PCA-6289

Socket 604 Dual Xeon™/LV Xeon™ Full-sized Processor Card with PCI-X/DDR/VGA/ Dual GbE/400 or 533 MHz FSB

User's Manual

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Part No. 2002628900 1st. Edition
Printed in Taiwan June 2005

1.0.1 A Message to the Customer

Advantech customer services

Each and every Advantech product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Advantech equipment is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Advantech has come to be known. Your satisfaction is our primary concern. Here is a guide to Advantech's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone.

So please consult this manual first. If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Advantech products. In fact, most problems reported are minor and are able to be easily solved over the phone.

In addition, free technical support is available from Advantech engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

1.0.2 Product warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

Step 1. Collect all the information about the problem encountered. (For example, type of PC, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.

Step 2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

Step 3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your return more quickly.

Step 4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

Step 5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

1.0.3 Initial Inspection

Before you begin installing your single board computer, please make sure that the following materials have been shipped:

1 PCA-6289 Dual Xeon™ / LV Xeon™ processor-based single board computer

1 Dual-CPU Cooler Set

1 PCA-6289 Startup Manual

1 CD with driver utility and manual (in PDF format)

1 FDD cable

2 Ultra ATA 33/66/100 HDD cables

2 180 mm +12V power extension cables

1 Printer/COM port cable kit

1 COM port cable kit

1 Y cable for PS/2 keyboard and PS/2 mouse

Warranty card

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

We have carefully inspected the PCA-6289 mechanically and

electrically before shipment. It should be free of marks and scratches and in perfect working order upon receipt.

As you unpack the PCA-6289, check it for signs of shipping damage. (For example, damaged box, scratches, dents, etc.) If it is damaged or it fails to meet the specifications, notify our service department or your local sales representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

1.0.4 Release Note

Date	Revision	Description
June 2005	1st. Edition	Initial Release

Important Safety Information

SAFETY INSTRUCTIONS

FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

CAUTION!!

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Contents

CHAPTER 1

General Information

Chapter 1 Hardware Configuration

1.1 Introduction

The PCA-6289 Series all-in-one industrial grade single board computer is a high performance and full-featured computing engine. It follows the PICMG 1.0 specification and meets most requirements for industrial applications.

The PCA-6289 uses Intel's E7501 chipset to support dual Intel Socket 604 Xeon™/ LV Xeon™ processors with 533/400 MHz front side bus. The dual channel DDR 200/266 SDRAM interface provides bottle neck free memory bandwidth up to 4.2 GB/s. Other features include onboard 32 bits/33 MHz PCI ATi Rage XL VGA controller with integrated 8MB frame buffer memory provides high performance graphic function dual Giga-bit Ethernet ports, four USB 1.1 ports (up to 12 Mbps), and other standard PC functions like two RS-232 serial ports, one enhanced parallel port and floppy disk interface.

PCA-6289 offers several impressive industrial features such as: CMOS data backup, which is stored in the Flash memory, which protects data even after battery failure. Also included is a 256-level watch-dog timer, which resets the CPU if a program cannot be executed normally. This enables reliable operation in unattended environments.

1.2 Features

1. **High performance:** The PCA-6289 uses Intel E7501 chipset which offers high-bandwidth interfaces such as dual-channel DDR200/266 main memory, 400/533 MHz system bus, ATi Rage XL VGA controller and 8MB frame buffer memory which provides high performance graphic functions, Gigabit Ethernet (GbE) and USB 1.1 connectivity to ensure the flexibility and performance you expect.
2. **BIOS CMOS backup and restore:** When BIOS CMOS setup has been completed, data in the CMOS RAM is automatically backed up to the Flash ROM. This is particularly useful in harsh environments which may cause setup data loss such as battery failure. Upon such an error occurring, BIOS will check the data, and automatically restore the original data for booting.

3. **Supports Hyper-Threading :** This allows HT-enabled Xeon™ / LV Xeon™ processors to process two threads simultaneously. By building two logical processors into a single physical processor, the performance and utilization of the processor resource will both increase. Users can obtain a higher CPU performance while Hyper-Threading is enabled.

1.3 Specifications

1.3.1 System

- **CPU:** Dual Intel® socket 604 Xeon™ / LV Xeon™ processors up to 3.06 GHz, FSB 400/533 MHz; suppports Intel Hyper-Threading technology.
- **L2 Cache:** CPU built-in 512 KB full-speed L2 cache.
- **BIOS:** Award Flash BIOS (8Mb Flash Memory).
- **System Chipset:** Intel E7501 with ICH3-S.
- **EIDE hard disk drive interface:** Supports two IDE hard disk drives or four enhanced IDE devices. Supports ATA 33/66/100 (33/66/100MB/s data transfer rate.) BIOS enabled/disabled.
- **Floppy disk drive interface:** Supports 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, 2.88 MB). BIOS enabled/disabled.

1.3.2 Memory

- **RAM:** Up to 8GB in four 184-pin DIMM sockets. Supports dual channel DDR200/266 SDRAM (Registered/ECC DIMMs only).

1.3.3 Input/Output

- **Bus interface:** PICMG 1.0 compliant PCI/ISA bus interface.
- **Enhanced parallel port:** Configurable to LPT1, LPT2, LPT3, or disabled. Standard DB-25 female connector provided. Supports EPP/SPP/ECP
- **Serial ports:** Two RS-232 ports with 16C550 UARTs (or compatible) with 16-byte FIFO buffer. Supports speeds up to 115.2 Kbps. Ports can be individually configured to COM1, COM2 or disabled.
- **Keyboard and PS/2 mouse connector:** One 6-pin mini-DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. An on board keyboard pin header connector is also available.

- **ISA bus:** Support ISA high drive. PCI-to-ISA bridge: ITE IT8888.
- **AC-97 Audio:** AC-97 2.0 output, 10 pin header x 1.
- **USB port:** Supports up to four USB 1.1 and transmission rate up to 12Mbps; available through two-port USB Cable with Bracket or Front panel USB cable.

1.3.4 VGA interface

- **Controller:** ATi Rage XL VGA controller.
- **Display memory:** Graphic controller chip integrate 8MB frame buffer memory.

1.3.5 Ethernet LAN

- Supports dual10/100/1000Base-T Ethernet networking
- **Controller:** Intel 82545EM and 82544GC gigabit ethernet controllers.

1.3.6 Industrial features

- **Watchdog timer:** The watch-dog timer is programmable, with each unit equal to 1, 2, 4, 8, 16,..., 256 seconds. You can find programming detail in Appendix A.

1.3.7 Mechanical and environmental specifications

- **Operating temperature:** 0° ~ 60° C (32° ~ 140° F, depending on CPU).
- **Storage temperature:** -20° ~ 80° C (-4° ~ 176° F).
- **Humidity:** 20 ~ 95% non-condensing.
- **Power supply voltage:** +5 V, ±12 V.
- **Power consumption:** Typical : +5V @ 10A, +12V @ 13.5A (Intel Xeon 3.06G CPU) or +5V @ 8.5A, +12V @ 7.5A (Intel LV Xeon 2.4G CPU).
- **Board size:** 338.58 mm (L) x 122 mm (W) (13.3" x 4.8").

1.4 Jumpers and Connectors

Connectors on the PCA-6289 single board computer link it to external devices such as hard disk drives and a keyboard. In addition, the board has a number of jumpers used to configure your system for your application.

The tables below list the function of each of the board jumpers and connectors. Later sections in this chapter give instructions on setting jumpers. Chapter 2 gives instructions for connecting external devices to your single board computer.

