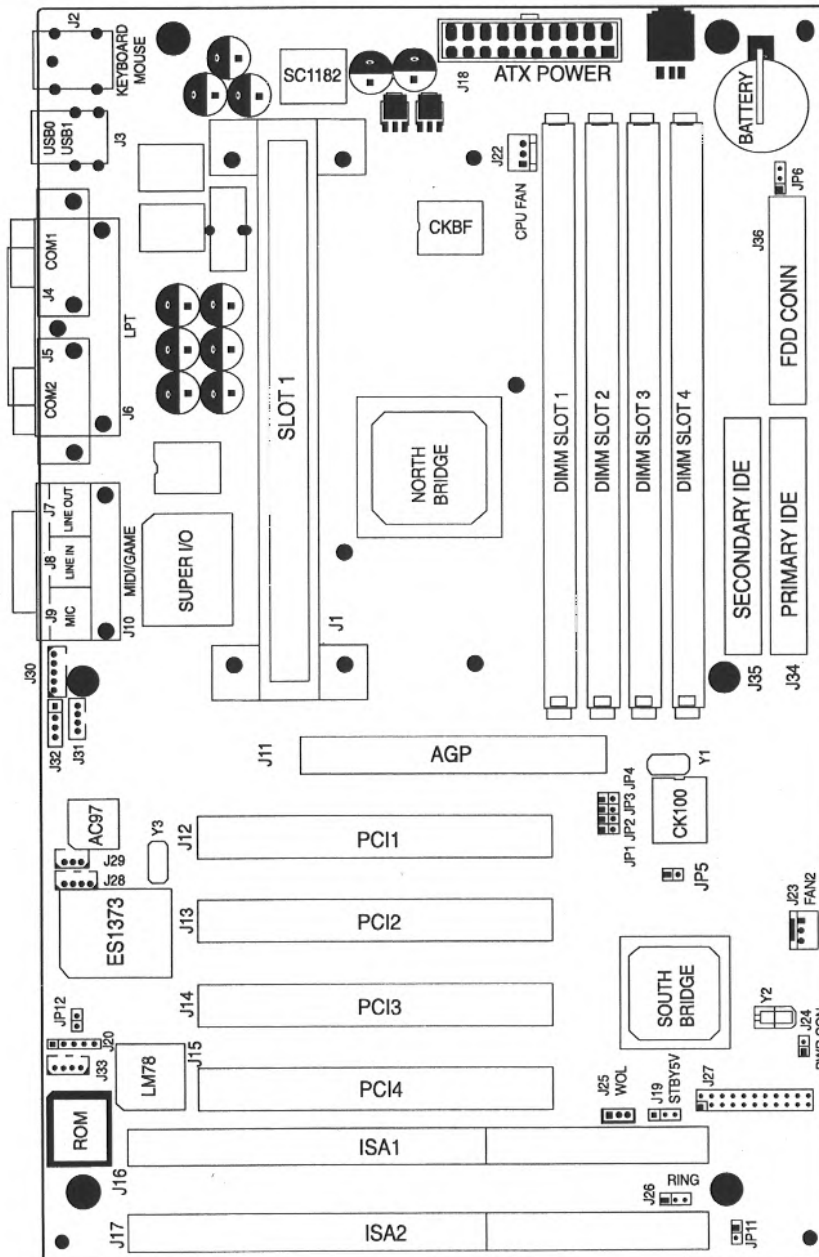


Fig. 2.1 System Board Layout Diagram

2.5 Connectors and Jumpers

■ Connectors Description

• J1	SLOT1 (Pentium-II/III CPU Slot)	• J19	Standby 5V(5VSB) Supply Connector
• J2	PS/2 Mouse and Keyboard Connector	• J20	IrDA Connector
• J3	USB 0/1 Connector	• J22	CPU Fan Connector
• J4	COM1 Port Connector	• J23	Front Fan Connector
• J5	COM2 Port Connector	• J24	Power Switch Connector
• J6	Parallel Port Connector	• J25	Wake-On LAN Connector
• J7	Line-Out Jack	• J26	Wake-On RING Connector
• J8	Line-In Jack	• J27	Front Panel Connector
• J9	Mic-In Jack	• J28	Telephony(TAD) Connector
• J10	MIDI/Game Port	• J29	Aux-In Conn. (Option)
• J11	AGP Connector	• J30	Front Panel MIC/Line-Out Conn.
• J12	PCI 1 Connector	• J31	CD-Audio Connector (Panasonic Type)
• J13	PCI 2 Connector	• J32	CD-Audio Connector (ATAPI Type)
• J14	PCI 3 Connector	• J33	MPEG-In Conn. (Option)
• J15	PCI 4 Connector	• J34	Primary IDE Connector
• J16	ISA Connector	• J35	Secondary IDE Connector
• J17	ISA Connector	• J36	FDD Connector
• J18	ATX Power Connector		

Table 2.1 Description of the Motherboard Connectors

■ Jumpers Description

• CPU Clock Setting

To install the CPU at its correct frequency, please refer the following table to setup the CPU Clock. But if you have Jumperless feature motherboard, following table does not need.

◆ CPU CLOCK SETTINGS

CPU SPEED	BUS CLOCK	RATIO	JP1	JP2	JP3	JP4	JP5
233 MHz	66 MHz	3.5X	ON	OFF	OFF	ON	ON
266 MHz	66 MHz	4.0X	ON	ON	ON	OFF	ON
300 MHz	66 MHz	4.5X	ON	OFF	ON	OFF	ON
333 MHz	66 MHz	5.0X	ON	ON	OFF	OFF	ON
366 MHz	66 MHz	5.5X	ON	OFF	OFF	OFF	ON
400 MHz	66 MHz	6.0X	OFF	ON	ON	ON	ON
433 MHz	66 MHz	6.5X	OFF	OFF	ON	ON	ON
466 MHz	66 MHz	7.0X	OFF	ON	OFF	ON	ON
350 MHz	100 MHz	3.5X	ON	OFF	OFF	ON	OFF
400 MHz	100 MHz	4.0X	ON	ON	ON	OFF	OFF
450 MHz	100 MHz	4.5X	ON	OFF	ON	OFF	OFF
500 MHz	100 MHz	5.0X	ON	ON	OFF	OFF	OFF
550 MHz	100 MHz	5.5X	ON	OFF	OFF	OFF	OFF
600 MHz	100 MHz	6.0X	OFF	ON	ON	ON	OFF

Table 2.2 CPU Clock Setting

• CPU FSB Setting

CPU Clock	JP5
100MHz	OFF
66MHz	ON

Table 2.3 CPU FSB Setting

• Clear CMOS

The CMOS RAM is powered by the onboard coin-cell battery or power supply.

To clear the CMOS data, first of all you should turn off your computer and unplug the Power cord from the system. Short pins 2&3 for 2~5 seconds and place jumper back to pins 1&2 position.

Clear CMOS	JP6
NORMAL	1-2
CLEAR	2-3

Table 2.4 Clear CMOS Jumper

- Internal SOUND Setting

This jumper is used for Enable or Disable the onboard Audio chip.

Int. SOUND	JP12
Enable	ON
Disable	OFF

Table 2.5 Internal Sound Setting

- Other Jumper

- JP11 : Power-Up when Plug-In Power Cord to the System
(Use Factory Only)

2.6 Install DRAM Modules

The CB648X-BX motherboard has four 3.3V unbuffered 64/72-bit, 168-pin DIMM sockets for up to 512MB of SDRAM memory, and up to 1GB of Registered DRAM memory.

■ Adding Memory

If you use FSB 100MHz CPU(such as Pentium II-350/400/450MHz CPUs and Pentium III-450/500/550/600MHz CPUs), use PC100 SDRAMs and FSB 66MHz CPU(such as Pentium II-233/266/300/333MHz CPUs and Intel Celeron CPUs), you can use either Normal SDRAMs or PC100 SDRAMs.

■ Memory Configuration

DIMM				TOTAL
DIMM1	DIMM2	DIMM3	DIMM4	
8MB	8MB	8MB	8MB	DIMM1+DIMM2+DIMM3+DIMM4 The combination of memory size is 8MB to 512MB. All DIMM sockets can use SDRAM memory like left table.
16MB	16MB	16MB	16MB	
32MB	32MB	32MB	32MB	
64MB	64MB	64MB	64MB	
128MB	128MB	128MB	128MB	

Table 2.6 Memory Configurations

Note :

In case of using the Pentium II 350/400/450MHz CPU and Pentium III 450~600MHz with FSB 100MHz, please use the DIMM satisfied PC100 specifications.

The combination of incorrect DIMM and CPU may cause the system malfunction, or system stability problems.

■ Installing and removing DIMMs

To Install the DIMMs, locate the memory banks on the motherboard and perform the following steps:

1. Release tab which you want to install the DIMM
2. Hold the DIMM so that notched edge is aligned with the notch on the DIMM socket.
3. Insert the DIMM at a 90 degree angle and gently push the DIMM straight down until it locks by the tabs.

