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PCA-6751 Series

Half-size all-in-one Pentium® CPU card with MMX CPU, VGA/LCD and Fast Ethernet interface

User's Manual

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This manual is for the PCA-6751, PCA-6751V, PCA-6751L Rev. A1 and above.

Part No. 2006675112

3rd Edition Published in Taiwan April 2000

Packing list

Before installing your board, ensure that the following materials have been received:

- 1 PCA-6751 Series all-in-one single board computer
- 2 utility disk with Ethernet utility programs
- 430 TX chipset driver for Windows 95
- 3 utility disks with SVGA utility programs and drivers for Windows 3.1/95/98/NT
- 1 hard disk drive (IDE) interface cable (40 pin)
- 1 floppy disk drive interface cable (34 pin)
- 1 parallel port adapter (26 pin) and COM2 adapter (9 pin) kit
- 1 6-pin mini-DIN keyboard and PS/2 mouse adapter
- 1ATX power adapter cable
- 1 warranty certificate

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

Optional devices

- IrdA adapter (part#: 968900042)
- 1 USB cable (part #1700100170)

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CHAPTER 1

Hardware Configuration

This chapter gives background information on the PCA-6751 Series. 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: Dimensions
- Board layout: Jumper locations
- Board layout: Connector locations
- Safety precautions
- Jumper settings
- Installing DRAM (SODIMMs)

1.1 Introduction

The PCA-6751 Series is a half-size ISA-bus CPU card designed with an onboard Intel® Pentium® MMX CPU. Featuring powerful onboard functions such as VGA, LCD, LAN and SSD, the versatile PCA-6751 Series can meet the needs of different applications.

Embedded Pentium® MMX CPU

The PCA-6751 Series is equipped with Intel's new embedded Pentium® MMX CPU at 166 MHz and 266 MHz. The CPU provides high performance with low power consumption and better thermal management, which is ideal for POS terminals, ATMs, and industrial and embedded applications

Guaranteed long product supply time

In addition to the CPU, all the major components of the PCA-6751 Series are Intel® EMD solutions. These include the 430 TX system chipset, C&T 69000/69030 VGA/LCD controller, and SB82558/SB82559/RTL-8139 10/100Base-T Ethernet. Unlike regular commercial solutions, Intel® EMD solutions provide higher system stability and longer product supply time (Intel EMD products' typical life cycle is 5 years). This guarantee is particularly important for end systems that will last for years.

1.2 Specifications

Standard SBC functions

- **CPU:** Intel Pentium® MMX CPU 166/266 MHz
- **BIOS:** AWARD 2 Mbit Flash BIOS, supports Plug & Play, APM 1.2, Ethernet boot ROM, boot from CD-ROM, LS-120, and ZIP drive
- **Chipset:** Intel® 430 TX
- **L2 cache:** 512 KB PB SRAM
- **System memory**: Two 144-pin SODIMM RAM sockets support SDRAM memory module from 8 MB to 256 MB
- **PCI IDE interface**: One Enhanced IDE interface, supports 2 IDE devices PIO mode 3, 4 with bus mastering up to 14 MB/sec Ultra DMA mode up to 33 MB/sec
- **Floppy disk drive interface**: Supports up to two floppy disk drives: 3½" (720 KB or 1.44 MB) and/or 5¼" (360 KB or 1.2 MB)
- **Parallel port**: One parallel port , supports SPP/EPP/ECP
- **IR port**: Supports up to 115 Kbps transmission rate
- **Serial ports:** one RS-232, one RS-232/422/485
- **Watchdog timer**: Can generate a system reset or IRQ 11. Software enabled/disabled. Time interval is from 1 ~ 62 seconds. Jumperless with run-time setup

VGA function

- **Controller**: C&T 69000/69030, supports CRT and 36-bit LCD display types
- **Display memory**: 2 MB SDRAM built-in (optional 4 MB with C&T 69030)
- **Display resolution**: Up to 1280 x 1024 @ 256 colors (16 million colors @ 4 MB)

Ethernet controller functions (PCA-6751 only)

- **Controller**: Intel® SB82558/SB82559, RTL-8139; 10/100 Mbps
- **I/O address switchless setting**
- **Connector type**: RJ-45
- **Boot ROM**: Built-in system (optional)

Solid state disk

- Supports CompactFlash™ disks

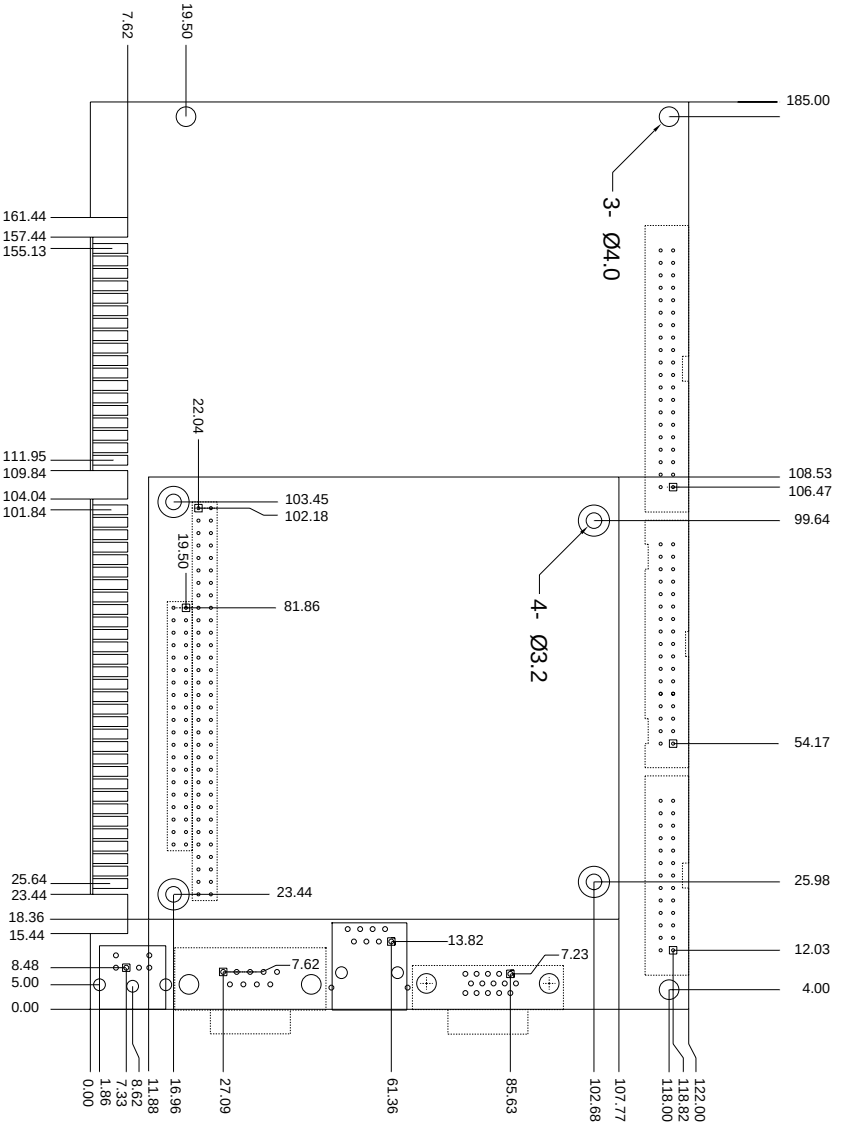
Mechanic and environmental specifications

- **Max. power requirement**: 5 A @ +5 V
- **Operating temperature**: 0 ~ 70° C (32 ~ 166° F)
- **Size**: 185 mm x 122 mm

PCA-6751 Series' models comparison table

Model Name	Brief description	A1 version	B1 version
PCA-6751	**All-in-one** With CPU, LAN, VGA, LCD and SSD	**PCA-6751-F0A1** (with Intel® 82558 LAN, 266 MHz CPU) **PCA-6751-A0A1** (with Intel® 82558 LAN, 166 MHz CPU)	**PCA-6751-F1B1** (with Intel® 82559 LAN, 266 MHz CPU) **PCA-6751-F0B1** (with RTL8139 LAN, 266 MHz CPU)
PCA-6751V	Without LAN	**PCA-6751-F0A1** (OEM only)	-
PCA-6751L	**Lite** Without VGA, LCD, LAN	**-**	**PCA-6751L-F0B1** (with 266 MHz CPU)

1.3 Board layout: Dimensions



Unit: mm

Figure 1-1: PCA-6751 Series board layout: Dimensions

1.4 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. Do not 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.

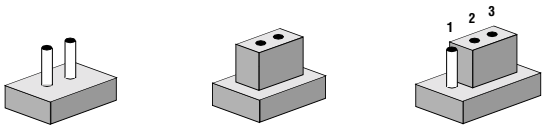
1.5 Jumper settings

1.5.1 Introduction

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.

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 cap (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, connect the pins with the cap. To "open" a jumper, remove the cap. 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.



Open **Closed** **Closed 2-3**

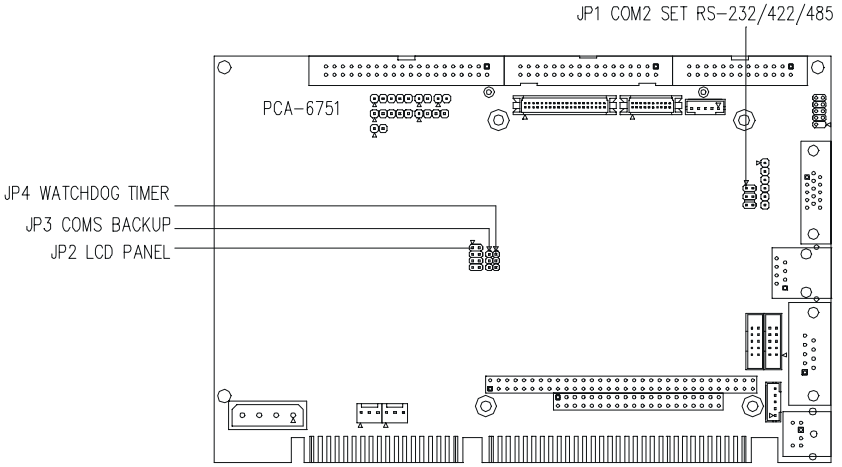
You may find a pair of needle-nose pliers useful for setting the jumpers.

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.

