

PCA-6155

Full-size Pentium PICMG
PCI/ISA-bus CPU Card

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

Packing list

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

- 1 PCA-6155 CPU card
- 1 6-pin mini-DIN keyboard & PS/2 mouse adapter
- 2 Hard disk drive (IDE) interface cables (40 pin)
- 1 Bus master IDE driver and Flash BIOS utility disk
- 1 Floppy disk drive interface cable (34 pin)
- 1 Parallel port adapter kit (26-pin)

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

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Hardware Configuration

This chapter gives background information on the PCA-6155. It then shows you how to configure the card to match your application and prepare it for installation into your PC.

Sections include:

- Card specifications
- Board layout
- Safety precautions
- Jumper settings
- Installing DRAM (SIMMs)

Introduction

The PCA-6155 packs all the functions of an industrial computer, including IDE, FDD controller, RS-232 ports and a parallel port onto a half-size card. This PICMG-compliant, all-in-one board supports Intel Pentium and Cyrix 6x86 processors and can be used with PICMG-compliant PCI/ISA passive backplanes.

The PCA-6155's two PCI-bus enhanced IDE ports support PIO mode 4 and DMA bus master IDE transfer, enabling data transfer rates in excess of 16 MB/second. Up to four IDE devices can be connected, including large hard disks (up to 8 GB), CD-ROM drives, tape backup drives, or other enhanced IDE devices.

On-board features also include two RS-232 ports with 16C550 UARTs (one of which can also function as an infrared port) and one bidirectional SPP/EPP/ECP parallel port. It provides COAST (Cache On A STick) pipeline burst synchronous cache RAM. The PCA-6155 can pack up to 128 MB of memory, using normal DRAM or EDO RAM.

If program execution is halted by a program bug or EMI, the board's 63-level watchdog timer can automatically reset the CPU or generate an interrupt. This ensures reliability in unmanned or standalone systems. The watchdog timer interval is set by software and can be changed during runtime, eliminating jumper switch setting.

Specifications

System

- **CPU:** Intel Pentium 75-166 MHz; Cyrix 6x86
- **2nd level cache:** 256/512 KB pipeline burst cache RAM
- **Bus interface:** PCI/ISA, PICMG standard
- **Chipset:** VIA 82C570 series
- **BIOS:** Award
- **Processing ability:** 32 bit
- **Bus speed:** 8 MHz ISA; 33 MHz PCI
- **RAM:** 2 MB to 128 MB. Uses four 72-pin SIMM sockets. 72-pin sockets accept 1, 2, 4, 8, 16 or 32 MB SIMMs. Supports both EDO and fast page DRAM.
- **Shadow RAM:** Supports system and video BIOS of up to 256 KB in 16 KB blocks

I/O

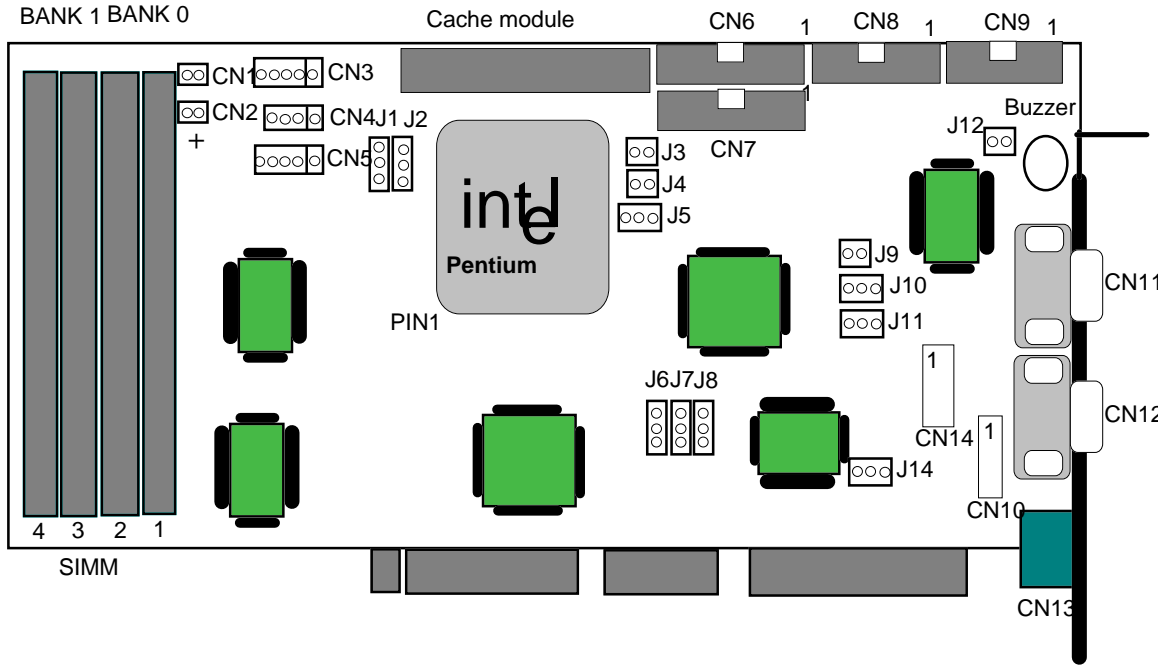
- **Enhanced IDE hard disk drive interface:**
Supports up to four IDE (AT bus) large (up to 8 GB) hard disk drives or other enhanced IDE devices. Supports mode 4 (16.6 MB/sec. data transfer rate). BIOS enables/disables on-board IDE controller.
- **Floppy disk drive interface:** Supports up to two floppy disk drives, 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB and 2.88 MB). BIOS enables/disables on-board FPP controller. Drives A and B may be swapped.
- **Enhanced bidirectional parallel port:** Configurable to LPT1, LPT2, LPT3, or disabled. Standard DB-25 female connector provided. Multi-mode parallel port supports SPP/EPP/ECP.

