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PCM-5823

NS Geode Single Board Computer with CPU SVGA/LCD, Dual Ethernet Interface

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This manual is for the PCM-5823 Rev. A102

Part No. 2006582300

1st Edition Printed in Taiwan Oct 2000

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Packing list

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

- 1 PCM-5823 Series all-in-one single board computer
- 1 startup manual
- 1 utility disk/CD, driver, and manual (in PDF format)
- 1 2.5" IDE flat cable, 44-pin to 44-pin (part no. 1701440351)
- 1 keyboard / PS2 mouse cable (part no. 1700000190)
- 1 secondary serial port cable (part no. 1701140201)
- 1 parallel cable (part no. 1700260250)
- 1 floppy cable, for 3.5" FDD only (part no. 1701340603)

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

The PCM-5823 Series Model Comparison Table				
	GXLV-200	GX1-300	RTL8139 LAN chip	Intel 82559ER LAN chip
PCM-5823-D0A1	X		X	
PCM-5823-G0A1		X		X

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CHAPTER 1

General Information

This chapter gives background information on the PCM-5823.

Sections include:

- Board specifications
- Board layout and dimensions

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1.1 Introduction

Advantech's new PCM-5823 NS Geode Series is a 3.5" SBC which offers an onboard NS Geode GX1-300 processor or GXLV-200 processor, plus support for dual ethernet for network functions such as Firewall, Network monitoring, Router or Gateway functions. Other onboard features include VGA/LCD, a Compact-Flash™ card socket, and watchdog timer. With the 586-level NS Geode processor mounted directly on board, upgrade and system configuration is much more convenient as is the benefits of fanless operation in temperatures up to 60° C (140° F). This board is a feature-packed, 586-level, hassle-free solution for space critical applications.

The flexible, dual Ethernet capability of the PCM-5823 gives network administrators another tool to deal with today's changing application needs. The board comes with the top-of-the-line Intel 82559ER LAN chips or cost-effective RTL 8139C LAN chips, depending on users needs. Used as a DMZ device, the PCM-5823 could act as a firewall that sits between the internet and a company's internal network. This applies to Web (HTTP) servers, FTP servers, SMTP (e-mail) servers or DNS servers. The PCM-5823 can also be used as an internet-network gateway (router) that connects a number of local networks. Once again, the dual ethernet capability and processing power of the PCM-5823 gives it the ability to perform these functions. The compact size, low power consumption and fanless operation also allow it to be used "exactly" where you need it as well.

The PCM-5823 Series complies with the "Green Function" standard and supports three types of power saving features: Normal, Doze, and Sleep modes.

The display type configuration is done through software. A single Flash chip holds the system BIOS and the VGA BIOS. This minimizes the number of chips and eases configuration. You can change the display BIOS simply by programming the Flash chip.

If you need any additional functions, the PCM-5820 Series has a PC/104 connector for future upgrades.

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1.2 Features

- Ultra-compact size single board computer as small as a 3 1/2" hard disk drive (145 mm x 102 mm)
- On-board NS GX1-300 or GXLV-200 CPU
- Up to 128 MB system memory by SODIMM (SDRAM)
- On-board VGA/LCD controller
- On-board Dual 100Base-T Ethernet interface
- Supports CompactFlash card
- Built-in Enhanced IDE (AT bus) hard disk drive interface
- On-board mini-DIN PS/2 keyboard/mouse connector
- Two serial ports: one RS-232, one RS-232/422/485 or infared selectable (uses 16C550 UARTs with 16 byte FIFO)
- Upgradeable through PC/104 module
- Green engine with sleep mode and low power consumption
- Single +5 V power supply

