PCA-6774

ISA Socket370 Slot PC, VGA/LCD/LVDS/LAN/CFC with optional second LAN and Gigabit LAN

User Manual

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This manual is for the PCA-6774.

Part No. 200K677410 2nd Edition, Dec. 2005

PCA-6774 User Manual

Packing List

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

- 1 PCA-6774 all-in-one single board computer
- 1 startup manual
- CD-ROM or disks for utility, drivers, and manual (in PDF format)
- 1 Power cable p/n: 1703080101
- 1 PS/2 KB/M cable p/n: 1700060202
- 1 COM port cable p/n: 1700100250
- 1 Printer cable p/n: 1700260250
- 1 FDD cable p/n: 1703340400
- 1 EIDE cable p/n: 1701400452
- Mini Jumper p/n: 1653300100

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

Optional item:

1700100170 USB cable adapter (2.54 mm)

Model No. List

Description

PCA-6774F-00A1	ISA Socket 370 half-sized CPU Card with VGA/LCD/LVDS/LAN/CFC
PCA-6774FG-00A1	ISA Socket 370 half-sized CPU card with VGA/LCD/LVDS/Giga LAN/CFC
PCA-6774F-02A1	ISA Eden 400 half-sized CPU card with VGA/LCD/LVDS/2LAN/CFC

Additional Information and Assistance

1. Visit the Advantech web site at **www.advantech.com** where you can find the latest information about the product.

2. 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.



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

PCA-6774 User Manual vi

Contents

Chapter	1	Introduction	.2
•	1.1	Introduction	. 2
	1.2	Features	. 2
	1.3	Specifications	. 3
		1.3.1 Standard SBC Functions	
		1.3.2 VGA/LCD Interface	. 3
		1.3.3 Solid State disk	
		1.3.4 PCI bus Ethernet interface	
		1.3.5 Mechanical and Environmental	
	1.4	Board layout: dimensions	. 5
		Figure 1.1:Board layout: dimensions (component side).	
		Figure 1.2:Board layout: dimensions (solder side)	. 6
Chapter	2	Installation	.8
-	2.1	Jumpers	. 8
		Table 2.1:Jumpers	
	2.2	Connectors	
		Table 2.2:Connectors	
	2.3	Locating Connectors (component side)	10
		Figure 2.1: Jumper & Connector locations	10
	2.4	Locating Connectors (solder side)	11
		Figure 2.2:Connectors (solder side)	11
	2.5	Setting Jumpers	11
	2.6	Clear CMOS (J1)	13
		Table 2.3:CMOS clear (J1)	13
	2.7	COM2 RS232-422-485 Select (J3)	
		Table 2.4:COM2 RS232-422-485 Select	14
	2.8	Watchdog timer configuration	14
		2.8.1 Watchdog timer output option (J2)	
		Table 2.5:Watchdog timer output option (J2)	
	2.9	Installing DIMMs	
	2.10	ATX power control connector (CN20,CN21)	
		2.10.1 ATX feature connector (CN20) and soft-on power butto	
		connector (CN21)	
		Figure 2.3: Wiring for ATX soft power switch function	
	2.11	Printer port connector (CN4)	
	2.12	CompactFlash Socket	
		2.12.1 CompactFlash (CN5)	
	2.13	Floppy drive connector (CN3)	
		2.13.1 Connecting the floppy drive	
	2.14	IDE connector (CN1,CN2)	18

Table of Contents

		2.14.1 Connecting the hard drive	18
	2.15	VGA/LCD interface connections	
		2.15.1 CRT display connector (CN7)	19
		2.15.2 Flat panel display connector (CN22)	
		2.15.3 Extension flat panel connector (CN23)	
		2.15.4 LVDS LCD panel connector (CN25)	
		2.15.5 Panel type selection (SW1)	
		Table 2.6:S1 Panel Type Select (SW1)	
	2.16	USB connectors (CN6)	
	2.17	Ethernet configuration	
		2.17.1 100Base-T connector (CN8)	
	• • •	2.17.2 Network boot	
	2.18	Power connectors (CN14, CN15)	
		2.18.1 Main power connector, +5 V, +12 V (CN15)	
	• • •	2.18.2 CPU Fan power supply connector (CN14)	
	2.19	ATX Power & HDD LED, speaker out Connector	
		2.19.1 HDD LED (CN19)	
		2.19.2 ATX power LED & KB-LOCK (CN16)	
	2.20	2.19.3 Speaker out (CN17)	
	2.20	COM port connector (CN9,CN10,CN29)	
	2.21	Keyboard and PS/2 mouse connector (CN11)	
	2.22	External KB/mouse connector (CN12)	
	2.23	Watchdog output (CN18)	
	2.24	Daughter card connector (CN27,CN28)	
Chapter		Software Configuration	
	3.1	Introduction	
	3.2	VGA display firmware configuration	26
		Figure 3.1:VGA setup screen	27
Chapter	4	Award BIOS Setup	30
	4.1	System test and initialization	
		4.1.1 System configuration verification	
	4.2	Award BIOS setup	
		4.2.1 Entering setup	31
		Figure 4.1:BIOS setup program initial screen	31
		4.2.2 Standard CMOS Features setup	
		Figure 4.2:CMOS Features setup	
		4.2.3 Advanced BIOS Features setup	
		Figure 4.3: Advanced BIOS Features setup	
		4.2.4 Advanced Chipset Features setup	
		Figure 4.4: Advanced Chipset Features setup	
		4.2.5 Integrated Peripherals	35
			35 35

PCA-6774 User Manual

	Т	able B.4:Printer Port Connector (CN4)	95
8.4			
8.3			
5.2			
5.1			
	0	8	
A	Progra	mming the Watchdog Timer	88
5.3	Further i	nformation	85
		1	
		-	
		1	
		igure 4.6:Power Management Setup	
	5 .1 .2 .3 6 .1 .2 .3 A .1 B .1 .1 .2 .3	4.2.7 P F 4.2.8 P F 4.2.9 F 4.2.9 F 4.2.10 L F 4.2.11 S 4.2.12 S 4.2.13 E 5 PCI SV .1 Introduc 5.1.1 C 5.1.2 D 5.1.3 D .2 Installati 5.2.1 In 5.2.2 In 5.2.3 In 5.2.4 In 5.2.5 In 6 PCI BU .1 Introduc .1 Introduc .2 Installati 6.2.1 In 6.2.2 In 6.2.3 In 6.2.3 In 6.2.3 In 6.2.4 In 1.3 Further I 6 PCI BU .1 Supporte B Pin As .1 Primary .2 Seconda T .3 Floppy C T .4 Printer P	 4.2.7 PnP/PCI Configurations

Table of Contents

B.5	CompactFlash Socket (CN5)	96
	Table B.5:CompactFlash Socket (CN5)	96
B.6	USB Connector (CN6)	97
	Table B.6:USB Connector (CN6)	
B.7	D-SUB VGA Connector (CN7)	
	Table B.7:D-SUB VGA Connector (CN7)	
B.8	LAN RJ45 Connector (CN8)	98
	Table B.8:LAN RJ45 Connector (CN8)	
B.9	COM Port 1, 2 Connector (CN9, CN10)	
	Table B.9:COM Port 1 Connector (CN9, CN10)	
B.10	PS/2 Keyboard & Mouse Connector (CN11)	
	Table B.10:PS/2 Keyboard & Mouse Connector	
B.11	External Keyboard Connector (CN12)	
	Table B.11:External Keyboard Connector (CN12)	
B.12	CPU Fan Connector (CN14)	. 100
5.44	Table B.12:CPU FAN Connector (CN14)	
B.13	EBX Power Connector (CN15)	
D 1 4	Table B.13:EBX Power Connector (CN15)	
B.14	Power LED & Keyboard Lock (CN16)	
D 17	Table B.14:Power LED & Keyboard Lock (CN16).	
B.15	External Speaker (CN17)	
D 16	Table B.15:External Speaker (CN17)	
B.16	Reset Connector (CN18) Table B.16:Reset Connector (CN18)	. 103
B.17		
B.17	HDD LED Connector (CN19) Table B.17:HDD LED Connector (CN19)	
B.18	ATX Feature Connector (CN20)	
D .10	Table B.18:ATX Feature Connector (CN20)	
B.19	ATX Soft-on Power Button Connector (CN20)	
D .19	Table B.19:ATX Soft-on Power Button Connector.	
B.20	LCD 40-Pin Connector (CN22)	
D .20	Table B.20:LCD 40-Pin Connector (CN22)	
B.21	LCD 20-Pin Connector (CN23)	
D.21	Table B.21:LCD 20-Pin Connector (CN23)	
B.22	LCD Backlight Connector (CN24)	
2.22	Table B.22:LCD Backlight Connector (CN24)	
B.23	LVDS Connector (CN25)	
	Table B.23:LVDS Connector (CN25)	
B.24	I/O Daughter Board Connector 1 (CN27)	
	Table B.24:I/O Daughter Board Connector 1 (CN27	
B.25	I/O Daughter Board Connector 2 (CN28)	
	Table B.25:I/O Daughter Board Connector 2 (CN28	
B.26	RS485/422 Connector (CN29)	
	Table B.26:RS485/422 Connector (CN29)	

PCA-6774 User Manual x

Appendix C	System Assignments	112
	System I/O Ports	
	Table C.1:System I/O ports	
C.2	1st MB memory map	
	Table C.2:1st MB memory map	
C.3	DMA channel assignments	
	Table C.3:DMA channel assignments	
C.4	Interrupt assignments	
	Table C.4:Interrupt assignments	

PCA-6774 User Manual xii

CHAPTER

General Information

This chapter gives background information on the PCA-6774.

Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

Chapter 1 Introduction

1.1 Introduction

Advantech's new PCA-6774 is a Socket 370 half-sized CPU card that will support up to 1.26GHz Pentium III with 512KB 2nd cache using VIA VT8606 "Twister T" chipset. This SBC includes a 4X AGP controller, a PCI Ethernet interface, and 36-bit TTL interface. Its design is based on the half-sized CPU card and supports ISA bus expansion. Other on-board features include an FDD, LPT, 2 USBs (4 USBs optional), and 2 serial ports. The SSD solution supports CompactFlash cards. This product uses a VIA Twister T chip with Integrated ProSavage4 2D/3D/Video Accelerator and supports 4X AGP VGA/LCD interface and up to 8/16/32 MB frame buffer using system memory. With the selection of daughter boards, the PCA-6774 board can support a second LAN at 10/100Mbps, also this CPU card can support Gigabit LAN with Intel 82540.

1.2 Features

- Supports Socket 370 for Intel processors up to Pentium III 1.26GHz with 512KB (Tualatin)
- ISA bus half-sized CPU card
- Supports selectable LAN (1 x 10/100BASE-T LAN or 2 x 10/ 100BASE-T LAN or 1 x Gigabit LAN)
- 4X AGP graphics for high performance applications
- · Supports boot from USB device
- Supports wake-on-LAN
- Supports Ring-up by Modem
- Supports LVDS interface
- · Supports LCD backlight turn-off function
- RS-485 Auto-flow

PCA-6774 User Manual

1.3 Specifications

1.3.1 Standard SBC Functions

- CPU: Supports Socket 370 for Intel processors up to Pentium III 1.26 GHz with 512KB cache (Tualatin)
- System chipsets: VIA VT8606 "Twister T" + VT82C686B
- BIOS: Award 256 KB Flash memory
- System memory: One DIMM socket accepts 64 MB up to 512 MB SDRAM
- 2nd cache memory: 128/256/512KB on Celeron/PentiumIII processor
- Enhanced IDE interface: One channel supports up to two EIDE devices. Supports ATA-100, ATA-33 and PIO modes.
- FDD interface: Supports up to two FDDs
- Serial ports: Two serial RS-232 ports:

COM1: RS-232 COM2: RS-232/422/485 RS-485 supports AUTO-flow

- Parallel port: Parallel port supports SPP/EPP/ECP modes
- **Keyboard/mouse connector:** Supports standard PC/AT keyboard and a PS/2 mouse
- Power management: Supports power saving mode including Normal/ Standby/Suspend modes. APM 1.2 compliant
- Watchdog timer: 62 level timer intervals
- USB: Two universal serial bus ports, Optional 4 ports.

1.3.2 VGA/LCD Interface

- Chipset: VIA VT8606 "Twister T" chip with integrated ProSavage4 2D/3D/Video Accelerator
- Frame buffer: Supports 8/16/32MB frame buffer with system memory
- Interface: 4X AGP VGA/LCD interface, Supports for up to 36 bit TFT
- Display modes:

CRT Mode: 1280 x 1024@16bpp (60Hz),

1024 x 768@16bpp (85Hz),

LCD/Simultaneous Mode:

1280 x 1024@16bpp (60Hz), 1024 x 768@16bpp (60Hz), 1280 x 1024@32bpp

LVDS interface:

Supports 2-Channel (2 x 18-bit) LVDS interface

1.3.3 Solid State disk

• Supports CompactFlash Type I/II disks

1.3.4 PCI bus Ethernet interface

- Chipset: Intel 82551/82559/82540
- Ethernet interface: IEEE 802.3u compatible 10/100Base-T interface. Supports selectable LAN (1 x 10/100base-T LAN or 2 x 10/100base-T LAN or 1x Gigabit LAN)
- 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, +12V ±5%
- Power requirements:

Max:

6.18 A @ +5 V, 0.22 A @+12 V

Typical:

5.5 A @ +5 V, (with PC133 128MB SDRAM, Pentium III 1.0 GHz) 0.17 A @ +12 V, (with PC133 128MB SDRAM, Pentium III 1.0 GHz)

- **Operating temperature:** 0 ~ 60°C (32 ~ 140°F)
- Operating humidity: 0% ~ 90% Relative Humidity, Non condensing
- Weight: 0.27 kg (weight of total package)

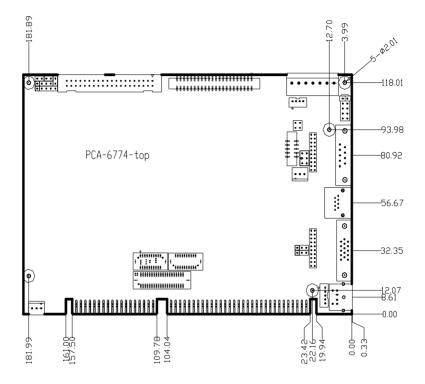


Figure 1.1: Board layout: dimensions (component side)

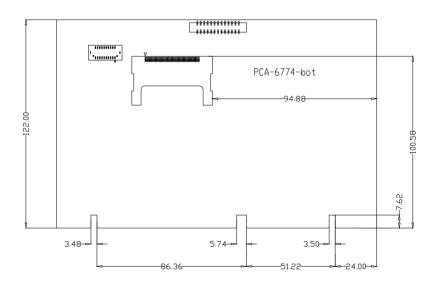


Figure 1.2: Board layout: dimensions (solder side)



Installation

This chapter explains the setup procedures of PCA-6774 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-6774 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		
J1	CMOS clear		
J2	Watchdog timer output selection		
J3	COM2 RS232-422-485 Select		

2.2 Connectors

Onboard connectors link the PCA-6774 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.	Table 2.2: Connectors			
Label	Function			
CN1	Primary IDE Connector			
CN2	Secondary IDE Connector			
CN3	Floppy Connector			
CN4	Printer Port Connector			
CN5	CompactFlash Socket			
CN6	USB Port 1, 2			
CN7	D-SUB VGA Connector			
CN8	LAN RJ45 Connector			
CN9	COM Port 1			
CN10	COM Port 2			
CN11	PS/2 Keyboard & Mouse Connector			

PCA-6774 User Manual

Table 2.	2: Connectors
CN12	External Keyboard Connector
CN14	CPU FAN Connector
CN15	EBX Power Connector
CN16	Power LED & Keyboard Lock
CN17	External Speaker
CN18	Reset Connector
CN19	HDD LED Connector
CN20	ATX Feature Connector
CN21	ATX Soft-on Power Button Connector
CN22	LCD 40-Pin Connector
CN23	LCD 20-Pin Connector
CN24	LCD Backlight Connector
CN25	LVDS Connector
CN27	I/O Daughter Board Connector 1
CN28	I/O Daughter Board Connector 2
CN29	RS485/422 Connector

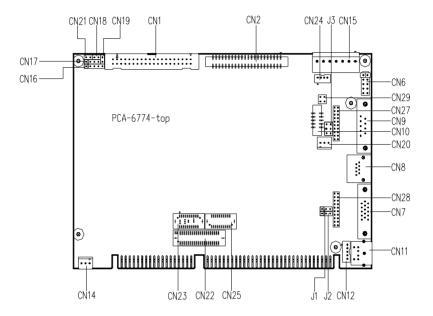


Figure 2.1: Jumper & Connector locations

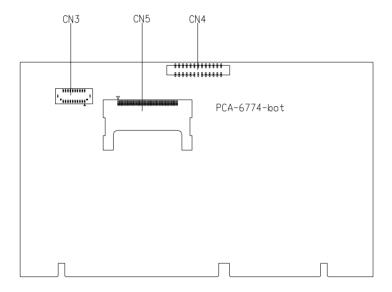
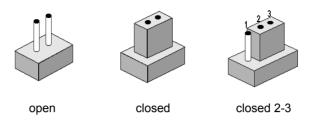


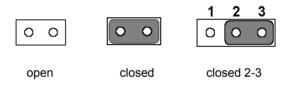
Figure 2.2: Connectors (solder side)

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.



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



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.

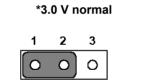
Warning! To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS." Before turning on the power supply, set the jumper back to "3.0 V Battery On."

