

PCA-6780

**ISA Celeron® M Half-sized SBC
with VGA/LCD/LVDS/10/100
Ethernet/USB 2.0 and SSD**

User Manual

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This manual is for the PCA-6780.

Part No.2006678000

1nd Edition

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Packing List

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

- 1 PCA-6780 Series Half-sized single board computer
- 1 Startup manual
- 1 CD for utility, drivers, and manual (in PDF format)
- 1 Y cable for PS/2 Keyboard, PS/2 Mouse p/n:1700060202
- 1 E-IDE (HDD) cable p/n:1701400452
- 1 FDD cable (600mm) p/n:1701340705
- 1 Parallel port cable p/n:1700260250
- 1 Power cable p/n:1700000265
- Mini jumper p/n:1653302122
- 1 ATX Feature Cable p/n:1700002343

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

Additional Information and Assistance

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Step 1. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

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.

Achtung!

Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

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General Information

This chapter gives background information on the PCA-6780.

Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

Chapter 1 General Information

1.1 Introduction

The PCA-6780 series is a half-sized ISA bus CPU card designed with powerful Intel Celeron M processor, with Intel 852GM and ICH4 chipset, which supports Dynamic Video Memory Technology. For maximum performance, PCA-6780 also supports one 200 Pin SODIMM socket and ECC DDR memory up to 1 GB. These chipsets provide an optimized on-board integrated graphics solution.

Other onboard features include 1 EIDE, 1 FDD, 1 LPT, 4 USB 2.0, 2 COM ports (1 x RS-232 and 1 x RS-232/422/485), PS/2 Keyboard/mouse, watchdog, and a DI/O interface. The SSD solution supports Type I/II CompactFlash cards.

This product uses an Intel 852GM that supports VGA/LVDS interface, 2 channel (36-bit) LVDS LCD panel. PCA-6780 supports AC97 audio with the addition of the optional PCM-231A-00A1E audio module.

The Ethernet interface supports 10/100Base-T Realtek 8100C.

Its dimension follows standard ISA slot PC, this makes it can match with all half-sized chassis and can operate in high vibration environment.

1.2 Features

- Intel Embedded new generation Celeron M Processor 1.0 GHz
- Fanless operation at 0 ~ 60° C
- On-board PCI VGA/LVDS display
- Supports 100Base-T Ethernet on board
- Supports 4 x USB 2.0 ports
- Supports 2 Channel 36-bit LVDS for LCD
- Supports 400 MHz Front Side Bus
- Accepts 128/256/512 bit technologies DDR 200/266 DRAM

1.3 Specifications

1.3.1 Standard SBC Functions

- **CPU:** Supports Intel® Embedded Celeron M Processor, up to 1.0 GHz
- **System chipsets:** Intel 852GM +ICH4
- **BIOS:** Award 4Mbit Flash BIOS
- **System memory:** 200 pin SODIMM x 1, supports ECC double data rate (DDR) 128 MB to 1 GB, accepts 128/256/512 bit technologies DDR 200/266 DRAM
- **2nd cache memory:** 0KB or 512KB on Celeron M
- **Enhanced IDE Interface:** Supports two enhanced IDE channels. Primary channel supports ATA-100 mode; Secondary channel only supports ATA-33 and PIO mode. CFC card occupies secondary IDE master
- **COM Ports:** Two COM ports: COM1: RS-232; COM2: RS-232/422/485
- **Printer Ports:** One printer port, support SPP/EPP/ECP
- **Keyboard/Mouse Connector:** Supports standard PC/AT Keyboard and a PS/2 Mouse
- **Power Management:** Supports Power Saving Mode, including Normal/Standard/Suspend modes. APM 1.2 compliant.
- **FDD interface:** Supports up to one FDD devices
- **DI/O interface:** 8-bit general purpose input/output
- **Watchdog Timer:** 0 ~ 255 Sec. System reset or IRQ11
- **Expansion Interface:** 16-bit ISA Slot

- **Battery:** Lithium 3V/196 mAH
- **USB:** 4 USB ports, USB 2.0 compliant

1.3.2 Display Interface

- **Chipset:** Intel 852GM
- **Memory size:** Shared up to 32 MB, supports DVMT
- **LVDS Interface:** Supports 2 channel (36-bit) LVDS LCD Panel
- **Display modes:**
 - CRT Modes: 2048 x 1536 @ 75 Hz;
 - LCD Modes: up to UXGA panel resolution with frequency range from 25 MHz to 112 MHz

1.3.3 Solid State disk

- Supports **CompactFlash Card Type I/II**

1.3.4 Ethernet interface

- **Chipset:** Realtek 8100C 10/100Mbps LAN Chip
- **Connection:** on-board RJ-45 connector
- **Interface:** IEEE 802.3u (100Base-T) protocol compatible
- **Built-in Boot ROM:** 8100C
- I/O address switchless setting

1.3.5 Mechanical and Environmental

- **Dimensions (L x W):** 185 x 122 mm (7.3" x 4.8")
- **Power Supply Voltage:** +5 V \pm 5%, +12 V \pm 5%
- **Power Consumption:**
 - Max:**
 - 3.29 A @ +5 V, 0.67 A @ +12 V
 - Typical:**
 - 2.29 A @ +5 V (Celeron M 1.0G + 512 MB)
 - 0.45 A @ +12 V (Celeron M 1.0G + 512 MB)
- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F) operation
- **Operating humidity:** 0% ~ 90% Relative Humidity, non-condensing

1.4 Board layout: dimensions

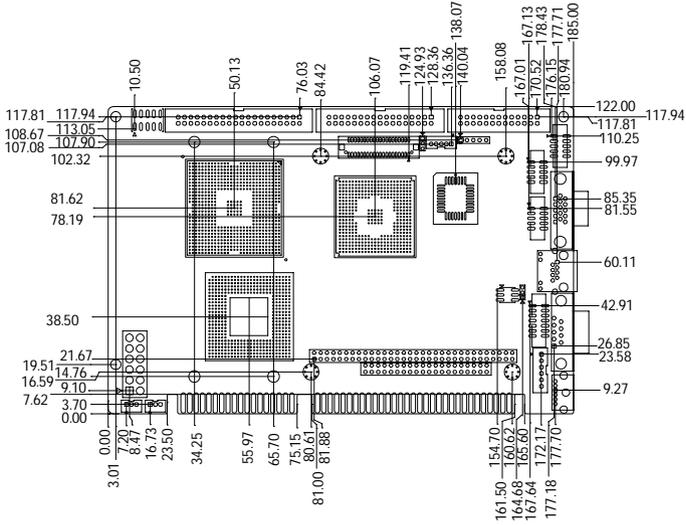


Figure 1.1: Board layout: dimensions (component side)

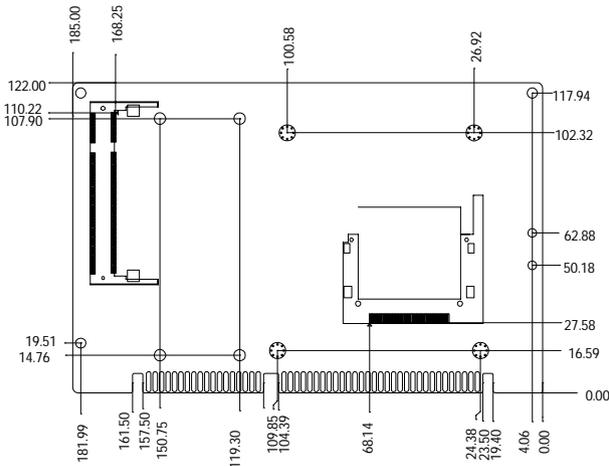


Figure 1.2: Board layout: dimensions (solder side)

Installation

This chapter explains the setup procedures of PCA-6780 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Chapter 2 Installation

2.1 Jumpers

The PCA-6780 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

Table 2.1: Jumpers

Label	Function
JP1	LVDS Voltage choose
J1	CLEAR CMOS
J2	232/422/485 SEL

2.2 Connectors

Onboard connectors link the PCA-6780 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors.