Table 1.1: Jumpers

Lable	Function
J1,J2	+12V Power Connector
J4,J5	Fan Connector
J5 on Daughter Board	ATX Power Connector
J6	AC'97
J7	1x2 2.54 mm Pin Header for IDE LED
J13	1x3 2.54 mm Pin Header for AT/ATX Selection
JP1	1x4 2.54 mm Pin Header for Speaker Function
JP3	2x4 2.0 mm Pin Header for Digital I/O
JP4	1x3 2.0 mm Pin Header for ON Board RTC
JP5	1x2 2.0 mm Pin Header for SMBUS External Connector
JP6	1x2 2.54 mm Pin Header for Reset Button
JP7	1x2 2.54 mm Pin Header for Power Button
JP9	1x5 2.54 mm Pin Header for Lock Function

Table 1.2: Connectors on PCA-6289 IO board	
Label	**Function**
CN1	Primary IDE connector
CN2	Secondary IDE connector
J1	PIO connector
J2	Floppy Disk connector
J3, J4	SIO connector
J8, J9	Single USB connectors
J12	Dual USB pin headers for front USB interface

1.5 Board Layout: Jumper and Connector Locations

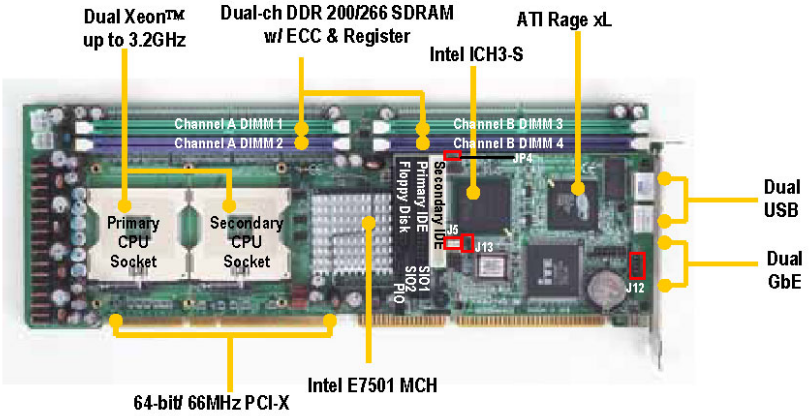


Figure 1.1: Jumper and Connector locations

1.6 PCA-6289 Block Diagram

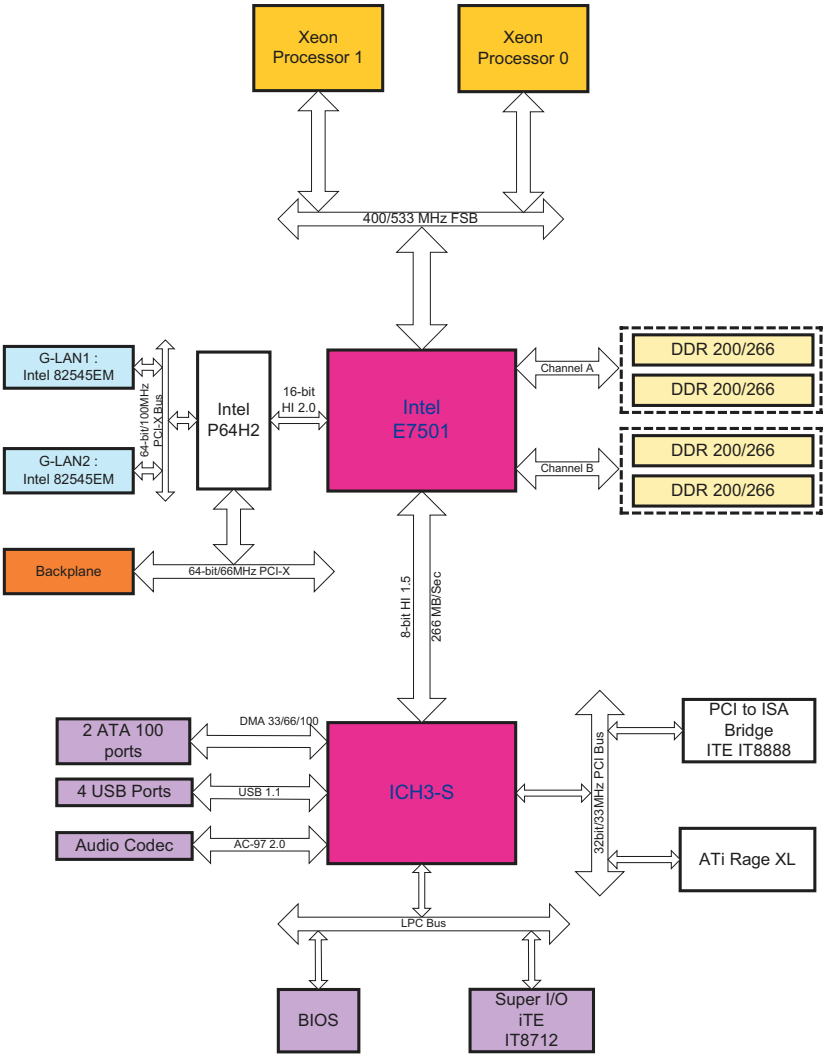


Figure 1.2: PCA-6289 Block Diagram

1.7 Safety Precautions

Warning! *Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.*

Caution! *Always ground yourself to remove any static charge before touching the single board computer. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*

Caution! *The computer is provided with a battery-powered Real-time Clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to manufacturer's instructions.*

Notice: *Before install your PCA-6289 into a chassis, make sure that all components on both sides of the CPU card do not touch any metal parts, especially the chassis wall and add-on card at the adjacent slot.*

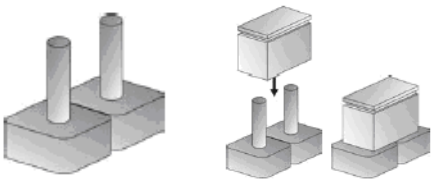
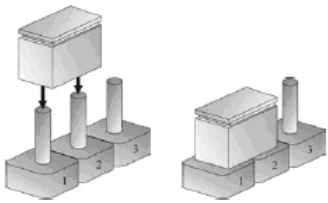
1.8 Jumper Settings

This section provides instructions on how to configure your single board computer by setting the jumpers. It also includes the single board computer's default settings and your options for each jumper.

1.8.1 How to set jumpers

You can configure your single board computer to match the needs of your application by setting the jumpers. A jumper is a metal bridge that closes an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” (or turn ON) a jumper, you connect the pins with the clip. To “open” (or turn OFF) a jumper, you remove the clip. Sometimes a jumper consists of a set of three pins, labeled 1, 2, and 3. In this case you connect either pins 1 and 2, or 2 and 3. A pair of needle-nose pliers may be useful when setting jumpers.

Table 1.3: How to Set Jumpers

The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.	 **Open (off)** **Short (on)**
These illustrations show a 3-pin jumper. Pins 1 and 2 are SHORT.	

1.9 System Memory

The system memory is provided by DIMM's (Dual In-line Memory Modules) on the CPU board. The CPU board contains two memory banks: Bank 0 and 1, corresponding to connector DIMM1, DIMM2.

The table below shows possible DIMM configurations for the memory banks. Please be noted that the PCA-6289 supports 8 GB DDR SDRAM. Configurations using different brands of memory modules are not recommended.

Table 1.4: PCA-6289G2-00A1 DIMM Configurations

DIMM1 Channel A	DIMM2 Channel A	DIMM3 Channel B	DIMM4 Channel B	Total Memory
128MB	128MB	Empty	Empty	256MB
256MB	256MB	Empty	Empty	512MB
512MB	512MB	Empty	Empty	1024MB
1024MB	1024MB	Empty	Empty	2048MB
Empty	Empty	128MB	128MB	256MB
Empty	Empty	256MB	256MB	512MB
Empty	Empty	512MB	512MB	1024MB
Empty	Empty	1024MB	1024MB	2048MB
128MB	128MB	128MB	128MB	512MB
256MB	256MB	256MB	256MB	1024MB
512MB	512MB	512MB	512MB	2048MB
1024MB	1024MB	1024MB	1024MB	4096MB
2048MB	2048MB	2048MB	2048MB	8192MB

1.9.1 Dual channel configuration

The four DIMM sockets are arranged in two channels: DIMM1 & DIMM2 in channel A; DIMM3 & DIMM4 in channel B. To enable dual channel operation, please install a matched pair of DIMMs in DIMM1 &

DIMM3 (green sockets). If additional memory is to be used, another matched pair of DIMMs have to be installed in DIMM2 & DIMM4 (purple sockets).

"Matched pair of DIMMs" means: same in speed (DDR200, DDR266), same in size (128MB, 256MB, 512MB, 1GB or 2GB), same in chip density (128 Mb, 256Mb or 512Mb) and same in CSA latency. Any other memory configuration will result in single channel memory operation.