Table 1-1: Jumpers

Label	Function
JP1	COM2 setting for RS-232/422/485
JP2	LCD panel select
JP3	CMOS backup select
JP4	Watchdog timer configuration

1.5.2 Locating jumpers



1.5.3 COM2 settings for RS-232/422/485 (JP1)

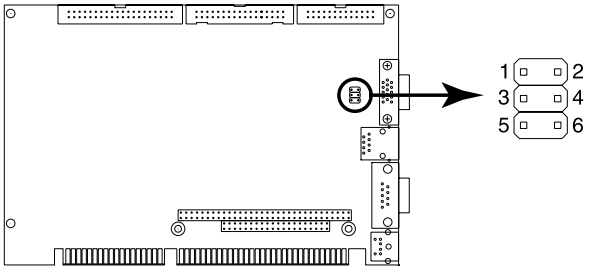
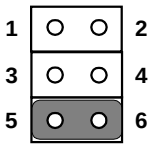
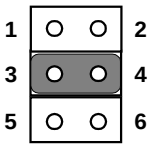
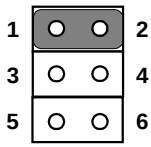


Table 1-2: COM2 settings for RS-232/422/485 (JP1)

	*RS-232	RS-422	RS-485
JP1			

* default setting

1.5.4 LCD panel select (JP2)

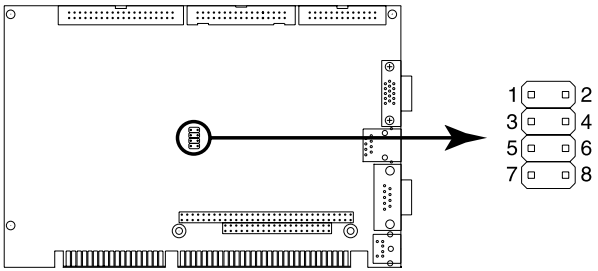
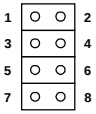
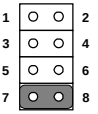
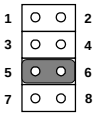
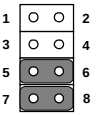
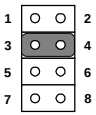
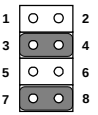
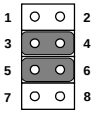
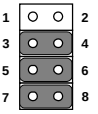
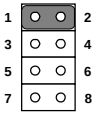
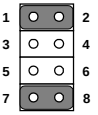
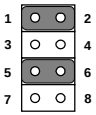
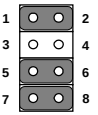
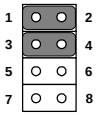
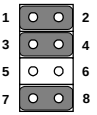
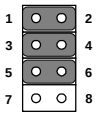
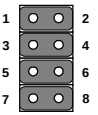


Table 1-3: LCD panel select (JP2)

LCD type	JP2	LCD type	JP2
1024 x 600 TFT 48 K		800 x 600 DSTN	
800 x 600 DSTN2 48 K		800 x 600 DSTN	
1280 x 1024 DSTN 48 K		*640 x 480 TFT 18-bit	
800 x 600 TFT2 48 K		1280 x 1024 TFT	
1024 x 600 DSTN		1024 x 768 TFT	
800 x 600 DSTN 48 K		640 x 480 DSTN	
1024 x 768 DSTN 48 K		640 x 480 Sharp TFT	
800 x 600 TFT1 48 K		1024 x 768 DSTN	

* default setting

1.5.5 CMOS backup select (JP3)

Warning: To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS". Set the jumper back to normal before turning on the power supply.

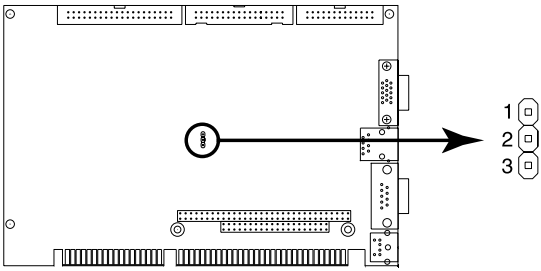


Table 1-4: RTC power and CMOS clear (JP3)

	*Normal	CMOS data clear
JP3		

* default setting

1.5.6 Watchdog timer configuration (JP4)

An onboard watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This is an invaluable protective device for standalone or unmanned applications. Setup involves two jumpers and running the control software. (Refer to Appendix A.)

When the watchdog timer is enabled and the CPU shuts down, the watchdog timer will automatically either reset the system or generate an interrupt on IRQ 11, depending on the setting of jumper JP4, as shown below:

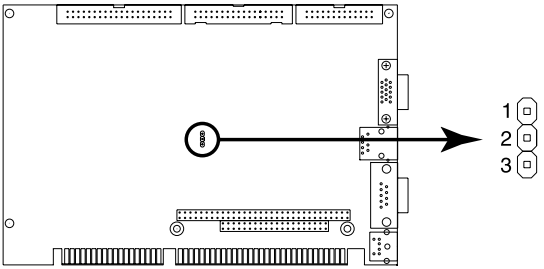
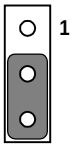
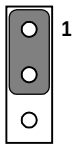


Table 1-5: Watchdog timer system reset select (JP4)

	*System reset	IRQ11 interrupt
JP4		

* default setting

1.6 Installing system memory (SODIMMs)

You can install anywhere from 8 to 256 MB of SDRAM into your PCA-6751 Series card. The card provides **two** 144-pin SODIMM sockets. Each socket accepts 8, 16, 32, 64 or 128 MB 3.3 V power level SODIMMs. If only one SODIMM module is installed, it may be installed in either SODIMM socket on the solder side of the PCA-6751 Series card.

Note: PCA-6751 Series cards only support SDRAM SODIMM modules. EDO SODIMM is not supported.

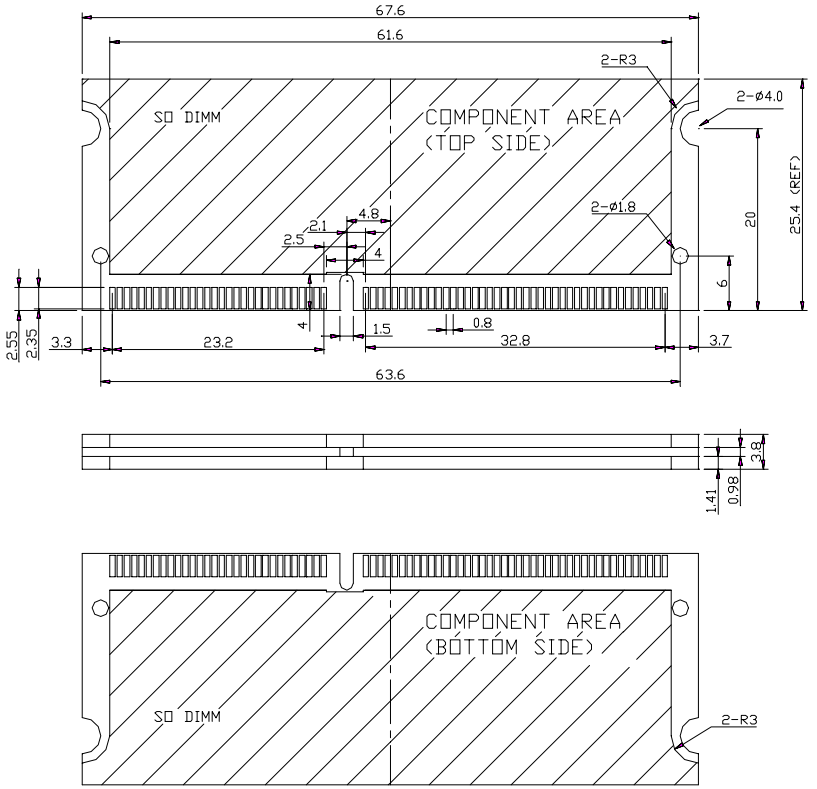
1.6.1 Installing SODIMMs

Note: The modules can only fit into a socket one way. Their 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.

Important: Only use standard form SODIMM memory modules (as shown in the diagram below). Standardized dimensions ensure a proper fit. Check with your memory supplier about the SODIMM modules you will use.

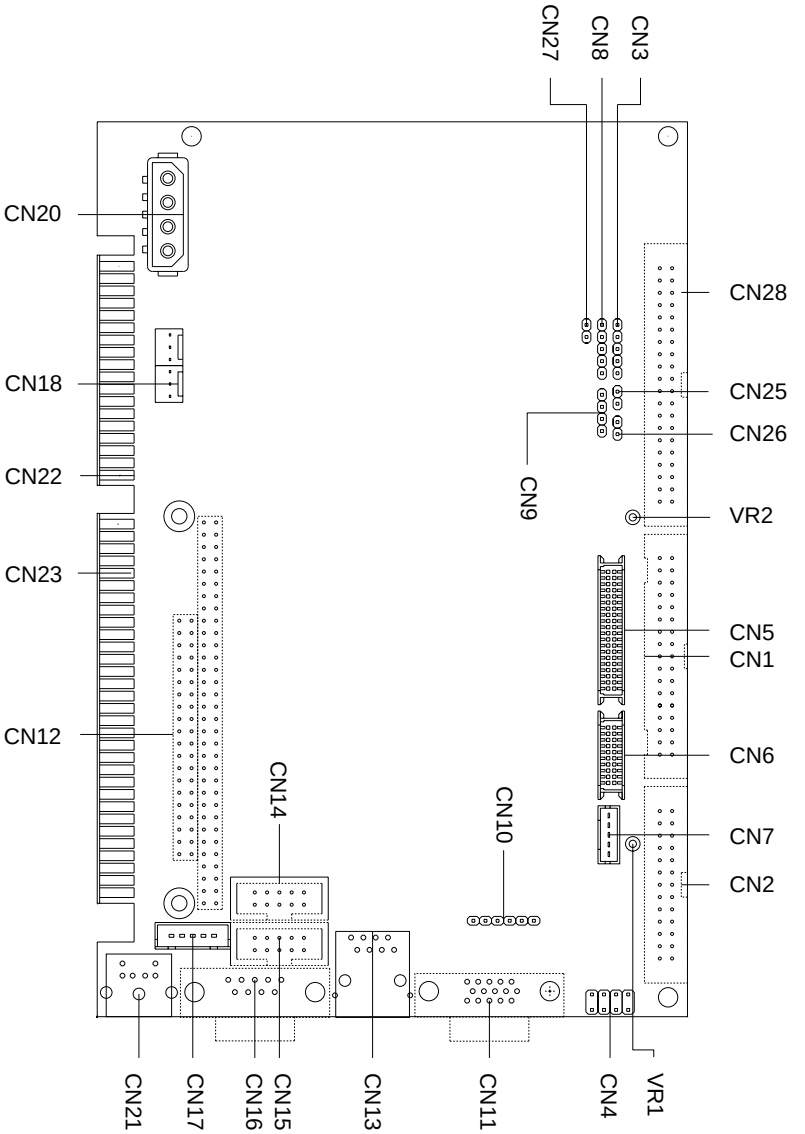


CHAPTER 2

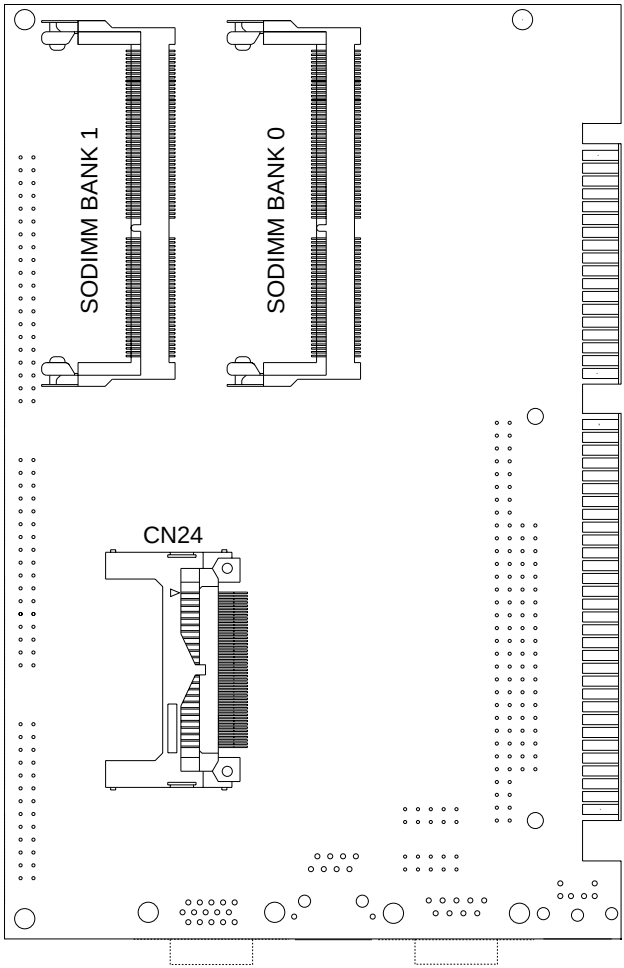
Connecting Peripherals

This chapter tells how to connect peripherals, switches and indicators to the PCA-6751 Series 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.