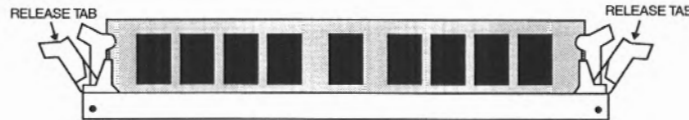


Fig. 2.2 Installing a SDRAM Module

To Remove the DIMMs, follow the steps below:

1. Press the both the release tabs away from the socket.
2. With the DIMM free from the release tabs, lift the module up and place in the anti-static bag or clean place.

2.7 Install the CPU

The CB648X-BX is designed to support a single Pentium II/III processor family. The Pentium II/III processor comes installed in a Single Edge Contact Cartridge (SECC) that connects into "Slot 1" on the motherboard.

A Universal Retention Mechanism (URM) is supplied to anchor the processor to the motherboard. Please be sure attach the URM kit before installing the CPU.

■ Install the URM

Before you start to install, verify that your URM kit contains the following items:

- ☐ Bodies (2 pieces of black plastic modules)
- ☐ Pins (4 pieces)

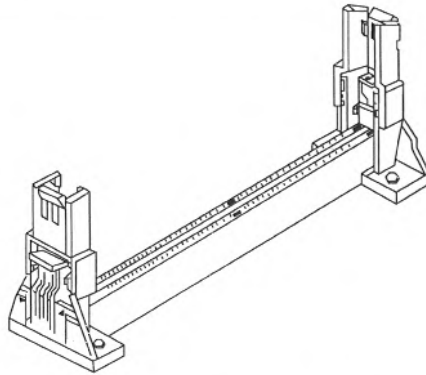
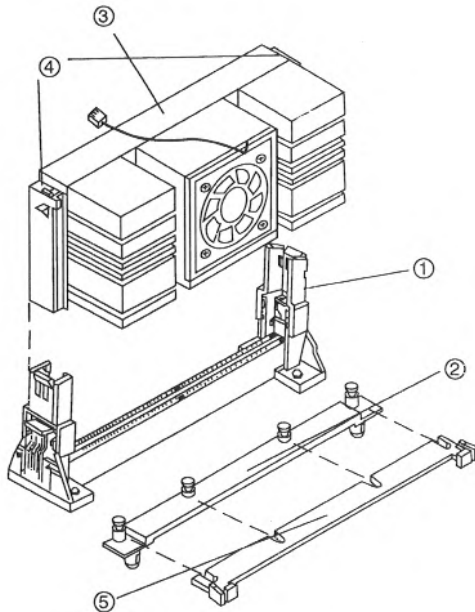


Fig. 2.3 Installing the URM kit

To install the URM kit, follow the steps below:

1. Locate the four Retention Base holes (near each end of the Slot 1).
Place the URM body to each end of the Slot 1 and meet the holes.
2. Push down the Pins with finger or plastic fastener installation tool.

■ Install the CPU



CPU Installation Overview

1. Mount the URM for the CPU.
2. Mount the (optional) heatsink support base onto the system board.
3. Slide the CPU into the URM.
4. Lock the CPU into the URM using the tabs.
5. Slide in the Heatsink Top Bar, then insert the pins to lock it in place.

Fig. 2.4 Installing the Pentium II CPU

■ Install the Boxed CPU

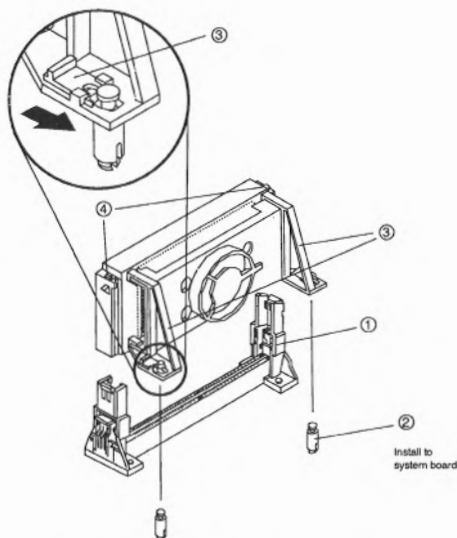


Fig. 2.5 Installing the Boxed CPU

2.8 Connect Cables

■ CPU Fan Connector (J22)

If you are installing Pentium-II/III processor with fan, you can use this header to connect the CPU's fan cable (3-pin or 2-pin).

Pin	Signal Name
1	Control(Ground)
2	+12V
3	Sense

■ Primary / Secondary IDE Connectors (J34 / J35)

These connectors support for the provided 40-pin ribbon cable. After connecting the single end to the motherboard, connect the two plugs at the other end of your hard disk drive(s).

■ FDD Connector (J36)

This connector supports for the provided 34-pin ribbon cable. After connecting the single end to the motherboard, connect the two plugs on the other end of the floppy drive(s).

■ IR Connector (J20)

CB648X-BX provides one connector which can support IrDA (InfraRed Data Association) receiver module. It gives to users IR wireless data exchange directly from mobile computers, printers and PDAs, etc.

Pin	Signal Name
1	+5V
2	IR_RXH
3	IR_RXL
4	Ground
5	IR_TX

■ Wake On LAN (WOL) Connector (J25)

This connector supports Wake On LAN function. If you use Wake on LAN function, connect 3-pin cable between this connector and your LAN Card.

Pin	Signal Name
1	+5V Stby (5VSB)
2	Ground
3	WOL

■ Internal Modem Ring Connector (J26)

This connector supports internal modem ring wake-up function.

If you use this function, connect 3-pin cable between this connector and your modem card.

Pin	Signal Name
1	+5V Stby (5VSB)
2	Ground
3	RING#

■ Secondary Fan Connector (J23)

This connector supports additional system fan such as Front Fan.

Pin	Signal Name
1	Control (Ground)
2	+12V
3	Sense

■ Front Panel Connector (J27)

This connector provides the signals of the Power LED, HDD LED, Reset Switch, Suspend/Resume Switch, Internal Speaker and Key Lock.

Pin	Signal Name	Pin	Signal Name
1	PWR_LED 2	12	PWR_LED 1
2	Ground	13	NC
3	Sleep LED 2	14	Ground for PWR_LED 1
4	Suspend/Resume Switch	15	KBLOCK#
5	Ground for S/R Switch	16	Ground for KBLOCK
6	Sleep LED 1	17	NC
7	Ground for Sleep LED 1	18	NC
8	HD_PWR	19	VCC for Speaker
9	HD Active#	20	Ground
10	Ground for HW Reset	21	Ground
11	HW Reset#	22	Speaker In

See the following figure.

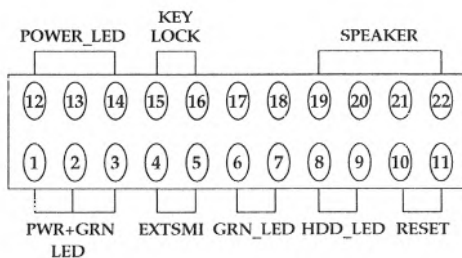


Fig. 2.6 Features of Front Panel Connector

■ Power Switch Connector (J24)

This connector is used to turn the system on. Connect the power switch from the front panel.

Pin	Signal Name
1	PWRBT#
2	Ground

Note :

In order to prevent the system from shutting down by mistake, the CB648X-BX motherboard provides one optional item of the BIOS setup (refer to the Power Management Setup).

This item is called Soft-Off by PWR-BTTN. The function is as follows:

Delay 4 sec:

1. Pushing the button one time will change the system from Normal operation mode to Suspend mode. Pushing the button again will wake up the system.
2. Pushing the power button more than 4 seconds will shut down the system.

Instant-Off:

Pushing the power button one time will turn the system on, pushing again will turn the system off.

■ ATX Power Supply Connector (J18)

This connector connects to an ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole-size. Find the proper orientation and push down firmly but gently making sure that the pins aligned.

Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PSON# (Power supply remote on/off control)
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWRGD (Power Good)	18	+5V
9	+5VSB (Standby for RTC)	19	+5V
10	+12V	20	+5V

■ +5V Standby Supply Connector (J19)

This connector can be used to supply power (+5V Standby) to an add-on card which can work while the system power is out.

Pin	Signal Name
1	NC
2	Ground
3	+5VSB

2.9 Connect External I/Os

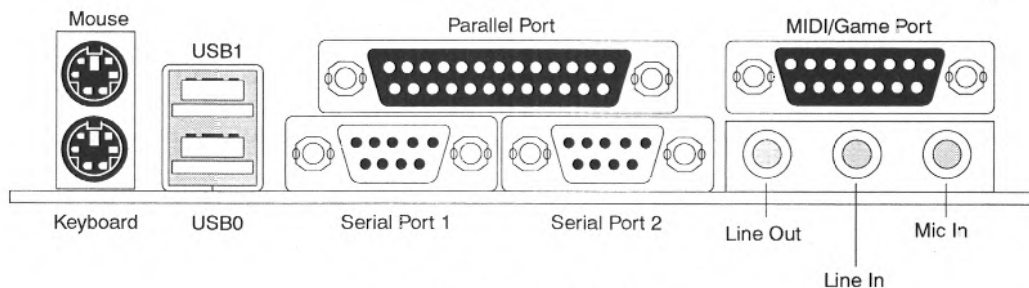


Fig. 2.7 Layout of Back Panels

■ PS/2 Keyboard and Mouse Connector (J2)

The CB648X-BX provides one PS/2 keyboard and one PS/2 mouse connector. Refer to the Fig. 2.7 for the location of keyboard(lower side) and mouse(upper side) cables and install to keyboard and mouse connectors.