1.10 Memory Installation Procedures

To install DIMMs, first make sure the two handles of the DIMM socket are in the "open" position. i.e. The handles lean outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket. Then press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the DIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

1.11 Processor Installation

To change the CPU:

1. Pull the handling bar of the socket upward to the other end to loosen the socket's openings. Carefully lift the existing CPU up to remove it from the socket.
2. Place the new 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. Replace the handling bar to fasten the CPU to the socket.

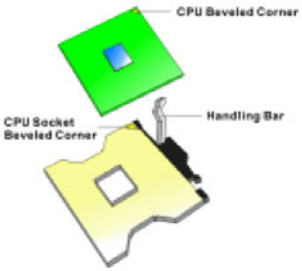
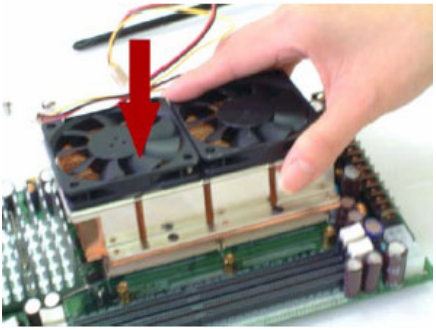


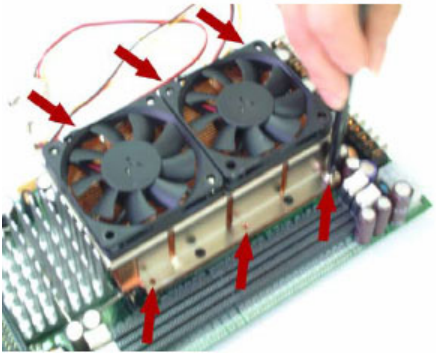
Figure 1.3: Processor Installation

Table 1.5: Installing the heatsink

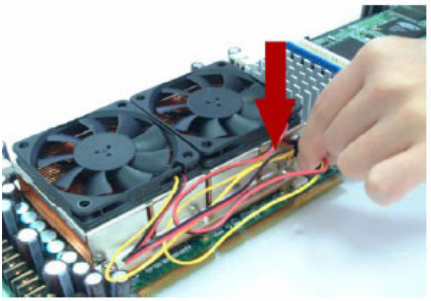
Step 1
Insert the fan in the CPU bed.



Step 2
As shown in the picture, screw tight



Step 3
Then get the fan connector connected.



CHAPTER 2

Award BIOS Setup

Chapter 2 Award BIOS Setup

2.1 Introduction

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This type of information is stored in battery backed-up memory (CMOS RAM) so that it retains the setup information when the power is turned off.

2.2 Entering Setup

Turn on the computer and press <Del> to allow you to enter the BIOS setup.

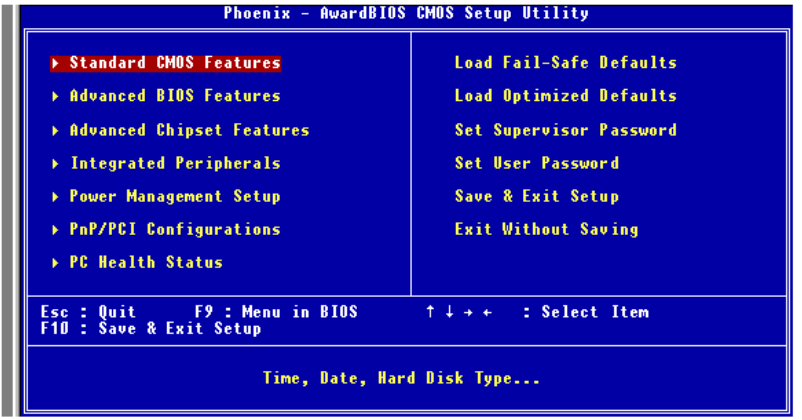


Figure 2.1: Award BIOS Setup initial screen

2.3 Standard CMOS Setup

Choose the "Standard CMOS Features" option from the "Initial Setup Screen" menu, and the screen below will be displayed. This menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

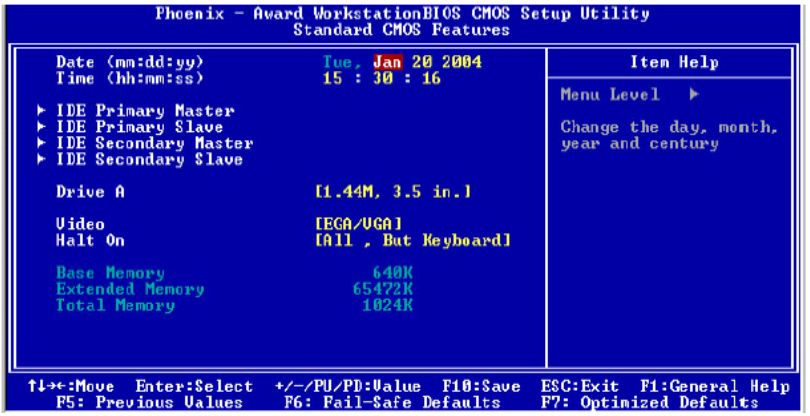


Figure 2.2: Standard CMOS features screen

2.4 Advanced BIOS Features

The “Advanced BIOS Features” screen appears when choosing the “Advanced BIOS Features” item from the “Initial Setup Screen” menu. It allows the user to configure the PCA-6289 according to his particular requirements. Below are some major items that are provided in the Advanced BIOS Features screen. A quick booting function is provided for your convenience. Simply enable the Quick Booting item to save yourself valuable time

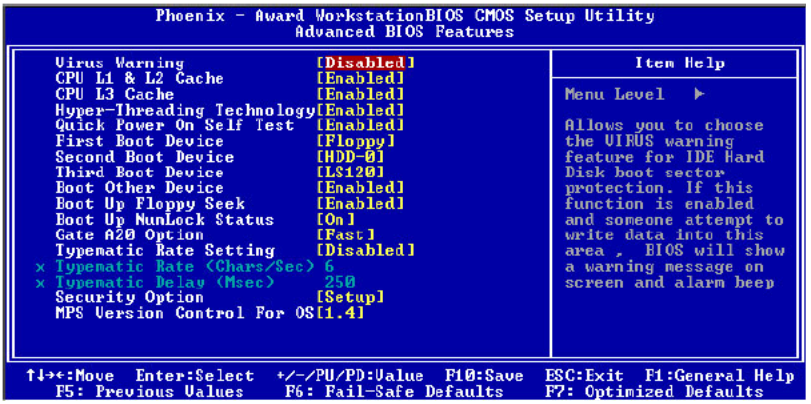


Figure 2.3: Advanced BIOS features screen

2.4.1 Hard Disk Boot Priority

Select hard disk boot device priority.

2.4.2 Virus Warning

Enable virus warning, the commands are "Enabled" or "Disabled".

2.4.3 CPU L1 & L2, L3 Cache

Enabling this feature speeds up memory access. The commands are “Enabled” or “Disabled.”

2.4.4 Hyper-Threading Technology

While using CPU with Hyper-Threading technology, you can select "Enabled" to enable Hyper Threading Technology in OS which supports Hyper-Threading Technology or select "Disabled" for other OS which do not support HT technology.

2.4.5 Quick Power On Self Test

Allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

2.4.6 First/Second/Third Boot Device

The BIOS tries to load the OS with the devices in the sequence selected. Choices are: "Floppy", "LS120", "HDD-0", "SCSI", "CDROM", "HDD-1", "HDD-2", "HDD-3", "ZIP100", "USB-FDD", "USB-ZIP", "USB-CDROM", "USB-HDD", "LAN", "Disabled".

2.4.7 Boot Other Device
To boot another device, choose "Enabled" or "Disabled".

2.4.8 Swap Floppy Drive
If the system has two floppy drives, choose "Enabled" to assign physical drive B to logical drive A and vice-versa. The commands are “Enabled” or “Disabled.”

2.4.9 Boot Up Floppy Seek
Selection of the command “Disabled” will speed the boot up. Selection of “Enabled” searches disk drives during boot up.