2.1 Board layout: Connector locations (component side)



2.2 Board layout: Connector locations (solder side)



The following table lists the connectors on the PCA-6751 Series.

Table 2-1: Connectors

Number	Function
CN1	FDD connector
CN2	Parallel port connector
CN3	Keyboard lock, LED connector
CN4	USB connector
CN5	24-bit LCD display connector
CN6	36-bit LCD display connector
CN7	LCD inverter connector
CN8	IR connector
CN9	External speaker connector
CN10	Reserved
CN11	VGA connector
CN12	PC/104 connector
CN13	Ethernet connector
CN14	COM2 RS-422/485 connector
CN15	COM2 RS-232 connector
CN16	COM1 RS-232 connector
CN17	External keyboard connector
CN18	ATX power connector
CN19	Reserved
CN20	AT power connector
CN21	Keyboard and PS/2 mouse connector
CN22	ISA gold finger connector
CN23	ISA gold finger connector
CN24	CompactFlash™ card connector
CN25	HDD LED connector
CN26	System reset switch connector
CN27	ATX power button
CN28	Enhanced IDE connector

The following sections tell how to make each connection. In most cases, you will simply need to connect a standard cable. All of the connector pin assignments are shown in Appendix C.

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 a 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.*



2.3 FDD connector (CN1)

You can attach up to two floppy disk drives to the PCA-6751 Series' onboard controller. You can use any combination of 5.25" (360 KB/ 1.2 MB) and/or 3.5" (720 KB/1.44/2.88 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 3.5" drives) and a printed-circuit-board connector (usually used for 5.25" 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: floppy. The set in the middle connects to the B: floppy.

2.4 Parallel port connector (CN2)

The parallel port is normally used to connect the CPU card to a printer. The PCA-6751 Series includes an on-board parallel port, accessed through a 26-pin flat-cable connector, CN3. 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.

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

To install the bracket, find an empty slot in your chassis. Unscrew the plate that covers the end of the slot. Screw in the bracket in place of the plate. Next, attach the flat-cable connector to CN2 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 CN2. Pin 1 is on the right side of CN2.

2.5 Keyboard lock, LED connector (CN3)

Connecting CN3 enables the keyboard locking function from the front panel of your chassis.

2.6 USB connector (CN4)

The PCA-6751 Series board provides two USB (Universal Serial Bus) interfaces, which give complete plug and play and also hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification rev. 1.0 and are fuse protected.

The USB interfaces are accessed through a 10-pin flat-cable connector, CN9. The adapter cable has a 10-pin connector on one end and a USB connector on the bracket.

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

2.7 24-bit LCD display connector (CN5)

CN5 is a 40-pin dual-in-line header and is used to connect an LCD display to the PCA-6751 Series. The PCA-6751 Series has bias control which can be used to control the LCD signal voltage. Pin 7 of CN5 is for LCD contrast adjustments, the LCD contrast can be adjusted via the VR2 (located on the upper left corner of CN5).

The VGA interface is set up solely with the software utiliity provided. Refer to Chapter 4 for details.

2.8 36-bit LCD display connector (CN6)

The PCA-6751 Series supports 36-bit LCD that must be connected to both CN5 (40-pin) and CN6 (20-pin).

The pin assignments for both CN5 and CN6 can be found in Appendix C.

2.9 LCD inverter connector (CN7)

The LCD inverter is connectoed to CN7 via a 5-pin connector to provide +12 V power to the LCD display. Pin 4 of CN7 provides LCD brightness control and can be adjusted via the VR1 (located on the uppper right corner of CN7).

2.10 IR connector (CN8)

This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through BIOS setup.

2.11 External speaker connector (CN9)

Connect external speakers to CN9. To activate the on-board buzzer, set the connector so that Pins 4 and 5 are closed.

2.12 VGA display connector (CN11)

The PCA-6751 Series provides a VGA controller for a high resolution VGA interface. The PCA-6751Series' CN7 is a DB-15 connector for VGA monitor input. Pin assignments for the CRT display are detailed in Appendix C.

2.13 PC/104 connectors (CN12)

The PCA-6751 Series is equipped with a 16-bit ISA signal PC/104 connector for future expansion. See Appendix B for details.

2.14 Ethernet connector (CN13) (PCA-6751 only)

The PCA-6751 is equipped with a high performance 32-bit PCI-bus Fast Ethernet interface which is fully compliant with IEEE 802.3u 100/10Base-T specifications. It is supported by all major network operating systems.

The medium type can be configured via the Intel82558.EXE program included on the utility disk. (See Chapter 5 for detailed information.)

2.14.1 RJ-45A connector (CN13)

100/10Base-T connects to the PCA-6751 via an adapter cable to the RJ-45 standard jack.

2.14.2 Network boot

The network boot feature is built into the BIOS. It can be enabled or disabled in the chipset setup of the CMOS configuration. Refer to "BIOS Setting" in Chapter 4 for more information.

2.15 Serial ports (CN16: COM1; CN15: COM2/RS-232; CN14: COM2/RS-422/485)

The PCA-6751 Series offers two serial ports: COM1 in RS-232 and COM2 (CN15: RS-232, CN14:RS-422/485). These ports let you connect to serial devices (a mouse, printers, etc.) or a communication network.

You can select the address for each port (for example, 3F8H [COM1], 2F8H [COM2]) or disable each port. Use the BIOS Advanced Setup program, which is covered in Chapter 4.

The card mounting bracket holds the serial port connector for the one port. The parallel port and serial port adapter kit (supplied with the card) holds the connector for the other port. This lets you connect and disconnect cables after you install the card. The DB-9 connector on the bottom of the bracket is the first RS-232 port, COM1. The DB-9 connector on the adapter kit is the second serial port, COM2.

Table 2-2: Serial port connections (COM1, COM2)

Connector	Function
COM1	RS-232
COM2	RS-232/422/485

2.15.1 RS-232 connection (COM1: CN16)

Different devices implement the RS-232 standard in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

2.15.2 RS-232/422/485 connection (COM2: CN15: RS-232; CN14: RS-422/485)

COM2 is an RS-232/422/485 serial port. The specific port type is determined by jumper settings (JP1), as detailed in Chapter 1.

The IRQ and address range for both ports are fixed. However, if you wish to disable the port or change these parameters later, you can do this in the system BIOS setup. The table below shows the settings for the PCA-6751 Series' board's ports:

Table 2-3: Serial port default settings

Port	Address	Interrupt	Default
COM1	3F8, 3E8	IRQ4	3F8
COM2	2F8, 2E8	IRQ3	2F8

2.16 External keyboard connector (CN17)

In addition to the PS/2 mouse/keyboard connector, an additional external keyboard connector is provided.

For external keyboard pin assignments, see Appendix D.

2.17 ATX power connector (CN18)

If the PCA-6751 Series is used as a standalone card, both the 4-pin main power connector (CN20) and the ATX power connector (CN18) must be connected to the power supply. If the PCA-6751 Series is used with a passive backplane, the main power connector (CN20) should not be connected as the card will be powered from the back-plane.

Use the ATX adapter cable (provided) to connect the PCA-6751 Series with the ATX power supply. The ATX adapter cable has two different connectors at either end. The ATX 20-pin (female type) connects to the power supply, while the 3-pin (female type) connects to the ATX power connector (CN18) on the board itself.

2.18 AT power connector (CN20)

If you prefer not to acquire power through PCA-6751 Series' back-plane via the gold H-connectors, CN20 also provides power input connectors for +5 V, -12 V and +12 V. Pin 8 of the PS/2 power supply can be used, too.

2.19 Keyboard and PS/2 mouse connector (CN21)

The PCA-6751 Series' board provides a keyboard connector. A 6-pin mini-DIN connector (CN21) on the card mounting bracket supports single-board computer applications. The card comes with an adapter to convert from the 6-pin mini-DIN connector to a standard DIN connector and to a PS/2 mouse connector.

2.20 ISA gold fingers (CN22, CN23)

The 16-bit ISA gold fingers are used for connecting the PCA-6751 Series to an ISA passive backplane.

2.21 CompactFlash™ disk (CN24)

The PCA-6751 Series is equipped with a CompactFlash™ disk socket on the solder side that supports the IDE interface for CompactFlash cards. The onboard CompactFlash™ socket is designed to prevent incorrect installation. Make sure that the system power is off when installing and removing CompactFlash™ cards.

The CompactFlash™ card is defaulted as the E drive on your PC.system.

2.22 Front panel connector (CN25, CN26, CN27)

Next, you may want to install external switches to monitor and control the PCA-6751 Series. These features are optional - install them only if you need them. The front panel connector provides connections for both a speaker and a hard disk access indicator, and it also provides an input switch for resetting the card and the ATX system power switch.

2.22.1 Hard disk drive LED (CN25)

You can connect an LED to connector CN25 to indicate when the HDD is active. Marks on the circuit board indicate LED polarity.

2.22.2 Reset switch (CN26)

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

For reset switch pin assignments, please see Appendix C.

2.22.3 ATX power button (CN27)

The PCA-6751 Series provides an ATX power input connector. When connected with the ATX power switch, the ATX power switch connector (CN27) enables power On/Off from the chassis.

2.23 Enhanced IDE connector (CN28)

You can attach two IDE (Integrated Device Electronics) drives to the PCA-6751 Series' internal controller. The PCA-6751 Series CPU card has an EIDE connector, CN28.

Wire number 1 on the cable is red or blue, and the other wires are gray. Connect one end to connector CN28 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 in finding the connector.

Unlike floppy drives, IDE hard drives can connect in either position on the cable. If you install two drives, you will need to set one as the master and one as the slave. You do this by setting the jumpers on the drives. If you use just one drive, you should set it as the master. See the documentation that came with your drive for more information.