Pin	Signal Name
1	Data
2	NC
3	Ground
4	+5V (fused)
5	Clock
6	NC

■ Universal Serial Bus (USB) Connector (J3)

The CB648X-BX provides double(2) stacked USB Ports.

The USB is a new external bus standard that supports data transfer rates of 12 Mbps (12 million bits per second). A single USB port can be used to connect up to 127 peripheral devices, such as mice, modems, and keyboards. USB also supports Plug-and-Play installation and hot plugging.

Pin	Signal Name
1	Power
2	USBP0# [USBP1#]
3	USBP0 [USBP1]
4	Ground

■ Serial Port 1 & 2 (J4 & J5)

The CB648X-BX provides two sets of high speed serial port. Each serial port is 16C550 UART compatible.

Pin	Signal Name	Pin	Signal Name
1	DCD#	6	DSR#
2	Serial In	7	RTS#
3	Serial Out	8	CTS#
4	DTR#	9	RI#
5	Ground		

■ Parallel Port (J6)

The CB648X-BX provides one set of high speed parallel port. The parallel port supports bi-direction / EPP / ECP modes.

Pin	Signal Name	Pin	Signal Name
1	Strobe#	14	Auto Feed#
2	Data bit 0	15	Fault#
3	Data bit 1	16	INIT#
4	Data bit 2	17	SLCT IN#
5	Data bit 3	18	Ground
6	Data bit 4	19	Ground
7	Data bit 5	20	Ground
8	Data bit 6	21	Ground
9	Data bit 7	22	Ground
10	ACK#	23	Ground
11	Busy	24	Ground
12	Error	25	Ground
13	Select		

■ Audio Jacks (J7/J8/J9/J10)

The CB648X-BX motherboard contains Creative AudioPCI 64V. It supports Line-out(J7), Line-in(J8), MIC-in(J9) jacks and MIDI/Game port(J10).

In the Audio Subsystem, describes detail about these jacks.

2.10 Audio Subsystem(Optional)

2.10.1 Introduction

This document is intended to provide a complete technical description of the features and specifications of the onboard Creative AudioPCI 64V. The Creative AudioPCI 64V is the first AudioPCI using Creative PCI audio technology. The CB648X-BX uses Creative AudioPCI 64V chipset that supports AC97 CODEC. While offering the next generation of audio performance in a PC, it maintains the full legacy compatibility without adopting the old ISA bus solutions.

The Creative AudioPCI 64V is a PC98 compliant interface incorporating the Creative Spatial 3D Positional Audio technology from the Creative which immerses users in 3D audio space. In addition, Creative 3D Stereo Enhancement technology dramatically improves sound clarity, spatial realism and sound effects, through the minimization of crosstalk which will dynamically adjust for monophonic or stereophonic input without user intervention.

The Creative AudioPCI 64V is fully Plug and Play compliant for ease of use in either DOS, Windows 3.1, Windows 95/98 or Windows NT applications. It provides General MIDI compatibility at an attractive price point. The Creative AudioPCI 64V is a professional audio solution for today's the newest generation of game, music and entertainment software which supports Microsoft's standard DLS technology. The Creative AudioPCI 64V also adds support for General Sound drum kit samples and cutting-edge positional 3D audio for true spatial localization of sounds and complies with the Roland MT-32 standard for wave table audio. The Creative AudioPCI 64V model is fully compliant with Multimedia PC Level 3 specifications and with Microsoft Multimedia extensions for Windows.

2.10.2 Creative AudioPCI 64V Features

■ Digitized Sounds

- Sound Blaster PCI Compatible.
- AC97 CODEC supporting stereo sampling 48KHz (Fixed).
- Recording source: microphone, stereo line-in, CD-audio, FM music or multiple source recording.
- 32 bit bus transfers PCI 2.2 compliant
- Advanced 16-bit software-based real time audio compression/decompression system with the following standards:
 - CCITT A-law (16:8)
 - CCITT m-law (16:8)
- Up to 64 simultaneous voice polyphony.

■ Synthesized Music

- SoundScape WaveTable Synthesizer

■ Communications Interface

- Telephone Answering Device (TAD) interface
 - Telephone Answering Device for modem connection allows a single microphone and stereo speaker set to be used for both voice modem and sound card audio applications (message recording and playback, speakerphone, etc.)
- I2S In input (Option)
 - Allows for low cost video conferencing and broadcast TV playback.
 - Audio data is transferred using serial I2S format.

■ Stereo Digital/ Analog Mixer

- Output mixing of all audio sources: Digitized sounds, synthesized music, line-in, CD-audio, PC speaker, microphone.
- Input mixing sources: synthesized music, microphone, line-in, CD-audio.

- Multiple source recording and L/R channels may be swapped or mixed.
- 32 level volume control on Digitized sound, synthesized music, microphone, CD-audio, line-in, master volume. 4-level volume control of PC speaker.
- 15 level tone control for bass and treble (L & R).

■ MIDI Interface

- MPU-401 UART emulation.

■ Advanced Wave Table Synthesis

- Creative Advanced Wave Synth Sound Engine
- 128 General MIDI WaveTable instruments.
- 61 drum programs
- 128 MT-32 instruments
- Multi-algorithm Reverb and Chorus.
- 10 drum kits In 4 Meg set (GS)

■ Sampling Subsystem

- Host memory support
- Virtually unlimited variations of sound
- Download additional sounds for use in your music from a library of over 4000 sounds.

■ 3D Stereo Enhancement

- Improves sound clarity, spatial realism and sound effects, through the minimization of crosstalk
- Dynamically adjust for monophonic or stereophonic input without user intervention

■ Joystick Port

- Allows standard PC joystick port.

■ Inputs and Outputs

- Line Out
- Line In
- MIC In.
- CD In (supports two types of connector)
- I2S In (Optional)
- Aux In (Optional)
- TAD
- Front Panel Control Interface

2.10.3 Connection and Jumpers

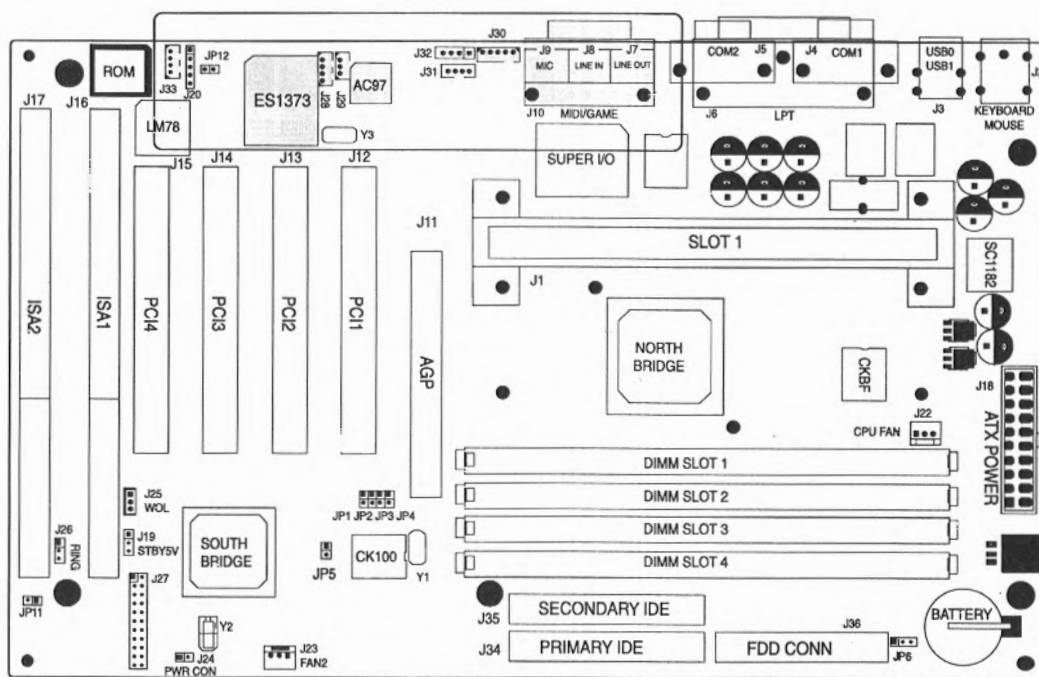


Fig. 2.8 Layout of Onboard AudioPCI

The board consists of the following connectors that support the connection of internal devices or hardware configuration changes:

- LINE-OUT Jack (J7)

This is line-out for a external speaker or an amplifier.