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1.3 Specifications

1.3.1 Standard SBC functions

- **CPU**:
  - Embedded NS GXLV-200/2.2V (for PCM-5823-DOA1)
  - Embedded NS GX1-300/1.8V (for PCM-5823-GOA1)
- **BIOS**: AWARD 256 KB Flash memory
- **Chipset**: NS CX5530
- **System memory**: One 144-pin SODIMM socket accepts up to 128 MB SDRAM
- **Enhanced IDE interface**: Supports up to two EIDE devices. BIOS auto-detect, PIO Mode 3 or Mode 4 transfer, Ultra DMA33 mode (ATA-4) up to 33 MB/sec.
- **FDD interface**: Supports up to two FDDs
- **Serial ports**: One serial RS-232 port, one serial RS-232/422/485 port
- **Parallel port**: One parallel port, supports SPP/EPP/ECP mode
- **Infrared port**: Shared with COM2. Transfer rate up to 115 kbps.
- **Keyboard/mouse connector**: Mini-DIN connector supports standard PC/AT keyboard and a PS/2 mouse
- **USB interface**: two USB ports, USB 1.0 compliant
- **Power management**: Supports power saving modes including Normal/Doze/Sleep modes. APM 1.1 compliant
- **Watchdog timer**: 1.6 sec. intervals

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1.3.2 Local-bus flat panel/VGA interface

- **Chipset**: NS CX5530
- **Display memory**: 1 ~ 4 MB share memory, set in BIOS
- **Display type**: Supports CRT and TFT LCD displays. Can display CRT and flat panel simultaneously
- **Flat panel display mode:** Panel resolution supports up to 1024 x 768 @ 18 bpp. Supports 18-bit TFT LCD panel
- **CRT display mode**: Non-interlaced CRT monitors resolutions up to 1280 x 1024 @ 256 colors or 1024 x 768 @ 16 bpp

1.3.3 Audio function (Optional)

- **Chipset**: NS CX5530
- **Audio interface**: AC97 version 2.0 compliant interface for optional audio module for complete audio capability; line-in, line out, CD audio-in, microphone

1.3.4 Dual Ethernet interface

- **Chipset**: Intel® 82559ER or Realtek RTL 8139
- **Ethernet interface**: PCI 10/100 Mbps Ethernet. IEEE 802.3 u protocol compatible
- **Connection**: 2 RJ-45 connector with LED on the frontside
- I/O address switchless setting
- Built-in boot ROM

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1.3.5 Mechanical and environmental

- **Dimensions (L x W)**: 145 mm x 102 mm (5.9" x 4.2")
- **Power supply voltage**: +5 V (4.75 ~ 5.25 V)
- **Power consumption** :
  - +5 V @ 4.0 A (maximum)
  - +5 V @ 1.5 A with GX1-300, 64 MB SODIMM and 40 MB CFC
  - +5 V @ 1.5 A with GXLV-200, 64 MB SODIMM and 40 MB CFC
- **Operating temperature**: 0 ~ 60° C (32 ~ 140° F)
- **Operating humidity**: 0 ~ 90%, Relative humidity, noncondensing
- **Weight**: 0.77 kg (weight of total package)

1.3.7 Solid state disk

- Supports one 50-pin socket for CompactFlash™ card

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1.4 Board layout and dimensions

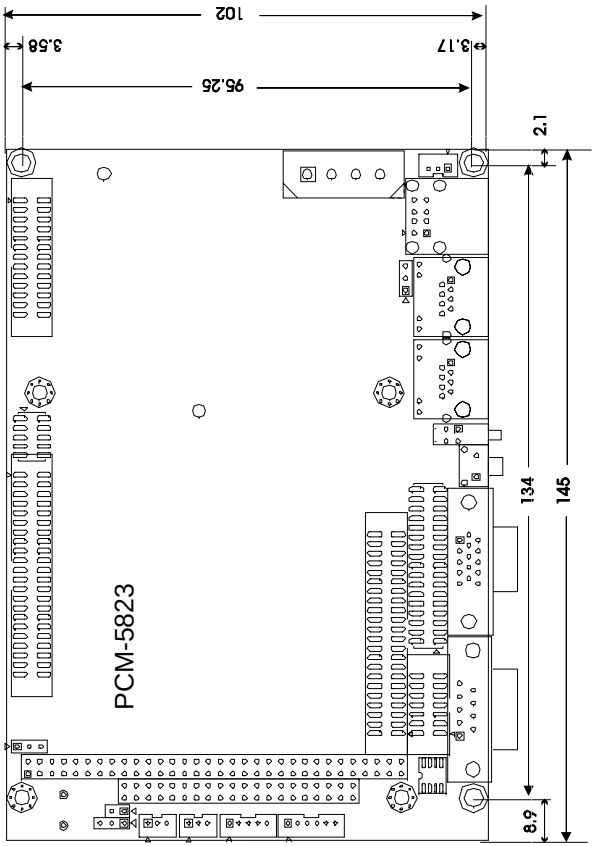


Figure 1-1: PCM-5823 Series dimensions

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CHAPTER 2

Installation

This chapter tells how to set up the PCM-5823 Series hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