2.4.10 Boot Up NumLock Status
This feature selects the “power on” state for NumLock. The commands are “Off” or “On.”

2.4.11 Gate A20 Option
"Normal": A pin in the keyboard controller controls GateA20.

"Fast" (Default): Lets chipset control GateA20.

2.4.12 Typematic Rate Setting
The typematic rate is the rate key strokes repeat as determined by the keyboard controller. The commands are .Enabled. or .Disabled.. Enabling allows the typematic rate and delay to be selected.

2.4.13 Typematic Rate (Chars/Sec)
This setting controls the speed at which the system registers held-down keystrokes. The choices range from 6 to 30 Chars/Sec.

2.4.14 Typematic Delay (msec)
This setting controls the time between the display of the first character and successive characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms.

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

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

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

.

Note: To disable security, select "PASSWORD SETTING" in the main menu. At this point, you will be asked to enter a password. Simply press <Enter> to disable security. When security is disabled, the system will boot, and you can enter Setup freely.

2.4.16 APIC Mode

This setting allows you to enable the APIC mode, the choice is "Disabled" or "Enabled."

2.4.17 MPS Version Control For OS

This reports if an FDD is available for Windows 95. The selections are "1.1" or "1.4."

2.5 Advanced Chipset Features:

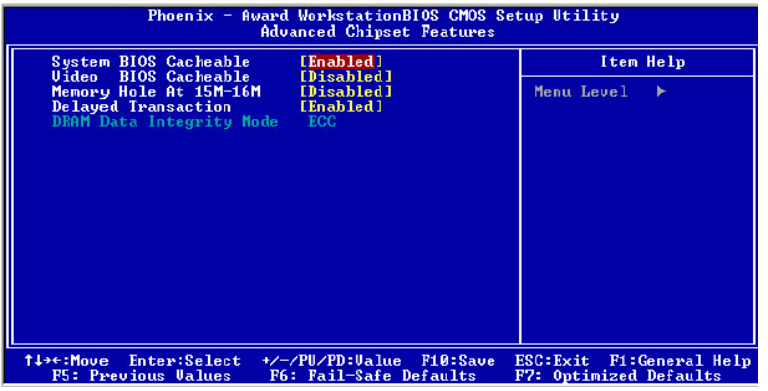


Figure 2.4: Advanced chipset features screen

2.5.1 System BIOS Cacheable

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 available choices are Enabled, Disabled.

2.5.2 Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h, resulting in better video performance. However, if any program writes to this memory area, a system error may result. The choices : Enabled, Disabled.

2.5.3 Memory Hole at 15M-16M

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory. The choices: Enabled, Disabled.

2.5.4 Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transaction cycles. Select Enabled to support compliance with PCI specification version 2.1

2.6 Integrated Peripherals

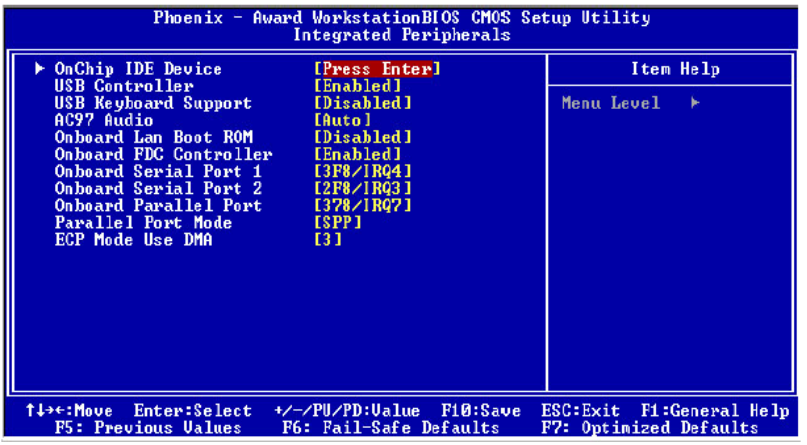


Figure 2.5: Integrated peripherals

2.6.1 On-Chip IDE Device

The system chipset contains IDE HDD Block mode, and a PCI IDE interface with support for two IDE Primary (Master & Slave) PIO's and two IDE Primary (Master & Slave) UDMA's, and two IDE Secondary (Master & Slave) PIO's and two IDE Secondary (Master & Slave) UDMA's. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface if you install a primary and/or secondary add-in IDE interface.

2.6.2 USB Controller

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

2.6.3 USB Keyboard Support

Select Enabled if your USB controller is enabled and it needs USB keyboard support in legacy (old) OS operating systems such as DOS.

2.6.4 AC'97 Audio

Selecting Auto will enable the AC'97 audio if it is detected onboard.

2.6.5 Onboard LAN Boot ROM

Decides whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2, and Disabled.

2.6.6 Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

2.6.7 Onboard Serial Ports 1 and 2

Select an address and corresponding interrupt for the first and second serial ports. The choices: Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3.

2.6.8 Onboard Serial Ports (1, 2, 3, 4)

This feature allows you to manually select the I/O address and IRQ for the first and second serial ports. It is recommended that you leave it as Auto so that the BIOS can select the best settings for it. But if you need a particular I/O port or IRQ that's been taken up by this serial port, you can manually select an alternative I/O port or IRQ for it. You can also disable this serial port if you do not need to use it. Doing so frees up the I/O port and IRQ used by this serial port. Those resources can then be reallocated for other devices to use.

2.6.9 Onboard Parallel Port

This feature allows you to select the I/O address and IRQ for the onboard parallel port. The default I/O address of 387h and IRQ of 7 should work well in most cases. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled.

2.6.10 Parallel Port Mode

The choices available include SPP, EPP, ECP and ECP+EPP.

2.6.11 ECP Mode Use DMA

When the on-board parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

After you have made your selections in the Integrated Peripherals setup, press the

<ESC> key to go back to the main program screen.

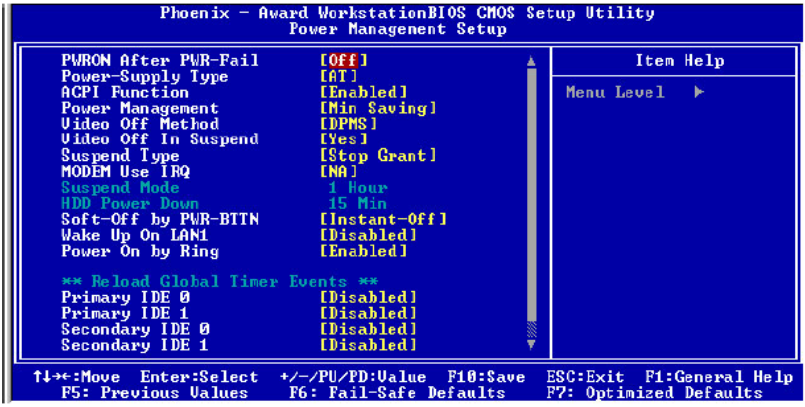


Figure 2.6: Power Management Setup

2.6.12 Auto PWR-Failure Resume

This setting specifies whether your system reboots after a power failure. There are three selections:

Off: The system will remain off when power comes back after a power failure.

On: The system will switch on when power comes back after a power failure.

2.6.13 Power Supply Type
The choices: AT, ATX.

2.6.14 ACPI Function
The ACPI standard (Advanced Configuration and Power Interface) allows the operating system to directly check the functions of energy saving and the PnP (Plug and Play) functionality. The ACPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

2.6.15 Power Management
This category allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode and Suspend Mode

.. Min. Saving: Minimum power management

.. Max Saving: Maximum power management

.. User Define: Allows you to set each mode individually

2.6.16 Video Off Method
This determines the manner in which the monitor is blanked. There are three choices:

1. V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization port and write blanks to the video buffer.

2. Blank Screen: This option only writes blanks to the video buffer.

3. DPMS Support: Select this option if your monitor supports the Display Power

Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

2.6.17 Video Off In Suspend
This determines the manner in which the monitor is blanked. The choices: Yes, No.

2.6.18 Suspend Type
Select the Suspend Type.

The Choices: PwrON Suspend, Stop Grant.

2.6.19 MODEM Use IRQ
This determines the IRQ in which the MODEM can use. The Choices: 3, 4, 5, 7, 9, 10, 11, NA.

2.6.20 Soft-Off by PWRBTN (Power Button)

Pressing the power button for more than 4 seconds forces the system to enter the

Soft-Off state when the system “hangs”. The available choices are Delay 4 Seconds, Instant Off.