Connect the first hard drive to the other end of the cable. Wire 1 on the cable should also connect to pin 1 on the hard drive connector, which is labeled on the drive circuit board. Check the documentation that came with the drive for more information.

Connect the second drive, as described above, on CN28.

2.24 ATX Feature Connector (CN27)

When the PCA-6751 is used as a standalone card, both the main power connector (CN20) and the ATX feature connector (CN27) must be connected to the power supply. If the PCA-6751 is used with a passive backplane, the main power connector (CN20) should not be connected. This is because the card will be powered from the back-plane.

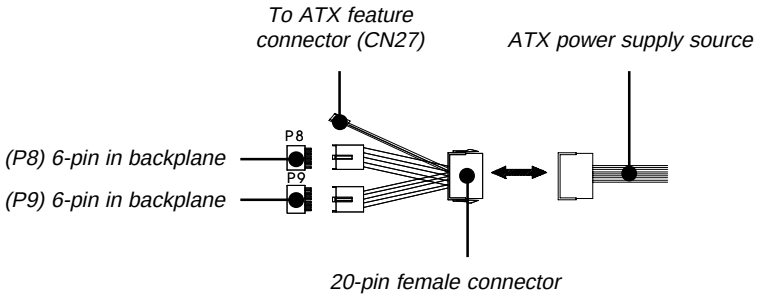


Figure 2-4: ATX adaptor cable

The ATX adapter cable (provided) is used to connect the PCA-6751 to the ATX power supply. The ATX adapter cable has different connectors at both ends. On one end is the ATX 20-pin (female type) which connects to the (male) ATX power supply source. The other end has a 3-pin connector (female type) which connects to the ATX feature connector (CN27) on the board itself. This end also has the 6-pin main power connector (P8) and a 6-pin connector (P9) which is used when the board is mounted on a passive backplane.

CHAPTER 3

Award BIOS Setup

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

3.1 Introduction

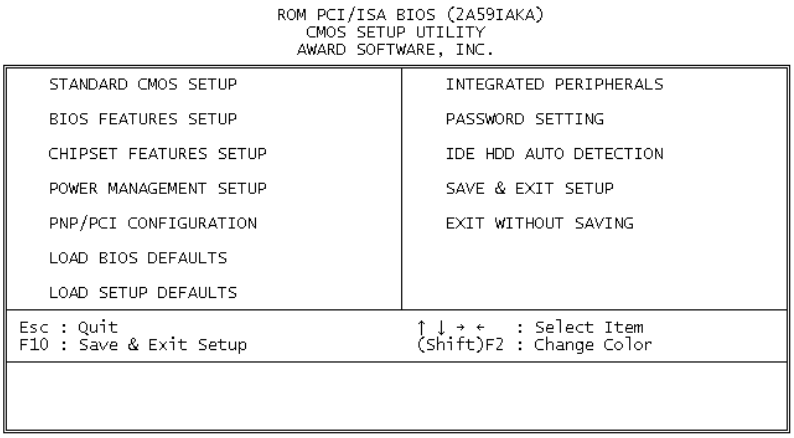


Figure 3-1: Setup program initial screen

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.

3.2 Entering setup

Turning on the computer and pressing <DEL> immediately will allow you to enter Setup.

3.3 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.

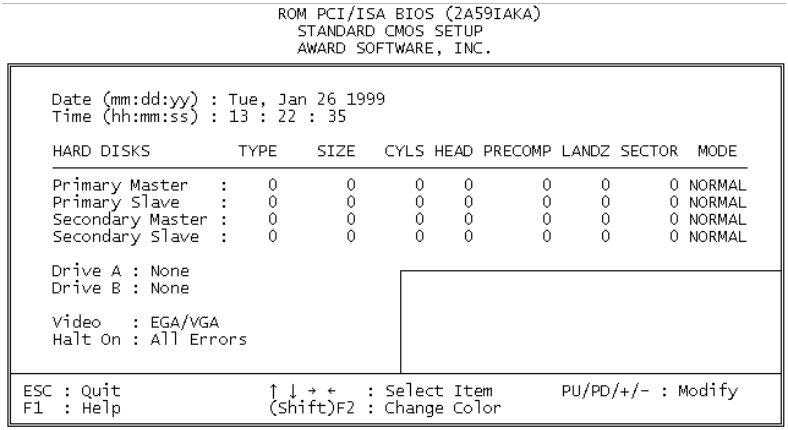


Figure 3-2: CMOS setup screen

3.4 BIOS features setup

The “BIOS FEATURES SETUP” screen appears when choosing the BIOS FEATURES SETUP item from the CMOS SETUP UTILITY Menu. It allows the user to configure the PCA-6751 Series according to his particular requirements.

Below are some major items that are provided in the BIOS FEATURES SETUP screen:

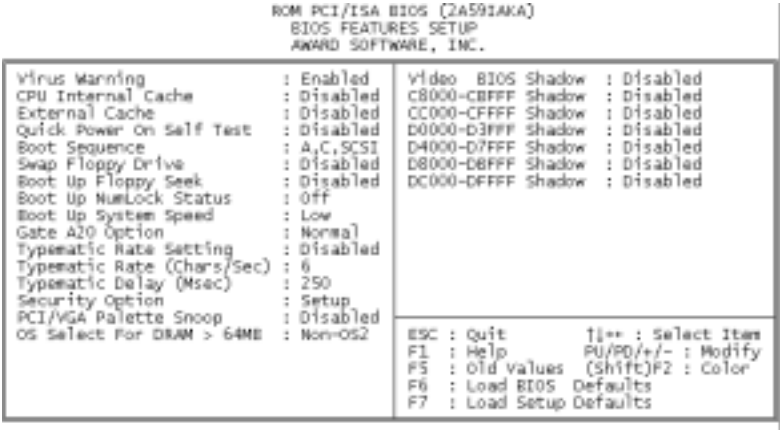


Figure 3-3: BIOS features setup screen

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, a warning message will be displayed. 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 “C, A”.

A,C	System will first search the FDD, then the HDD.
C,A	System will first search the HDD, then the FDD.
C only	System will only search the HDD.
•	•
•	•
•	•

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 they are all 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.

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.

OS Select for DRAM>64 MB
This setting is under OS/2 system.

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

3.5 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-6751 Series.

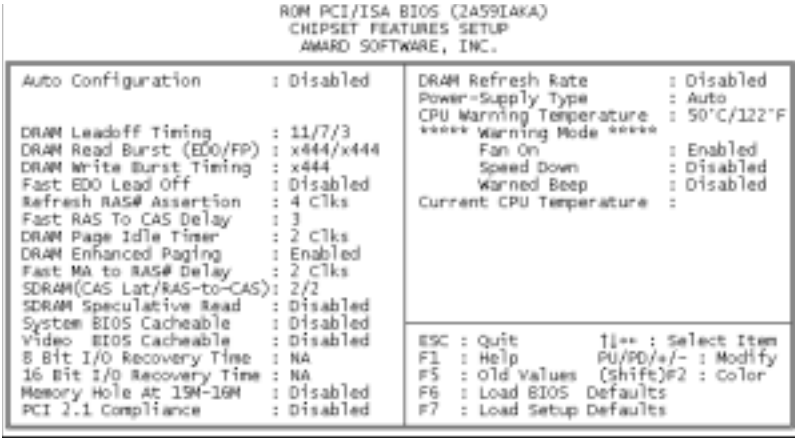


Figure 3-4: Chipset features setup screen

3.6 Power management setup

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

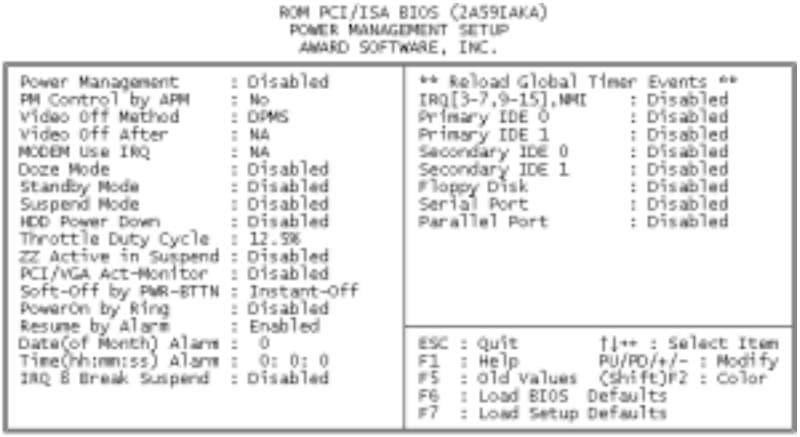


Figure 3-5: Power management setup screen

Power Management

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

HDD Power Management

You can choose to turn the HDD off after a one of 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.

3.7 PnP PCI configuration setup

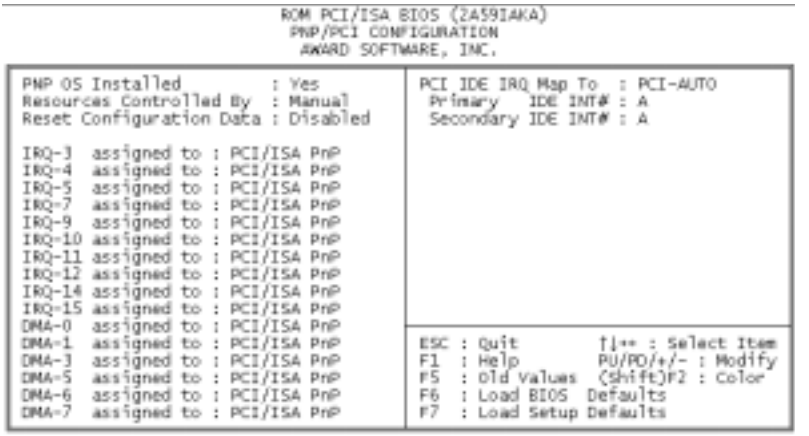


Figure 3-6: PCI configuration screen

3.8 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).

3.9 Load setup defaults

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

3.10 Integrated peripherals

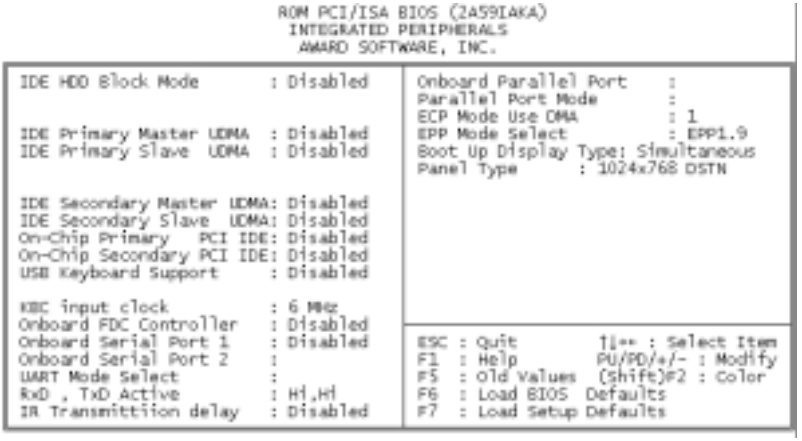


Figure 3-7: Integrated peripherals

Note: If you enable the IDE HDD block mode, the enhanced IDE driver will be enabled.