- **Serial ports:** Two RS-232 serial ports, both with 16C550 UARTs (or compatible) with 16-byte FIFO buffer. Support speeds up to 115 Kbps. Ports can be individually configured as COM1, COM2 or disabled. COM2 can function as an infrared port or an RS-232 port.
- **Keyboard & PS/2 mouse connector:** A 6-pin mini DIN connector is located on the mounting bracket for easy keyboard and/or PS/2 mouse connection.
- **Watchdog timer:** Can generate a system reset or IRQ11/15. The timer interval is 1 - 63 seconds (63 levels). Run-time software setup.

General

- **Max. power requirements:** +5 V @ 5 A
- **Power supply voltage:** +5 V (4.75 V to 5.25 V)
- **Operating temperature:** 32 to 140°F (0 to 60°C)
- **Storage temperature:** -40 to 176°F (-40 to 80°C)
- **Board size:** 13.3" (L) x 4.8" (W) (338 mm x 122 mm)
- **Board weight:** 1.2 lbs (0.5 kg)

Board Layout



Jumpers and Connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers which you use to configure it for your application.

The table below lists the function of each of the board jumpers and connectors. Later sections in this chapter give instructions on setting jumpers and detailed information on each jumper setting. Chapter 2 gives instructions for connecting external devices to your card.

| Jumpers and connectors | |
|------------------------|-------------------------------------|
| Number | Function |
| J1, J2 | CPU voltage select |
| J3, J4 | CPU clock select |
| J5 | Cache RAM select |
| J6, J7, J8 | CPU type select |
| J9, J10 | Watchdog timer reset/IRQ select |
| J11 | RTC data erase enable/disable |
| J12 | Buzzer enable/disable |
| J13 | Reserved |
| J14 | PS/2 mouse select |
| CN1 | Reset |
| CN2 | HDD LED |
| CN3 | IrDA Tx/Rx header |
| CN4 | External speaker |
| CN5 | Power LED and keylock |
| CN6 | Primary IDE |
| CN7 | Secondary IDE |
| CN8 | Floppy drive connector |
| CN9 | Parallel port |
| CN10 | Keyboard pin-header connector |
| CN11 | COM1 (DB-9) |
| CN12 | COM2 (DB-9) |
| CN13 | Keyboard & PS/2 mouse DIN connector |
| CN14 | CPU cooling fan power connector |

Safety Precautions

Follow these simple precautions to protect yourself from harm and your PC from damage.

1. To avoid electric shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.
3. Always ground yourself to remove any static charge before you touch your CPU card. Be particularly careful not to touch the chip connectors. Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electric discharges and fields. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

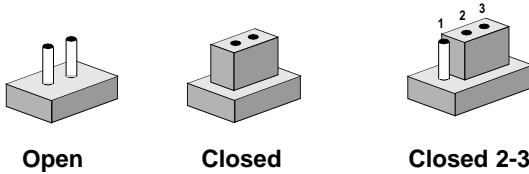
Jumper Settings

This section tells how to set the jumpers to configure your card. It gives the card default configuration and your options for each jumper. After you set the jumpers and install the card, you will also need to run the BIOS Setup program (discussed in Chapter 3) to configure the serial port addresses, floppy/hard disk drive types and system operating parameters. Connections, such as hard disk cables, appear in Chapter 2.

For the locations of each jumper, see the board layout diagram depicted earlier in this chapter.

How to set jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. 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” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you connect either pins 1 and 2 or 2 and 3.



You may find pair of needle-nose pliers useful for setting the jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.




































CPU clock select (J3, J4, J6, J7, J8)

In order for the system to function properly, the jumpers must be set to accommodate the correct CPU. The following table shows the jumper settings, as well as the clock and frequency values, for each CPU type.