Table 2.2: Connectors

Label	Function
CN1	HDD LED/Reset/Power Button
CN2	Primary IDE Connector
CN3	Floppy Connector
CN4	Printer Port Connector
CN5	IR Connector
CN6	LCD Inverter Connector
CN7	Audio Interface Connector
CN8	LVDS Connector
CN9	USB port 1,2 Connector
CN10	D-SUB VGA Connector
CN11	USB port 3,4 Connector
CN12	PC104 Connector
CN13	LAN RJ45 Connector
CN14	COM port 1 (RS-232)
CN15	COM port 2 (RS-232/422/485)
CN16	ATX Power Connector
CN17	KB/MS Connector
CN18	External KB/mouse Connector
CN19	ISA Gold Finger
CN20	ATX Suspend Power Connector
CN21	Negative Power Input Connector
CN22	CF Connector

2.3 Locating Connectors (component side)

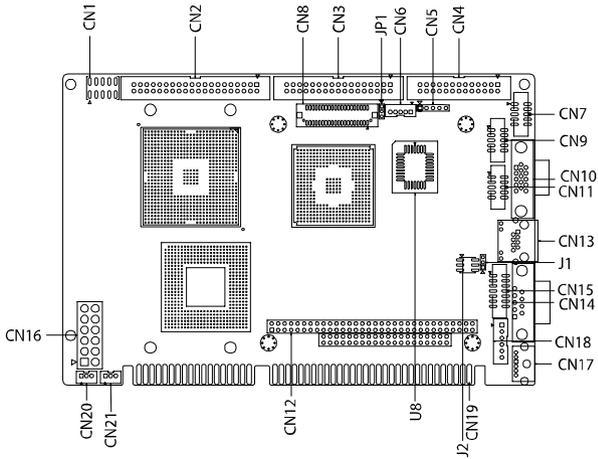


Figure 2.1: Jumper & Connector Locations

2.4 Locating Connectors (solder side)

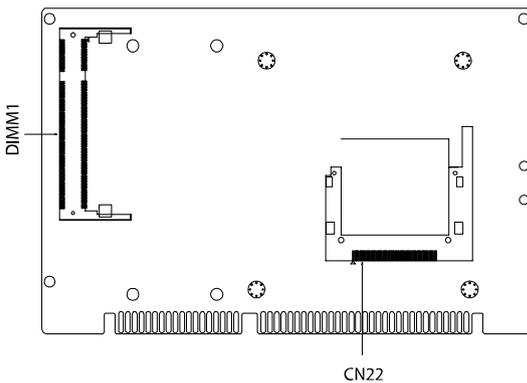
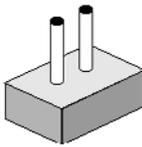


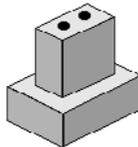
Figure 2.2: Connectors (component side)

2.5 Setting Jumpers

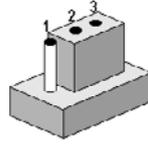
You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, 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 would connect either pins 1 and 2, or 2 and 3.



open

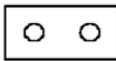


closed

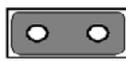


closed 2-3

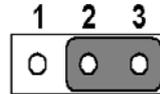
The jumper settings are schematically depicted in this manual as follows:.



open



closed



closed 2-3

A pair of needle-nose pliers may be helpful when working with 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. Generally, you simply need a standard cable to make most connections.

2.6 Clear CMOS (J1)

Warning! To avoid damaging the computer, always turn off the power supply before setting “Clear CMOS.” Before turning on the power supply, set the jumper back to “3.0 V Battery On.”

This jumper is used to erase CMOS data and reset system BIOS information.

The procedure for clearing CMOS is:

1. Turn off the system.
2. Short pin 1 and pin 2.
3. Turn on the system. The BIOS is now reset to its default setting

Table 2.3: Clear CMOS (J1)

Clear CMOS



2.7 COM2 RS-232/422/485 Select (J2)

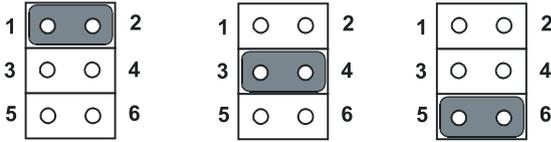


Table 2.4: COM2 RS-232/422/485 Select

1-2 (default)	RS-232
3-4	RS-422
5-6	RS-485

2.8 LVDS Panel Power Select (JP1)



Table 2.5: LVDS Panel Power Select

Pin	Function
1-2 (default)	+5 V
2-3	+3.3 V

2.9 Installing SODIMMs

Notes *The modules can only fit into a socket one way. The gold pins must point down into the SODIMM socket.*

The procedure for installing SODIMMs appears below. Please follow these steps carefully.

1. Make sure that all power supplies to the system are switched off
2. Install the SODIMM card. Install the SODIMM so that its gold pins point down into the SODIMM socket.
3. Slip the SODIMM into the socket at a 45 degree angle and carefully fit the bottom of the card against the connectors.
4. Gently push the SODIMM into a perpendicular position until the clips on the ends of the SODIMM sockets snap into place.
5. Check to ensure that the SODIMM is correctly seated and all connector contacts touch. The SODIMM should not move around in its socket.

2.10 ATX power Connector (CN5)

The PCA-6780 supports ATX power. CN5 supplies main power (+5 V , +12 V , 5 VSB), and it is a 6 x 2 pins power connector, w/Fixed Lock 4200-WS-A1.

Important *Make sure that the ATX power supply can take at least a 10 mA load on the 5 V standby lead (5 VSB). If not, you may have difficulty powering on your system.*

2.11 Printer port Connector (CN4)

Normally, the printer port is used to connect the card to a printer. The PCA-6780 includes a multi-mode (SPP/EPP/ECP) printer port accessed via CN4 and a 26-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 26-pin connector on one end, and a DB-25 connector on the other.

The printer port is designated as LPT1, and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

The printer port interrupt channel is designated to be IRQ7.

You can select ECP/EPP DMA channel via BIOS setup.

2.12 CompactFlash Socket

The PCA-6780 provides a 50-pin socket for CompactFlash card type I/II.

2.12.1 CompactFlash (CN22)

The CompactFlash card occupies a secondary IDE channel which can be enabled/disabled via the BIOS settings.

2.13 Floppy Connector (CN3)

You can attach up to two floppy drives to the PCA-6780's on-board controller. You can use any combination of 5.25" (360 KB and 1.2 MB) and/or 3.5" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. 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 3.5" drives) and a printed-circuit board connector (usually used for 5.25" drives).

2.13.1 Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN3. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the 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.
3. If you are connecting a 5.25" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

If you are connecting a 3.5" floppy drive, you may have trouble determining which pin is number one. Look for a number printed on the circuit board indicating pin number one. In addition, the connector on the floppy drive may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

In case you need to make your own cable, you can find the pin assignments for the board's connector in Appendix B.

2.14 IDE Connector (CN2)

The PCA-6780 provides one IDE channels to which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCA-6780's internal controller. The PCA-6780's IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PIO Mode 3 or Mode 4, UDMA 33/66/100 mode.

2.14.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion. It requires one of two cables (not included in this package), depending on the drive size. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives use a 1 x 44-pin to 2 x 40-pin connector.

Wire number 1 on the cable is red or blue, and the other wires are gray.

1. Connect one end of the cable to CN2. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

If desired, connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install only one drive, set it as the master.

2.15 VGA/LVDS interface connections

The PCA-6780's display interface can drive conventional CRT displays and is capable of driving a wide range of LVDS flat panel displays as well. The board has two display connectors: one for standard CRT VGA monitors, and one for LVDS flat panel displays.

2.15.1 CRT display Connector (CN10)

CN10 is a standard 15-pin D-SUB connector used for conventional CRT displays. Users can drive a standard progressive scan analog monitor with pixel resolution up to 2048 x 1536 at 75 Hz. Pin assignments for CRT display connector CN10 are detailed in Appendix B.

2.15.2 LVDS LCD panel Connector (CN8)

PCA-6780 uses the Intel 852GM to supports single or dual-channel LVDS panels up to UXGA panel resolution with frequency range from 25MHz to 112MHz.

The display mode can be 2 channels (2 x 18 bits) LVDS LCD panel displays. Users can connect to either an 18, 24 or 36 bits LVDS LCD with CN8.

2.15.3 LCD Inverter Connector (CN6)

The LCD inverter is connected to CN6 via a 5-pin connector to provide +5 V/+12 V power to the LCD display.

2.16 USB Connectors (CN9,CN11)

The PCA-6780 board provides up to four USB (Universal Serial Bus) ports. This gives complete Plug and Play, and hot attach/detach for up to **127** external devices. The USB interfaces comply with USB specification Rev. 2.0, and are fuse protected.