Pin	Signal Name
Sleeve	Ground
Tip	Audio Left Out
Ring	Audio Right Out

- LINE-IN Jack (J8)

This line-in jack is for input from external sources, such as cassette recorder, DAT or CD-Player. This is for mixing with the other sources and so on.

Pin	Signal Name
Sleeve	Ground
Tip	Audio Left In
Ring	Audio Right In

- MIC-IN Jack (J9)

Microphone input port. You can connect Dynamic or Condensor mic.

Pin	Signal Name
Sleeve	Ground
Tip	Mono In
Ring	(Electret Bias Voltage)

- MIDI/GAME Port (J10)

Connect MIDI Kit or Joystick.

Pin	Signal Name	Pin	Signal Name
1	Power	9	Power
2	Joystick button 0	10	Joystick button 2
3	Joystick X1	11	Joystick X2
4	Ground	12	MIDI out
5	Ground	13	Joystick Y2
6	Joystick Y1	14	Joystick button 3
7	Joystick button 1	15	MIDI in
8	Power		

• Telephony(TAD) Pin Assignment (J28)

Pin	Signal Name
1	MIC input (Phone)
2	Ground
3	Ground
4	Mono output

• Aux-In (Line-In) Audio Pin Assignment (J29) : Factory Option

Pin	Signal Name
1	Left channel audio in
2	Ground
3	Right channel audio in

• Front Panel Audio Pin Assignment (J30)

Pin	Signal Name
1	Left, Line-Out
2	Ground
3	Right, Line-Out
4	Ground
5	MIC input

• CD-ROM (Panasonic) Audio Pin Assignment (J31)

Pin	Signal Name
1	Ground
2	CD Audio left channel
3	Ground
4	CD Audio right channel

- ATAPI Audio Pin Assignment (J32)

Pin	Signal Name
1	CD Audio left channel
2	Ground
3	Ground
4	CD Audio right channel

- MPEG-IN (I2S) Pin Assignment (J33) : Factory Option

Pin	Signal Name
1	I2S_LRCLK
2	I2S_BCLK
3	I2S_DATA
4	Ground

Remark:

1. User can disable Creative AudioPCI 64V using JP12 to change a new sound card or something.

- Internal Sound Enable/Disable Jumper(JP12)

Int. Sound	JP12
Enable	ON
Disable	OFF

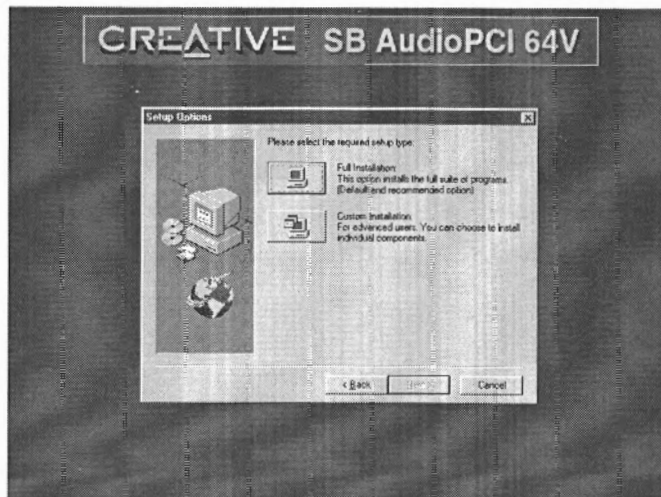
2.10.4 Audio Subsystem Install

■ Installing Driver and Applications in Windows 9x & Windows NT.

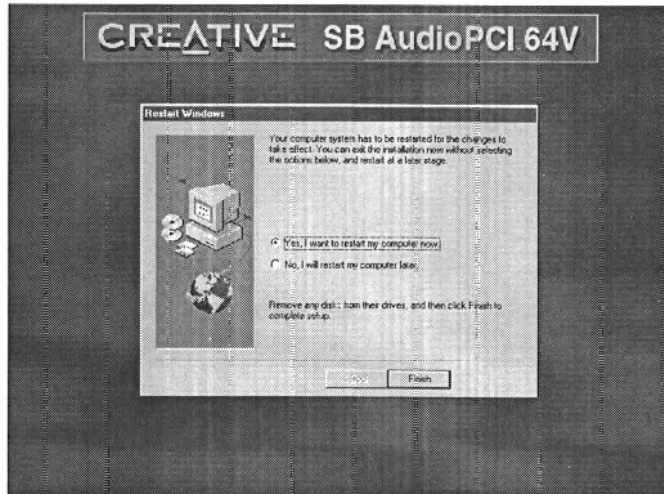
1. Insert the driver CD and run 'Ctrun. exe'.
(that is, D:\SOUND\CTRUN\Ctrun. exe).



2. Click the 'Install' button.
3. Then click the 'Next' or 'Yes' button continuously until 'Setup Options' window is appeared.
4. When 'Setup Options' window appeared, click the 'Full Installation' button.



5. Click the next button.
6. When 'Restart Windows' window appeared, click finish button.



Then your system will restart and complete the installation.

■ Setup Mixer

AudioPCI 64V includes its own mixer. To start the mixer, double click the icon on task bar. This icon is automatically added by install wizard.

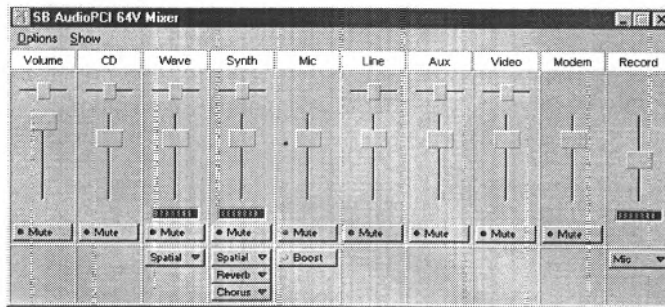


Fig 2.9 AudioPCI 64V Mixer

● Real Time Sound Effect

1) Reverb

Reverb effect realizes the sound like playing in the huge concert hall or gymnasium. You can apply this effect with synthesizer device.

2) Chorus

Chorus effect makes better quality of synthesizer sound.

Chorus is the effect that use carefully, and generally not recommend using its effect continuous. You can apply this effect with synthesizer device.

3) Spatial

This effect provides the 3 dimensional surround sound effect, and applies both wave and synthesizer devices.

4) Record

You can find the button, which you can select audio source, at the volume control. You can record the selected source.

5) Mic

AudioPCI 64V mixer has Boost and Mute check box below the Mic tab. When Boost is selected, Mic is added 20 dB amplification.

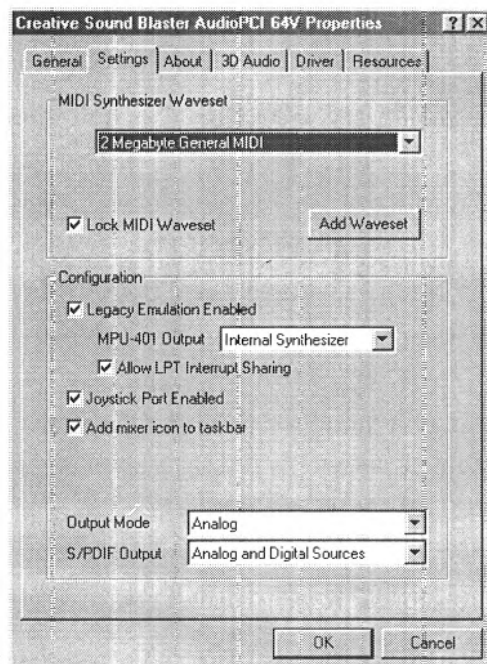
If Mic input is low, this item must be checked. But using this option may make noise, so you'd better not using this option.

When Mute check box is not selected, you can hear mic sound through the speaker. To remove or reduce feedback symptom in full duplex supporting internet phone application, this option must be selected.

■ Setup in the Control Panel

1. Click the Start button, point to Settings, and then click Control Panel.
2. In the control panel window, double click the system icon, and then click 'Device Manager' tab.
3. Double click 'Sound, Video & Game Controllers', take Sound Blaster AudioPCI 64V, and then click properties button.

● Settings Tab



1) Lock Midi Waveset

Using this option, all setting banks loading to memory when play midi data. If not use this option, instrument data required for midi data loading selectably.

To insure working with safety, you must use this option.

2) Legacy Emulation Enabled

This option provides compatibility to DOS application.

If not use this option, you can use other ISA sound card at same time.

If you check Allow LPT Interrupt Sharing option, IRQ shared with printer port. (Legacy IRQ automatically set at 7)

3) Joystic Port Enabled

This option makes the joystic port ON/OFF state.

It is very available to use other sound card or joystic port.

4) Add Mixer Icon to Task Bar

This option adds its own mixer to task bar.

5) Output Mode

Default setting is Analog. If you set Digital or Autosense, the system may malfunction.