CPU clock select (J3, J4, J6, J7, J8)

Pentium CPU/

Cyrix 6x86 CPU

| | J3 | J4 | J6 | J7 | J8 |
|---------------------------|---|---|---|---|---|
| 75 MHz (1.5 x 50 MHz) |  |  |  |  |  |
| 90 MHz (1.5 x 60 MHz) |  |  |  |  |  |
| 100 MHz (1.5 x 66 MHz) |  |  |  |  |  |
| 120 MHz (2 x 60 MHz) |  |  |  |  |  |
| 133 MHz (2 x 66 MHz) |  |  |  |  |  |
| 150 MHz (2.5 x 60 MHz) |  |  |  |  |  |
| 166 MHz (2.5 x 66 MHz) |  |  |  |  |  |

CPU voltage select (J1, J2)

| CPU voltage select (J1, J2) | | |
|-----------------------------|--|--|
| Voltage | J1 | J2 |
| 3.3 V | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3.45 V | <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3.6 V | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 3.7 V | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |

Cache RAM select (J5)

The PCA-6155 provides a COAST cache module slot for 2nd level cache. Users can select either 256 KB or 512 KB (BIOS detected) to enhance performance.

| Cache RAM select (J5) | | | |
|-----------------------|--|--|--|
| Burst RAM | Synchronized | Asynchronized | No Cache (default) |
| J5 | <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Watchdog timer reset/IRQ select (J9, J10)

| Watchdog timer reset/IRQ select (J9, J10) | | | |
|---|--|--|--|
| | Reset (default) | IRQ11 | IRQ15 |
| J9 | <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| J10 | <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

RTC data erase enable/disable (J11)

J11 determines whether RTC data is kept or erased.

| RTC data erase enable/disable (J11) | | | | | | |
|-------------------------------------|-----------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|-----------------------|
| Enable (keep data) | | | Disable (dump data) | | | |
| | 3 | 2 | 1 | 3 | 2 | 1 |
| J11 | <input type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input checked="" type="radio"/> | <input type="radio"/> |

Buzzer enable/disable (J12)

Buzzer enable/disable (J12)

| | Enable | Disable |
|-----|---|---|
| J12 | <input checked="" type="radio"/> <input checked="" type="radio"/> | <input type="radio"/> <input type="radio"/> |

PS/2 mouse select (J14)

IRQ 12 is designed for PS/2 mouse use. It may also be reserved for user selected applications.

Buzzer enable/disable (J14)

| | PS/2 Mouse (default) | Reserve IRQ 12 |
|-----|---|---|
| J14 | <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> | <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> |

Installing DRAM (SIMMs)

The PCA-6155 has four 72-pin SIMM (Single In-Line Memory Module) sockets that provide anywhere from 2 MB to 128 MB of DRAM. Each socket accepts from 1 to 32 MB of DRAM. For more detailed information please refer to the memory configuration tables on page 12 of this manual.

Table 1: Single SIMM (32-bit) boot up

| Total Memory | Bank 0 | | Bank 1 | | Remark |
|--------------|----------|--------|--------|--------|----------------|
| | SIMM 1 | SIMM 2 | SIMM 3 | SIMM 4 | |
| 4MB | 4MB x 1 | | | | 32-bit boot up |
| 8MB | 8MB x 1 | | | | 32-bit boot up |
| 16MB | 16MB x 1 | | | | 32-bit boot up |
| 32MB | 32MB x 1 | | | | 32-bit boot up |

Table 2: Dual or Quad SIMM (64-bit) boot up

| Total Memory | BANK 0 | | BANK 1 | |
|--------------|----------|----------|----------|----------|
| | SIMM 1 | SIMM 2 | SIMM 3 | SIMM 4 |
| 2MB | 1MB x 1 | 1MB x 1 | | |
| 4MB | 2MB x 1 | 2MB x 1 | | |
| 4MB | 1MB x 1 | 1MB x 1 | 1MB x 1 | 1MB x 1 |
| 8MB | 4MB x 1 | 4MB x 1 | | |
| 8MB | 2MB x 1 | 2MB x 1 | 2MB x 1 | 2MB x 1 |
| 16MB | 8MB x 1 | 8MB x 1 | | |
| 16MB | 4MB x 1 | 4MB x 1 | 4MB x 1 | 4MB x 1 |
| 32MB | 16MB x 1 | 16MB x 1 | | |
| 32MB | 8MB x 1 | 8MB x 1 | 8MB x 1 | 8MB x 1 |
| 64MB | 16MB x 1 | 16MB x 1 | 16MB x 1 | 16MB x 1 |
| 64MB | 32MB x 1 | 32MB x 1 | | |
| 128MB | 32MB x 1 | 32MB x 1 | 32MB x 1 | 32MB x 1 |
| 24MB | 4MB x 1 | 4MB x 1 | 8MB x 1 | 8MB x 1 |
| 48MB | 8MB x 1 | 8MB x 1 | 16MB x 1 | 16MB x 1 |
| 96MB | 16MB x 1 | 16MB x 1 | 32MB x 1 | 32MB x 1 |
| 40MB | 4MB x 1 | 4MB x 1 | 16MB x 1 | 16MB x 1 |
| 80MB | 8MB x 1 | 8MB x 1 | 32MB x 1 | 32MB x 1 |

Connecting Peripherals

This chapter tells how to connect peripherals, switches and indicators to the PCA-6155 board. You can access most of the connectors from the top of the board while it is installed in the chassis. If you have a number of cards installed, or your chassis is very tight, you may need to partially remove the card to make all the connections.