2.6.21 Wake up on LAN 1

When the system enters a Soft-off mode (Standby power exists but system is not working), it will wake up system when specific signals occurred. The BIOS monitors

the system for “activity” to determine when to enable power management. If you enable this feature, the computer specifies that any signal noticed on the LAN bus channel must go out from the hibernation state. The choices: Enabled, Disabled.

2.6.22 Power On by Ring

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

Reload Global Timer Events

Primary IDE 0

Primary IDE 1

Secondary IDE 0

Secondary IDE 1

The events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as Enabled, even when the system is in a power down mode. The choices: Enabled, Disabled.

2.7 PnP/PCI Configurations.

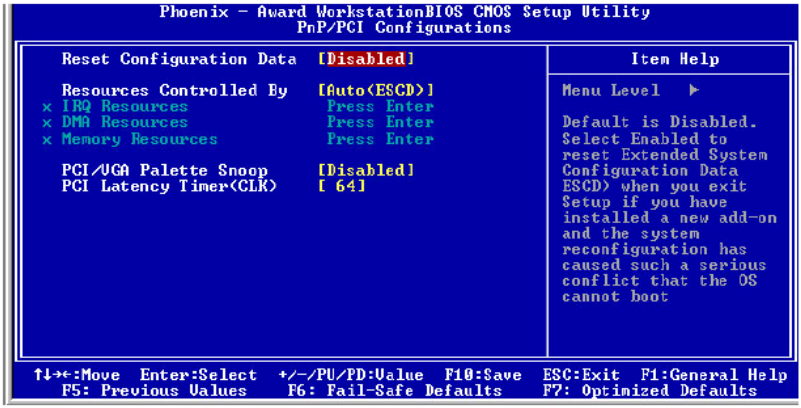


Figure 2.7: BIOS -- PnP/PCI Configurations

2.7.1 Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. The choices: Enabled, Disabled.

2.7.2 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 Windows95. If you set this field to Manual, then choose specific resources by going into each of the submenus that follows this field. The Choice: Auto (ESCD), Manual.

2.7.3 PCI/VGA Palette Snoop

Leave this field at Disabled. The Choices: Enabled, Disabled.

2.7.4 PCI Latency Timer (CLK)

This item controls how long each PCI device can hold the bus before another takes over.

2.8 PC Health Status

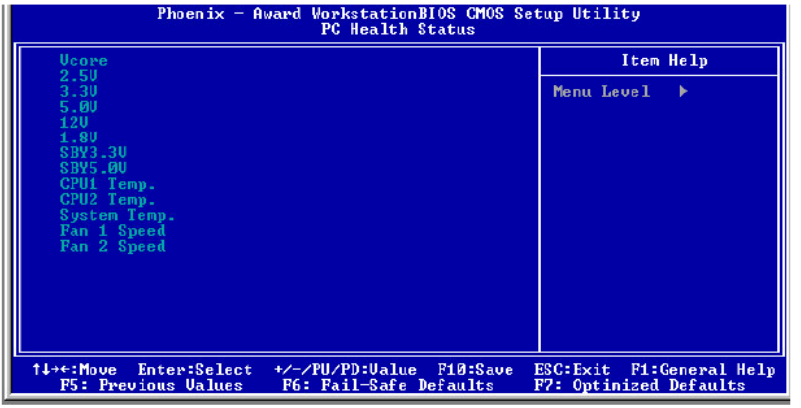


Figure 2.8: BIOS- PC Health Status

After you have read the PC Health Status, press the <ESC> key to go back to the main program screen.

2.9 Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility. Use this option if you have changed your system and it does not operate correctly or does not power up.

2.10 Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate

items in the whole Setup Utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

2.11 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The mainboard is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again. To disable the password, press <Enter> instead of entering a new password when the Enter Password dialog box appears. A message appears confirming that the password has been disabled. If you have set supervisor and user passwords, only the supervisor password allows you to enter the BIOS Setup Program.

Note: If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP2 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP2.

2.12 Save & Exit Setup

If you select this and press <Enter>, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

2.13 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the setup program without recording any new values or changing old ones.

CHAPTER 3

VGA Setup

Chapter 3 VGA Setup

3.1 Before you begin

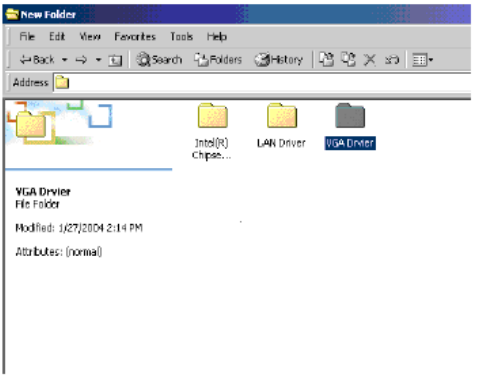
The PCA-6289 series comes with a driver installation CD-ROM that enables you to install VGA driver software, Intel chipset software, and LAN.

3.2 Installing VGA Driver

Figure 3.1: Installing VGA Driver

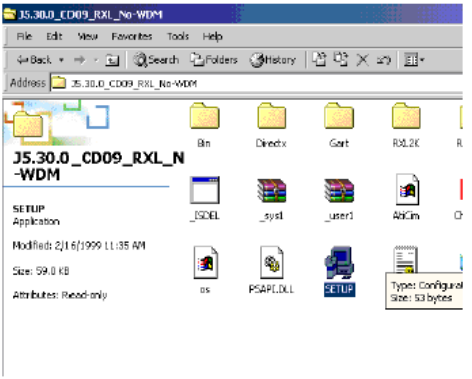
Step 1

Double click the folder of VGA. The menu will display. Select the folder of J5.30.0_CD09_ RXL_N-WDM for Windows 2000 operating system.



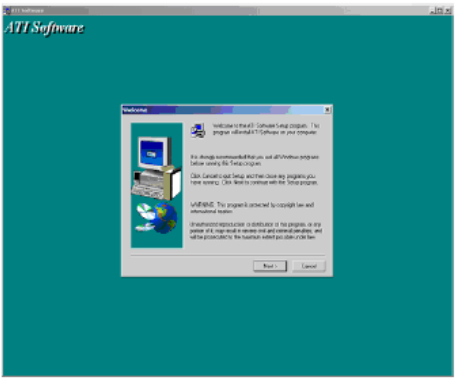
Step 2

After the menu displays, select the SETUP icon.

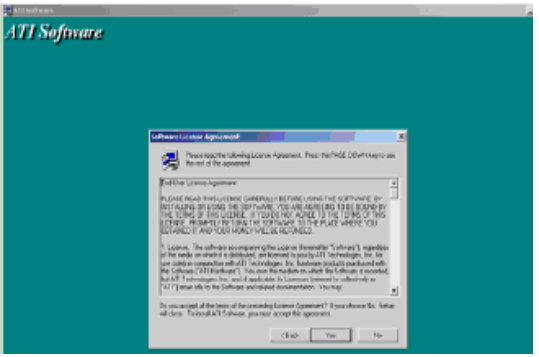


Step 3

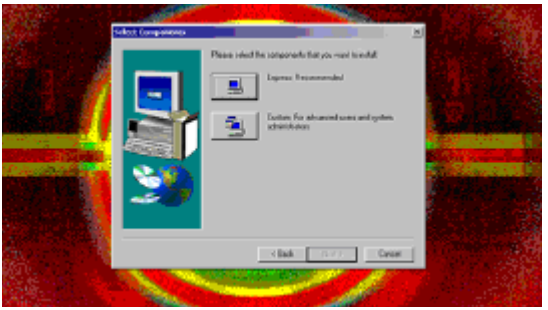
Click NEXT to continue with the Setup program.