3.11 Password setting

To change, confirm, or disable the password, choose the “PASSWORD SETTING” option form 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.” Pressing [Enter] again without typing any characters can disable the password setting function.

3.12 IDE HDD auto detection

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

3.13 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.

3.14 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.

CHAPTER 4

PCI SVGA Setup

- Introduction
- Installation of SVGA driver
  - for Windows 3.1
  - for Windows 95
  - for Windows NT
- Further information

4.1 Introduction

The PCA-6751 Series has an onboard PCI flat panel/VGA interface. The specifications and features are described as follows:

4.1.1 Chipset

The PCA-6751 Series uses a C&T 69000/69030 chipset for its PCI/SVGA controller. It supports many popular LCD, EL, and gas plasma flat panel displays and conventional analog CRT monitors. The 6900/69030 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. In addition, it also supports interlaced and non-interlaced analog monitors (color and mono-chrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

4.1.2 Display memory

With on-board 2 MB display memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 64 K colors. The display memory can be expanded to 4 MB for true-color resolution of 1024 x 768 with C&T 69030.

4.1.3 Display types

CRT and panel displays can be used simultaneously. The PCA-6751 Series can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. The utility disks includes three *.COM files in the subdirectory `Utility\vga\` which can be used to configure the display. In order to use these configuration programs, type the file name and path at the DOS prompt.

CT.COM: Enables CRT display only

FP.COM: Enables panel display only

SM.COM: Enables both displays simultaneously

4.2 Installation of SVGA driver

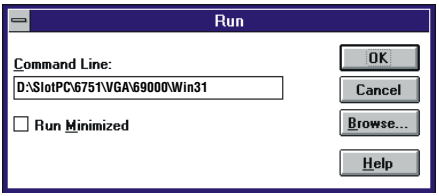
Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you you are using within your PCA-6751 Series.

Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

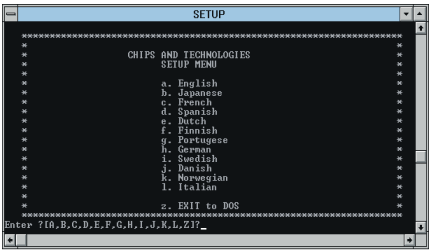
Note: <Enter> means pressing the "Enter" key on the keyboard.

4.2.1 Installation for Windows 3.1

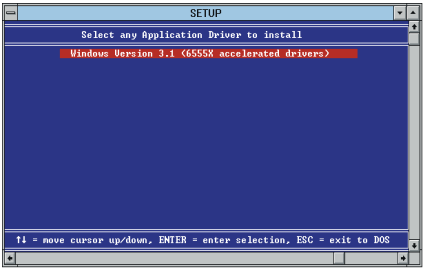
1. a. Insert the utility disc into the CD-ROM drive.
   b. Select "File" in Program Manager.
   c. Click "Run" and type: D:\SlotPC\6751\VGA\69000\Win31



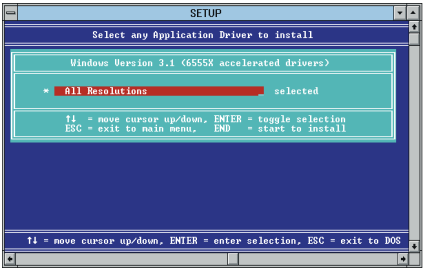
2. a. Choose the language you want to use during installation.



3. a. Select the highlighted item.
   b. Press "ENTER".

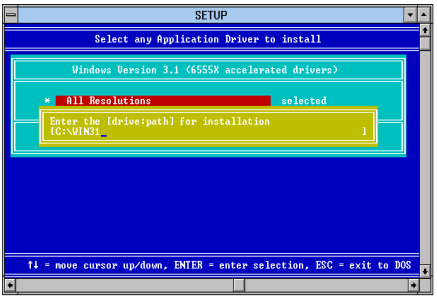


4. a. Press "ENTER" to install all resolutions.



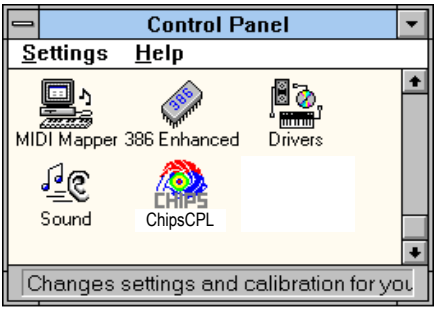
5.

a. Type the path of the operating system.



6.

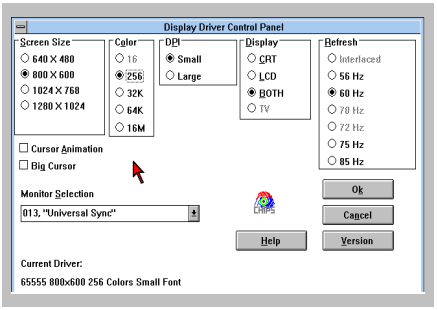
a. When installation is completed, reboot the system.
b. You will see the "ChipsCPL" icon in the control panel.



7.

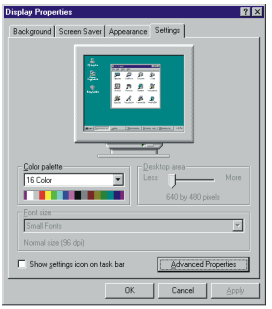
a. Double click "ChipsCPL".
b. Adjust screen size, color and refresh rate to your preferences.

END

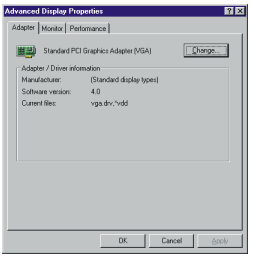


4.2.2 Installation for Windows 95

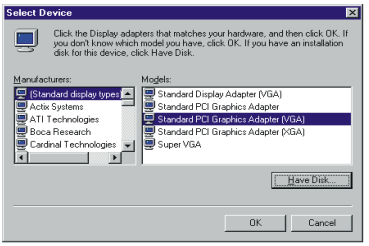
1. a. Select "Start", "Settings", "Control Panel", "Display", "Settings".
   b. Press "Advanced Properties".



2. a. Choose the "Adapter" label.
   b. Press the "Change..." button.



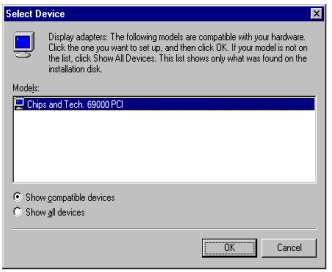
3. a. Press the "Have Disk" button.



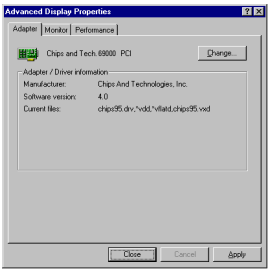
4. a. Insert the utility disc into the CD-ROM drive.
   b. Type: D:\SlotPC\6751\VGA\69000\Win95
   c. Press "OK".



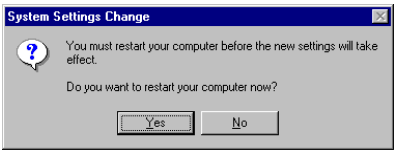
5. a. Select the highlighted item.
   b. Click the "OK" button.



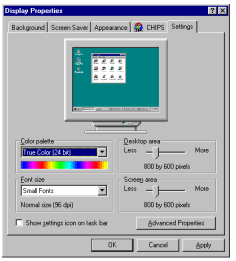
6. a. C&T69000/69030 appears in the adapter label.
   b. Click the "Apply" button.



7. a. Press "Yes" to reboot.

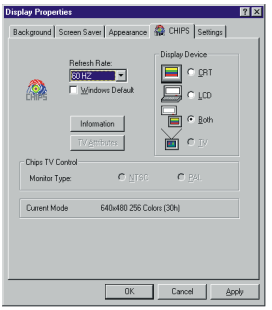


8. a. Repeat Step 1 on the previous page of this manual. The "CHIPS" label appears in "Display".
   b. Adjust resolution and color.



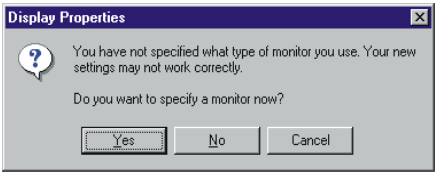
9.

a. Click the "CHIPS" label.
b. Adjust the refresh rate and display type.
c. Press "OK" to exit.



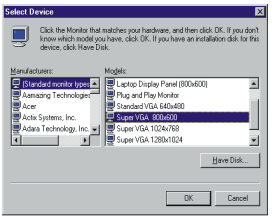
10.

a. Press "Yes" to set the monitor type.



11.

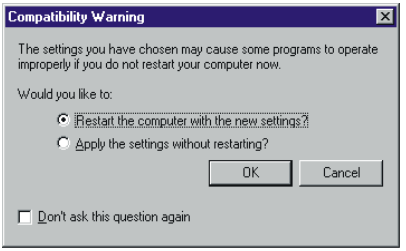
a. Select "Standard", "Super VGA 800 x 600", or "XGA".
b. Press the "OK" button.



12.

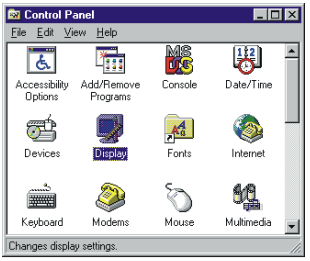
a. Choose "Restart" to reboot.

END

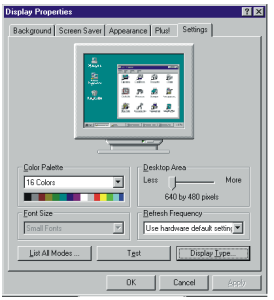


4.2.3 Installation for Windows NT

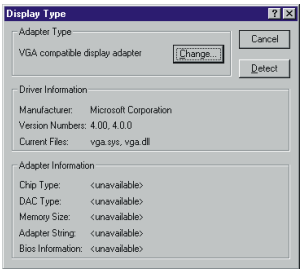
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click the "Display" icon.



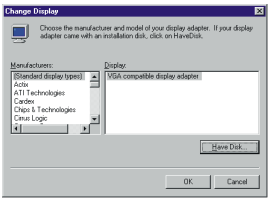
2. a. Choose the "Settings" label.
   b. Press the "Display Type" button.



3. a. Press the "Change..." button.

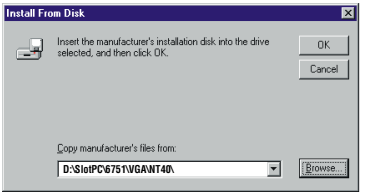


4. a. Click the "Have Disk..." button.