The following table lists the connectors on the PCA-6155. See Chapter 1 for help locating the connectors.

| PCA-6155 Connector functions | |
|------------------------------|-------------------------------------|
| Connector | Function |
| CN1 | Reset |
| CN2 | HDD LED |
| CN3 | IrDA Tx/Rx header |
| CN4 | External speaker |
| CN5 | Power LED and keylock |
| CN6 | Primary IDE |
| CN7 | Secondary IDE |
| CN8 | Floppy drive connector |
| CN9 | Parallel port |
| CN10 | Keyboard pin-header |
| CN11 | COM1 (DB-9) |
| CN12 | COM2 (DB-9) |
| CN13 | Keyboard & PS/2 mouse DIN connector |
| CN14 | CPU cooling fan power connector |

The following sections tell how to make each connection. In most cases, you will simply need to connect a standard cable.



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



Caution! *Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. 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.*

Reset Switch (CN1)

You can connect an external switch to easily reset your computer. This switch restarts your computer as if you had turned off the power, then turned it back on.

Hard Drive LED (CN2)

You can connect a LED to connector CN2 to indicate when the HDD is active. Marks on the circuit board indicate LED polarity.

IrDA Tx/Rx Header (CN3)

This connector supports the optional wireless transmitting and receiving infrared module. This module mounts onto a small opening on system cases that support this feature. You must also configure the setting through BIOS setup to select whether UART2 is directed for use with COM2 or IrDA.

IrDA Tx/Rx header (CN3)

| Pin | Function |
|-----|----------|
|-----|----------|

| | |
|---|------|
| 1 | +5 V |
|---|------|

| | |
|---|---------------|
| 2 | No Connection |
|---|---------------|

| | |
|---|----|
| 3 | Rx |
|---|----|

| | |
|---|-----|
| 4 | GND |
|---|-----|

| | |
|---|----|
| 5 | Tx |
|---|----|

External Speaker (CN4)

The CPU card has its own buzzer. You can also connect to the external speaker on your computer chassis. Pin assignments for CN4 are shown below:

External speaker (CN4)

| Pin | Function |
|-----|----------|
|-----|----------|

| | |
|---|-------------|
| 1 | Speaker out |
|---|-------------|

| | |
|---|---------------|
| 2 | No Connection |
|---|---------------|

| | |
|---|-----|
| 3 | GND |
|---|-----|

| | |
|---|--------|
| 4 | +5 VDC |
|---|--------|

Power LED and Keylock (CN5)

You can use a LED to indicate when the CPU card is on. Pin 1 of CN5 supplies the LED's power, and Pin 3 is the ground.

You can use a switch (or a lock) to disable the keyboard so the PC will not respond to any input. This is useful if you don't want anyone to change or stop a running program. Connect the switch between Pins 4 and 5 of CN5.

Power LED and keylock (CN5)

| Pin | Function |
|-----|------------------|
| 1 | LED power (+5 V) |
| 2 | +5 V |
| 3 | GND |
| 4 | Keyboard lock |
| 5 | GND |

Enhanced IDE (CN6, CN7)

You can attach four IDE (Integrated Device Electronics) drives to the PCA-6155's internal controller. The PCA-6155 CPU card has two EIDE connectors, CN6 and CN7. The first two IDE devices must be installed into CN6. CN7 may be used for a third and fourth IDE device.

Wire number 1 on the cable is red or blue, the other wires are gray. Connect one end to CN6 or CN7 on the CPU card. Make sure that the red (or blue) wire corresponds to pin 1 on the connector (on the right side). See Chapter 1 for help finding the connector.

Floppy Drive (CN8)

You can attach up to two floppy disk drives to the PCA-6155's on-board controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and 3½" (720 KB and 1.44 MB) drives.

The card comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit-board connector (usually used for 5¼" drives). You can use only one connector in each set. The set on the end (after the twist in the cable) connects to the **A** drive. The set in the middle connects to the **B** drive.

Parallel Port (CN9)

The parallel port is normally used to connect the CPU card to a printer. The PCA-6155 includes an on-board parallel port, accessed through CN9, a 26-pin flat-cable connector. The card comes with an adapter cable which lets you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other, mounted on a retaining bracket. The bracket installs at the end of an empty slot in your chassis, giving you access to the connector.

To install the bracket:

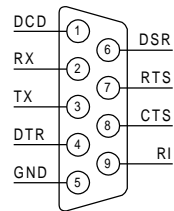
1. Find an empty slot in your chassis.
2. Unscrew the plate that covers the end of the slot, and screw in the bracket.
3. Attach the flat-cable connector to CN9 on the CPU card. Wire 1 of the cable is red or blue, and the other wires are gray. Make sure that wire 1 corresponds to pin 1 of CN9. Pin 1 is on the right side of CN9.