The USB interface is accessed through the 5 x 2-pin flat-cable connector, CN9 (USB1, 2),CN11 (USB3, 4). You will need an adapter cable if you use a standard USB connector. The adapter cable has a 5 x 2-pin connector on one end and a USB connector on the other.

The USB interfaces can be disabled in the system BIOS setup.

2.17 Ethernet configuration

The PCA-6780 is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3u 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

The PCA-6780 supports 10/100Base-T Ethernet connections with onboard RJ-45 connectors (CN13).

2.17.1 LAN Connector (CN13)

10/100Base-T or 1000Base-T connects to the PCA-6780 via a cable to a standard RJ-45 connector.

2.17.2 Network boot

The Network Boot feature can be utilized by incorporating the Boot ROM image files for the appropriate network operating system. The Boot ROM BIOS files are included in the system BIOS, which is on the utility CD disc.

2.18 HDD LED/Reset/Power Button (CN1)

Next, you may want to install external switches to monitor and control the PCA-6780. These features are optional: install them only if you need them. CN1 is an 2 x 5 pin header, 180 degree, male. It provides connections for reset and power & hard disk indicator.

2.18.1 Reset (Pin7&Pin8)

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

2.18.2 HDD LED (Pin1&Pin2,Pin3&Pin4,Pin5&Pin6)

The HDD LED indicator for hard disk access is an active low signal (24 mA sink rate).

Pin3 & Pin4

The HDD LED indicator would light when the power is on.

Pin5 & Pin6

The HDD LED indicator would light when the computer is suspend.

2.18.3 Power Button (Pin9&Pin10)

PCA-6780 also supports power on/off button.

2.19 COM port Connector (CN14,CN15)

The PCA-6780 provides two COM ports (COM1: RS-232 and COM2: RS-232/422/485). CN14 supports COM1, CN15 supports COM2. And J2 is for COM2 RS-232/422/485 selection. It provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix B.

2.20 MINI Keyboard Connector (CN17)

The PCA-6780 board provides a keyboard connector that supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. If the keyboard is not present, the standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset. The PCA-6780's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications, without the system halting under POST.

2.21 External Keyboard Connector (CN18)

In addition to the Mini keyboard connector on the PCA-6780's rear plate, there is an additional onboard external keyboard connector, allowing for greater flexibility in system design.

2.22 Audio Interface Connector (CN7)

The Audio Interface link is a 10 pin connector, the PCA-6780 can support Audio with the addition of optional PCM-231A-00A1. Detailed pin assignment refer to Appendix B.

BIOS Operation

This chapter describes how to set BIOS configuration data.

Sections include:

- BIOS Introduction
- BIOS Setup

Chapter 3 BIOS Operation

3.1 BIOS Introduction

Advantech provide full-featured Award BIOS 6.0 and delivers the superior performance, compatibility and functionality that manufactures of Industry PC and Embedded boards, it's many options and extensions let you customize your products to a wide range of designs and target markets.

The modular, adaptable Award BIOS 6.0 supports the broadest range of third-party peripherals and all popular chipsets, plus Intel, AMD, nVidia, VIA, and compatible CPUs from 386 through Pentium and AMD Geode, K7 and K8 (including multiple processor platforms), and VIA Eden C3 and C7 CPU.

You can use Advantech's utilities to select and install features to suit your designs for customers need.

3.2 BIOS Setup

The PCA-6780 system has build-in Award BIOS with a CMOS SETUP utility which allows user to configure required settings or to activate certain system features.

The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to the CMOS RAM.

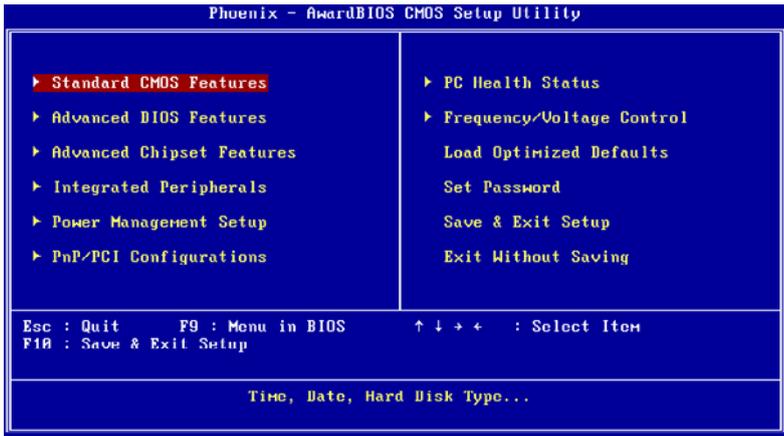
When the power is turned on, press the button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen.

Table 3.1: Control Keys

< ↑ >< ↓ >< ← >< → >	Move to select item.
<Enter>	Select Item.
<Esc>	Main Menu - Quit and not save changes into CMOS. Sub Menu - Exit current page and return to Main Menu.
<Page Up/+>	Increase the numeric value or make changes.
<Page Down/->	Decrease the numeric value or make changes.
<F1>	General help, for Setup Sub Menu.
<F2>	Item Help.
<F5>	Load Previous Values.
<F7>	Load Optimized Default.
<F10>	Save all CMOS changes.

3.2.1 Main Menu

Press to enter Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



- **Standard CMOS Features**

This setup page includes all the items in standard compatible BIOS.

- **Advanced BIOS Features**

This setup page includes all the items of Award BIOS enhanced features.

- **Advanced Chipset Features**

This setup page includes all the items of Chipset configuration features.

- **Integrated Peripherals**

This setup page includes all onboard peripheral devices.

- **Power Management Setup**

This setup page includes all the items of Power Management features.

- **PnP/PCI Configurations**

This setup page includes PnP OS and PCI device configuration.

- **PC Health Status**

This setup page includes the system auto detect CPU and system temperature, voltage, fan speed.

- **Frequency/Voltage Control**

This setup page includes CPU host clock control, frequency ratio and voltage.

- **Load Optimized Defaults**

This setup page includes Load system optimized value, and the system would be in best performance configuration.

- **Set Password**

Establish, change or disable password.

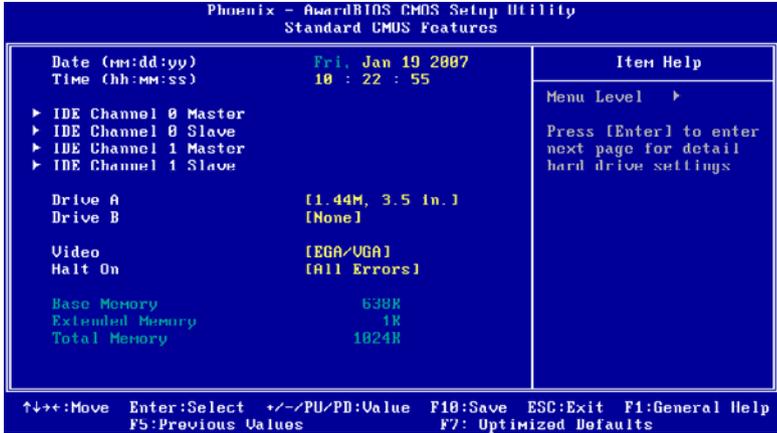
- **Save & Exit Setup**

Save CMOS value settings to CMOS and exit BIOS setup.

- **Exit Without Saving**

Abandon all CMOS value changes and exit BIOS setup.

3.2.2 Standard CMOS Features



- **Date**

The date format is <week>, <month>, <day>, <year>.

- Week From Sun to Sat, determined and display by BIOS only.
- Month From Jan to Dec.
- Day From 1 to 31.
- Year From 1999 through 2098.

- **Time**

The times format in <hour> <minute> <second>, base on the 24-hour time.

- **IDE Channel 0 Master/Slave**

- IDE HDD Auto-Detection Press “Enter” for automatic device detection.

- **IDE Channel 1 Master/Slave**

- IDE HDD Auto-Detection Press “Enter” for automatic device detection.

- **Drive A / Drive B**

The Item identifies the types of floppy disk drive A or drive B.

- None No floppy drive installed.
- 360K, 5.25" 5.25 inch PC-type standard drive; 360K byte capacity.
- 1.2M, 5.25" 5.25 inch AT-type high-density drive; 1.2M byte capacity.
- 720K, 3.5" 3.5 inch double-sided drive; 720K byte capacity.
- 1.44M, 3.5" 3.5 inch double-sided drive; 1.44M byte capacity.