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 2 and pin 3.
- 3. Return jumper to pins 1 and 2.
- 4. Turn on the system. The BIOS is now reset to its default setting.

Table 2.3: CMOS clear (J1)



clear	CMOS
alaar	CMOG
cieai	CINICS



* default setting

Table 2.4: COM2 RS232-422-485 Select					
PIN	RS232*	RS484			
1-2	Closed	Open	Open		
3-4	Open	Closed	Open		
5-6	Open	Open	Closed		

2.8 Watchdog timer configuration

An on-board 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 one jumper and running the control software (refer to Appendix A).

2.8.1 Watchdog timer output option (J2)

When the watchdog timer activates (CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ11. This can be set via setting J2 as shown below:

Table 2.5: Watchdog timer output option (J2)



* default setting

2.9 Installing DIMMs

The procedure for installing DIMMs is described below. Please follow these steps carefully. The number of pins are different on either side of the breaks, so the module can only fit in one way. DIMM modules have different pin contacts on each side, and therefore have a higher pin density.

- 1. Make sure that the two handles of the DIMM socket are in the "open" position. i.e. The handles remain leaning outward.
- 2. Slowly slide the DIMM module along the plastic guides on both ends of the socket.
- 3. Press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the socket.

To **remove** the memory module, just push both handles outward, and the module will be ejected from the socket.

2.10.1 ATX feature connector (CN20) and soft-on power button connector (CN21)

The PCA-6774 can support an advanced soft power switch function, if an ATX power supply is used. To enable the soft power switch function:

- 1. Get the specially designed ATX-to-EBX power cable (PCA-6774 optional item, Part No. 1703200100)
- 2. Connect the 3-pin plug of the cable to CN20 (ATX feature connector).
- 3. Connect the power on/off button to CN21. (A momentary type of button should be used.)
- *Important* Make sure that the ATX power supply can take at least a 10 mA load on the 5 V standby lead (5VSB). If not, you may have difficulty powering on your system.

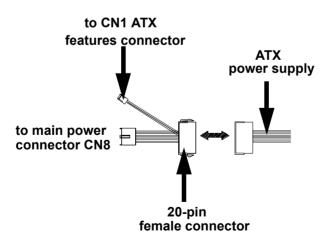


Figure 2.3: Wiring for ATX soft power switch function

PCA-6774 User Manual

2.11 Printer port connector (CN4)

Normally, the parallel port is used to connect the card to a printer. The PCA-6774 includes a multi-mode (ECP/EPP/SPP) parallel 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 parallel port is designated as LPT1, and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

The parallel port interrupt channel is designated to be IRQ7.

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

2.12 CompactFlash Socket

The PCA-6774 provides a 50-pin socket for CompactFlash card type I/II.

2.12.1 CompactFlash (CN5)

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

2.13 Floppy drive connector (CN3)

You can attach up to two floppy drives to the PCA-6774'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 20-pin daisy-chain drive connector cable is required for a dual-drive system. On one end of the cable is a 20-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 20-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 (CN1,CN2)

The PCA-6774 provides an IDE channel to which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCA-6774's internal controller. The PCA-6774'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 CN1, 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).
- 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/LCD interface connections

The PCA-6774's display interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays as well, including passive LCD and active LCD displays. The board has two display connectors: one for standard CRT VGA monitors, and one for flat panel displays.

2.15.1 CRT display connector (CN7)

CN7 is a standard 15-pin D-SUB connector commonly used for VGA.

Pin assignments for CRT display connector CN7 are detailed in Appendix B.

2.15.2 Flat panel display connector (CN22)

CN22 consists of a 40-pin connector which can support an 18-bit LCD panel. It is Hirose's product no. DF13A-40DP-1.25 V.

The PCA-6774 provides a bias control signal on CN22 that can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V or +3.3 V) and panel video signals are stable. Under normal operation, the control signal (ENAVEE) is active high. When the PCA-6774's power is applied, the control signal is low until just after the relevant flat panel signals are present. CN22 can connect up to 18-bit TFT LCD.

2.15.3 Extension flat panel connector (CN23)

CN23 consists of a 20-pin connector which is Hirose's product no. DF13-20DP-1.25V. The PCA-6774 supports a 36-bit LCD panel which must be connected to both the CN22 (40-pin) and CN23 (20-pin). The pin assignments for both CN22 and CN23 can be found in Appendix B.

2.15.4 LVDS LCD panel connector (CN25)

The PCA-6774 uses the VIA "Twister T" chip that supports 2 channel LVDS LCD panel displays. Users can connect to LVDS LCD with CN25.

2.15.5 Panel type selection (SW1)

SW1 is an 8 segment DIP switch for DSTN/TFT panel type and resolution functions

Table 2.6: S1 Panel Type Select (SW1)						
SW 1-1	SW 1-2	SW 1-3	SW 1-4	Panel T	ype & Resol	ution
ON	ON	ON	ON	TFT	640x480**	18bit (H. V. Freq)
ON	ON	ON	OFF	TFT	640x480	18bit (Synthetic)
ON	ON	OFF	ON	TFT	640x480**	N/A
ON	ON	OFF	OFF	TFT	640x480**	LVDS
ON	OFF	ON	ON	DSTN	640x480**	18bit
ON	OFF	ON	OFF	TFT	800x600**	18bit (H. V. Freq)
ON	OFF	OFF	ON	TFT	800x600	18bit (Synthetic)
ON	OFF	OFF	OFF	TFT	800x600**	LVDS
OFF	ON	ON	ON	TFT	800x600**	N/A
OFF	ON	ON	OFF	DSTN	800x600**	18bit
OFF	ON	OFF	ON	TFT	1024x768* *	36bit (H. V. Freq)
OFF	ON	OFF	OFF	TFT	1024x768* *	36bit (Synthetic)
OFF	OFF	ON	ON	TFT	1024x768* *	LVDS
OFF	OFF	ON	OFF	TFT	1024x768* *	N/A
OFF	OFF	OFF	ON	DSTN	1024x768* *	18bit
OFF	OFF	OFF	OFF	DSTN	1024x768* *	24bit
* Default setting						

** will support in the future

2.16 USB connectors (CN6)

The PCA-6774 board provides up to two USB (Universal Serial Bus) ports. This gives complete Plug and Play, and hot attach/detach for up to

PCA-6774 User Manual

127 external devices. The USB interfaces comply with USB specification Rev. 1.1, and are fuse protected.

The USB interface is accessed through the 5 x 2-pin flat-cable connector, CN6 (USB1, 2). 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-6774 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-6774 supports 10/100Mbps Ethernet connections with onboard RJ-45 connectors (CN8).

2.17.1 100Base-T connector (CN8)

10/100Base-T connects to the PCA-6774 via an adapter cable to an 8-pin polarized header (CN8).

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 Power connectors (CN14, CN15)

2.18.1 Main power connector, +5 V, +12 V (CN15)

Supplies main power to the PCA-6774 (+5 V), and to devices that require +12 V.

2.18.2 CPU Fan power supply connector (CN14)

Provides power supply to CPU cooling fan. Only present when +12 V power is supplied to the board.

Chapter 2

2.19 ATX Power & HDD LED, speaker out Connector (CN16, CN17, CN19)

Next, you may want to install external switches to monitor and control the PCA-6774. These features are optional: install them only if you need them. CN16, CN17, CN19 integrated in one connector, which is an 5×3 pin header, 180degree, male. It provides connections for a speaker, hard disk access indicator.

2.19.1 HDD LED (CN19)

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

2.19.2 ATX power LED & KB-LOCK (CN16)

Power supply activity LED indicator and KB_lock function.

2.19.3 Speaker out (CN17)

Support a buzzer function, pin assignment refer to Appendix B.

2.20 COM port connector (CN9,CN10,CN29)

The PCA-6774 provides two serial ports (COM1: RS232 and COM2: RS422/485) in one COM port connector. 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.

2.21 Keyboard and PS/2 mouse connector (CN11)

The PCA-6774 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-6774'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.

2.22 External KB/mouse connector (CN12)

In addition to the PS/2 mouse/keyboard connector on the PCA-6774's rear plate, there is an additional onboard external keyboard connector, allowing for greater flexibility in system design.

PCA-6774 User Manual

It provides connection for watchdog output, detailed pin assignment refer to Appendix B.

2.24 Daughter card connector (CN27,CN28)

CN27, CN28 are 20-pin 180degree female connectors. With daughter board, PCA-6774 can support 2 LAN and 4 USB ports. Detailed pin definition you will find in Appendix B.

PCA-6774 User Manual 24

CHAPTER 3

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. Award System BIOS will be covered in Chapter 4.

Sections include:

- Introduction
- VGA display software configuration

Chapter 3 Software Configuration

3.1 Introduction

The system BIOS and custom drivers are located in a 256 KB, 32-pin (JEDEC spec.) Flash ROM device, designated U10. A single Flash chip holds the system BIOS, VGA BIOS, and network Boot ROM image. The display can be configured via software. This method minimizes the number of chips and eases configuration. You can change the display BIOS simply by reprogramming the Flash chip.