Serial Ports (CN11, CN12)

The PCA-6155 offers two RS-232 serial ports, COM1 and COM2, which let you connect to serial devices (a mouse, printers, etc.) or a communication network. CN11 is COM1, and CN12 is COM2. See Chapter 1 for help finding the connectors.

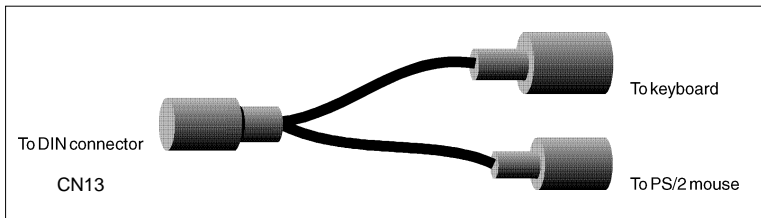
You can disable each port or select its address (3F8H [COM1], 2F8H [COM2] or 3E8H) using the BIOS Advanced Setup program, covered in Chapter 3.

The figure at right shows the pin assignments for the card's RS-232 ports:



Keyboard & PS/2 mouse connector (CN10, CN13)

CN13, the card's keyboard and PS/2 mouse connector, is a 6-pin mini-DIN connector on the card mounting bracket. The PCA-6155 also comes with an adapter to convert a standard DIN connector to a keyboard and PS/2 mouse connector.



The PCA-6155 provides a second connector designed for external keyboard input (CN10). To locate CN10 and CN13 please see the board layout on page 5 of chapter 1.

CPU cooling fan power connector (CN14)

The CN14 is a connector for the CPU cooling fan. It provides both +5V and +12V when power is on.

CPU cooling fan power connector (CN14)

| Pin | Function |
|------------|-----------------|
| 1 | +5 V |
| 2 | GND |
| 3 | GND |
| 4 | +12 V |

CHAPTER 3

Award BIOS Setup

This chapter describes how to set the card's BIOS configuration data.

Entering setup

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 RAM so that it retains the Setup information when the power is turned off. Turning on the computer and pressing immediately will allow you to enter Setup.

| | |
|--|--|
| ROM PCI/ISA BIOS (2A5L9AKA) CMOS SETUP UTILITY AWARD SOFTWARE, INC. | |
| STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PCI CONFIGURATION SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS | PASSWORD SETTING IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING |
| ESC : QUIT F1 : SAVE & EXIT SETUP | ↑↓←→ : SELECT ITEM (SHIFT)F2 : CHANGE COLOR |
| Time, Date, Hard Disk Type... | |

Setup program initial screen

Standard CMOS setup

Choose the "STANDARD CMOS SETUP" option from the INITIAL SETUP SCREEN Menu, and the screen below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

| ROM PCI/ISA BIOS (2A5L9AKA) | | | | | | | | |
|--------------------------------------|--------|--------------------------|------|------|-------------------|-------|--------|--------|
| STANDARD CMOS SETUP | | | | | | | | |
| AWARD SOFTWARE, INC. | | | | | | | | |
| Date (mm:dd:yy) : Mon, April 1, 1996 | | | | | | | | |
| Time (hh:mm:ss) : 16 : 23 : 5 | | | | | | | | |
| HARD DISK | | | | | | | | |
| | TYPE | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR | MODE |
| Primary Master | : User | 539 | 1046 | 16 | 65535 | 1045 | 63 | Normal |
| Primary Slave | : None | 0 | 0 | 0 | 0 | 0 | 0 | ---- |
| Secondary Master | : None | 0 | 0 | 0 | 0 | 0 | 0 | ---- |
| Secondary Slave | : None | 0 | 0 | 0 | 0 | 0 | 0 | ---- |
| Drive A : 1.2M, 5.25 in. | | | | | | | | |
| Drive B : 1.44M, 3.5 in. | | | | | | | | |
| Video : EGA/VGA | | | | | | | | |
| Halt On : All Errors | | | | | | | | |
| Base Memory: 640K | | | | | | | | |
| Extended Memory: 15360K | | | | | | | | |
| Other Memory: 384K | | | | | | | | |
| Total Memory: 16384K | | | | | | | | |
| ESC : QUIT | | ↑↓←→ : SELECT ITEM | | | PU/PD/+/-: Modify | | | |
| F1 : HELP | | (SHIFT)F2 : CHANGE COLOR | | | | | | |

CMOS setup screen

BIOS features setup

By choosing the "BIOS FEATURES SETUP" option from the INITIAL SETUP SCREEN Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6155.