2.88M, 3.5" 3.5 inch double-sided drive; 2.88M byte capacity.

- **Halt on**

The item determines whether the computer will stop if an error is detected during power up.

No Errors	The system boot will not stop for any error.
All Errors	Whenever the BIOS detects a non-fatal error the system will be stopped.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors. (Default value)
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for al other errors.

- **Base Memory**

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

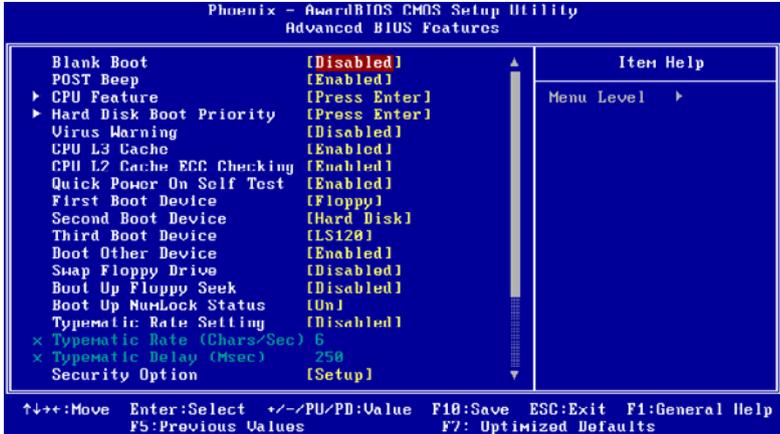
- **Extended Memory**

The POST of the BIOS will determine the amount of extended memory (above 1MB in CPU's memory address map) installed in the system.

- **Total Memory**

This item displays the total system memory size.

3.2.3 Advanced BIOS Features



- **Blank Boot[Disabled] (* Advantech feature enhancement)**

This item allows system only displays blank screen during BIOS Post stage.

- **POST Beep[Enabled] (* Advantech feature enhancement)**

This item allows system send out Beep sound during BIOS Post stage.

- **CPU Feature**

This item allows user to adjust CPU features, CPU ratio, VID and Thermal and special feature like XD flag.

- **Hard Disk Boot Priority**

This item allows user to select boot sequence for system device HDD, SCSI, RAID.

- **Virus Warning[Disabled]**

This item allows user to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection.

- **CPU L3 Cache [Enabled]**

This item allows user to enable CPU L3 cache.

- **CPU L2 Cache ECC Checking [Enabled]**

This item allows user to enable CPU L2 cache and ECC checking function.

- **Quick Power On Self Test[Enabled]**

This field speeds up the Power-On Self Test (POST) routine by skipping retesting a second, third and forth time. Setup setting default is enabled.

• **First / Second / Third / Other Boot Drive**

Floppy	Select boot device priority by Floppy.
LS120	Select boot device priority by LS120.
Hard Disk	Select boot device priority by Hard Disk.
CDROM	Select boot device priority by CDROM.
ZIP	Select boot device priority by ZIP.
USB-FDD	Select boot device priority by USB-FDD.
USB-ZIP	Select boot device priority by USB-ZIP.
USB-CDROM	Select boot device priority by USB-CDROM.
USB-HDD	Select boot device priority by USB-HDD.
LAN	Select boot device priority by LAN.
Disabled	Disable this boot function.

• **Swap Floppy Drive[Disabled]**

This item enables users to swap floppy “A” and “B” identified without change hardware cable connection.

• **Boot Up Floppy Seek[Disabled]**

When enabled, the BIOS will seek the floppy “A” drive one time

• **Boot Up NumLock Status[Disabled]**

This item enables users to activate the Number Lock function upon system boot.

• **Typematic Rate Setting**

This item enables users to set the two typematic controls items.

This field controls the speed at

Typematic Rate (Chars/Sec)	This item controls the speed at system registers repeated keystrokes. Eight settings are 6, 8, 10, 12, 15, 20, 24 and 30.
Typematic Delay (Msec)	This item sets the time interval for displaying the first and second characters. Four delay rate options are 250, 500, 750 and 1000.

- **Security Option[Setup]**

System System can not boot and can not access to Setup page if the correct password is not entered at the prompt.

Setup System will boot, but access to Setup if the correct password is not entered at the prompt. (Default value)

- **MPS Version Control for OS[1.4]**

This item sets the operating system multiprocessor support version.

- **OS Select For DRAM > 64M[Non-OS2]**

Select OS2 only if system is running OS/2 operation system with greater than 64MB of RAM on the system.

- **Video BIOS Shadow[Enabled]**

Enabled copies Video BIOS to shadow RAM improves performance.

- **Full Screen Logo Show[Enabled]**

Show full screen logo during post stage, and the Logo picture can be customization.

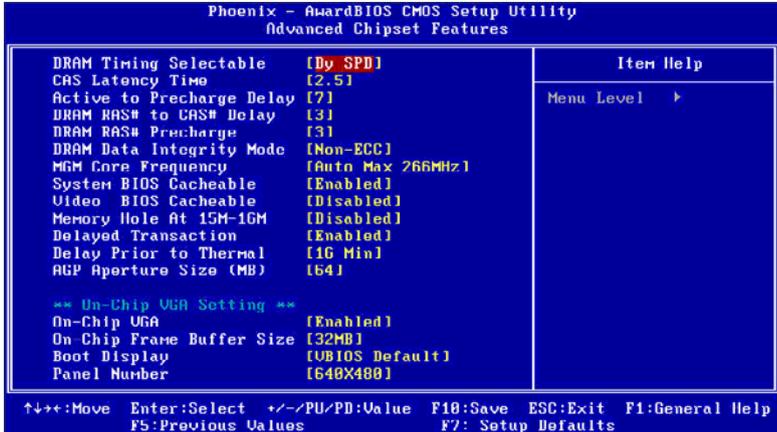
- **Small Logo (EPA) Show[Enabled]**

Show EPA logo during system post stage.

- **Summary Screen Show[Enabled]**

Show system status in Summary screen page.

3.2.4 Advanced Chipset Features



NOTE: This “Advanced Chipset Features” option controls the configuration of the board’s chipset, this page is developed by Chipset independent, for control chipset register setting and fine tune system performance. It is strongly recommended only technical users make changes to the default settings.

- **DRAM Timing Selectable[By SPD]**

This item enables users to set the optimal timings for items 2 through 5, system default setting of “By SPD” to follow the SPD information and ensure the system running in stable and optimal performance.

- **CAS Latency Time[2.5]**

This item enables users to set the timing delay in clock cycles before SDRAM start a read command after receiving it.

- **Active to Precharge Delay[7]**

This item enables users to control the memory back’s minimum row active time (tRAS), system default is setting to “7” to reference value.

- **DRAM RAS# to CAS# Delay[3]**

This item enables users to set the timing of the transition from RAS (row address strobe) to CAS (column address strobe) as both rows and column are separately addressed shortly after DRAM is refreshed.

- **DRAM RAS# Precharge[3]**

This item enables users to set the DRAM RAS# precharge timing, system default is setting to “3” to reference value.

- **DRAM Data Integrity Mode[Non-ECC]**

This item enables users to set the DRAM Type of Error data correction, system default is setting to “Non-ECC” to reference value.

- **MGM Core Frequency [Auto Max 266MHz]**

This item enables users to set the operation speed of internal Graphic Chip FSB and DRAM , system default is setting to “Auto Max 266MHz” to reference value.

- **System BIOS Cacheable[Enabled]**

This item allows the system BIOS to be cached to allow faster execution and better performance.

- **Video BIOS Cacheable[Disabled]**

This item allows the video BIOS to be cached to allow faster execution and better performance.

- **Memory Hole At 15M-16M[Disabled]**

This item reserves 15MB-16MB memory address space to ISA expansion cards that specifically require the setting. Memory from 15MB-16MB will be unavailable to the system because of the expansion cards can only access memory at this area.

- **DRAM Data Integrity Mode[Non-ECC]**

This item enables users to set the DRAM Type of Error data correction, system default is setting to “Non-ECC” to reference value.

- **Delayed Transaction [Enabled]**

This items enables users to actives PCI delayed Transaction feature, it can have better PCI performance and meet PCI 2.1 specifications.

- **Delay Period to Thermal [16 Min]**

This items enables users to select the time period of system detect CPU Thermal, system default is setting to “16 Min” to reference value.