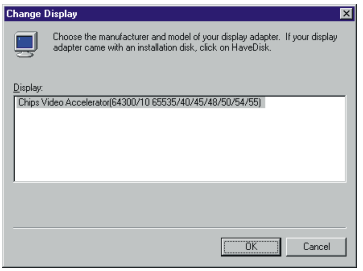
5.

a. Insert the utility disc into the CD-ROM drive.
b. Type D:\SlotPC\6751\VGA\NT40\
c. Press the "OK" button.



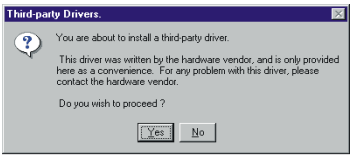
6.

a. Select the highlighted item.
b. Press the "OK" button.



7.

a. Press "Yes" to proceed.



8.

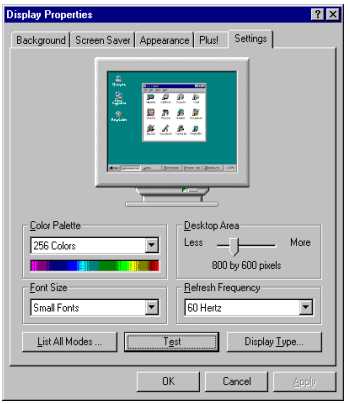
a. Press "OK" to reboot.



9.

a. Repeat Step 1 in this manual, to select the "Settings" label.
b. Adjust resolution and color.
c. Click "Test" to see the result.
d. Click "OK" to save the setting.

END



4.3 Further information

For more information about the PCI/SVGA installation in your PCA-6751 Series, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

C&T website: **www.chips.com**

Advantech websites: **www.advantech.com**

www.advantech.com/support

CHAPTER 5

PCI Bus Ethernet Interface With Intel® SB82558/SB82559 (PCA-6751 only)

This chapter provides information on Ethernet configuration.

- Introduction
- Installation of Ethernet driver
  - Installation for MS-DOS and Windows 3.1
  - Installation for Windows 95
  - Installation for Windows NT
- Further information

5.1 Introduction

The PCA-6751 is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the 82558.exe program included on the utility disk.

The Ethernet port provides a standard RJ-45 jack. 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 combined with system BIOS, which can be enabled/disabled in the BIOS setup.

5.2 Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCA-6751, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or WINDOWS.

Note 1: The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

5.2.1 Installation for MS-DOS and Windows 3.1

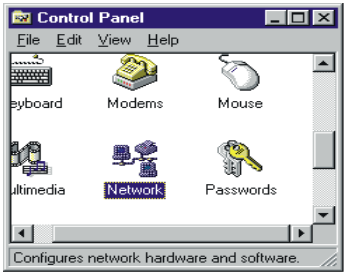
If you want to set up your Ethernet connection under the MS-DOS or Windows 3.1 environment, you should first check your server system model. For example, MS-NT, IBM-LAN server, and so on.

Then choose the correct driver to install in your panel PC.

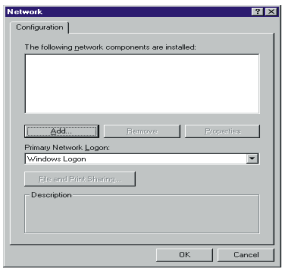
The installation procedures for various servers can be found in the directory path "LAN/TXT/*" of the drivers and utilities disks, where * is your server model.

5.2.2 Installation for Windows 95

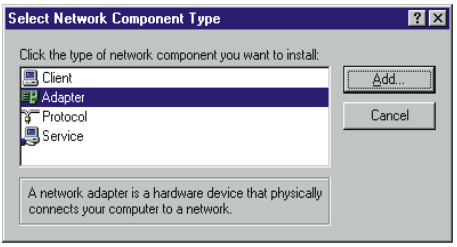
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click "Network".



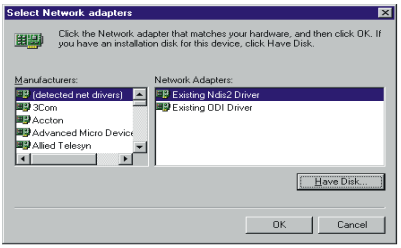
2. a. Click "Add" and prepare to install network functions.



3. a. Select the "Adapter" item to add the Ethernet card.



4. a. Click "Have Disk" to install the driver.



5.

a. Insert the utility disc into the CD-ROM drive.
b. Type: D:\SlotPC\6751\Ether.100\82558\Win95\Setup.exe
c. Click "OK".



6.

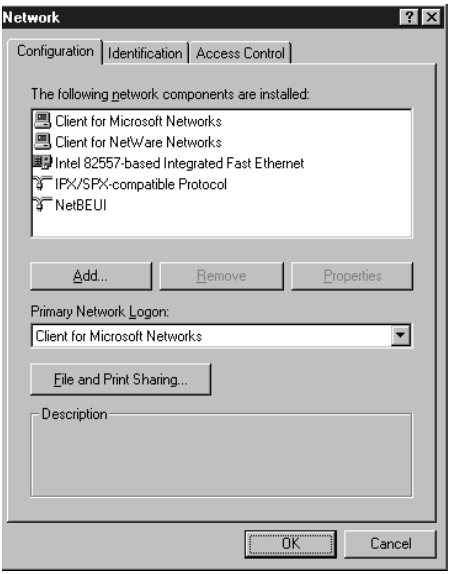
a. Choose the "Intel" item.
b. Click "OK".



7.

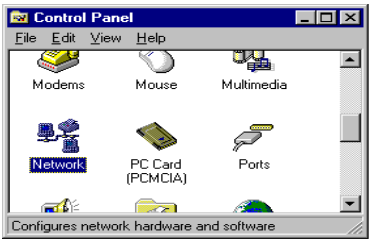
a. Make sure the configurations of the relevant items are set correctly.
b. Click "OK" to reboot.

END

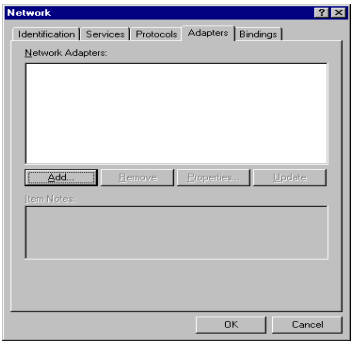


5.2.3 Installation for Windows NT

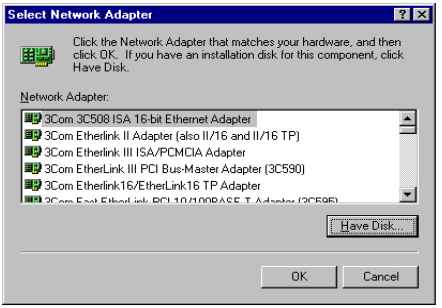
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click "Network".



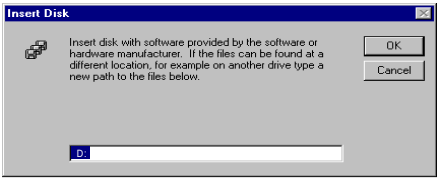
2. a. Choose the "Adapters" label.
   b. Click the "Add" button.



3. a. Press "Have Disk".

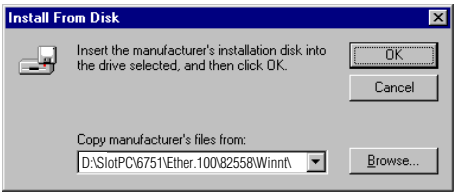


4. a. Type "D:".
   b. Press "OK".



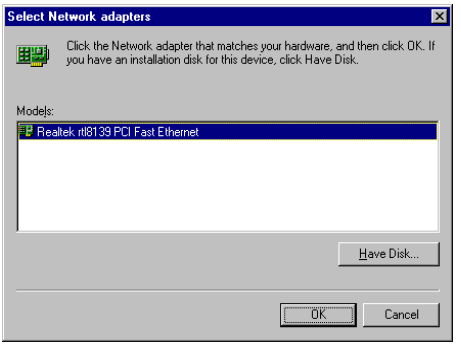
5.

a. Insert the utility disc into the CD-ROM drive.
b. Type: D:\SlotPC\6751\Ether.100\82558\Winnt\
c. Click "OK".



6.

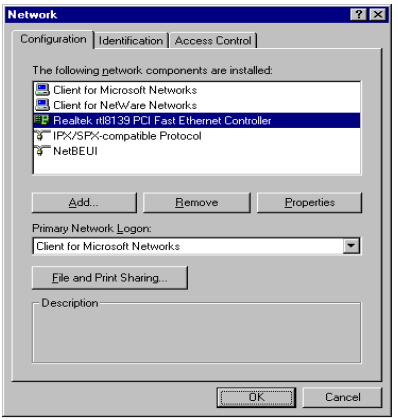
a. Choose the "Realtek" item.
b. Click "OK".



7.

a. Make sure the configurations of relevant items are set correctly.
b. Click "OK" to reboot.

END



5.3 Further information

Intel® website: **www.intel.com**

Advantech websites: **www.advantech.com**
www.advantech.com/support

CHAPTER 6

PCI Bus Ethernet Interface With RTL-8139 (PCA-6751 only)

This chapter provides information on Ethernet configuration.

- Introduction
- Installation of Ethernet driver
  - for Windows 95/98
  - for Windows NT
- Further information

6.1 Introduction

The PCA-6751 is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the RSET8139.exe program included on the utility disk.

The Ethernet port provides a standard RJ-45 jack on board. 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 combined with system BIOS, which can be enabled/disabled in the BIOS setup.

6.2 Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCA-6751, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or Windows.

Note: The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

6.2.1 Installation for MS-DOS and Windows 3.1

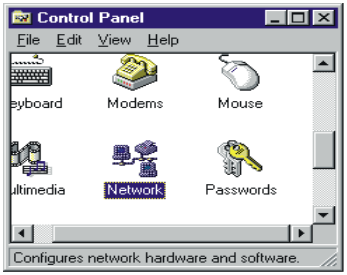
If you want to set up your Ethernet connection under the MS-DOS or Windows 3.1 environment, you should first check your server system model. For example, MS-NT, IBM-LAN server, and so on.

Then choose the correct driver to install in your panel PC.

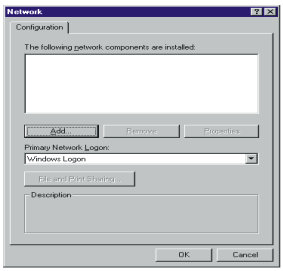
The installation procedures for various servers can be found on CD-ROM. The file path is: **D:\SlotPC\6751\Ethernet\8139\wfw311**

6.2.2 Installation for Windows 95/98

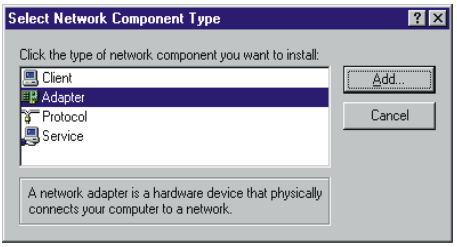
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click "Network".