6) S/PDIF

S/PDIF can Support Digital source, but CB648X-BX mother board does not support Digital source.



You want to play a game for DOS mode, please restart system on windows 9x which is Start → SHUT DOWN → "Restart in MS-DOS Mode", then click 「OK」 button.

2.10.5 Creative AudioPCI 64V Specifications

■ Audio Performance

Frequency Response	20 Hz to 20 KHz (Source: Line in)
(+0/-3dB)	20 Hz to 20 KHz (Source: Mic)
Line-In Voltage Range	0 to 1 Vrms
Line-Out voltage at	0 to 2 Vrms (10Kohms load)
Reference signal 1KHz (measured with wide-band filter 22Hz-22KHz):	
Signal to Noise Ratio	> 90 dB A-wtg (Source: Line-in)
THD+ N	0.005% (Source: Line-in)
	70 dB A-wtg (Source: 35dBu Mic-in)
	At output of 1 Vrms:
Signal to Noise Ratio	90 dB A-wtg (Source: Line-in)
THD + N	0.005% (Source: Line in)
Microphone Input Range	0 to 40 mVrms
Line-In Impedance	20 Kohms
CD Audio-In Impedance	20 Kohms
CD Audio-In Input Range	0 to 2 Vrms
Power Consumption (estimated)	
+5 Volt Current Consumption	20 mA (Typ)
+12 Volt Current Consumption	110 mA (Typ)
-12 Volt Current Consumption	35 mA (Typ)
Vcc Volt Current Consumption	560 mA (Typ)

■ I/O mapping - managed by PnP Resources EEPROM

(Default settings in Bold Face)

Audio	220H - 22FH, 240H - 24FH, 260H - 26FH, 280H - 28FH
Joystick:	200H - 207H, 208 - 20FH
Music Synthesis:	388H - 38BH , 38CH - 38FH, 390H - 393H, 394H - 397H
MPU-401 UART	300H - 301H, 310H - 311H, 320H - 321H, 330H - 331H
MIDI (X = Base Address)	6X0H - 6X3H, AX0H - AX3H, EX0H - EX3H

■ Temperature range

Operation	10 to 50 degree C
Non-operating	-40 to 125 degree C

Chapter 3.

BIOS Setup

This chapter provides information on how the SETUP program allows you to configure the function and device of your computer and how to configure each item on the SETUP menus.

Before the computer can operate, it must know what devices are installed in it. These devices include floppy and fixed-disk drives, video, and so forth. Taken together, the presence or absence of these devices comprise the system configuration. Use the SETUP program to verify or change the system configuration.

Ordinarily, there should be no need to run SETUP the first time you start your system, since your computer comes from the factory ready to use. You must, however, run the SETUP program each time you make any changes to your computer's configuration, such as adding drives, and so forth. you can also run it to verify the system configuration.

3.1 Starting SETUP

The SETUP program is permanently stored in a "Flash EEPROM" and not contained on disk.

The SETUP program can be accessed:

- When powering up the system and When resetting the system
- When the system detects an error and prompts for the SETUP program

1. Accessing SETUP When Powering Up the System

To access the SETUP program when powering up the system, turn the computer power on. The system BIOS will first test the system components and then display a message similar to the following:

Press <DEL> to enter setup

Before the above message disappears, press the  key to activate the SETUP program.

2. Accessing SETUP When Resetting the System

Reset the system by either pressing the reset button or the    key combination. The system will display the following message:

Press <DEL> to enter setup

Before the above message disappears, press  key to activate the SETUP program.

3. Accessing SETUP When the System Prompts for the SETUP Program

If the system BIOS detects a software or hardware error during the self-testing process, the system displays the following message:

Press <F1> to continue, <DEL> to Enter SETUP

Press  to continue the boot sequence or  to run SETUP.

4. Accessing SETUP Menus

SETUP provides access to primary menus from which you modify the system configuration. SETUP always displays the Main Menu when you start the program.

ROM PCI/ISA BIOS (CB648XBX) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type ...	

Figure 3-1. Setup Main Menu Screen

- **STANDARD CMOS SETUP** - This option allows users to check or modify the basic system configuration.
- **BIOS FEATURES SETUP** - This option is used to set the various system options for the users, including the virus warning, external cache, security option, boot operations, and video BIOS shadow, etc...
- **CHIPSET FEATURES SETUP** - This option allows users to control the features of chipset.

- **POWER MANAGEMENT SETUP** - This option allows users to set the power saving status for reducing the power consumption.
- **PNP/PCI CONFIGURATION** - This option is used to set the various system function and internal addresses of the PCI devices. Allows users to configure system IRQ and DMA to PCI/ISA PnP or Legacy ISA.
- **LOAD BIOS DEFAULTS** - User can load the BIOS default values to boot the system safely.
- **LOAD SETUP DEFAULTS** - This option supports the better performance for the system.
- **INTEGRATED PERIPHERALS** - This option allows users to decide how many kinds peripherals need to change their I/O type, mode and used or not.
This option also allows users to set the various system function and onboard PCI IDE controller.
- **SUPERVISOR PASSWORD** - Password is required when entering and changing all of the SETUP option or booting your system. Users can change the current password stored in the CMOS by accessing this option.
- **USER PASSWORD** - Password is required when booting your system and entering to change only the USER PASSWORD. Users can change the current password stored in the CMOS by accessing the option.
- **IDE HDD AUTO DETECTION** - This option can automatically detect the hard disk drive type(s) including the number of cylinders and heads, write precompensation time, read/write head landing zone, and number of sectors per track.

■ **SAVE & EXIT SETUP** - After saving the changes what you have made in the SETUP program, exit and reboot the system.

■ **EXIT WITHOUT SAVING** - Abandon all previous settings, then exit and reboot the system.

To choose an menu item from the SETUP main menu, move the cursor by using the **↑**, **↓**, **→**, **←** Arrow keys and press **Enter**. To modify the setting of an option, simply press the **Page Up** or **+** and the **Page Down** or **-** keys. Press the **F2** key when changing the color setting, the **F1** for a context sensitive help function, and the **Esc** key when quitting SETUP.

3.2 Standard CMOS Setup

ROM PCI/ISA BIOS (CB648XBX)								
STANDARD CMOS SETUP								
AWARD SOFTWARE, INC.								
Date (mm:dd:yy)		: Mon, Mar 29 1999						
Time (hh:mm:ss)		: 20 : 14 : 43						
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: Auto	0	0	0	0	0	0	AUTO
Primary Slave	: Auto	0	0	0	0	0	0	AUTO
Secondary Master	: Auto	0	0	0	0	0	0	AUTO
Secondary Slave	: Auto	0	0	0	0	0	0	AUTO
Drive A	: 1.44M, 3.5 in.				Base Memory : 640K Extended Memory : 31744K Other Memory : 384K			
Drive B	: None							
Video	: EGA/VGA				Total Memory : 32768K			
Halt On	: All, But Keyboard							
ESC : Quit			↑ ↓ → ← : Select Item			PU/PD/+/- : Modify		
F1 : Help			(Shift) F2 : Change Color					

Figure 3-2 Standard CMOS Setup Screen

- **SAVE & EXIT SETUP** - After saving the changes what you have made in the SETUP program, exit and reboot the system.
- **EXIT WITHOUT SAVING** - Abandon all previous settings, then exit and reboot the system.

To choose an menu item from the SETUP main menu, move the cursor by using the **↑**, **↓**, **→**, **←** Arrow keys and press **Enter**. To modify the setting of an option, simply press the **↑** or **↓** and the **Page Up** or **Page Down** keys. Press the **F2** key when changing the color setting, the **F1** for a context sensitive help function, and the **Esc** key when quitting SETUP.

3.2 Standard CMOS Setup

ROM PCI/ISA BIOS (CB648XBX) STANDARD CMOS SETUP AWARD SOFTWARE, INC.								
Date (mm:dd:yy)		: Mon, Mar 29 1999						
Time (hh:mm:ss)		: 20 : 14 : 43						
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: Auto	0	0	0	0	0	0	AUTO
Primary Slave	: Auto	0	0	0	0	0	0	AUTO
Secondary Master	: Auto	0	0	0	0	0	0	AUTO
Secondary Slave	: Auto	0	0	0	0	0	0	AUTO
Drive A	: 1.44M, 3.5 in.							
Drive B	: None							
Video	: EGA/VGA							
Halt On	: All, But Keyboard							
					Base Memory : 640K			
					Extended Memory : 31744K			
					Other Memory : 384K			
					Total Memory : 32768K			
ESC : Quit			↑ ↓ → ← : Select Item			PU/PD/+/- : Modify		
F1 : Help			(Shift) F2 : Change Color					

Figure 3-2 Standard CMOS Setup Screen

1. **Date** - Allows manual setting of the electronic calendar on the motherboard.
2. **Time** - Sets the system's internal clock which includes hour, minutes, and seconds.
3. **Primary Master / Primary Slave / Secondary Master / Secondary Slave** - Specifies the physical and electronic properties of the standard hard disk drives installed. Relevant specifications include the type, number of cylinders(CYLS), heads(HEAD), write pre-compensation time (PRECOMP), read/write head landing zone (LANDZ), number of sectors per track (SECTOR), and HDD mode (MODE). Selecting "AUTO" in the hard disk type item avoid the necessity of loading the HDD specifications and the function of the IDE HDD Auto Detection option in the main menu. The system BIOS will automatically detect the hard disk drive installed on the system upon boot-up.