- **AGP Aperture Size (MB) [64]**

This item enables users to select size of system memory to support AGP graphic usage, system default is setting to “64MB” to reference value.

- **On-Chip VGA Setting**

This platform support On-Chip VGA function and will continue to VGA related setting.

- **On-Chip VGA [Enabled]**

This item enables users to Enabled or Disabled On-Chip VGA device, system default is setting to “Enabled” to reference value.

- **On-Chip Frame Buffer Size [32MB]**

This Item enables users to set Video Memory size, system default is setting to “32MB” to reference value.

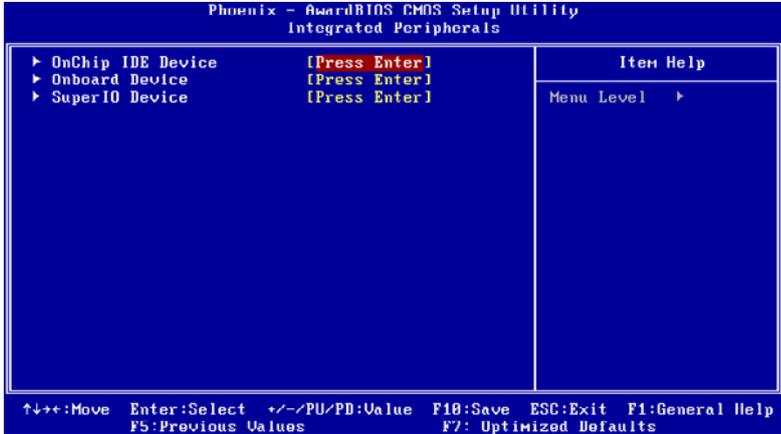
- **Boot Display [VBIOS Default]**

This Item enables users to set Initial display device of system boot up, system default is setting to “VBIOS Default” to reference value.

- **Panel Number [640 x 480]**

This item enables users to set the Resolution of Panel Type, system default is setting to “640 x 480” to reference value.

3.2.5 Integrated Peripherals



***NOTE:** This “Integrated Peripherals” option controls the configuration of the board’s chipset, includes IDE, ATA, SATA, USB, AC97, MC97 and Super IO and Sensor devices, this page is developed by Chipset independent.*

- **OnChip IDE Device**

This item enables users to set the OnChip IDE device status, includes enable IDE devices and setting PIO and DMA access mode, and some of new chipset also support for SATA device (Serial-ATA)

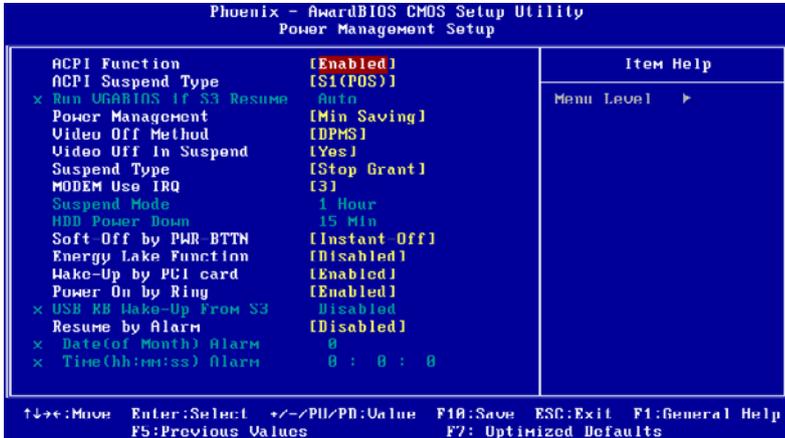
- **Onboard Device**

This item enables users to set the Onboard device status, includes enable USB, AC97, MC97 and LAN devices.

- **Super IO Device**

This item enables users to set the Super IO device status, includes enable Floppy, COM, LPT, IR and control GPIO and Power fail status.

3.2.6 Power Management Setup



NOTE: This “Power management Setup” option configure system to most effectively saving energy while operating in a manner consistent with your computer use style.

- **ACPI Function[Enabled]**

This item defines the ACPI (Advanced Configuration and Power Management) feature that makes hardware status information available to the operating system, and communicate PC and system devices for improving the power management.

- **ACPI Suspend Type[S1 (POS)]**

This item allows user to select sleep state when suspend.

- S1(POS) The suspend mode is equivalent to a software power down.
- S3(STR) The system shuts down with the exception of a refresh current to the system memory.

- **Run VGA BIOS if S3 Resume[Auto]**

This item allows system to reinitialize VGA BIOS after system resume from ACPI S3 mode.

- **Power Management[Min Saving]**

This item allows user to select system power saving mode.

- Min Saving Minimum power management. Suspend Mode=1 hr.
- Max Saving Maximum power management. Suspend Mode=1 min.
- User Define Allows user to set each mode individually. Suspend.

Mode= Disabled or 1 min ~1 hr.

- **Video Off Method[DPMS]**

This item allows user to determine the manner in which the monitor is blanked.

V/H SYNC+Blank This option will cause system to turn off vertical and horizontal synchronization ports and write blanks to the video buffer.

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

DPMS Initial display power management signaling.

- **Video Off In Suspend[Yes]**

This item allows user to turn off Video during system enter suspend mode.

- **Suspend Type [Stop Grant]**

This item allows user to determine the suspend type.

- **Modem use IRQ[3]**

This item allows user to determine the IRQ which the MODEM can use.

- **Suspend Mode [1 Hour]**

This item allows user to determine the time of system inactivity, all devices except the CPU will be shut off.

- **HDD Power Down Mode[15 Min]**

This item allows user to determine the time of system inactivity, the hard disk drive will be powered down.

- **Soft-Off by PWR-BTTN[Enabled]**

This item allows user to define function of power button.

Instant-Off Press power button then Power off instantly.

Delay 4 Sec Press power button 4 sec. to Power off.

- **Wake-Up by PCI card[Enabled]**

This item allows user to defines PCI cards to wake up the system from the suspend mode.

- **Power On by Ring [Enabled]**

This item allows user to define the system will resume by activating of modem ring.

- **USB KB Wake-Up From S3[Enabled]**

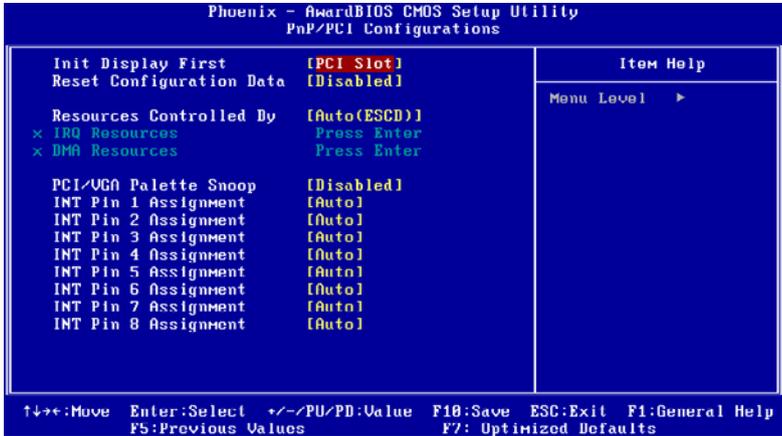
This item allows user to enable using a USB keyboard, and allow a key-stroke to wake up the system from power saving mode.

- **Resume by Alarm[Disabled]**

This item allows user to enable and key in Date/time to power on system.

Disabled	Disable this function.
Enabled	Enable alarm function to power on system.
Data (of month)	Alarm1-31
Time (HH:MM:SS)	Alarm(0-23) : (0-59) : 0-59)

3.2.7 PnP/PCI Configurations



NOTE: This “PnP/PCI Configurations” option is setting up the IRQ and DMA (both PnP and PCI bus assignments).

- **Init Display First [PCI Slot]**

This item is setting for start up Video output from PCI or Onboard device.

- **Reset Configuration Data [Disabled]**

This item allow user to clear any PnP configuration data stored in the BIOS.

- **Resources Controlled By [Auto (ESCD)]**

IRQ Resources This item allows you respectively assign an interruptive type for IRQ-3, 4, 5, 7, 9, 10, 11, 12, 14, and 15.

DMA Resources This item allows you respectively assign an interruptive type for DMA, 0, 1, 2, 3, 4, 5, 6, and 7.