3.2 VGA display firmware configuration

The board's on-board VGA interface supports a wide range of popular LCD, EL, gas plasma flat panel displays and traditional analog CRT monitors. The optimized shared memory architecture supports an 8/16/32 MB frame buffer using system memory to provide resolutions of 1280×1024 @ 16 bpp, the interface can drive CRT displays with resolutions up to 1024×768 @ 16 bpp and 800 x 600 @ 16 bpp.

The VGA interface is configured completely via the software utility, so you do not have to set any jumpers. Configure the VGA display as follows:

- 1. Apply power to the board with a color TFT display attached. This is the default setting for this board. Ensure that the AWD-FLASH.EXE and *.BIN files are located in the working drive.
 - NOTE: Ensure that you do not run AWDFLASH.EXE while your system is operating in EMM386 mode.

2. At the prompt, type AWDFLASH.EXE and press <Enter>. The VGA configuration program will then display the following:

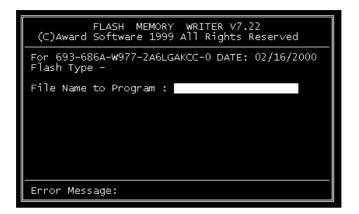


Figure 3.1: VGA setup screen

- 3. At the prompt, enter the new BIN file which supports your display. When you are sure that you have entered the file name correctly press <Enter>.
- 4. The screen will ask if you want to save BIOS? If you change your mind or have made a mistake, press N to abort and end the setup procedure. Press Y if you wish to save the existing configuration before changing it. Then type the name under which you want to save the current configuration.
- 5. The prompt will then ask "Are you sure", Press Y if you want the new file to be written into the BIOS. Press N to exit the program.

The new VGA configuration will then write to the ROM BIOS chip. This configuration will remain the same until you run the AWDFLASH.EXE program and change the settings.

PCA-6774 User Manual 28



Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Chapter 4 Award BIOS Setup

4.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

4.1.1 System configuration verification

These routines check the current system configuration against the values stored in the board's CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- 1. You are starting your system for the first time
- 2. You have changed the hardware attached to your system
- 3. The CMOS memory has lost power and the configuration information has been erased.

The PCA-6774 Series' CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

4.2 Award BIOS setup

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

4.2.1 Entering setup

Power on the computer and press immediately. This will allow you to enter Setup.

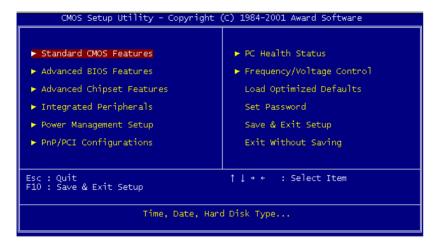


Figure 4.1: BIOS setup program initial screen

4.2.2 Standard CMOS Features setup

When you choose the Standard CMOS Features option from the Initial Setup Screen menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

Date (mm:dd:yy) Time (hh:mm:ss)	Mon, May 10 2004 8 : 56 : 40	Item Help
 IDE Primary Master IDE Primary Slave IDE Secondary Master IDE Secondary Slave 	[None] [None] [None]	Menu Level ► Change the day, month, year and century
Drive A Drive B	[1.44M, 3.5 in.] [None]	
Video Halt On Select Diaplay Device	[EGA/VGA] [All , But Keyboard] [Auto]	

Figure 4.2: CMOS Features setup

4.2.3 Advanced BIOS Features setup

By choosing the Advanced BIOS Features Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6774 Series.

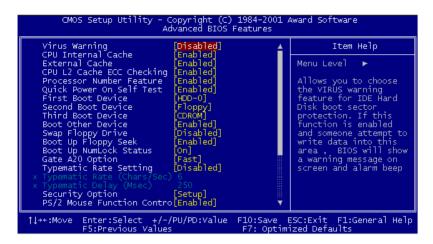


Figure 4.3: Advanced BIOS Features setup

4.2.4 Advanced Chipset Features setup

By choosing the Advanced Chipset Features option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6774 Series.

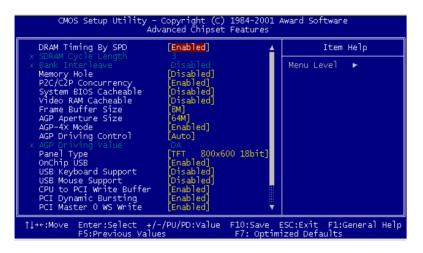


Figure 4.4: Advanced Chipset Features setup

PCA-6774 User Manual

4.2.5 Integrated Peripherals

Choosing the Integrated Peripherals option from the Initial Setup Screen menu should produce the screen below. Here we see the manufacturer's default values for the PCA-6774 Series.

OnChip IDE Channel0	[Enabled] [Enabled]	 Item	Нејр
OnChip IDE Channell IDE Prefetch Mode Primary Master PIO Secondary Master PIO Secondary Master PIO Primary Slave UDMA Primary Slave UDMA Secondary Master UDMA Secondary Slave UDMA Init Display First IDE HDD Block Mode Onboard FDD Controller Onboard Serial Port 1 Onboard Serial Port 2 Onboard Parallel Port Onboard Parallel Mode ECP Mode Use DMA	Enabled Enabled Auto Auto Auto Auto Auto Auto Auto PCI Slot Enabled Br	Menu Level	•

Figure 4.5: Integrated Peripherals

4.2.6 Power Management Setup

By choosing the Power Management 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-6774 Series.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software Power Management Setup			
ACPI function	[Enabled]	Item Help	
 Power Management PM Control by APM Video Off Option Video Off Method MODEM Use IRQ Soft-Off by PWRBTN Wake Up Events 	[Press Enter] [Yes] [Suspend -> Off] [V/H SYNC+Blank] [3] [Instant-Off] [Press Enter]	Menu Level 🕨	
↑↓→←:Move Enter:Select F5:Previous \	+/-/PU/PD:Value F10:Save Values F7: Opti	ESC:Exit F1:General Help mized Defaults	

Figure 4.6: Power Management Setup

4.2.7 PnP/PCI Configurations

By choosing the PnP/PCI Configurations option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6774 Series.

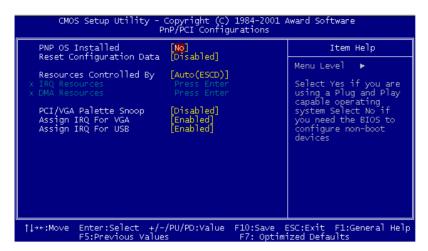


Figure 4.7: PnP/PCI Configurations

4.2.8 PC Health Status

The PC Health Status option displays information such as CPU and motherboard temperatures, fan speeds, and core voltage.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software PC Health Status				
	CPU Temp.		Item	Нејр
Current 2.5V 3.3V 5V 12V			Menu Level	•
î↓→←:Move	Enter:Select +/-/PU/PD:Value F5:Previous Values	F10:Save E F7: Optimi	SC:Exit F1: ized Defaults	Seneral Help

Figure 4.8: PC Health Status

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4.2.9 Frequency/Voltage Control

By choosing the Frequency/Voltage Control option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6774

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software Frequency/Voltage Control				
VIA C3	Clock Ratio	[Default]		Item Help
				Menu Level 🕨
				This item is for VIA C3 CPU Ratio adjustment.
†↓→←:Move	Enter:Select +/ F5:Previous Valu	-/PU/PD:Value Mes	F10:Save E F7: Optimi	SC:Exit F1:General Help ized Defaults

Figure 4.9: Frequency/Voltage Control

Caution Incorrect settings in Frequency/Voltage Control may damage the system CPU, video adapter, or other hardware.

4.2.10 Load Optimized Defaults

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-6774 Series system on.



Figure 4.10: Load BIOS defaults screen

4.2.11 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>.

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- 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, 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>.

4.2.12 Save & Exit Setup

If you select this option and press <Y> then <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and use the settings to configure the system. This record is required for the system to operate.

4.2.13 Exit Without Saving

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

CHAPTER CHAPTER

PCI SVGA Setup

Introduction Installation of SVGA drivers -for Windows 95/98/Me -for Windows NT/2000/XP Further information

Chapter 5 PCI SVGA Setup

5.1 Introduction

The board has an onboard AGP flat panel/VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The board uses a VIA VT8606 chipset from VIA Technology Inc. for its AGP/SVGA controller. It supports many popular LCD, and LVDS LCD displays and conventional analog CRT monitors. The VIA VT8606 VGA BIOS supports color TFT and DSTN LCD flat panel displays. In addition, it also supports interlaced and non-interlaced analog monitors (color and monochrome 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 if they were analog monitors.

5.1.2 Display memory

The TwisterT chip can support 8/16/32MB frame buffer shared with system memory; the VGA controller can drive CRT displays or color panel displays with resolutions up to 1280 x 1024 at 16 M colors.