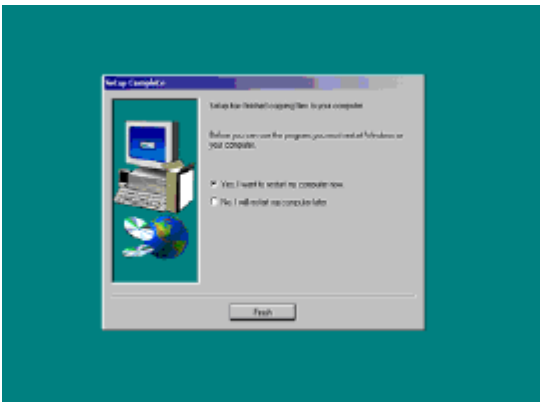
Step 4
To install ATI software, you must accept this agreement. Click YES to continue Setup.



Step 5
Please select the component you want to install and then click NEXT.



Step 6
An installation wizard will inform successful completion of driver software installation and ask you to restart your computer. Select "Yes, I want to restart my computer now," and then click Finish. After your computer reboots, VGA driver is already setup in your computer.



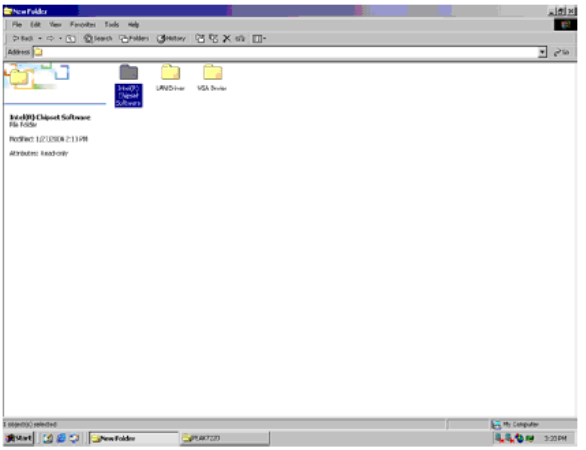
CHAPTER 4

Chipset Software Installation Utility

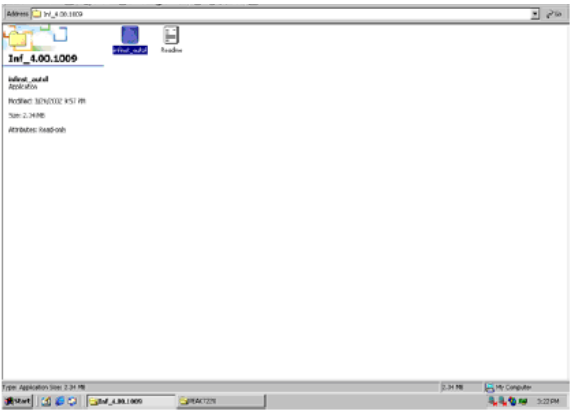
Chapter 4 Chipset Software Installation Utility

4.1 Installing Intel Chipset Software

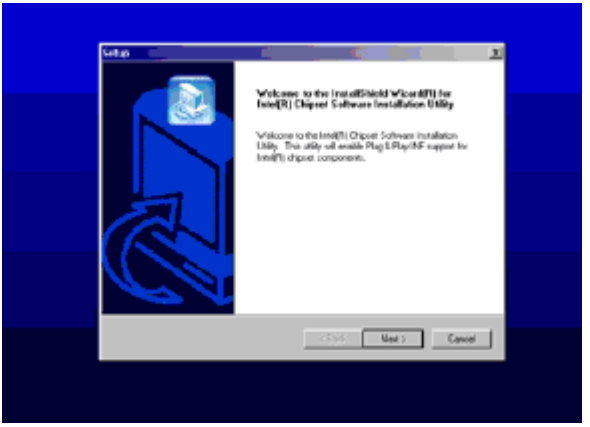
Step 1
Open the folder of Intel Chipset software



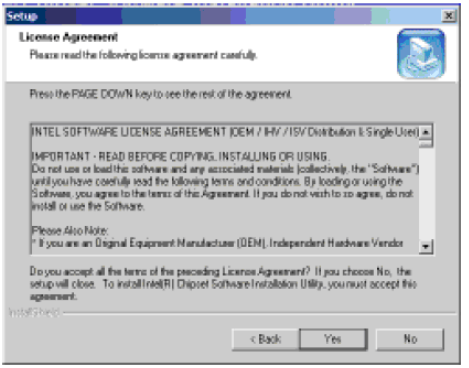
Step 2
Double click the blue icon infinst_autol



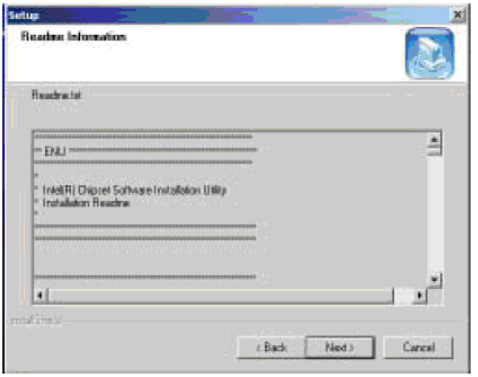
Step 3
Click Next to install INF.



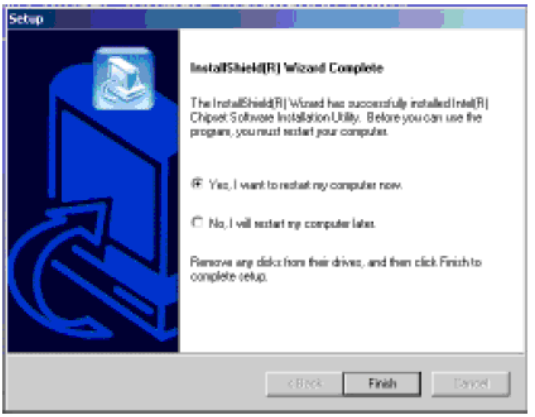
Step 4
Click Yes to continue



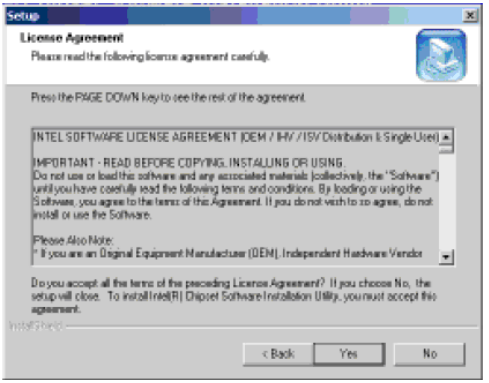
Step 5
Click NEXT



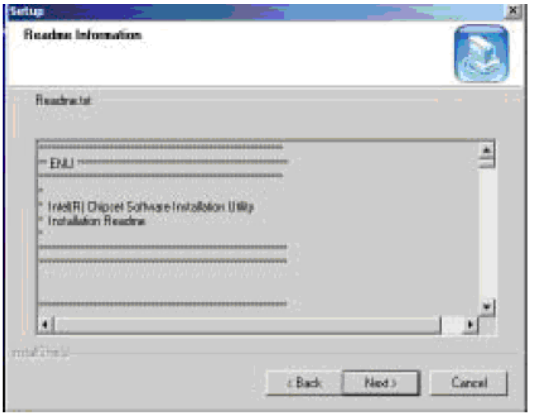
Step 6
Select Yes, I want to restart my computer now. Then click Finish. INF is installed.



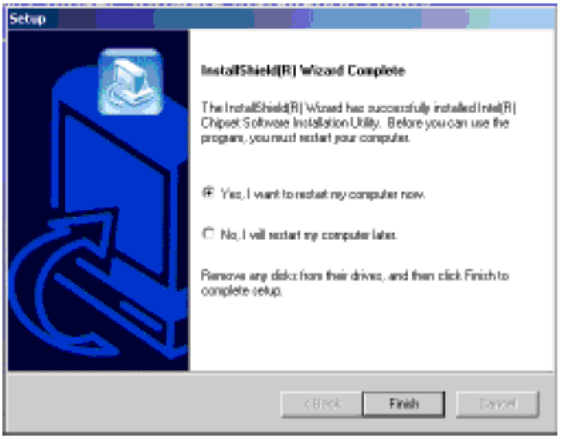
Step 7
Click Yes to continue.



Step 8
Click NEXT



Step 9
Select Yes, I want to restart my computer now. Then click Finish. INF is installed.