 Large Hard Disk Modes

The last of the drive parameter - Mode - has four options, Normal, LBA, Large, and Auto.

Normal : For IDE hard disks of 528MB or less.

LBA : This stands for Logical Block Addressing, a method used with SCSI and IDE disk drives to translate the cylinder, head, and sector specifications of the drive into addresses that can be used by an enhanced BIOS. LBA is used with drive's that are larger than 528MB.

The maximum drive size supported is 2 TB (2,099,511,627,776 bytes) ideally with FAT32.

 *FAT16 does not support partitions larger than 2GB.*

FAT32 is an improvement, as it supports drives up to 2 Terabytes in size, and cluster sizes are 4K for partitions smaller than 8GB.

Large : For 1GB or smaller drives with more than 1024 cylinders and no LBA support. This access mode causes the operating system to treat the drive as if it has fewer than 1024 cylinders by dividing the cylinder total in half and doubling the most large IDE hard disk drives currently available use the LBA mode.

Use the Auto setting to automatically detect the correct mode for new drives.

4. **Drive A: / B:** - Specifies the capacity and format of the floppy drive installed in your system.
5. **Video** - Specifies the display adapter installed.
6. **Halt On** - Enables the system to halt on errors with several condition options. The choices : "All Errors", "All, But Keyboard", "All, But Diskette", "All, but Disk/key", "System Test Only", and "No Errors".
7. **Base/Extended/Other Memory** - A small section in the lower right corner of the screen displays important information about your system which includes the base, extended, and other memory sizes. They are updated automatically by the SETUP program according to the status detected by the BIOS self-test. This section of the Standard CMOS SETUP screen is for viewing purpose only and manual modifications are not allowed.

3.3 BIOS Features SETUP

ROM PCI/ISA BIOS (CB648XBX) BIOS FEATURES SETUP AWARD SOFTWARE, INC.			
Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D4000-D7FFF Shadow	: Disabled
Boot From LAN First	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	DC000-DFFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	HDD S.M.A.R.T. Func.	: Disabled
Boot Up Floppy Seek	: Enabled		
Boot Up NumLock Status	: On		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled	ESC : Quit	↑↓→← : Select Item
Assign IRQ For VGA	: Enabled	F1 : Help	PU/PD/+/- : Modify
Assign IRQ For USB	: Enabled	F5 : Old Values	(Shift) F2 : Color
OS Select For DRAM > 64MB	: Non-OS2	F6 : Load BIOS Defaults	
Report No FDD For WIN 95	: No	F7 : Load Setup Defaults	

Figure 3-3 BIOS Features Setup Screen

- 1. Virus Warning** - Allows the virus warning feature for the hard disk boot sector to display a warning message and produce a beep sound whenever an attempt is made to write on the hard disk's boot sector.
The Choices : Enabled, Disabled.

2. CPU Internal Cache - Enables the internal code/data cache of CPU when set to "Enabled".

The Choices : Enabled, Disabled.

3. External Cache - Enables the secondary cache of the Processor when set to "Enabled".

The Choices : Enabled, Disabled.

4. CPU L2 Cache ECC Checking - Enables the ECC(Error Checking & Correction) checking of the Processor L2 Cache when set to "Enabled".

The Choices : Enabled, Disabled.

5. Quick Power On Self Test - Allows the power on self test to run at either a fast or a normal speed.

The Choices : Enabled, Disabled.

6. Boot From LAN First - This feature makes it possible to configure or reconfigure a system remotely, even with a blank hard disk drive. Note that this item only function with the proper network environment.

The Choices : Enabled, Disabled.

7. Boot Sequence - Selects the drive where the system would search for the operating system to run with.

The Choices :	- A, C, SCSI	- C, A, SCSI
	- C, CDROM, A	- CDROM, C, A
	- D, A, SCSI	- E, A, SCSI
	- F, A, SCSI	- SCSI, A, C
	- SCSI, C, A	- C only
	- LS/ZIP, C	

8. Swap Floppy Drive - "Enabled" will effectively change the A: drive to B: and the B: to A: drive.

"Disabled" sets the floppy drives in their default states.

The Choices : Enabled, Disabled.

9. Boot Up Floppy Seek - Check if the floppy drives installed on the system are correct or not. This option's operation usually occurs when the magnetic heads of the floppy drives produce a sound during power on self test.
The Choices : Enabled, Disabled.

10. Boot Up NumLock Status - This allows users to determine the default state of the numeric keypad.
By default, the system boots up with NumLock on.
The Choices : On, Off

11. Gate A20 Option - Boots the performance of system with software using the 80286 protected mode such as OS/2 or UNIX. This option determines the accessibility of the extended memory.
The Choices : Fast, Normal

12. Typematic Rate Setting - Defines the setting of the keyboard's typematic rate.
The Choices : Enabled, Disabled.

13. Typematic Rate <Char/Sec> - Specifies the key repeat rate, in seconds, of keyboard character.
The Choices : 6/8/10/12/15/20/24/30

14. Typematic Delay <Msec> - Select the delay, in milliseconds, before a key repeat.
The Choices : 250/500/750/1000

15. Security Option - Determines whether the password will be asked for in every boot (System), or when entering into the SETUP program (Setup). Refer to the section entitled SUPERVISOR PASSWORD for the password setting.
The Choices : Setup, System.

- 16. PCI/VGA Palette Snoop** - Selects "Enabled" to solve the abnormal color in Windows while using ISA MPEG and PCI VGA card.
The Choices : Enabled, Disabled.
- 17. Assign IRQ For VGA** - Sets the interrupt request (IRQ) line assigned to the VGA (if any) on your system.
The Choices : Enabled, Disabled.
- 18. Assign IRQ For USB** - Sets the interrupt request (IRQ) line assigned to the USB on your system.
The Choices : Enabled, Disabled.
- 19. OS Select For DRAM > 64MB** - Select the OS if DRAM > 64MB.
The Choices : Non-OS2, OS2
- 20. Report No FDD For WIN 95** - Enables to release IRQ6 when the floppy drive in CMOS Setup to NONE. When you select "Yes", BIOS reports the information to Windows 95 when no floppy drive is installed.
The Choices : Yes, No
- 21. Video BIOS Shadow** - Enables the system shadowing and achieve the best performance of the system.
The Choices : Enabled, Disabled.
- 22. C8000-CBFFF, CC000-CFFFF, D0000-D3FFF, D4000-D7FFF, D8000- DBFFF, DC000-DFFFF Shadow** - If you have a shadowing of the BIOS at any of the above segments, you may set the appropriate memory shadowable function to "Enabled". Otherwise, select "Disabled"
The Choices : Enabled, Disabled.
- 23. HDD S.M.A.R.T. Func.** - This item allows you to support Hard Disk S.M.A.R.T function. S.M.A.R.T stands for Self - Monitoring, Analysis and Reporting Technology.
The Choices : Enabled, Disabled.

3.4 Chipset Features SETUP

ROM PCI/ISA BIOS (CB648XBX) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.		
Auto Configuration	: Enabled	CPU Warning Temperature : 56°C/133°F
EDO DRAM Speed Selection	: 60ns	Current CPU Temperature : 43°C/109°F
EDO CASx# MA Wait State	: 2	Shutdown Temperature : 60°C/140°F
EDO RASx# Wait State	: 2	Current System Temp. : 44°C/111°F
SDRAM RAS-to-CAS Delay	: 3	Current CPU FAN Speed : 4963 RPM
SDRAM RAS Precharge Time	: 3	Secondary FAN Speed : 0 RPM
SDRAM CAS latency Time	: 3	Current SMPS FAN Speed : 0 RPM
SDRAM Precharge Control	: Disabled	CPU Core Voltage : 2.00V
DRAM Data Integrity Mode	: Non-ECC	CPU GTL+ Voltage (1.5V) : 1.48V
System BIOS Cacheable	: Enabled	Logic Voltage (3.3V) : 3.37V
Video BIOS Cacheable	: Enabled	Logic Voltage (5.0V) : 5.08V
8 Bit I/O Recovery Time	: 1	SMPS Voltage (12V) : 12.52V
16 Bit I/O Recovery Time	: 1	SMPS Voltage (-12V) : -12.34V
Memory Hole At 15M-16M	: Disabled	SMPS Voltage (-5.0V) : -4.99V
Passive Release	: Enabled	ESC : Quit ↑↓→← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
Delayed Transaction	: Disabled	
AGP Aperture Size (MB)	: 64	
Chassis Intrusion	: Closed	

Figure 3-4. Chipset Features Setup Screen

1. Auto Configuration

This item allows you select pre-determined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.