| ROM PCI/ISA BIOS (2A5L9AKA) | | | |
|-------------------------------|-------------|-----------------------------------|-----------------------|
| BIOS_FEATURES_SETUP | | | |
| κτι ουσ Ωαονινγ | : Εναβλεδ | κτι δεο ΒΙ CΣ Σπαδω | : Εναβλεδ |
| ΧΠΥ Ιντεοναλ Χαχηη | : Εναβλεδ | Χ8000-Χ444Φ Σπαδω | : Δι σαβλεδ |
| Εξτεοναλ Χαχηη | : Εναβλεδ | Δ0000-Δ744Φ Σπαδω | : Δι σαβλεδ |
| Ευι γκ Ροαεο Ον Σε λφ Τεστ | : Εναβλεδ | Λ8000-Λ444Φ Σπαδω | : Λι σαβλεδ |
| Βοοτ Σε θυε νγε | : Α. Χ | ΔΧ000-Δ444Φ Σπαδω | : Δι σαβλεδ |
| Σωαπ Φλοππω Δοι πε | : Δι σαβλεδ | | |
| Βοοτ Υπ Φλοππω Σε εκ | : Εναβλεδ | | |
| Βοοτ υπ Νομλογκ Στατυς | : Ον | | |
| Βοοτ Υπ Σωστρευ Σπεεδ | : Ηι νη | | |
| Γατε Α20 Cπτι ον | : Νοουαλ | | |
| Τυπειαστι γ Ρατε Σε πτι νν | : Λι σαβλεδ | | |
| Τυπειαστι γ Ρατε (Χηρα/ Σεχ) | : 6 | | |
| Τυπειαστι γ Δε λω (Νοεχ) | : 250 | | |
| Σε γυοι τω Cπτι ον | : Σε τυπ | | |
| ΠΧΙ/ ςΓΑ Παλε τετε Σνοοπ | : Δι σαβλεδ | | |
| CΣ Σε λε χτ Φορ ΔΡΑΜ>64 ΜΒ | : Νον-CΣ2 | | |
| | | ESC : Quit | ↑ ↓ ← → : Select Item |
| | | F1 : Help | PU/PD/+/- : Modify |
| | | F5 : Old Values (Shift)F2 : Color | |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

BIOS features setup

Virus Warning

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system. In this case, if Virus Warning is enabled, the following error message will automatically appear:

| |
|---|
| <p>!WARNING! Disk boot sector is to be modified Type "Y" to accept write or "N" to abort write Award Software, Inc.</p> |
|---|

You can run the anti-virus program to locate the problem.

If Virus Warning is Disabled, no warning message will appear if anything attempts to access the boot sector or hard disk partition.

CPU Internal Cache/External Cache

Depending on the CPU/chipset design, these options can speed up memory access when enabled.

Quick Power On Self Test

This option speeds up the Power-On Self Test (POST) conducted as soon as the computer is turned on. When enabled, BIOS shortens or skips some of the items during the test. When disabled, normal POST procedures assumes.

Boot Sequence

This function determines the sequence in which the computer will search the drives for the disk operating system (i.e. DOS). The default value is "A, C".

| | |
|-----|---|
| C,A | System will first search the hard drive, then the floppy drive. |
|-----|---|

| | |
|-----|---|
| A,C | System will first search the floppy drive, then the hard drive. |
|-----|---|

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360 KB type is 40 tracks while 720 KB, 1.2 MB, and 1.44 MB are all 80 tracks.

| | |
|---------|--|
| Enabled | BIOS searches the floppy drive to determine if it is 40 or 80 tracks. Note that BIOS cannot differentiate 720 KB, 1.2 MB, and 1.44 MB type drives as all have 80 tracks. |
|---------|--|

| | |
|----------|---|
| Disabled | BIOS will not search for the floppy drive type by track number. Note that there will not be any warning message if the drive installed is 360 KB. |
|----------|---|

Boot Up NumLock Status

The default is "On".

| | |
|----|---------------------------------|
| On | Keypad boots up to number keys. |
|----|---------------------------------|

| | |
|-----|--------------------------------|
| Off | Keypad boots up to arrow keys. |
|-----|--------------------------------|

Boot Up System Speed

| | |
|------|------------------------|
| High | Sets the speed to high |
| Low | Sets the speed to low |

IDE HDD Block Mode

| | |
|----------|---|
| Enabled | Enable IDE HDD Block Mode. BIOS will detect the block size of the HDD and send a block command automatically. |
| Disabled | Disable IDE HDD Block Mode |

Gate A20 option

| | |
|--------|--|
| Normal | The A20 signal is controlled by the keyboard controller or chipset hardware |
| Fast | Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method. |

Memory parity check

| | |
|----------|---|
| Enabled | Normal memory parity check. If system DRAM has no parity bit, the the system will display "RAM parity error". |
| Disabled | Ignores memory parity check even if DRAM has no parity bit. The the system will display "RAM parity error". |

Typematic Rate setting

The typematic rate determines the characters per second accepted by the computer. Typematic Rate setting enables or disables the typematic rate.

Typematic Rate (Char/Sec)

BIOS accepts the following input values (character/second) for Typematic Rate: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (msec)

When holding down a key, the Typematic Delay is the time interval between the appearance of the first and second characters. The input values (msec) for this category are: 250, 500, 750, 1000.