5.1.3 Display types

CRT and panel displays can be used simultaneously. The board 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. If you want to enable the CRT display only or the flat panel display only, please contact VIA Technology Inc., or our sales representative for detailed information.

5.2 Installation of the 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 are using within your board.

Notes: 1. The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.

2. For convenience, the CD-ROM drive is designated as "D" throughout this chapter.

5.2.1 Installation for Windows 95

1. Select "Start", "Settings", "Control Panel", "Display", "Settings", and "Advanced Properties".

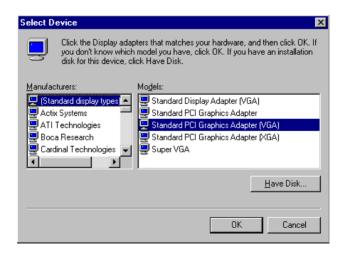
Display Properties
Background Screen Saver Appearance Settings
Color palette
Eont size Small Fonts Normal size (96 dpi)
Show settings icon on task bar <u>A</u> dvanced Properties
OK Cancel Apply

Chapter 5

2. Choose the "Adapter" tab, then press the "Change..." button.

Advanced Display P	roperties	? ×
Adapter Monitor F	Performance	
	PCI Graphics Adapter (VGA)	[]
	OK 0	Cancel Apply

3. Press the "Have Disk" button.



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4. Type in the path: D:\Biscuit\9577\VGA\Win9x_Me

Install Fr	om Disk	×
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from: D:\Biscuit\9577\VGA\Win9x_Me	Browse

5. Select the highlighted item, and click the "OK" button.

Select De	evice X
	Display adapters: The following models are compatible with your hardware. Click the one you want to set up, and then click OK. If your model is not on the list, click Show All Devices. This list shows only what was found on the installation disk.
Modeļs:	
S3 Grap	hics Twister
Show	/ <u>c</u> ompatible devices
O Show	<u>all</u> devices
	OK Cancel

6. "S3 GraphicsTwister" appears under the adapter tab. Click the "Apply" button, then the "OK" button.

Advanced Display Properties		? ×
Adapter Monitor Performance		
S3 Graphics Twister Adapter / Driver information Manufacturer: VIA Software version: Current files:		Change
Refresh rate		×
Close	Cancel	Apply

7. Press "Yes" to reboot.



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5.2.2 Installation for Windows 98/Me

1. Select "Start", "Settings", "Control Panel", "Display", and "Settings," then press the "Advanced..." button.

Display Properties		
Background Screen Saver Appearance Effects Web Settings		
Display: NEC C900 on SiS 6326		
Colors High Color (16 bit) More High Color (16 bit) More 800 by 600 pixels Extend my Windows desktop onto this monitor.		
OK Cancel Apply		

2. Select "Adapter," then "Change."

SiS 6326 Properties		<u>? ×</u>
Color Management General A	Sis Display Modes	Camma Correction
🗮 🛄 SiS 6326		Change
Adapter / Driver inform	nation	
Manufacturer:	SiS	
Chip type:	6326 AGP Rev H0	
DAC type:	Internal	
Memory:	8 MB	
Features:	DirectDraw 1.00	
Software version:	4.0	
Current files:	sis6326m.drv,*vdd,sis63	26m.vxd,dd326_32.dl
- Refresh rate		
75 Hz		
	ОК	Cancel Apply

3. Press "Next," then "Display a list...."

Update Device Driver Wizard		
Update Device Driver w	What do you want Windows to do? Search for a better driver than the one your device is using now. (Recommended) Display a list of all the drivers in a specific location, so you can select the driver you want.	
	< <u>B</u> ack Next > Cancel	

4. Press the "Have disk..." button.

Update I	Device Driver Wizard
	Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.
Models:	
-	w compatible hardware. Have Disk
	< <u>B</u> ack Next > Cancel

 Insert the CD into the CD-ROM drive. Type in the path D:\Biscuit\9577\VGA\Win9x_Me Then press "OK"

Install Fr	om Disk	×
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from: D:\Biscuit\9577\VGA\WIN98&ME	<u>B</u> rowse

6. Select the highlighted item, then click "OK."

Select D	evice X
9	Click the Display adapters that matches your hardware, and then click OK. If you don't know which model you have, click OK. This list shows only what was found on the installation disk.
Mode <u>l</u> s:	
S3 Grap	hics Twister
	OK Cancel

7. "S3 Graphics Twister" appears under the adapter tab. Click the "Apply" button.

S3 Graphics Twis	ter Properties		? ×
General	Adapter	Monitor	Performance
🗮 🛄 S3 Grap	bhics Twister		Change
- Adapter / Drive	er information		
Manufacturer:	VIA		
Chip type:			
DAC type:			
Memory:			
Features:			
Software version	on:		
Current files:			
- <u>R</u> efresh rate			
75 Hz			_
		OK Car	ncel <u>Apply</u>

8. Press "Yes" to reboot.



5.2.3 Installation for Windows NT

- Note: Service Pack X (X = 3, 4, 5, 6,...) must be installed first, before you install the Windows NT VGA driver.
- 1. Select "Start", "Settings", "Control Panel" and double click the "Display" icon.



2. Choose the "Settings" tab, and press the "Display Type" button.

Visplay Properties
Background Screen Saver Appearance Plus! Settings
Color Palette
T6 Colors More More
640 by 480 pixels
Eont Size Befresh Frequency
Small Fonts Use hardware default setting
List All Modes Test Display Type
OK Cancel Apply

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

Display Properties	×
Background Screen Saver Appearance Plus! Settings	
Display Type ? 🗙	
Adapter Type	L
vga compatible display adapter <u>Change</u>	
Driver Information	L
Manufacturer: Microsoft Corporation	L
Version Numbers: 4.00, 4.0.0	L
Current Files: vga.sys, vga.dll	L
Adapter Information	l
Chip Type: <unavailable></unavailable>	L
DAC Type: <unavailable></unavailable>	L
Memory Size: <unavailable></unavailable>	L
Adapter String: <unavailable></unavailable>	L
Bios Information: <unavailable></unavailable>	L
List All Modes I est Display Lype	
OK Cancel Apply	

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

Change Display	х
Choose the manufacturer and model of your display adapter. If your display adapter came with an installation disk, click on HaveDisk.	
Manufacturers: Display:	
(Standard display types) VGA compatible display adapter Actix ATI Technologies Cardex Chips & Technologies Cirrus Logic Image: Cirrus Logic	
Have Disk	
Cancel	

 Type the path: D:\Biscuit\VGA\WinNT Press the "OK" button.

Install Fro	om Disk	×
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from: D:\Biscuit\VGA\WinNT	Browse

6. Select the highlighted item, and click the "OK" button.

Change D)isplay 🗙	1
9	Choose the manufacturer and model of your display adapter. If your display adapter came with an installation disk, click on HaveDisk.	
<u>D</u> isplay:		l
S3 Grap	hics Twister	
		l
		l
	Cancel	

7. Press "Yes" to proceed.

Third-pa	rty Drivers. 🛛 🕅
?	You are about to install a third-party driver.
~	This driver was written by the hardware vendor, and is only provided here as a convenience. For any problem with this driver, please contact the hardware vendor.
	Do you wish to proceed ?
	Yes No.

8. Press "OK" to reboot.

Installing	Installing Driver		
•	The drivers were successfully installed.		
ч	You must exit from the Display Properties window and reboot in order for the changes to take effect.		

PCA-6774 User Manual

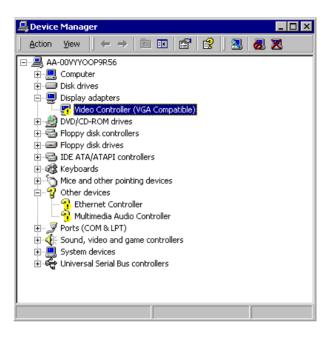
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5.2.4 Installation for Windows 2000

1. Select "System", "Settings", "Control Panel" and double click the "system" icon.



2. Choose the "Video Controller (VGA Compatible)" button.



3. Choose the "Drive" button, press "Update Driver..." button.

¥ideo Con	troller (¥GA Com	patible) Properties 🛛 📪 🗙	
General	Driver Resource	s]	
	Video Controller (VGA Compatible)		
	Driver Provider:	Unknown	
	Driver Date:	Not available	
	Driver Version:	Not available	
	Digital Signer:	Not digitally signed	
No driver files are required or have been loaded for this device. To uninstall the driver files for this device, click Uninstall. To update the driver files for this device, click Update Driver.			
	Driver Details	Uninstall Update Driver	
		OK Cancel	

4. Choose "Display a list of...", then press "Next" button.



5. Choose "Display adapters", press "Next" button.

Ipgrade Device Driver Wizard Hardware Type What type of hardware do you want to install?	
Select a hardware type, and then click Next. Hardware types:	
Batteries Display adapters IDE ATA/ATAPI controllers FileEE 1394 Bus host controllers FileEE 1394 Bus h	
< Back Next >	Cancel

PCA-6774 User Manual

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6. Click the "Have Disk" button.