The Choices : Enabled, Disabled.



Note : When this item is Enabled, the pre-defined items will become SHOW-ONLY.

2. EDO DRAM Speed Selection

The DRAM timing is controlled by the DRAM Timing Register. The timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory.

The choices : 50 ns, 60 ns

3. EDO CASx# MA Wait State

You can select the timing control type of EDO DRAM CAS MA (memory address bus).

The Choices : 1, 2

4. EDO RASx# Wait State

You can select the timing control type of EDO DRAM RAS MA (memory address bus).

The Choices : 1, 2

5. SDRAM RAS-to-CAS Delay

This option specifies the length of the delay inserted between the RAS and CAS signals of the SDRAM system memory access cycle.

The Choices : 2, 3

6. SDRAM RAS Precharge Time

This Option specifies the RAS precharge time for the SDRAM.

The Choices : 2, 3

7. SDRAM CAS latency Time

You can select CAS latency time in HCLKs of 2/2 or 3/3. 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 the installed CPU...

The Choices : 2, 3

8. SDRAM Precharge Control

This item allows you to determine the use of "SDRAM Precharge".

The Choices : Enabled, Disabled

9. DRAM Data Integrity Mode

Select Parity or ECC (Error-Correcting Code), according to the type of installed DRAM.

The Choices : Non-ECC, ECC

10. System BIOS Cacheable

Selecting "Enabled" allows caching of the system BIOS ROM at F0000h - FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choices : Enabled, Disabled

11. Video BIOS Cacheable

Selecting "Enabled" allows caching of the system BIOS ROM at C0000h - C7FFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choices : Enabled, Disabled

12. 8 Bit I/O Recovery Time

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O.

The Choices : NA, 1 to 8 CPU clocks

13. 16 Bit I/O Recovery Time

This item allows you to determine the recovery time allowed for 16 bit I/O.

The Choices : NA, 1 to 4 CPU clocks

14. Memory Hole at 15M - 16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The Choices : Enabled, Disabled

15. Passive Release

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

The Choices : Enabled, Disabled

16. Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles.

Select Enabled to support compliance with PCI specification version 2.1.

The Choices : Enabled, Disabled

17. AGP Aperture Size

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

The Choices : 4, 8, 16, 32, 64, 128, or 256

18. Chassis Intrusion

This item shows whether chassis has been opened, being opening, or not. Note that this item is SHOW-ONLY. If system chassis was opened once, BIOS is display below messages.

"Warning!!! Chassis was opened."

19. CPU Warning Temperature

When set the temperature, CPU automatically downs the clock for cooling the CPU, if the temperature of CPU meets the predefined temperature.

Note that this item only supports when the special sensor module is mounted on the mother board.

20. Current CPU Temperature

This item shows current CPU temperature. Note that this item is SHOW-ONLY.

Note that this item only supports when the special sensor module is mounted on the mother board. This item is SHOW-ONLY.

21. Shutdown Temperature

This item allows you to select shutdown temperature.

When the CPU temperature reaches the temperature indicated by this item, the ACPI OS will immediately shutdown the system.

Note that this item only supports when the special sensor module is mounted on the mother board.

22. Current system Temp.

This item shows current system temperature. Note that this item is SHOW-ONLY.

23. Current CPU FAN Speed / Secondary FAN Speed / Current SMPS FAN Speed

These items show current states of the FAN speed. Note that these items are SHOW-ONLY.

24. CPU Core Voltage / CPU GTL+ Voltage (1.5V)

These items show voltage states of the CPU. Note that these items are SHOW-ONLY.

25. Logic Voltage (3.3V) / Logic Voltage (5.0V) / SMPS Voltage (12V) / SMPS Voltage (-12V) / SMPS Voltage (-5.0V)

These items show voltage states of the system power. Note that these items are SHOW-ONLY.

3.5 Power Management SETUP

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.

ROM PCI/ISA BIOS (CB648XBX) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.			
ACPI Function	: Enabled	** Reload Global Timer Events **	
Power Management	: User Define	IRQ [3-7, 9-15], NMI	: Disabled
PM Control by APM	: Yes	Primary IDE 0	: Enabled
Video Off Method	: DPMS	Primary IDE 1	: Enabled
Video Off After	: Standby	Secondary IDE 0	: Disabled
MODEM Use IRQ	: 3	Secondary IDE 1	: Disabled
Doze Mode	: 4 Min	Floppy Disk	: Enabled
Standby Mode	: 8 Min	Serial Port	: Enabled
Suspend Mode	: 12 Min	Parallel Port	: Enabled
HDD Power Down	: Disable	PME Function	: Disabled
Throttle Duty Cycle	: 62.5%		
PCI/VGA Act-Monitor	: Disabled		
Soft-Off by PWR-BTTN	: Delay 4 Sec.		
CPUFAN off In Suspend	: Enabled		
PowerOn by Ring	: Disabled	ESC : Quit ↑↓→← : Select Item	
Resume by Alarm	: Disabled	F1 : Help PU/PD/+/- : Modify	
		F5 : Old Values (Shift) F2 : Color	
Wake On LAN	: Disabled	F6 : Load BIOS Defaults	
IRQ 8 Break Suspend	: Disabled	F7 : Load Setup Defaults	

Figure 3-5. Power Management Setup Screen

1. ACPI Function

This item allows you to Enable ACPI (Advanced Configuration and Power Interface). The ACPI is the key element in OS directed power management (OSPM). ACPI involves the existing collection of power management BIOS code and APM.

The choices : Enabled, Disabled

2. Power management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. See the section PM Timers for brief description of each mode.

There are four selections for Power management, three of which have fixed mode settings.

Disabled	No Power management. Disables all four modes.
Min Saving	Minimum power management. Doze Mode = 1 Hour, Standby Mode = 1 Hour, Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max Saving	Maximum power management. Doze Mode = 1 Min., Standby Mode = 1 Min., Suspend Mode = 1 Min., and HDD Power Down = 1 Min.
User Define	Allow you to set each mode individually. When not disabled, each of the ranges are from 1 Min. to 1 Hour, except for HDD Power Down which ranges from 1 Min. to 15 Min. and Disable.

3. PM Control by APM

When enabled, an Advanced Power Management (APM) device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If APM is installed on your system, selecting "Yes" gives you better power savings.

The choices : Yes, No

4. Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power management Signaling (DPMS) standards of the Video Electronics Standards to select video power management values.

5. Video Off After

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

NA	Monitor will remain on during power saving mode.
Suspend	Monitor blanked when the system enters the Suspend mode.
Standby	Monitor blanked when the system enters the Standby mode.
Doze	Monitor blanked when the system enters any power saving mode.

6. MODEM Use IRQ

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

The choices : 3, 4, 5, 7, 9, 10, 11, and NA

7. Doze Mode

When enabled and after the set time of system inactivity, system enters Doze Mode and the CPU clock will run at slower speed while all other devices still operate at full speed.

The choices : 1, 2, 4, 8, 12, 20, 30, 40(Min), 1 Hour, Disable.

8. Standby Mode

When enabled and after the set time of system inactivity, system enters Standby Mode and the CPU clock will run at slower speed while all other devices still operate at full speed.

The choices : 1, 2, 4, 8, 12, 20, 30, 40(Min), 1 Hour, Disable.

9. Suspend Mode

When enabled and after the set time of system inactivity, system enters Suspend Mode.

The choices : 1, 2, 4, 8, 12, 20, 30, 40(Min), 1 Hour, Disable.

10. HDD Power Down

This shuts down IDE hard disks that support a power saving modes after a specified period of time.

The settings range from 1 to 15 minutes and can be set manually when power management is in User Define Mode. This item does not affect SCSI hard disks.

The choices : 1 to 15 (Min), Disabled

11. Throttle Duty Cycle

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

The choices : 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, and 75.0%

12. PCI/VGA Act-Monitor

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

The choices : Enabled, Disabled

13. Soft-Off by PWR-BTTN

When enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

The choices : Delay 4 sec, Instant-Off

14. CPU FAN Off In Suspend

Turns the CPU fan off while in suspend mode.

The choices : Enabled, Disabled

15. Power On by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system a soft off state.

The choices : Enabled, Disabled

16. Resume by Alarm

Sets to wake up/ resume from suspend-off state by alarm interrupt.

"Disabled" is a default. Select "Enabled" to enter resume/ wake up date, and times.

The choices : Enabled, Disabled

17. Wake On LAN

Sets to turn the system on from power off state by network.

The choices : Enabled, Disabled

18. IRQ 8 Break Suspend

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

The choices : Enabled, Disabled

19. IRQ [3-7, 9-15], NMI

When an I/O device wants to gain the attention of the operating system (OS), it signals this by causing an IRQ to occur. When the OS is ready to respond to the request, it interrupts itself and performs the service. When set any IRQ item to "Enabled", Enabled IRQ events occurring at device(s) will awaken a system which has been powered down.

The choices : Enabled, Disabled

20. Primary IDE 0/Primary IDE 1/Secondary IDE 0/Secondary IDE 1

When set to Enabled, any event occurring at a HDD will awaken a system which has been powered down.