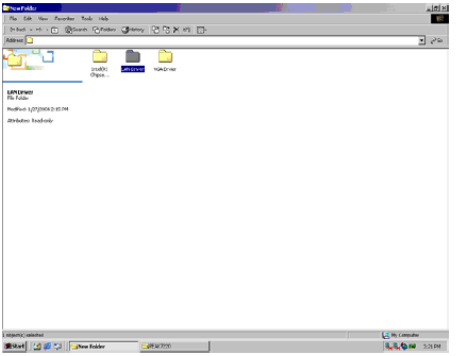
CHAPTER 5

LAN Configuration

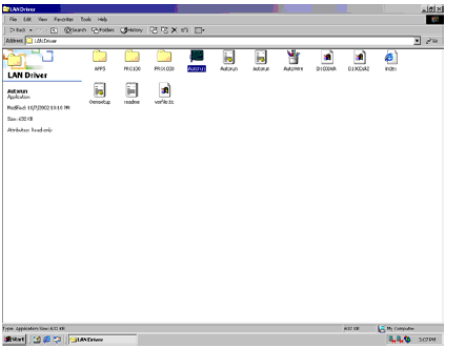
Chapter 5 LAN Configuration

5.1 Installation

Step 1
After the folder of LAN driver displays, click it.



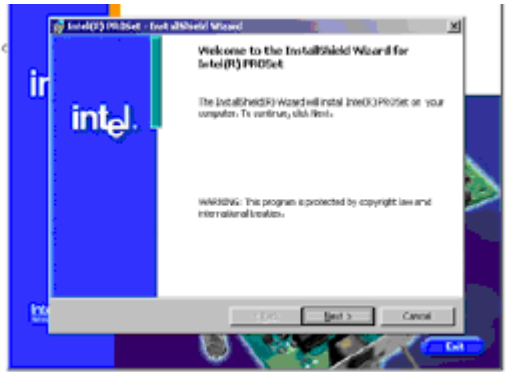
Step 2
Double click the Autorun Icon



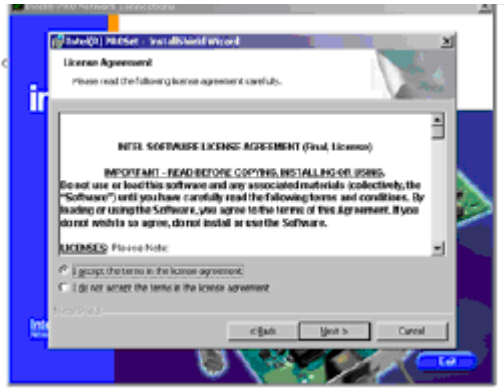
Step 3
Click Install Base Driver.

Step 4
Click OK to continue

Step 5
Click NEXT to continue



Step 6
Click NEXT after accepting the license agreement.



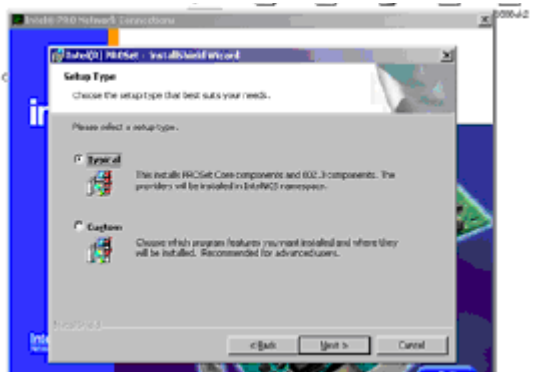
CHAPTER 6

USB 1.1 Configuration

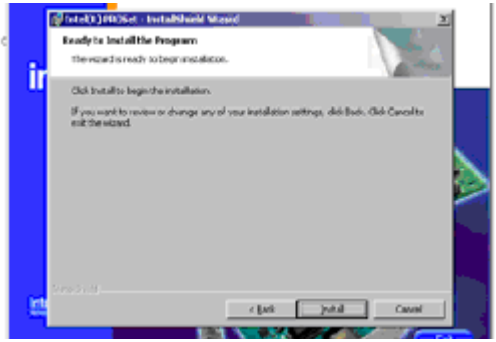
Chapter 6 USB 1.1 Configuration

6.1 Installation

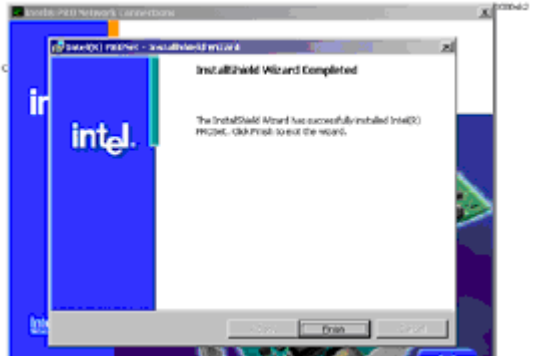
Step 1
Choose the setup type that best suits your needs and then click NEXT.



Step 2
Click INSTALL to begin installation.



Step 3
Click FINISH to exit after the installation.



Appendix A

Programming the Watchdog Timer

Appendix A Programming the watchdog

A.1 Programming the Watchdog Timer

The PCA-6289's watchdog timer can be used to monitor system software operation and take corrective action if the software fails to function after the programmed period. This section describes the operation of the watchdog timer and how to program it.

A.1.1 Watchdog Timer Working Procedure

Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before the timer reaches zero, WDT resets and counts down again. If for some reason the monitored item doesn't occur before

the timer reaches zero, WDT performs an action, such as a diagnostic operation (rebooting the computer). You must enter timer values into WDT Configuration Register (Write the control value to the Configuration Port), and clear WDT counter (read the Configuration Port).

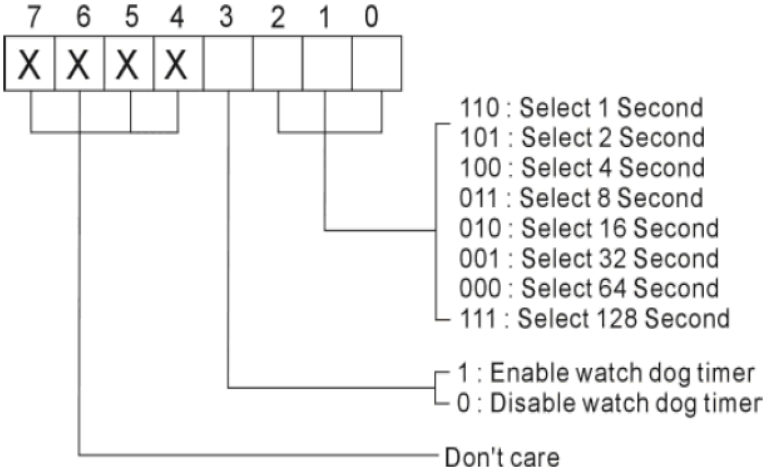
Table A.1: Installing the heatsink

WDT Configuration port	F2	Default at F2
Watch Dog Timer	Disabled	Default at disabled
	Enabled	Enabled for user's programming
WDT Active Time	1 sec 2 sec 4 sec 8 sec 16 sec 32 sec 64 sec 128 sec	Default at 64 sec

A.1.2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the WDT working mode. Write the value to the WDT Configuration Port. The following table describes the Control Register bit definition:

Table A.2: WDT Control Register Bit Definition



A.1.3 Watchdog Timer Programming Procedure

Power On or Reset the System

The initial value of WDT Control Register (D3~D0) is zero (0), when power is on or the system has been reset. The following table indicates the initial value of WDT (00000000b)

:

Table A.3: WDT Control Register Initial Value

Bit	Value	Mean
3	0	Disable Watchdog Timer
2,1,0	000	Select 64 second

A.1.4 Clear the WDT

WDT counter interval cannot be longer than the preset time, otherwise, WDT sends a reset signal to the system. The following is an example of clearing the WDT program in Intel 8086 assembly language.

```
; ( Clear the WDT)
Mov   dx,  F2h   ;Setting the WDT configuration port
In    al,  dx
```

Note: Before running WDT, you must clear WDT to ensure that the initial value is zero.