Upgrade Device Driver Wizard
Select a Device Driver Which driver do you want to install for this device?
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.
Manufacturers: Models: 3Dfx Interactive, Inc. 3Dfx Interactive, Inc. Banshee 3Dlabs Inc. Ltd. 3dfx Interactive, Inc. Voodoo3 Accel Graphics Actix
Appian Graphics
< Back Next> Cancel

7. Type the path D:\Biscuit\9577\VGA\Win2000 press the "OK" button.

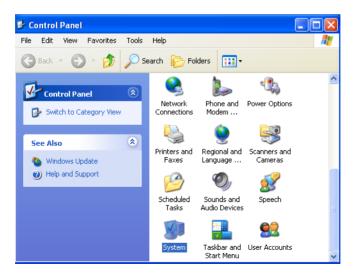
Insert the manufacturer's installation disk into the drive selected, and then click DK.	OK Cancel
Copy manufacturer's files from:	Browse
	selected, and then click OK.

8. Press "Finish" to reboot.



5.2.5 Installation for Windows XP

1. Select "System", "Settings", "Control Panel" and double click the "system" icon.

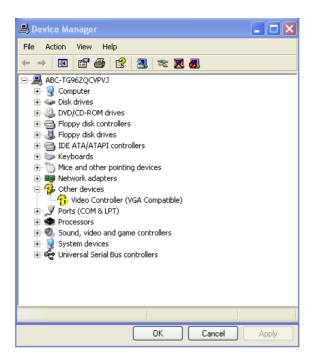


PCA-6774 User Manual

2. Choose "Hardware" and "Device Manager", press "OK" button.

System Properties	? 🛛	
System Restore Automatic Updates Remote		
General Computer Name	Hardware Advanced	
Add Hardware Wizard		
The Add Hardware Wizard	helps you install hardware.	
	Add Hardware Wizard	
Device Manager		
	all the hardware devices installed Device Manager to change the	
Driver Signing	Device Manager	
- Hardware Profiles		
Hardware profiles provide a way for you to set up and store different hardware configurations.		
	Hardware Profiles	
	JK Cancel Apply	

3. Choose "Video Controller (VGA Compatible), press "OK" button.



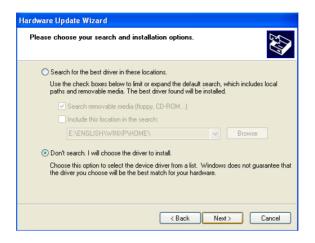
4. Choose "Driver", "Update Driver", press "OK" button.

Video Controller (VGA Compatible) Properties
General Driver Resources
Video Controller (VGA Compatible)
Driver Provider: Unknown
Driver Date: Not available
Driver Version: Not available
Digital Signer: Not digitally signed
Driver Details To view details about the driver files.
Update Driver To update the driver for this device.
Roll Back Driver If the device fails after updating the driver, roll back to the previously installed driver.
Uninstall To uninstall the driver (Advanced).
OK Cancel

5. Choose "Install from a list....", press "Next".

Hardware Update Wizard	
	Welcome to the Hardware Update Wizard
	This wizard helps you install software for:
	Video Controller (VGA Compatible)
- And	If your hardware came with an installation CD or floppy disk, insert it now.
	What do you want the wizard to do?
	 Install the software automatically (Recommended) Install from a list or specific location (Advanced)
	Click Next to continue.
	< Back Next > Cancel

6. Choose "Don't search. I will....", press "Next" button.



7. Choose "Display adapters", press "Next" button.

Hardware Update Wizard	
Hardware Type.	
Select a hardware type, and then click Next. Common hardware types:	
Computer Computer Computer Disk drives Display adapters Computer Comp	
< Back Next >	Cancel

PCA-6774 User Manual

8. Type the path D:\Biscuit\9577\VGA\WinXP then press "OK" button.

Install F	rom Disk 🛛 🔀
.	Insert the manufacturer's installation disk, and then make sure that the correct drive is selected below. Cancel
	Copy manufacturer's files from: D:\Biscuit\9577\VGA\WirXP Browse

9. Choose "S3 Graphics Twister + S3 Hotkey" then press "Next" button.



10. Press "Finish" to reboot.

Hardware Update Wizard	
	Completing the Hardware Update Wizard
	The wizard has finished installing the software for:
	S3 Graphics Twister + S3Hotkey
	The hardware you installed will not work until you restart your computer.
	Click Finish to close the wizard.
	K Back Finish Cancel

5.3 Further Information

For further information about the AGP/VGA installation in your PCA-6774, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

VIA website: www.via.com.tw

Advantech websites: www.advantech.com www.advantech.com.tw

PCA-6774 User Manual

CHAPTER 6

PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

- Introduction
- Installation of Ethernet drivers for Windows 98/2000/NT
- Further information

Chapter 6 PCI Bus Ethernet Interface

6.1 Introduction

The board is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with 802.3u 100BASE-T \Fast Ethernet CSMA/CD standards (F version) and compliant IEEE 802.3z/ab 1000BAS-T Gigabit Ethernet (FG version). It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible.

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.

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 board Series, 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. Follow the steps and pay attention to the instructions which 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 biscuit PC.

The installation procedures for various servers can be found on the supplied CD-ROM, the correct path being:

D:\Biscuit\9577\LAN\82559er\wfw311

6.2.2 Installation for Windows 98

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

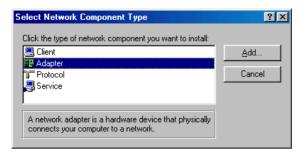


2. a. Click "Add" and prepare to install network functions.

Network	? ×
Configuration	
The following network components are installed:	
Add Remove	Properties
Primary Network Logon: Windows Logon	
Ele and Print Sharing	
Description	
OK	Cancel

Chapter 6

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



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

Select N	etwork adapters	×
		dapter that matches your hardware, and then click OK. If tion disk for this device, click Have Disk.
	acted net drivers)	Network Adapters:
		OK Cancel

a. Insert the CD into the D: drive
b. Fill in "D:\Biscuit\9577\LAN\"
c. Click "OK"



PCA-6774 User Manual

a. Choose the "Intel 8255x based PCI Ethernet Adapter (10/100)"b. Click "OK".

Select N	etwork adapters
ШЩ)	Click the Network adapter that matches your hardware, and then click OK. If you have an installation disk for this device, click Have Disk.
Modeļs:	
📑 🖳 Intel	8255x-based PCI Ethernet Adapter (10/100)
B Rea	Itek RTL8139 A PCI Adapter
j ≊j # Intel(R) PR0/100+ PCI Adapter
	Have Disk
	OK Cancel

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

Network	×
⚠	You have selected a Plug and Play adapter. Please turn off your machine and install the adapter, then turn your machine on again.
	OK

6.2.3 Installation for Windows 2000

1. Open Device Manager,



2. Click "Update Driver..."

Ethernet (ontroller Propert	ies ?×
General	Driver Resources	3]
}	Ethernet Controller	
	Driver Provider:	Unknown
	Driver Date:	Not available
	Driver Version:	Not available
	Digital Signer:	Not digitally signed
the driv		r have been loaded for this device. To uninstall , click Uninstall. To update the driver files for ver. Uninstall Update Driver
		OK Cancel

3. Click "Next"

Upgrade Device Driver Wizard
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
This wizard upgrades drivers for the following hardware device:
Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.
What do you want the wizard to do?
O Search for a suitable driver for my device (recommended)
Display a list of the known drivers for this device so that I can choose a specific driver
< Back Next > Cancel

4. Select "Network Adapter", and click "Next"

Upgrade Device Driver Wizard		
Hardware Type What type of hardware do you want to inst	sil?	M
Select a hardware type, and then click Nex	t.	
Hardware types:		
Section 1394 Bus host controllers		
a Imaging devices		
N Infrared devices		
Memory technology driver		
And the second s		
Multi-port serial adapters		
Network adapters		
🛃 NT Apm/Legacy Support		
😵 Other devices		-
	< Back Next :	Cancel

PCA-6774 User Manual

5. Select the driver, and click "Next"

Upgrade Device Driver Wizard
Select Network Adapter Which network adapter do you want to install?
Click the Network Adapter that matches your hardware, then click OK. If you have an installation disk for this component, click Have Disk.
Manufacturers: Network Adapter: 3Com 3Com (3C562) EtherLink III LAN+288 Modem PC Card Aceton 3Com (3C5628-3C5638 MNP10) EtherLink III LAN+288 Modem PC Acer 3Com (3C5628-3C5638 B) EtherLink III LAN+288 Modem PC Action Tec 3Com (3C5628-3C5638) EtherLink III LAN+288 Modem PC Adaptec, Inc. III LAN+286 Modem PC Image: State Sta
< Back Next> Cancel

6. Click "OK"

Install Fro	om Disk		×
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel	
	Copy manufacturer's files from: E:\LAN Driver\WIN2000	Browse	

7. Click "Next"

Upgrade	Device Driver Wizard
	Inct Network Adapter Which network adapter do you want to install?
Ш <mark>Ш</mark>	Click the Network Adapter that matches your hardware, then click OK. If you have an installation disk for this component, click Have Disk.
	k Adapter: k RTL8139/810X Family PCI Fast Ethernet NIC Have Disk
	< Back Next > Cancel

8. Click "Finish"



PCA-6774 User Manual

9. Click "Yes" to reboot



6.2.4 Installation for Windows NT

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



a. Choose type of network.
 b. Click "Next"

Network Setup Wizard	
	Windows NT needs to know how this computer should participate on a network.
	♥ Wired to the network Your computer is connected to the network by an ISDN Adapter or Network Adapter.
	Bernote access to the network:
	Your computer uses a Modem to remotely connect to the network.
	< Back Next > Cancel

3. a. Click "Select from list..."