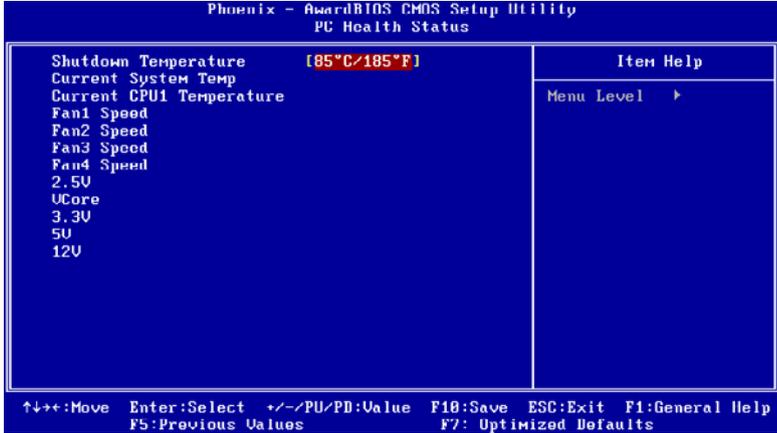
- **PCI VGA Palette Snoop[Disabled]**

The item is designed to solve problems caused by some non-standard VGA cards. A built-in VGA system does not need this function.

- **INT Pin 1~8 Assignment [Auto]**

The interrupt request (IRQ) line assigned to a device connected to the PCI interface on your system.

3.2.8 PC Health Status



NOTE: This “PC Health Status” option controls the Thermal, FAN and Voltage status of the board. this page is developed by Chipset independent.

- **Shutdown Temperature [Disabled]**

This item enables users to set the limitation of CPU temperature, the range is from 85° C through 100° C.

- **Current System/CPU Temp [Show Only]**

This item displays current system and CPU temperature.

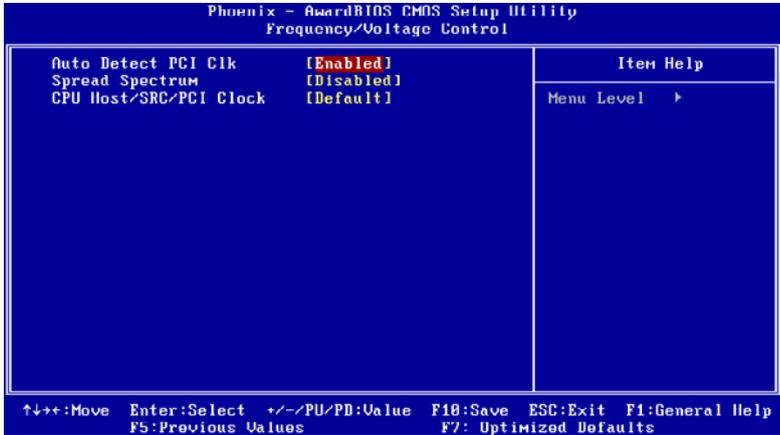
- **FAN 1 / FAN2 / FAN3 / FAN4 Speed [Show Only]**

This item displays current system FAN speed.

- **2.5V / 3.3V / 5V / 12V and VCore [Show Only]**

This item displays current CPU and system Voltage.

3.2.9 Frequency/Voltage Control



***NOTE:** This “Frequency/Voltage Control” option controls the CPU Host and PCI frequency, this page is developed by CPU and Chipset independent, some items will show up when you install a processor which supports this function.*

- **Auto Detect PCI Clk [Enabled]**

This item enables users to set the PCI Clock by system automatic detection or by manual.

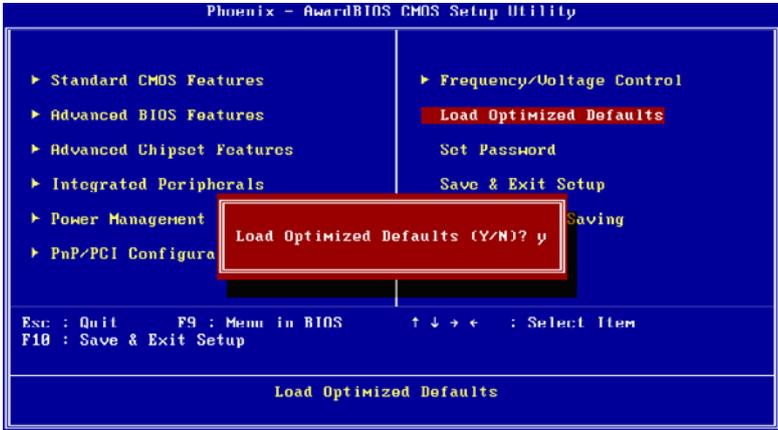
- **Spread Spectrum [Disabled]**

This item enables users to set the spread spectrum modulation.

- **CPU Host/SRC/PCI Clock [Default]**

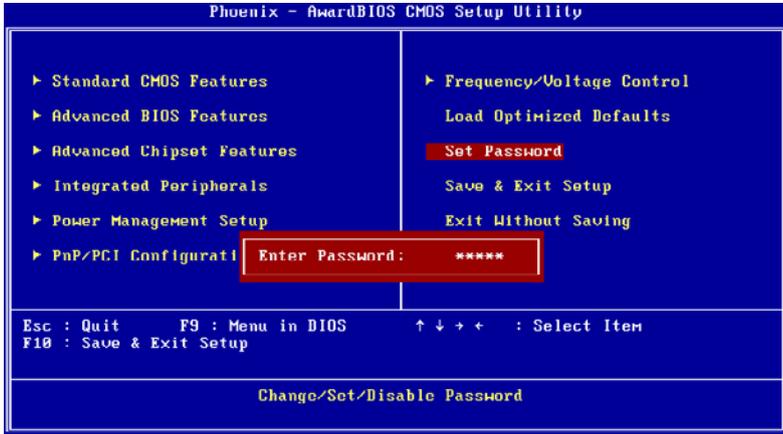
This item enables users to set the CPU Host and PCI clock by system automatic detection or by manual.

3.2.10 Load Optimized Defaults



NOTE: Load Optimized Defaults loads the default system values directly from ROM. If the stored record created by the Setup program should ever become corrupted (and therefore unusable). These defaults will load automatically when you turn the PCA-6780 system on.

3.2.11 Set Password



NOTE: To enable this feature, you should first go to the Advanced BIOS Features menu, choose the Security Option, and select either Setup or System, depending on which aspect you want password protected. Setup requires a password only to enter Setup. System requires the password either to enter Setup or to boot the system. A password may be at most 8 characters long.

To Establish Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password”, enter the desired password and press <Enter>.
3. At the “Confirm Password” prompt, retype the desired password, then press <Enter>.
4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Change Password

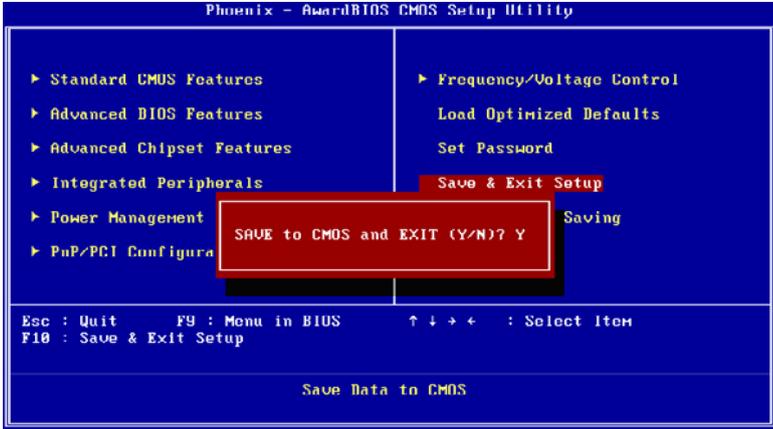
1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password”, enter the existing password and press <Enter>.
3. You will see “Confirm Password”. Type it again, and press <Enter>.
4. Select Set Password again, and at the “Enter Password” prompt, enter the new password and press <Enter>.