21. Floppy Disk

When set to Enabled, any event occurring at a floppy disk will awaken a system which has been powered down.

22. Serial Port

When set to Enabled, any event occurring at a serial port will awaken a system which has been powered down.

23. Parallel Port

When set to Enabled, any event occurring at a parallel port will awaken a system which has been powered down.

24. PME Function

When set to Enabled, PCI network or any event on PCI cards will awaken a system which has been powered down.

3.6 PNP/PCI Configuration

ROM PCI/ISA BIOS (CB648XBX) PNP/PCI CONFIGURATION AWARD SOFTWARE, INC.	
PNP OS Installed	: Yes
Resources Controlled By	: Auto
Reset Configuration Data	: Disabled
ESC : Quit ↑↓→← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

Figure 3-6. PNP/PCI Configuration Setup Screen

1. PNP OS Installed

If you plan to use an operating system that supports Plug and Play, you should set this line to "Yes".

When this line is set to "Yes", the BIOS will only initialize PnP PCI card boot devices.

Any other PnP PCI cards are initialized by the OS not change the default setting if your OS does not support Plug and Play.

The choices : Yes, No

2. Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95 & 98.

When this line is set to "Auto", the BIOS will automatically configure IRQ and DMA resources.

This is the recommended setting. If you set this line to "Manual", allows manual configuration. In general you should only need to this if you are installing an ISA card that requires manual configuration.

The choices : Auto, Manual

3. Reset Configuration Data

Normally, you leave this field "Disabled". If you need to clear Extended System Configuration (ESCD), set this to "Enabled". The ESCD data will clear automatically and the BIOS will reset this item to "Disabled" setting. Use this item if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS can not boot.

The choices : Enabled, Disabled

3.7 Load BIOS Defaults

In the event of a loss in memory on the configuration SETUP, the user can restore the information on the BIOS by default values. This setting is not optimal and turn off all the performance features. Loading the BIOS defaults provides safety booting of the system.

3.8 Load SETUP Defaults

SETUP defaults are considered default values with which the system will be enabled to perform better. This is due to the enabling of some options within the SETUP program. However, if problems are encountered after loading the Setup Default Setting, reboot the system and load the BIOS defaults instead.

3.9 Integrated Peripherals

ROM PCI/ISA BIOS (CB648XBX) INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.			
IDE HDD Block Mode	: Enabled	Parallel Port Mode	: SPP
IDE Primary Master PIO	: Auto	Power ON Function	: Button
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Init Display First	: PCI Slot		
Onboard FDC Controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4	ESC : Quit	↑↓→← : Select Item
Onboard Serial Port 2	: 2F8/IRQ3	F1 : Help	PU/PD/+/- : Modify
UR 2 Mode	: Standard	F5 : Old Values (Shift) F2 : Color	
Onboard Parallel Port	: 378/IRQ7	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 3-7. Integrated Peripherals Screen

1. IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled : IDE controller uses block mode.

Disabled : IDE controller uses standard mode.

2. IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports.

Mode 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

3. IDE Primary/Secondary Master/Slave UDMA

Ultra DMA /33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 98 or a third-party IDE bus master driver). If your hard drive and your system both support Ultra DMA /33, select Auto to enable BIOS support.

The choices : Auto, Disabled

4. On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels.

Select Enabled to activate each channel separately.

The choices : Enabled, Disabled

5. USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The choices : Enabled, Disabled

6. Init Display First

This item allows you to select which video card display first when AGP and PCI video card are installed at the same time.

The choices : AGP, PCI Slot.

7. Onboard FDC Controller

This should be enabled if your system has a floppy disk drive (FDD) installed on the system board and you wish to use it. Even when so

equipped, if you have a higher performance controller, you will need to disable this feature.

The choices : Enabled, Disabled

8. Onboard Serial Ports 1 and 2

This item allows you to determine access onboard serial Port 1 / Port 2 controller with which I/O address.

The choices : 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, and Auto.

9. UR2 Mode

This item allows you to determine which InfraRed (IR) function of onboard I/O chip.

The choices : Standard, IrDA 1.0, ASK IR.

10. Onboard Parallel Port

Select a logical LPT port name and matching address of the physical parallel (printer) port.

The choices : 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled

11. Parallel Port Mode

Select an operating mode for the onboard parallel port. Select Compatible or Extended unless you are certain both your hardware and software support EPP or ECP mode.

The choices : SPP, EPP, ECP, or ECP+EPP

12. Power ON Function

This item allows you to select a methode for power on.

The available options are :

- Button (default) : It allows you to power on the system by the Power Button.
- Password : It allows you to power on the system by the Password that you entered. Allows you to enter a password 2 to 5 characters.

- Hot Key : It allows you to power on the system by the Hot-key.
(Ctrl-F12 combination or PC98-KBD's power button)

Password Power ON

This option will be shown only when the option "Power On Function" is set to "Password".

You will be asked to input a password that you entered the password.



When the power cord is disconnected abruptly or power source is disappeared, you should press the Power Button before enter the password that you decided to power on the system to the password. When you press the Power Button, the screen shows you the following message :

Warning !!! Power cord was out !

System will Shutdown!!

and then system will be shutdown. After that, you can power on the system with your password.

Hot-Key Power ON

This option will be shown only when the option "Power On Function" is set to "Hot-Key".

This item asks to select a hot-key for power on the system.

The available options are : Ctrl-F12, PC98 KBD



PC98-KBD is available only when you are using PC98 Keyboard.



Please note that "Password Power ON" and "Hot-key Power ON" are not function with USB keyboard.

3.10 Supervisor Password

The Supervisor Password utility allows you to set, change, and disable the password which is stored in the CMOS. To change the password setting, press <Enter> on the SUPERVISOR PASSWORD option of the main menu and then type the new password.

Configure the Security Option within the BIOS Features Setup corresponding to the setting in this utility. Supervisor Password access right is higher than User Password.

The password can be at most 8 characters long. The program will require you to confirm the new password before it exits and enables the utility. To disable the Supervisor Password, press the <F1> when the program asks you to enter a new password.

3.11 User Password

The User Password only can be used when the system is booting. Users only can enter SETUP screen to change the USER PASSWORD.

The password can be at most 8 characters long. The program will require you to confirm the new password before it exits and enables the utility. To disable the USER PASSWORD, press the <F1> when the program asks you to enter the new password.

3.12 IDE HDD Auto Detection

The IDE HDD Auto Detection provides auto configuration of the hard disk drive installed in the system. It supports LBA, Large, and Normal modes. If the system's hard disk drive has a capacity of over 528MB and supports LBA functions, you may enable either the LBA mode or the Large mode. On the other hand, if the hard disk drive's capacity is over 528MB but does support LBA functions, you may enable the Large mode in order to use over 528MB.

ROM PCI/ISA BIOS (CB648XBX) CMOS SETUP UTILITY AWARD SOFTWARE, INC.							
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR MODE
Primary Master :							
Select Primary Master Option (N=Skip) : N							
OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
2(Y)	1674	811	64	0	3243	63	LBA
1	1674	3244	16	65535	3243	63	NORMAL
3	1674	811	64	65535	3243	63	LARGE
Note : Some OSes (like SCO-UNIX) must use "NORMAL" for Installation							
				ESC : Skip			

Figure 3-8. IDE HDD Auto Detection Screen

1. The LBA and Large modes will only appear on the screen when the installed hard disk drive is specified to support the LBA mode.

2. In case when a hard disk drive's cylinder specification exceeds 1024, and does not support the LBA functions, only the Large mode will be displayed on the screen.
3. With a hard disk drive supporting cylinders below 1024, only the Normal mode will appear on the screen. The Normal mode will also be shown on the screen under conditions 1 & 2 above.
4. Hard disk drives with less than 528MB total capacity must be set to Normal mode when combined with either old BIOS versions or the Award BIOS. LBA and Large modes are new specifications which may not be fully supported by all operating systems. An example of which is the current version of UNIX system (R3.2.4) which is still unable to support the LBA function. Therefore, determine the specifications of your hard disk drive and operating system before selecting the drive's mode.

Once the program detects the type of hard disk installed, it will display the relative information such as the type, cylinders, heads, write precompensation, landing zone, number of sectors per track, size and mode. A message asking you to accept the IDE HDD detected will also be flashed on the screen.

3.13 Quitting SETUP

After making all modifications in the SETUP program, go to the option "Save & Exit SETUP" then press the <Enter> key. The program will display the following screen.

SAVE to CMOS and EXIT (Y/N) ?N

Press <Y> to confirm the changes made, and the <N> or the <Esc> keys if further modifications are still necessary before exiting the SETUP program. Once the <Y> key is pressed, the system will automatically exit the program and reboot.

However, if you want to cancel all changes made under the SETUP program, go to the options "Exit Without Saving", press <Y> and the system will exit the SETUP program then reboot without saving any of the changes made. You may also use the <F10> key to save the new settings.