Security Option

This setting determines whether the system will boot if the password is denied, while limiting access to 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 hit the <ENTER> key to disable security. When security is disabled, the system will boot, and you can enter Setup freely.

Video BIOS Shadow

This determines whether video BIOS will be copied to RAM, which is optional according to the chipset design. When enabled, Video Shadow increases the video speed.

C8000 - CFFFF Shadow/DC000-DFFFF Shadow

These determine whether optional ROM will be copied to RAM in blocks of 16 KB.

Enabled Optional shadow is enabled

Disabled Optional shadow is disabled

CHIPSET features setup

By choosing the "CHIPSET FEATURES SETUP" option from the INITIAL SETUP SCREEN Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6155.

| ROM PCI/ISA BIOS (2A5L9AKA) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC. | | | |
|---|------------|--------------------------|-------------------|
| Auto Configuration | : Enabled | SRAM Tag/Alt Bit Config. | : 8 tags |
| AT Bus Clock | : CLKIN/8 | Data Link Bus Master | : Normal |
| Decoupled Refresh | : Disabled | CPU to DRAM Write Buffer | : Disabled |
| Video BIOS Cacheable | : Enabled | On-Board FDD Controller | : Enabled |
| System BIOS Cacheable | : Enabled | On-Board Serial Port 1 | : COM1/3F8 |
| Memory Hole at 15MB Addr. | : Disabled | On-Board Serial Port 2 | : COM2/2F8 |
| Cache Timing Control | : Fast | Infrared (IR) Function | : Disabled |
| DRAM Timing Control | : Fast | Onboard Parallel Port | : 378/IRQ7 |
| | | Onboard Parallel Mode | : Normal |
| On-Chip IDE channel 1 | : Enabled | Onboard Game Port | : Disabled |
| On-Chip IDE channel 2 | : Enabled | IR Transfer Mode | : Half-Dup |
| IDE HDD Block Mode | : Enabled | | |
| IDE 32-bit Transfer Mode | : Disabled | | |
| IDE Primary Master PIO | : Mode 1 | | |
| IDE Primary Slave PIO | : Auto | | |
| IDE Secondary Master PIO | : Auto | | |
| IDE Secondary Slave PIO | : Auto | | |
| | | ESC: Quit | ↑↓←→: Select Item |
| | | F1 : Help | PU/PD/+/-: Modify |
| | | F5 : Old Values | (SHIFT)F2: Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

CHIPSET features setup

Power management setup

The power management setup controls the CPU cards' "green" features. The following screen shows the manufacturer's default.

| ROM PCI/ISA BIOS (2A5L9AKA) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC. | | | |
|---|-------------------|----------------------------|-------------------|
| Ενεργο Ανάγερση μινι | : Δι.σβλεδ | IP69 (IP62 Pε δι ρ) | : Πη.ισου |
| ΠΜΧοντοολ.βυ.ΑΠΜ | : Ψεσ | IP610 (Pε σε ρσε δ) | : Σε γονδισου |
| ετι δεο Cφφ Cπτι ον | : Συσπε νδ -> Cφφ | IP611 (Pε σε ρσε δ) | : Σε γονδισου |
| ξτι δεο Cφφ Με τη οδ | : ΔΠΜΣ Συμπορτ | IP612 (ΠΣ/ ? Λοιψε) | : Σε γονδισου |
| | ** PMTi με ρσ ** | IP613 (Χοπηρο γε σε σο ρ) | : Σε γονδισου |
| ΗΑΑ Ενε ρο Δοαν | : Δι.σβλεδ | IP614 (Ηαηδ δι σκ) | : Πη.ισου |
| Λοΰε Νοδε | : Δι.σβλεδ | IP615 (Pε σε ρσε δ) | : Σε χονδισου |
| Συσπε νδ Νοδε | : Δι.σβλεδ | | |
| | ** ΠΜΕσε ντς ** | | |
| εΓΑ | : Cφφ | | |
| ΑΓΤ & ΧCΜ | : ΑΓΤ/ ΧCΜ | | |
| ΗΑΔ & ΦΑΔ | : Cν | | |
| IP63 (ΧCΜ2) | : Γοι.ισου | | |
| IP64 (ΧCΜ1) | : Γοι.ισου | | |
| IP65 (ΑΓΤ ?) | : Γοι.ισου | | |
| IP66 (ελ.οπ.πψ Δι σκ) | : Γοι.ισου | | |
| IP67 (ΑΓΤ 1) | : Γοι.ισου | | |
| IP68 (ΡΤΧ Αλορμ) | : Σε χονδισου | | |
| | | ESC: Quit | ↑↓←→: Select Item |
| | | F1 : Help | PU/PD/+/-: Modify |
| | | F5 : Old Values | (SHIFT)F2: Color |
| | | F6 : Load BIOS Defaults | |
| | | F7 : Load Setup Defaults | |

Power management

Power Management

This option allows you to determine if the values in power management are disabled, user-defined, or predefined.