5. At the “Confirm Password” prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password”, enter the existing password and press <Enter>.
3. You will see “Confirm Password”. Type it again, and press <Enter>.
4. Select Set Password again, and at the “Enter Password” prompt, please don’t enter anything; just press <Enter>.
5. At the “Confirm Password” prompt, again, don’t type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

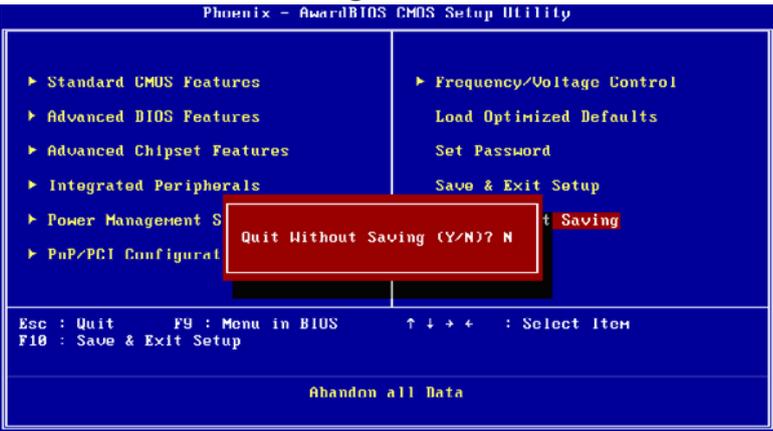
3.2.12 Save & Exit Setup



NOTE:

1. Type "Y" will quit the BIOS Setup Utility and save user setup value to CMOS.
2. Type "N" will return to BIOS Setup Utility.

3.2.13 Quit Without Saving



NOTE:

1. Type "Y" will quit the BIOS Setup Utility without saving to CMOS.
2. Type "N" will return to BIOS Setup Utility.

Driver Installation

This chapter gives you the driver installation information on the PCA-6780 Half-size CPU card.

Sections include:

- Driver Information
- Driver Installation

Chapter 4 Driver Installation

4.1 Driver Introduction

The CD shipped with PCA-6780 should contain below drivers, please follow below sequence to complete the driver installation.

Step 1:

Install Intel INF Update Driver for Windows XP/2000.

Step 2:

Install Intel Graphic Driver for Windows XP/2000.

Step 3:

Install Audio Driver for Windows XP/2000.

Step 4:

Install Realtek Ethernet Driver for Windows XP/2000.

***Note:** For Windows XP Embedded, Windows CE 5.0 and Linux support, please contact sales representative or technical person.*

***Note:** Downloading the update for Windows XP or Windows 2000 may be required for enabling USB 2.0 function. Details information please refers to below web link.*

<http://www.microsoft.com/whdc/system/bus/USB/USB2support.msp>

4.2 Driver Installation

Insert the PCA-6780 CD into the CD-ROM device, and follow below installation process from Step 1 to Step 4.

4.2.1 Step 1- Install Intel INF Update Driver for Windows XP/2000

1. Click on the “Chipset” folder and double click the “*.exe” file.
2. Follow the instructions that the driver installation wizard shows.
3. The system will help you to complete the driver installation.

4.2.2 Step 2- Install Intel Graphic Driver for Windows XP/2000

1. Click on the “VGA” folder and double click the “*.exe” file.
2. Follow the instructions that the driver installation wizard shows.
3. The system will help you to complete the driver installation.

4.2.3 Step 3- Install Audio Driver for Windows XP/2000

1. Click on the “Audio” folder and double click the “*.exe” file.
2. Follow the instructions that the driver installation wizard shows.
3. The system will help you to complete the driver installation.

4.2.4 Step 4- Install Realtek Ethernet Driver for Windows XP/2000

1. Click on the “LAN” folder and double click the “*.exe” file.
2. Follow the instructions that the driver installation wizard shows.
3. The system will help you to complete the driver installation.

Programming GPIO & Watchdog Timer

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

Appendix A Programming GPIO & Watchdog Timer

A.1 Supported GPIO Register

Below are detailed description of the GPIO addresses and programming sample.

A.1.1 GPIO Registers

CRF0 (GP10-GP17 I/O selection register. Default 0xFF)

When set to a '1', respective GPIO port is programmed as an input port.

When set to a '0', respective GPIO port is programmed as an output port.

CRF1 (GP10-GP17 data register. Default 0x00)

If a port is programmed to be an output port, then its respective bit can be read/written.

If a port is programmed to be an input port, then its respective bit can only be read.

CRF2 (GP10-GP17 inversion register. Default 0x00)

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in data register.

Extended Function Index Registers (EFIRs)

The EFIRs are write-only registers with port address 2Eh or 4Eh on PC/AT systems.

Extended Function Data Registers (EFDRs)

the EFDRs are read/write registers with port address 2Fh or 4Fh on PC/AT systems.

A.1.2 GPIO Example program-1

Enter the extended function mode, interruptible double-write

```
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
```

Configure logical device 7(GP10~GP17), configuration register
CRF0,CRF1,CRF2

```
MOV DX,2EH
MOV AL,07H ; point to Logical Device Number Reg.
OUT DX,AL
MOV DX,2FH
MOV AL,07H ; select logical device 7
OUT DX,AL ;
MOV DX,2EH
MOV AL,F0
OUT DX,AL
MOV DX,2FH
MOV AL,00H ; 01:Input 00:output for GP10~GP17
OUT DX,AL
MOV DX,2EH
MOV AL,F2H ;
OUT DX,AL
MOV DX,2FH
MOV AL,00H ;Set GPIO is normal not inverter
OUT DX,AL;
MOV DX,2EH
MOV AL,F1H
```

```
OUT DX,AL
MOV DX,2FH
MOV AL,??H ; Put the output value into AL
OUT DX,AL
```

Exit extended function mode

```
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

A.2 Watchdog programming

Watchdog: (Index Port:300H , Data Port:301)

1, Enable Watchdog

```
Outportb (0x4e,0x77);
```

```
Outportb (0x4e,0x77); //Entry Configuration Mode
```

```
Outportb (0x4e,0x07); //Select Register Index 0x07
```

```
Outportb (0x4f,0x08); //Select LDN 8
```

```
Outportb (0x4e,0x30); //Select LDN 8 Register Index 0x30
```

```
Outportb (0x4f,0x01); //Enable Watchdog Timer Device
```

```
Outportb (0x4e,0xaa); //Exit Configuration Mode
```

2, Set Watchdog Timer to 20 Second Used Base Address 0x300~0x301

```
Outportb (0x300,0x03); Select Unit to One Second and clear Time out Status
```

```
; If 0x03 Change to 0x00 that Unit is 10 mini Second
```

```
; Or if change to 0x05 that unit is one minute
```

```
Outportb(0x301,0x14);
```

```
Outportb(0x301,0x14); //Set Timer to 20 Second and Enable Timer
```

3, Disable Watchdog