Network Setup Wizard	
	To have setup start searching for a Network Adapter, click Start Search button. Start Search Network Adapters: Select from list
	Cancel

PCA-6774 User Manual

4. Click "Have Disk."

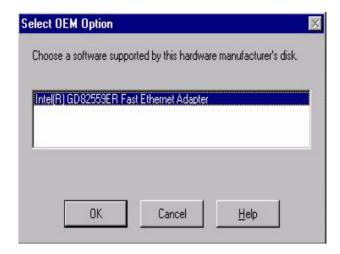
Select Ne	etwork Adapter ?	×
	Click the Network Adapter that matches your hardware, and then click OK. If you have an installation disk for this component, click Have Disk.	
<u>N</u> etwork	Adapter:	
■2 3Co ■2 3Co ■2 3Co ■2 3Co	m 3C508 ISA 16-bit Ethernet Adapter m Etherlink II Adapter (also II/16 and II/16 TP) m Etherlink III ISA/PCMCIA Adapter m EtherLink III PCI Bus-Master Adapter (3C590) m Etherlink16/EtherLink16 TP Adapter m East Etherlink RCI 10/0008ASE T Adapter (2C595)	
	Have Disk	
	OK Cancel	

5. a. Insert the Utility CD ROM

b. Fill in the correct path: D:\Biscuit\9577\LAN\82559er\winnt4 c. Click "OK".

Insert Dis	sk	X
F	Insert disk with software provided by the software or hardware manufacturer. If the files can be found at a different location, for example on another drive type a new path to the files below.	OK Cancel

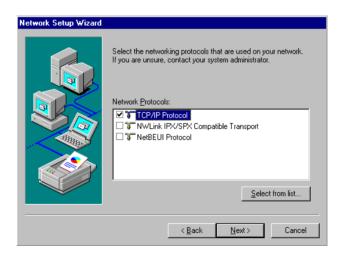
6. Check the highlighted item, and click "OK."



7. Click "Next" to continue setup.

Select from list	Network Setup Wizard	To have setup start searching for a Network Adapter, click Start Search button. Start Search Network Adapters:
		RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter

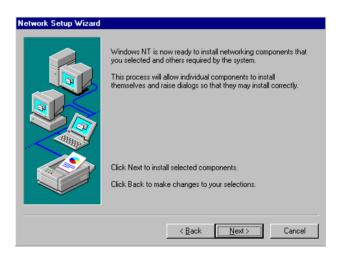
8. Choose the networking protocols, then click "Next"



9. Select the correct Network Services then click "Next"

Network Setup Wizard	
	Listed below are the services that will be installed by the system. You may add to this list by clicking the Select from list button.
	Network Services:
	Select from list
	< <u>B</u> ack <u>N</u> ext > Cancel

10. Click "Next" to continue setup.



PCA-6774 User Manual

11. Click "Next" to start the network.

Network Setup Wizard	
	Windows NT is now ready to start the network so that you can complete the installation of networking.
	Click Next to start the network. Click Back to stop the network if it is running.
	< <u>Back</u> Carroel

6.3 Further information

Realtek website:	www.realtek.com.tw
Intel website:	www.intel.com
Advantech websites:	www.advantech.com
	www.advantech.com.tw

PCA-6774 User Manual 86

A

Appendix

Programming the 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 the Watchdog Timer

A.1 Supported Input Timing Modes

In order 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 A

PCA-6774 User Manual 90



Pin Assignments

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

- Primary IDE Connector
- Secondary IDE Connector
- Floppy Connector
- Printer Port Connector
- CompactFlash Socket
- USB Port 1, 2
- D-SUB VGA Connector
- LAN RJ45 Connector
- COM Port 1, 2
- PS/2 Keyboard & Mouse Connector
- External Keyboard Connector
- CPU FAN Connector
- EBX Power Connector
- Power LED & Keyboard Lock
- External Speaker
- Reset Connector
- HDD LED Connector
- ATX Feature Connector
- ATX Soft-on Power Button Connector
- LCD 40-Pin Connector
- LCD 20-Pin Connector
- LCD Backlight Connector
- LVDS Connector
- I/O Daughter Board Connector 1
- I/O Daughter Board Connector 2
- RS485/422 Connector

Appendix B Pin Assignments

B.1 Primary IDE Connector (CN1)

Tabl	e B.1: Primary			
Pin	Signal	Pin	Signal	_
1	IDE RESET	2	GND	
3	D7	4	D8	
5	D6	6	D9	40 🔿 39
7	D5	8	D10	- 38 0 0 37 - 0 0
9	D4	10	D11	
11	D3	12	D12	00
13	D2	14	D13	
15	D1	16	D14	
17	D0	18	D15	00
19	GND	20	Vcc	
21	REQ	22	GND	
23	IOW	24	GND	00
25	IOR	26	GND	
27	READY	28	Cable Select (Pull-Low)	
29	DACK	30	GND	
31	IRQ14	32	NC	4 0 0 3
33	A1	34	Cable check	2 🖸 🗌 1
35	A0	36	A2	
37	CS0	38	CS1	
39	Active LED	40	GND	

43 41	3	•
000000000000000000000000000000000000000	\overline{O}	
000000000000000000000000000000000000000	0	0
44 42	4	2

Table B.2: Secondary IDE Connector(CN2)				
Pin	Signal	Pin	Signal	
1	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	Vcc	
21	DREQ	22	GND	
23	IOW	24	GND	
25	IOR	26	GND	
27	IOCHRDY	28	CSELS	
29	DACK	30	GND	
31	IRQ	32	NC	
33	A1	34	DMA66 Detect	
35	A0	36	A2	
37	HDCS0	38	HDCS1	
39	HDLED	40	GND	
41	Vcc	42	Vcc	
43	GND	44	NC	
-				

Appendix B

Pin	Signal	Pin	Signal	
1	GND	2	REDWC	
3	GND	4	DS1	2 () [] 1 4 () () 3
5	GND	6	INDEX	00
7	GND	8	MOTOR A ON	
9	DISKETTE CHANGE	10	DRIVE SELECT B	
11	HEAD SELECT	12	DRIVE SELECT A	00
13	READ DATA	14	MOTOR B ON	18 0 0 17
15	WRITE PRO- TECT	16	DIRECTION SELECT	20 🔿 🗍 19
17	TRACK 00	18	STEP	-
19	WRITE GATE	20	WRITE DATA	-

Table B.4:	Printer	Port	Connector	(CN4)
------------	---------	------	------------------	-------

Pin	Signal	Pin	Signal	
1	STB	2	AFD*	
3	D0	4	ERR	26 🔾 🔿 25
5	D1	6	INIT*	24 0 0 23
7	D2	8	SLIN*	00
9	D3	10	GND	00
11	D4	12	GND	
13	D5	14	GND	
15	D6	16	GND	00
17	D7	18	GND	
19	ACK*	20	GND	4 0 0 3
21	BUSY	22	GND	2 🔿 🗆 1
23	PE	24	GND	
25	SLCT	26	NC	
* low	<i>i</i> active			

Table B.5: CompactFlash Socket (CN5)				
Pin	Signal	Pin	Signal	
1	GND	26	#CD1	
2	D3	27	D11	
3	D4	28	D12	
4	D5	29	D13	
5	D6	30	D14	
6	D7	31	D15	
7	#CE	32	#CE2	
8	A10	33	#VS14	
9	#OE	34	#IORD	
10	A9	35	#IOWR	
11	A8	36	#WE	
12	A7	37	#IRQ	
13	Vcc	38	Vcc	
14	A6	39	#CSEL	
15	A5	40	#VS2	
16	A4	41	RESET	
17	A3	42	#WAIT	
18	A2	43	#INPACK	
19	A1	44	#REG	
20	A0	45	BVD2	
21	D0	46	BVD1	
22	D1	47	D8	
23	D2	48	D9	
24	IOCS16	49	D10	
25	#CD2	50	GND	