Note: *This register writes to WDT configuration port.*

Set WDT Control Register to control the WDT working mode. The initial value of WDT Control Register is shown as follows:

```
; (Setting the WDT Control Register as AL)
Mov       al, 0h  ; Setting initial value = 0 for the WDT Control Register
```

Follow these instructions to set the register:

1. Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2)

Example: If D2~D0 = 0, the time-out interval is 64 seconds.

```
AND       al, 11111000b  ; Setting the time-out interval as 64 sec.
```

2. Enable or Disable WDT (decide D3 value in F2)

i.e. D3=0, Disables WDT

```
AND     al, 11110111b  ; Disable the WDT
```

i.e. D3=1, Enables WDT

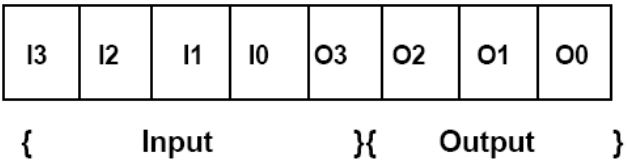
```
OR      al, 00001000b  ; Enable the WDT
```

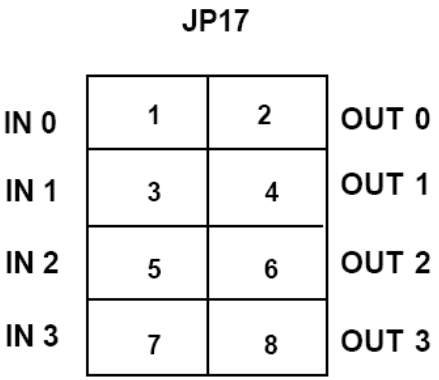
After finishing the above settings, you must output the Control Register's value to WDT Configuration Port. Then WDT will start according to the above settings.

```
MOV     dx, F2h   ; Setting WDT Configuration Port
OUT     dx, al    ; Output the Control Register Value
```

GPIO User's Guide

Digital I/O UESD Port 801





Appendix B

I/O Pin Assignments

Appendix B Pin Assignments

B.1 Mainboard

- J1, J2: Power Connector

Pin	Definition	Pin	Definition
1	GND	2	GND
3	+12V	4	+12V

- J4, J5: Single Ramp System FAN Connector

Pin	Definition	Pin	Definition
1	Ground	2	+12V
3	Sense		

- J7: External Keyboard Function Connector

Pin	Description	Pin	Description
1	KCLK	2	KDAT
3	NC	4	GND
5	+5V		

- J8: Keyboard & Mouse Mini Din

Pin	Description	Pin	Description
1	KBDATA-	2	MOUSEDATA
3	GND	4	VCC
5	KBCLK	6	MOUSECLK

- J9, J10: LAN RJ45 Connector

Pin	Description	Pin	Description
1	TXD_0P	2	TXD_0N
3	TXD_1P	4	TXD_2P
5	TXD_2N	6	TXD_1N
7	TXD_3P	8	TXD_3N
9	SPEED_LED	10	+VSBY3.3
11	LINK_LED	12	ACTIVE_LED
13	PD to TERMPLANE	14	PD to TERMPLANE

* PD means Pull-Down

B.2 Daughterboard

- J1: 2x13 2.0mm Box Header for PIO Connector

Pin	Description	Pin	Description
1	STB-	2	PD0
3	PD1	4	PD2
5	PD3	6	PD-4
7	PD5	8	PD6
9	PD7	10	ACK-
11	BUSY	12	PE
13	SLCT	14	AFD-
15	ERR-	16	INIT-
17	SLIN-	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	GND

- J2: Floppy Disk Connector

Pin	Description	Pin	Description
1	GND	2	REDWC#
3	GND	4	NC
5	GND	6	NC
7	GND	8	INDEX#
9	GND	10	MOTSA#
11	GND	12	DRVSB#
13	GND	14	DRVSA#
15	GND	16	MOTEB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TK00#
27	GND	28	WPT#
29	GND	30	RDATA#
31	GND	32	SIDE1#
33	GND	34	DSKCHG#

• J3: SIO2 Connector

Pin	Description	Pin	Description
1	DCD2#(Data Carrier Detect 2)	2	RXD2 (Receive Data 2)
3	TXD2 (Transmit Data 2)	4	DTR2#(Data Terminal Ready 2)
5	GND (Chassis Ground)	6	DSR2#(Data Set Ready 2)
7	RTS2#(Request To Send 2)	8	CTS2# (Clear To Send 2)
9	R12# (Ring Indicator 2)	10	GND (Chassis Ground)

• J4: SIO1 Connector

Pin	Description	Pin	Description
1	DCD1#(Data Carrier Detect 2)	2	RXD1 (Receive Data 2)
3	TXD1 (Transmit Data 2)	4	DTR1#(Data Terminal Ready 2)
5	GND (Chassis Ground)	6	DSR1#(Data Set Ready 2)
7	RTS1#(Request To Send 2)	8	CTS1#(Clear To Send 2)
9	RI1#(Ring Indicator 2)	10	GND (Chassis Ground)

• J5: ATX Power Connector (Daughterboard)

Pin	Description	Pin	Description
1	PS_ON#	2	VCC
3	+5Vsb		

• J6: AC'97 Connector

Pin	Description	Pin	Description
1	SDATOUT	2	VCC5V
3	RST	4	GND
5	SYNC	6	VCC12V
7	SDATAIN0	8	SDATAIN1
9	BITCLK	10	NC

• J7: 1x2 2.54mm Pin Header for IDE LED

Pin	Description	Pin	Description
1	+5V	2	IDE_LED

• J8, J9: USB Single Upright Right-Angle Connector

Pin	Description	Pin	Description
1	VCC	2	USBP0 minus
3	USBP0 plus	4	GND

• J12: Dual USB pin header for front USB interface

Pin	Description	Pin	Description
1	USBV0	6	USBV0
2	USBD0-	7	USBD1-
3	USBD0+	8	USBD1+
4	GND	9	GND
5	N/C	10	GND

• J13: 1x3 2.54mm Pin Header for AT/ATX Selection

Pin	Description
* 1, 2 Short	ATX Mode
2, 3 Short	AT Mode

• JP1: 1x4 2.54mm Pin Header For Speaker Function

Pin	Description	Pin	Description
1	Speaker	2	GND
3	GND	4	+5V

• JP3: 2x4 2.0mm Pin Header for Digital IO

Pin	Description	Pin	Description
1	GP27_D_IN1	2	GP23_D_OUT1
3	GP26_D_IN2	4	GP22_D_OUT2
5	GP25_D_IN3	6	GP21_D_OUT3
7	GP24_D_IN4	8	GP20_D_OUT4

• JP4: 1x3 2.0mm Pin Header for On Board RTC

Pin	Description
* 1, 2 Short	Operation Mode
2, 3 Short	Clear CMOS

• JP5: 1x2 2.0mm Pin Header for SMBUS External Connector

Pin	Description	Pin	Description
1	SMB_CLK	2	SMB_DAT

• JP6: 1x2 2.54mm Pin Header for Reset Button

Pin	Description	Pin	Description
1	GND	2	Reset

• JP7: 1x2 2.54mm Pin Header for Power Button

Pin	Description	Pin	Description
1	Power Up	2	GND

• JP9: 1x5 2.54mm Pin Header for Keyboard Lock Function

Pin	Description	Pin	Description
1	KL VCC	2	NC
3	GND	3	KEYLOCK
5	GND		

• CON1: Primary IDE Connector

Pin	Description	Pin	Description
1	Reset #	2	GND
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	GND	20	NC
21	DMA REQ	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IOCHRDY	28	Pull Down
29	DMA ACK	30	GND

31	Interrupt 14	32	NC
33	Disk Address 1	34	DMA66 Detect
35	Disk Address 0	36	Disk Address 2
37	HDC CS100	38	HDC CS300
39	HDD Active LED	40	GND

- CON2: IDE (Secondary) Connector

Pin	Description	Pin	Description
1	Reset #	2	GND
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	GND	20	NC
21	DMA REQ	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IOCHRDY	28	Pull Down
29	DMA ACK	30	GND
31	Interrupt 15	32	NC
33	Disk Address 1	34	DMA66 Detect
35	Disk Address 0	36	Disk Address 2
37	HDC CS100	38	HDC CS300
39	HDD Active LED	40	GND