```
Outportb (0x4e,0x77);
```

```
Outportb (0x4e,0x77); //Entry Configuration Mode
```

```
Outportb (0x4e,0x07); //Select Register Index 0x07
```

```
Outportb (0x4f,0x08); //Select LDN 8
```

```
Outportb (0x4e,0x30); //Select LDN 8 Register Index 0x30
```

```
Outportb (0x4f,0x00); //Disable Watchdog Timer Device
```

```
Outportb (0x4e,0xaa); //Exit Configuration Mode
```


Appendix **B**

Pin Assignments

This appendix contains information of a detailed or specialized nature.

Appendix B Pin Assignments

B.1 Connectors

B.1.1 HDD LED/Reset/Power Button (CN1)

Table B.1: HDD LED/Reset/Power Button (CN1)

Pin	Signal	Pin	Signal
1	+5V	2	HDD_LED
3	+5V	4	GND
5	SUSPEND	6	5VSB
7	RESET	8	GND
9	5VSB	10	PWR_Button

B.1.2 Primary IDE Connector (CN2)

Table B.2: Primary IDE Connector (CN2)

Pin	Signal	Pin	Signal
1	IDE Reset	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC
21	DRQ	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	Cable Select
29	DACK	30	GND
31	IRQ14	32	NC
33	A1	34	DIAG#
35	A0	36	A2
37	CS#1	38	CS#3
39	Active	40	GND

B.1.3 Floppy Connector

Table B.3: Floppy Connector

Pin	Signal	Pin	Signal
1	GND	2	RWC#
3	GND	4	NC
5	GND	6	NC
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	NC
13	GND	14	DSA#
15	GND	16	NC
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WD#
23	GND	24	WE#
25	GND	26	TRAK0#
27	GND	28	WP#
29	GND	30	RDATA#
31	GND	32	HEAD#
33	GND	34	DSKCHG#

B.1.4 Printer Port Connector

Table B.4: Printer Port Connector

Pin	Signal	Pin	Signal
1	STB#	2	AFD#
3	D0	4	ERR#
5	D1	6	INIT#
7	D2	8	SLIN
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	NC

B.1.5 IR Connector

Table B.5: IR Connector

Pin	Signal	Pin	Signal
1	+5V	2	NC
3	RX	4	GND
5	TX		

B.1.6 LCD Inverter Connector (CN6)

Table B.6: LCD Inverter Connector (CN6)

Pin	Signal	Pin	Signal
1	+12V output	2	GND
3	Back-light enable signal output	4	Back-light VBR signal output
5	+5V output		

B.1.7 Audio Interface (CN7)

Table B.7: Audio Interface (CN7)

Pin	Signal	Pin	Signal
1	+5V	2	BitCLK
3	Data in	4	GND
5	GND	6	Sync
7	Data out	8	ACRST
9	+5V	10	SPKR

B.1.8 LVDS Connector (CN8)

Table B.8: LVDS Connector (CN8)

Pin	Signal	Pin	Signal
1	LVDS power	2	LVDS power
3	GND	4	GND
5	LVDS power	6	LVDS power
7	LVDS0_D0-	8	LVDS1_D0-
9	LVDS0_D0+	10	LVDS1_D0+
11	GND	12	GND
13	LVDS0_D1-	14	LVDS1_D1-
15	LVDS0_D1+	16	LVDS1_D1+
17	GND	18	GND
19	LVDS0_D2-	20	LVDS1_D2-
21	LVDS0_D2+	22	LVDS1_D2+
23	GND	24	GND
25	LVDS0_CLK-	26	LVDS1_CLK-
27	LVDS0_CLK+	28	LVDS1_CLK+
29	GND	30	GND
31	LVDS1_DDC_SC	32	LVDS1_DDC_SD
33	GND	34	GND
35	LVDS0_D3-	36	LVDS1_D3-
37	LVDS0_D3+	38	LVDS1_D3+
39	NC	40	VCON

B.1.9 USB port 1, 2 Connector (CN9)

Table B.9: USB port 1,2 Connector (CN9)

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	GND	10	NC

B.1.10 D-SUB VGA Connector (CN10)

Table B.10: D-SUB VGA Connector (CN10)

Pin	Signal	Pin	Signal
1	R	2	G
3	B	4	NC
5,6,7,8, 10,16,17	GND	11	NC
12	VGA_DDAT	13	HSYNC
14	VSYNC	15	VGA_DCLK

B.1.11 USB port 3,4 Connector (CN11)

Table B.11: USB port 3,4 Connector (CN11)

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	USB2-	4	USB3-
5	USB2+	6	USB3+
7	GND	8	GND
9	GND	10	NC

B.1.12 PC 104 Connector

B.1.13 LAN RJ45 Connector (CN13)

Table B.12: LAN RJ45 Connector (CN13)

Pin	Signal	Pin	Signal
1	TX+	2	TX-
3	RX+	4	GND
5	GND	6	RX-
7	GND	8	GND
9	GND	10	GND
11	VCC_LAN	12	LILED
13	VCC_LAN	14	ACTLED

B.1.14 COM port 1 (RS-232)(CN14)

Table B.13: COM port 1 (RS-232) (CN14)

Pin	Signal	Pin	Signal
1	DCD#	2	RXD
3	TXD	4	DTR#
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI#		

B.1.15 COM port 2 (RS-232/422/485)(CN15)

Table B.14: COM port 2 (RS-232/422/485) (CN15)

Pin	Signal	Pin	Signal
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND
11	TXD485+	12	TXD485-
13	RXD485+	14	RXD485

B.1.16 ATX Power Connector (CN16)

Table B.15: ATX Power Connector (CN16)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	+5V	4	GND
5	+5V	6	+5VSB
7	GND	8	PSON#
9	+5V	10	GND
11	+5V	12	+12V

B.1.17 KB/MS Connector (CN17)

Table B.16: KB/MS Connector (CN17)

Pin	Signal	Pin	Signal
1	KBDATA	2	MSDATA
3	GND	4	+5V
5	KBCLK	6	MSCLK

B.1.18 External KB/mouse Connector (CN18)

Table B.17: External KB/mouse Connector (CN18)

Pin	Signal	Pin	Signal
1	KBCLK	2	KBDATA
3	NC	4	GND
5	+5V		

B.1.19 ISA Gold Finger (CN19)

B.1.20 ATX Suspend Power Connector (CN20)

Table B.18: ATX Suspend Power Connector (CN20)

Pin	Signal	Pin	Signal
1	+5VSB	2	GND
3	PS_ON signal		

B.1.21 Negative Power Input (CN21)

Table B.19: Negative Power Input (CN21)

Pin	Signal	Pin	Signal
1	-5V	2	GND
3	-12V		

B.1.22 CF Connector (CN22)

B.2 Jumpers

B.2.1 LVDS Voltage Choose (JP1)

Table B.20: LVDS Voltage Choose (JP1)

Pin	Signal	Pin	Signal
1-2	+5V	2-3	+3.3V

B.2.2 CLEAR CMOS (J1)

Table B.21: CLEAR CMOS (J1)

Pin	Signal
1-2	Clear CMOS

B.2.3 232/422/485 SEL (J2)

Table B.22: 232/422/485 SEL (J2)

Pin	Signal	Pin	Signal
1-2	RS232 *	2-3	RS422
5-6	RS485		

Appendix **C**

System Assignments

This appendix contains information of a detailed nature. It includes:

- System I/O ports
- 1st MB memory map
- DMA channel assignments
- Interrupt assignments

Appendix C System Assignments

C.1 System I/O Ports

Table C.1: System I/O ports

Addr. range (Hex)	Device
00-0F	Master DMA controller
20-21F	Master Interrupt controller
40-5F	Timer/Counter
60-6F	Keyboard controller
(60h)	KBC Data
(61h)	Misc Functions & Spkr Ctrl
(64h)	KBC Command/Status
70-77	RTC/COMS/NMI-Disable
78-7F	-available for system use-
80	-reserved-(debug port)
81-8F	DMA Page Registers
90-91	-available for system use-
92	System Control
93-9F	-available for system use-
A0-A1H	Slave Interrupt Controller
C0-DF	Slave DMA Controller
E0-FF	-available for system use-
100-CF7	-available for system use-
CF8-CFB	PCI Configuration Address
CFC-CFF	PCI Configuration Data
D00-FFFF	-available for system use-
200-20F	Game Port
2F8-2FF	COM2
378-37F	Printer Port (Standard & AFF)
3F0-3F1	Configuration Index/Data
3F0-3F7	Floppy Controller
3F8-3FF	COM1

Table C.1: System I/O ports

Addr. range (Hex)	Device
778-77A	Printer Port (ECP Extensions)(Port 378+400)
MPU-401 select from 300 ~ 330H (2 bytes)	

C.2 1st MB memory map

Table C.2: 1st MB memory map

Addr. range (Hex)	Device
F0000h - FFFFFh	System ROM
*CC000h - EFFFFh	Unused (reserved for Ethernet ROM)
C0000h - CBFFFh	Expansion ROM (for VGA BIOS)
B8000h - BFFFFh	CGA/EGA/VGA text
B0000h - B7FFFh	Unused
A0000h - AFFFFh	EGA/VGA graphics
00000h - 9FFFFh	Base memory

* If Ethernet boot ROM is disabled (Ethernet ROM occupies about 16 KB)

* E0000 - EFFFF is reserved for BIOS POST

C.3 DMA channel assignments

Table C.3: DMA channel assignments

Channel	Function
0	Available
1	Available (audio)
2	Floppy disk (8-bit transfer)
3	Available (printer port)
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

* Audio DMA select 1, 3, or 5

** Printer port DMA select 1 (LPT2) or 3 (LPT1)

C.4 Interrupt assignments

Table C.4: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	COM2
IRQ 4	COM1
IRQ 5	Unused
IRQ 6	FDD
IRQ 7	LPT1
IRQ 8	RTC
IRQ 9	Reserved (audio)
IRQ 10	Unused
IRQ 11	Reserved for watchdog timer
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Primary IDE
IRQ 15	Secondary IDE for CFC

* Ethernet interface IRQ select: 9, 11, 15

* PNP audio IRQ select: 9, 11, 15

* PNP USB IRQ select: 9, 11, 15

* PNP ACPI IRQ select: 9, 11, 15