PCA-6774 User Manual

			2	
σ	0	0	0	
00	0	0	0	0
			7	

Table B.6: USB Connector (CN6) Page 10				
Pin	Signal	Pin	Signal	
1	+5V	6	+5V	
2	UVO-	7	UV1-	
3	UVO+	8	UV1+	
4	USB GND	9	USB GND	
5	GND	10	N/C	

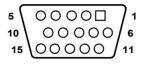


Table B.7: D-SUB VGA Connector (CN7)				
Pin	Signal	Pin	Signal	
1	RED	8	GND	
2	GREEN	9	CRT Vcc	
3	BLUE	10	GND	
4	NC	11	NC	
5	GND	12	DDCDATA	
6	GND	13	HSYNC	
7	GND	14	VSYNC	
15	DDCCLOCK			

B.8 LAN RJ45 Connector (CN8)



Pin	Signal	
1	TX+	
2	TX-	
3	RX+	
6	RX-	

PCA-6774 User Manual

98

B.9 COM Port 1, 2 Connector (CN9, CN10)

5 4 3 2 1	
-----------------------	--

	4			
O	0	0	0	0
	0	0	0	00
1	3		7	

Table B.9: COM Port 1 Connector (CN9, CN10) Part 1								
CON	/11 conne	ector (C	N9)			12 conne 32 Only	ector (CN ²	10)
Pin	Signal	Pin	Signal		Pin	Signal	Pin	Signal
1	DCD	6	DSR		1	DCD	2	DSR
2	RX	7	RTS		3	RX	4	RTS
3	ТΧ	8	CTS		5	ТΧ	6	CTS
4	DTR	9	RI		7	DTR	8	RI
5	GND				9	GND	10	N.C.

B.10 PS/2 Keyboard & Mouse Connector (CN11)

Table B.10: PS/2 Keyboard & Mouse Connector (CN11)		
Pin	Signal	
1	KB data	
2	Mouse DATA	
3	Ground	
4	+5V	
5	KB CIOCK	
6	MS CIOCK	
7	NC	
8	NC	

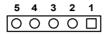


Table B.11: External Keyboard Connector (CN12)		
Pin	Signal	
1	Keyboard Clock	
2	Keyboard Data	
3	NC	
4	GND	
5	+5V	

B.12 CPU Fan Connector (CN14)

Table B.12: CPU FAN Connector (CN14)			
Pin	Signal		
1	GND		
2	+12V		
3	Fan speed detect signal input		

PCA-6774 User Manual



Table B.13: EBX Power Connector (CN15)		
Pin	Signal	
1	+5V input	
2	GND	
3	GND	
4	+12V input	
5	NC	
6	GND	
7	+5V input	

B.14 Power LED & Keyboard Lock (CN16)



Table B.14: Power LED & Keyboard Lock (CN16)		
Pin	Signal	
1	Power LED+	
2	NC	
3	Power LED-	
4	KB_LOCK+	
5	KB_LOCK-(GND)	

B.15 External Speaker (CN17)

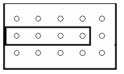


Table B.15: External Speaker (CN17)			
Pin	Signal		
1	Vcc		
2	NC		
3	Internal Buzzer		
4	Speaker Signal		

PCA-6774 User Manual

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

Table B.16: Reset Connector (CN18) Page 10		
Pin	Signal	
1	Reset signal	
2	GND	

B.17 HDD LED Connector (CN19)

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

Table B.17: HDD LED Connector (CN19)		
Pin	Signal	
1	HDD LED+	
2	HDD LED-	

3	2	1
0	0	

Table B.18: ATX Feature Connector (CN20)			
Pin	Signal		
1	ATX PS_ON signal output		
2	Vcc		
3	Suspend 5V input		

B.19 ATX Soft-on Power Button Connector (CN21)

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

Table B.19: ATX Soft-on Power Button Connector (CN21)			
Pin Signal			
1	POWER ON		
2	GND		

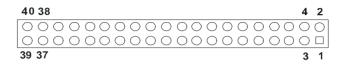


Table B.20: LCD 40-Pin Connector (CN22)				
Pin	Signal	Pin	Signal	
1	+5V output	2	+5V output	
3	GND	4	GND	
5	+3.3V output	6	+3.3V output	
7	NC	8	GND	
9	PD0 signal output	10	PD1 signal output	
11	PD2 signal output	12	PD3 signal output	
13	PD4 signal output	14	PD5 signal output	
15	PD6 signal output	16	PD7 signal output	
17	PD8 signal output	18	PD9 signal output	
19	PD10 signal output	20	PD11 signal output	
21	PD12 signal output	22	PD13 signal output	
23	PD14 signal output	24	PD15 signal output	
25	PD16 signal output	26	PD17 signal output	
27	PD18 signal output	28	PD19 signal output	
29	PD20 signal output	30	PD21 signal output	
31	PD22 signal output	32	PD23 signal output	
33	GND	34	GND	
35	FPCLK signal output	36	FPVS signal output	
37	FPDE signal output	38	FPHS signal output	
39	NC	40	ENVEE signal	

Note:

The model number of the CN22 socket is DF13A-40DP-1.25V (Hirose Electric Co., Ltd.)

Appendix B

B.21 LCD 20-Pin Connector (CN23)

19 17	31
00000000	
	00
20 18	42

Table	Table B.21: LCD 20-Pin Connector (CN23)			
Pin	Signal	Pin	Signal	
1	GND	2	GND	
3	PD24	4	PD25	
5	PD26	6	PD27	
7	PD28	8	PD29	
9	PD30	10	PD31	
11	PD32	12	PD33	
13	PD34	14	PD35	
15	GND	16	GND	
17	NC	18	NC	
19	NC	20	NC	

B.22 LCD Backlight Connector (CN24)

1	2	3	4
	0	0	0

Table	Table B.22: LCD Backlight Connector (CN24)	
Pin	Signal	
1	+12V output	
2	GND	
3	Back-light enable signal output	
4	NC	

PCA-6774 User Manual

B.23 LVDS Connector (CN25)

19 17	3	•
00000000	0	
000000000000000000000000000000000000000	0	0
20 18	4	2

Table E	Table B.23: LVDS Connector (CN25)		
Pin	Signal	Pin	Signal
1	GND	2	GND
3	YP0	4	ZP0
5	YM0	6	ZM0
7	YP1	8	ZP1
9	ZM1	10	ZM1
11	YP2	12	ZP2
13	ZM2	14	ZM2
15	YCP	16	ZCP
17	YCM	18	ZCM
19	3V_SAFE	20	3V_SAFE

Appendix B

B.24 I/O Daughter Board Connector 1 (CN27)

19 17	3	•
000000000000000000000000000000000000000	0	
000000000	0	0
20 18	4	2

Table E	Table B.24: I/O Daughter Board Connector 1 (CN27)		
Pin	Signal	Pin	Signal
1	USBD3+	2	USBD2+
3	USBD3-	4	USBD32
5	USBV2	6	USBV2
7	GND	8	GND
9	USBD1+	10	USB0+
11	USB1-	12	USB0-
13	USBV0	14	USBV0
15	GND	16	GND
17	3V3B	18	LAN2 ACT LED+
19	LAN2 ACT LED-	20	LAN SPLED

PCA-6774 User Manual

B.25 I/O Daughter Board Connector 2 (CN28)

19 17	3	•
000000000000000000000000000000000000000	0	
00000000	0	O
20 18	4	2

Table 1	Table B.25: I/O Daughter Board Connector 2 (CN28)		
Pin	Signal	Pin	Signal
1	NC	2	NC
3	NC	4	NC
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC
13	LAN2 TD+	14	GND
15	LAN2 RD+	16	LAN2 TD-
17	3V3B	18	LAN2 RD-
19	MSCLK	20	Vcc

B.26 RS485/422 Connector (CN29)



Table B.26: RS485/422 Connector (CN29)				
Pin	Description	Pin	Description	
1	TXD-	2	TXD+	
3	RXD-	4	RXD+	

Appendix B

PCA-6774 User Manual 110



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	Table C.1: System I/O ports		
Addr. range (Hex)	Device		
00-1F	Master DMA controller		
20-3F	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/CMOS/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-BF	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	Parallel Port (Standard & AFF)		
3F0-3F1	Configuration Index/Data		
3F0-3F7	Floppy Controller		
3F8-3FF	COM1		

PCA-6774 User Manual

Table C.1: System	Table C.1: System I/O ports	
Addr. range (Hex)	Device	
778-77A	Parallel Port (ECP Extensions) (Port 378+400)	
MPU-401 select	t from 300 ~ 330H (2 bytes)	

C.2 1st MB memory map

Table C.2: 1st MB met	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

Table C.3: DMA channel assignments	
Channel	Function
0	Available
1	Available (audio)
2	Floppy disk (8-bit transfer)
3	Available (parallel port)
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available
* Audio DMA select 1, 3, or 5	

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

PCA-6774 User Manual

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		

PCA-6774 User Manual 116

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