Video Off Method

This option controls to what degree will the video be downed:

1. Blank screen only turns off the screen
2. V/H SYNC + Blank will also turn off the V-SYNC and H-SYNC signals from the VGA cards to the monitor
3. DPMS is enabled only for VGA cards that support DPMS.

HDD Power Management

You can choose to turn the HDD off after the time interval listed, or when the system is in Suspend mode. If in a power saving mode, any access to the HDD will wake it up.

Note: HDD will not power down if the Power Management option is disabled.

IRQ Activity

IRQ can be set independently. Activity on any enabled IRQ will wake up the system.

PCI configuration setup

| ROM PCI/ISA BIOS (2A5L9AKA) PCI CONFIGURATION SETUP AWARD SOFTWARE, INC. | |
|--|------------------------------------|
| PnP BIOS Auto-Config : Disabled | CPU to PCI Write Buffer : Enabled |
| 1st Available IRQ : 10 | PCI Master Write Buffer : Disabled |
| 2nd Available IRQ : 11 | PCI Master Prefetch : Disabled |
| 3rd Available IRQ : 9 | PCI Master Burst Read : Disabled |
| 4th Available IRQ : 5 | PCI Master Burst Write : Disabled |
| PCI IRQ Activated By : Edge | PCI Byte Merge : Disabled |
| PCI IDE IRQ Map To : PCI-AUTO | Local Memory Detect Point : Fast |
| Primary IDE INT# : A | PCI Burst : Enabled |
| Secondary IDE INT# : B | PCI Master 0 WS Write : Enabled |
| ESC: Quit ↑↓←→: Select Item | |
| F1 : Help PU/PD/+/-: Modify | |
| F5 : Old Values (SHIFT)F2: Color | |
| F6 : Load BIOS Defaults | |

PCI configuration

Load BIOS defaults

"LOAD BIOS DEFAULTS" indicates the most appropriate values for the system parameters for minimum performance. These default values are loaded automatically if the stored record created by the Setup program becomes corrupted (and therefore unusable).

Load setup defaults

"LOAD SETUP DEFAULTS" loads the values required by the system for maximum performance.

Password setting

To change, confirm, or disable the password, choose the "PASSWORD SETTING" option from the Setup main menu and press [Enter]. The password can be at most 8 characters long.

Remember, to enable this feature. You must first select the Security Option in the BIOS FEATURES SETUP to be either "Setup" or "System."

IDE HDD auto detection

"IDE HDD AUTO DETECTION" automatically self-detects for the correct hard disk type.

Save & Exit setup

If you select this and press the [Enter] key, 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.

Exit without saving

Selecting this option and pressing the [Enter] key lets you exit the Setup program without recording any new values or changing old ones.

Programming the Watchdog Timer

The PCA-6155 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial standalone and unmanned environments.

Programming the Watchdog Timer

If you decide to program the watchdog timer, you must write data to I/O port 443 (hex). The output data is a value timer. You can write from 01 (hex) to 3E (hex), and the related timer is 1 sec. to 63 sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read I/O port 043 (hex).

The following procedure is a program for the watchdog timer:

- Step 1 Out 443h, data **REM Start and reset
the watchdog timer**
- Step 2 your application program task #1
- Step 3 out 443h, data **REM Reset the timer**
- Step 4 your application program task #2
- Step 5 out 443h, data **REM Reset the timer**
- Step 6 in 043h, **REM Disable the watchdog
timer**

Data Values

| | |
|----|---------|
| 01 | 1 sec. |
| 02 | 2 sec. |
| 03 | 3 sec. |
| 04 | 4 sec. |
| . | . |
| . | . |
| . | . |
| . | . |
| 3E | 63 sec. |

APPENDIX

B

Hardware Information

Interrupt assignments

| Priority | Interrupt# | Interrupt source |
|----------|------------|---------------------------------------|
| - | IRQ2 | Interrupt from controller 2 (cascade) |
| 1 | NMI | Parity error detected |
| 2 | IRQ0 | Interval timer, counter 0 output |
| 3 | IRQ1 | Keyboard |
| 4 | IRQ8 | Real-time clock |
| 5 | IRQ9 | Reserved |
| 6 | IRQ10 | Reserved |
| 7 | IRQ11 | Watchdog IRQ |
| 8 | IRQ12 | PS/2 mouse |
| 9 | IRQ13 | INT from co-processor |
| 10 | IRQ14 | IDE 0 driver |
| 11 | IRQ15 | IDE 1 driver |
| 12 | IRQ3 | Serial communication port 2 |
| 13 | IRQ4 | Serial communication port 1 |
| 14 | IRQ5 | Reserved |
| 15 | IRQ6 | Diskette controller (FDC) |
| 16 | IRQ7 | Parallel port 1 (print port) |

Memory Map

| Range | Size | Comments |
|--------------|------|--------------------|
| 00000-9FFFF | 640K | Conventional Area |
| A0000-BFFFF | 128K | Video Buffer Area |
| C0000-DFFFF | 128K | ROM Expansion Area |
| E0000-FFFFFF | 128K | System Bios Area |