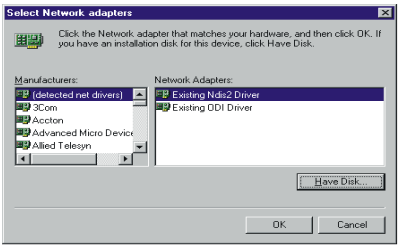
2. a. Click "Add" and prepare to install network functions.



3. a. Select the "Adapter" item to add the Ethernet card.

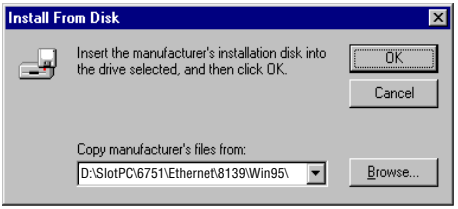


4. a. Click "Have Disk" to install the driver.



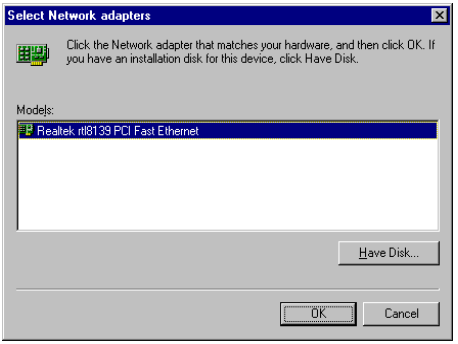
5.

a. Insert the utility disc into the CD-ROM drive.
b. Type: D:\SlotPC\6751\Ethernet\8139\Win95\
c. Click "OK".



6.

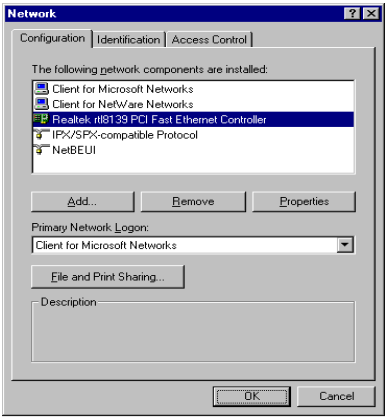
a. Choose the "Realtek" item.
b. Click "OK".



7.

a. Make sure the configurations of relevant items are set correctly.
b. Click "OK" to reboot.

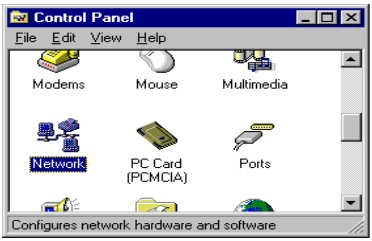
END



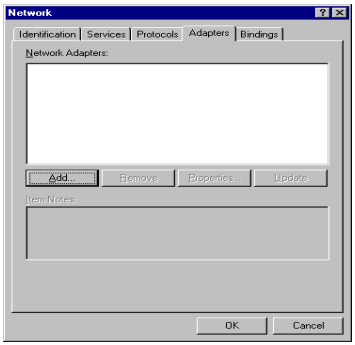
Note: *The correct path for Windows 98 is:* ***D:\SlotPC\6751\Ethernet\8139\Win98***

6.2.3 Installation for Windows NT

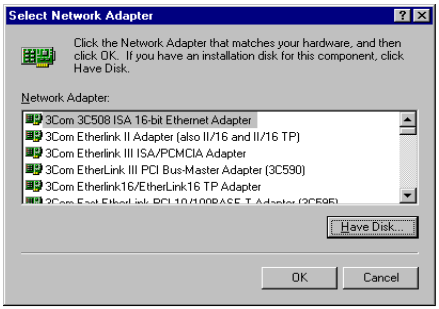
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click "Network".



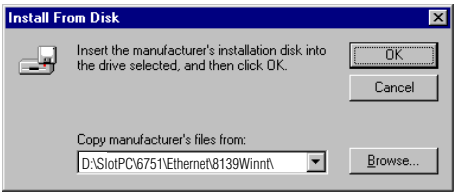
2. a. Choose the "Adapters" label.
   b. Click the "Add" button.



3. a. Press "Have Disk".

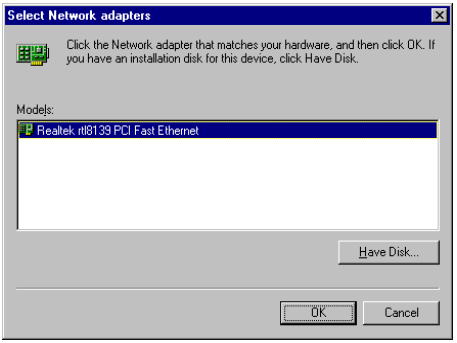


4. a. Insert the utility disc into the CD-ROM drive.
   b. Type: D:\SlotPC\6751\Ethernet\8139\Winnt\
   c. Click "OK".



5.

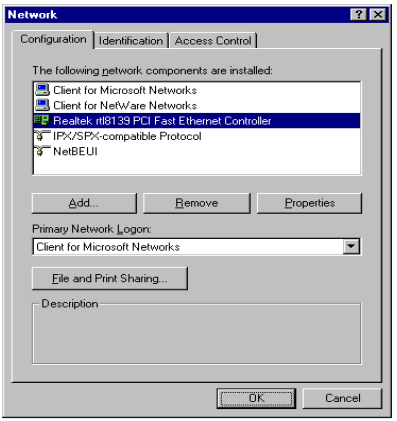
a. Choose the "Realtek" item.
b. Click "OK".



6.

a. Make sure the configurations of relevant items are set correctly.
b. Click "OK" to reboot.

END



6.3 Further information

Realtek website: **www.realtek.com**

Advantech websites: **www.advantech.com**
www.advantech.com/support

APPENDIX A

Programming the Watchdog Timer

The PCA-6751 Series 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.

A.1 Programming the watchdog timer

To program the watchdog timer, you must write a program which writes I/O port address 443 (hex). The output data is a value of time interval. The value range is from 01 (hex) to 3E (hex), and the related time interval is 1 sec. to 62 sec.

Data	**Time Interval**
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
•	•
•	•
•	•
3E	62 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 443 (hex).

The following example shows how you might program the watchdog timer in BASIC:

```
10      REM  Watchdog timer example program
20      OUT &H443, data REM  Start and restart the watchdog
30      GOSUB 1000 REM  Your application task #1,
40      OUT &H443, data REM  Reset the timer
50      GOSUB 2000 REM  Your application task #2,
60      OUT &H443, data REM  Reset the timer
70      X=INP (&H443) REM, Disable the watchdog timer
80      END

1000    REM  Subroutine #1, your application task
•         •
•         •
•         •
1070    RETURN
2000    REM  Subroutine #2, your application task
•         •
•         •
•         •
2090    RETURN
```

APPENDIX B

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

B.1 Installing PC/104 modules

The PCA-6751 Series' PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCA-6751 Series is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCA-675 Series from your system paying particular attention to the safety instructions already mentioned above.
2. Make any jumper or link changes required to the CPU card now. Once the PC/104 module is mounted you may have difficulty in accessing these.
3. Normal PC/104 modules have male connectors and mount directly onto the main card. (Refer to the diagram on the following page.)
4. Mount the PC/104 module onto the CPU card by pressing the module firmly but carefully onto the mounting connectors.
5. Secure the PC/104 module onto the CPU card using the four mounting spacers and screws.

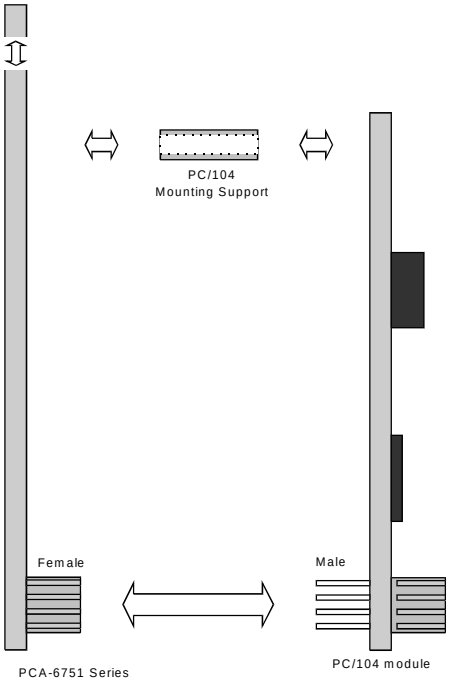


Figure B-1: PC/104 module mounting diagram

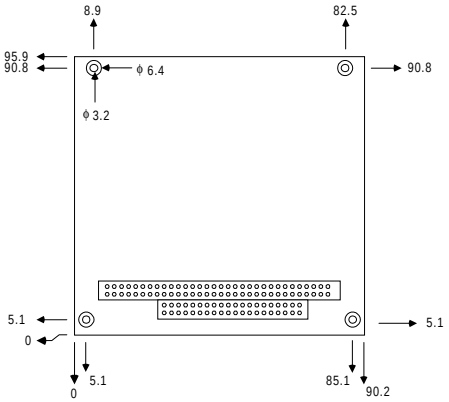


Figure B-2: PC/104 module dimensions (mm) (±0.1)

Table B-1: PCA-6751 Series PC/104 connectors (CN12)

Pin Number	Signal (CN12) Row A	Row B	Row C	Row D
0	—	—	0 V	0 V
1	IOCHCHK*	0 V	SBHE*	MEMCS16*
2	SD7	RESETDRV	LA23	IOCS16*
3	SD6	+5 V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5 V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12 V	LA18	IRQ14
8	SD1	ENDXFR*	LA17	DACK0*
9	SD0	+12 V	MEMR*	DRQ0
10	IOCHRDY	N/C	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5 V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	0 V
19	SA12	REFRESH*	KEY	0 V
20	SA11	SYSCLK	—	—
21	SA10	IRQ7	—	—
22	SA9	IRQ6	—	—
23	SA8	IRQ5	—	—
24	SA7	IRQ4	—	—
25	SA6	IRQ3	—	—
26	SA5	DACK2*	—	—
27	SA4	TC	—	—
28	SA3	BALE	—	—
29	SA2	+5 V	—	—
30	SA1	OSC	—	—
31	SA0	0 V	—	—
32	0 V	0 V	—	—

*active low

APPENDIX C

Pin Assignments

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

- FDD connector
- Parallel port connector
- Keyboard lock connector
- USB connector
- 24-bit LCD display connector
- 36-bit LCD display connector
- LCD inverter connector
- IR connector
- External speaker connector
- VGA connector
- PC/104 connector
- Ethernet connector
- COM2 RS-422/485 connector
- COM2 RS-232 connector
- COM1 RS-422/485 connector
- External keyboard connector
- ATX power connector
- AT power connector
- Keyboard and PS/2 mouse connector
- CompactFlash™ card connector
- HDD LED connector
- System reset switch connector
- ATX power button
- Enhanced IDE connector

C.1 Floppy drive connector (CN1)

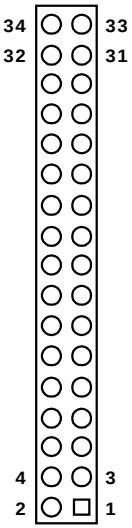


Table C-1: Floppy drive connector (CN1)

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT*
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX*
9	GND	10	MOTOR 0*
11	GND	12	DRIVE SELECT 1*
13	GND	14	DRIVE SELECT 0*
15	GND	16	MOTOR 1*
17	GND	18	DIRECTION*
19	GND	20	STEP*
21	GND	22	WRITE DATA*
23	GND	24	WRITE GATE*
25	GND	26	TRACK 0*
27	GND	28	WRITE PROTECT*
29	GND	30	READ DATA*
31	GND	32	HEAD SELECT*
33	GND	34	DISK CHANGE*

* low active

C.2 Parallel port connector (CN2)

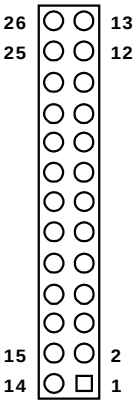


Table C-2: Parallel port connector (CN2)

Pin	Signal
1	*STROBE
2	*AUTOFD
3	D0
4	ERR
5	D1
6	*INIT
7	D2
8	*SLCTINI
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	N/C

* low active

C.3 Keyboard lock, LED connector (CN3)

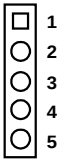


Table C-3: Keyboard lock, LED connector (CN3)

Pin	Signal
1	+5 V
2	N/C
3	GND
4	KBLOCK
5	GND

C.4 USB1/USB2 connector (CN4)

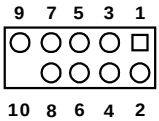


Table C-4: USB1/USB2 connector (CN4)

Pin	USB1 Signal	Pin	USB2 Signal
1	+5 V	2	+5 V
3	UV-	4	UV-
5	UV+	6	UV+
7	GND	8	GND
9	Chassis GND	10	N/C

C.5 24-bit LCD display connector (CN5)

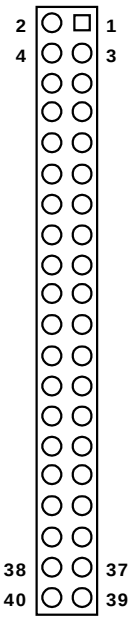


Table C-5: 24-bit LCD display connector (CN5)

Pin	Signal	Pin	Signal
1	VDDSAFE5	2	VDDSAFE5
3	GND	4	GND
5	VDDSAFE3	6	VDDSAFE3
7	Vcon	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHIFT CLOCK	36	FILM
37	M	38	LP
39	N/C	40	ENAVEE

Note: The model number of the CN18 socket is DF13A-40DP-1.25V (Hirose Electric Co., Ltd.)

C.6 36-bit LCD display connector (CN6)

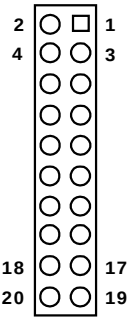


Table C-6: 36-bit LCD display connector (CN6)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	P24	4	P25
5	P26	6	P27
7	P28	8	P29
9	P30	10	P31
11	P32	12	P33
13	P34	14	P35
15	GND	16	GND
17	N/C	18	N/C
19	N/C	20	N/C

Note: The model number of the CN19 socket is DF13A-20DP-1.25V (Hirose Electric Co., Ltd.)

C.7 LCD inverter connector (CN7)

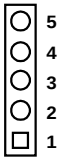


Table C-7: LCD inverter connector (CN7)

Pin	Signal
1	+12 V
2	GND
3	ENABKL
4	VBR
5	+ 5 V

C.8 IR connector (CN8)

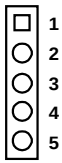


Table C-8: IR connector (CN8)

Pin	Signal
1	+5 V
2	N/C
3	IR_RX
4	GND
5	IR_TX

C.9 External speaker connector (CN9)

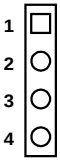


Table C-9: External speaker connector (CN9)

Pin	Signal
1	+ 5 V
2	N/C
3	Internal speaker
4	External speaker

C.10 VGA connector (CN11)

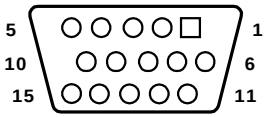


Table C-10: VGA connector (CN11)

Pin	Signal	Pin	Signal
1	RED	9	N/C
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	N/C
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	N/C
8	GND		

C.11 PC/104 connector (CN12)

For details on PC/104 connectors, please refer to Appendix B.

C.12 Ethernet connector (CN13)

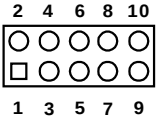


Table C-11: Ethernet connector (CN1)

Pin	Signal	Pin	Signal
1	Vcc (+5 V)	2	ACTLED-
3	RX+	4	RX-
5	LILED-	6	GND
7	NC	8	GND
9	TX+	10	TX-

C.13 COM2 RS-422/485 connector (CN14)

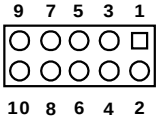


Table C-12: COM2 RS-232/422/485 connector (CN14)

Pin	RS-232 port	RS-422 port	RS-485 port
1	DCD	TXD-	DATA-
2	DSR	N/C	N/C
3	RxD	TXD+	DATA+
4	RTS	N/C	N/C
5	TxD	RXD+	N/C
6	CTS	N/C	N/C
7	DTR	RXD-	N/C
8	RI	N/C	N/C
9	GND	GND	GND
10	N/C	N/C	N/C

C.14 COM2 RS-232 connector (CN15)

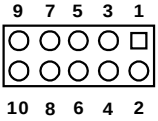


Table C-13: COM2 RS-232 connector (CN15)

Pin	RS-232 port	Pin	RS-232 port
1	DCD	6	CTS
2	DSR	7	DTR
3	RxD	8	RI
4	RTS	9	GND
5	TxD	10	N/C

C.15 COM1 RS-232 connector (CN16)

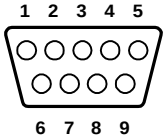


Table C-14: COM1 RS-232 connector (CN16)

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

C.16 External keyboard connector (CN17)

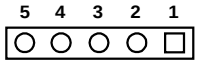


Table C-15: External keyboard connector (CN17)

Pin	Signal
1	CLK
2	DATA
3	NC
4	GND
5	+ 5 V

C.17 ATX power connector (CN18)

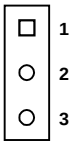


Table C-16: ATX power connector (CN18)

Pin	Signal
1	5 V SB
2	N/C
3	PS_ON

C.18 AT power connector (CN20)



Table C-17: AT power connector (CN20)

Pin	Signal
1	+12 V
2	GND
3	GND
4	+5 V

C.19 Keyboard and PS/2 mouse connector (CN21)

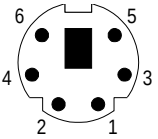


Table C-18: Keyboard and PS/2 mouse connector (CN21)

Pin	Signal
1	KB DATA
2	MS DATA
3	GND
4	+5 V

C.20 CompactFlash™ card connector (CN24)

Table C-19: CompactFlash™ card connector (CN24)

Pin	Signal	Pin	Signal
1	GND	2	D03
3	D04	4	D05
5	D06	6	D07
7	*CS0	8	A10
9	*ATA SEL	10	A09
11	A08	12	A07
13	+5 V	14	A06
15	A05	16	A04
17	A03	18	A02
19	A01	20	A00
21	D00	22	D01
23	D02	24	-IOCS16
25	*CD2	26	-CD1
27	D11	28	D12
29	D13	30	D14
31	D15	32	-CS1
33	*VS1	34	-IORD
35	*IOWR	36	-WE
37	INTRQ	38	+5 V
39	*CSEL	40	-VS2
41	*RESER	42	IORDY
43	*INPACK	44	-REG
45	*DASP	46	-PDIAG
47	D08	48	D09
49	D10	50	GND

* low active

C.21 HDD LED connector (CN25)



Table C-20: HDD LED connector (CN25)

Pin	Signal
1	IDE LED +
2	IDE LED -

C.22 System reset switch connector (CN26)

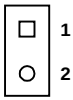


Table C-21: System reset switch connector (CN26)

Pin	Signal
1	MR_RESET
2	GND

C.23 ATX power button (CN27)

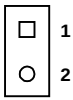


Table C-22: ATX power button (CN27)

Pin	Signal
1	Standby 5 V
2	Power ON

C.24 Enhanced IDE connector (CN28)

Table C-23: Enhanced IDE connector (CN28)

Pin	Signal	Pin	Signal
1	IDE RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	N/C	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	N/C
29	HDACKO*	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0*	38	HARD DISK SELECT 1*
39	IDE ACTIVE*	40	GND

* low active

APPENDIX D

System Assignments

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

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

D.1 System I/O ports

Table D-1: System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game I/O
278-27F	Parallel printer port 2 (LPT 3)
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* PNP audio I/O map range from 220 ~ 250H (16 bytes)
  MPU-401 select from 300 ~ 330H (2 bytes)

D.2 DMA channel assignments

Table D-2: DMA channel assignments

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

* Audio DMA select 0, 1 or 3

D.3 Interrupt assignments

Table D-3: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 8	Real-time clock
IRQ 9	Cascaded to INT 0A (IRQ 2)
IRQ 10	Available
IRQ 11	Watchdog timer
IRQ 12	PS/2 mouse (non-releasable)
IRQ 13	INT from co-processor
IRQ 14	Fixed disk controller (primary)
IRQ 15	Fixed disk controller (secondary)
IRQ 3	Serial communication port 2
IRQ 4	Serial communication port 1
IRQ 5	Parallel port 2
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

* PNP audio IRQ select: 5, 7, 9 or 10
* Ethernet function is auto-sensing

D.4 1st MB memory map

Table D-4: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
CB00h - EFFFh	Unused
C000h - CAFFh	Expansion ROM
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

APPENDIX E

LCD Services

This appendix contains information on Advantech's LCD lighting services.

E.1 LCD services

LCD screens are very popular on Advantech's CPU cards, Biscuit PCs and POS Series products, such as the PCA-6135/6145/6153, and PCA-6751 Series. "Lighting" LCDs is virtually impossible without technical expertise. Advantech provides LCD lighting and integration services to assist our customers in setting up their systems. Advantech's LCD lighting guide explains how to make connections between LCD interfaces and LCD panels, as well as how to control contrast, brightness, V_{EE} source, LCD inverter and all other factors that affect the successful installation of LCD panels.

The following information details our LCD lighting services:

a) This policy is only valid for Advantech products that include LCD support

b) The customer should **send** the following LCD components for service:

   - DC-AC inverter and cable (i.e. connector with/without wires) and data sheet
   - LCD flat panel and cable (connector with/without wires) and complete data sheet

c) Advantech will normally charge the customer a deposit. The deposit will be refunded when servicing exceeds a minimum volume

d) The customer must sign the agreement and fax it to us prior to sending the LCD package. Advantech reserves the right to refuse service if the customer cannot provide the required documents and auxiliary parts

e) Advantech will supply a BIOS file and connection cable to the customer upon completing the service

f) A minimum of seven working days is required for completion of service, starting from receipt of the LCD package by Advantech

For TFT display support lists, see our website at:
http://www.advantech.com/support
Please contact our customer service department for more detailed information and service files.

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