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2.1 Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard or expansion bus connectors. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

The table below lists the function of each of the board jumpers and connectors:

Table 2-1: Jumpers

Label	Function
J1	LCD power selector
J2	Clear CMOS
J4	Ethernet power select
SW2	COM2 setting, watchdog timer action, buzzer setting

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Table 2-2: Connectors

Label	Function
CN1	Parallel port connector
CN2	AC97 Audio connector (optional)
CN3	LCD connector
CN4	Auxilary power connector (-5 V, -12 V)
CN5	CPU fan power connector
CN6	PC/104 connector
CN7	IR connector (infrared)
CN8	PS/2 keyboard + PS/2 mouse
CN9	Main power connector (+5 V, +12 V)
CN10	IDE hard disk connector
CN11	USB connector
CN12	Floppy disk connector
CN13	COM2 connector
CN14	ATX stand-by (feature) power connector
CN15	Ethernet connector (2nd)
CN16	Ethernet connector (1st)
CN17	CRT display connector
CN18	COM1 connector
CN19	CompactFlash socket
CN20	SODIMM socket
CN21	ATX power button
D9	HDD LED
D10	Power LED

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2.2 Locating jumpers

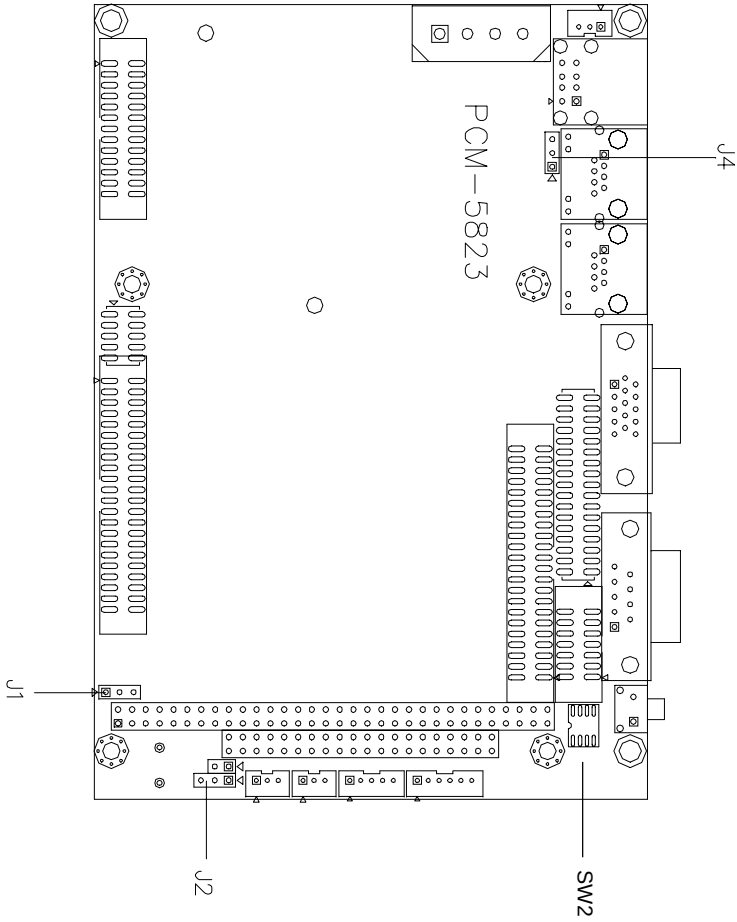


Figure 2-1: Jumpers

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2.3.1 Component side

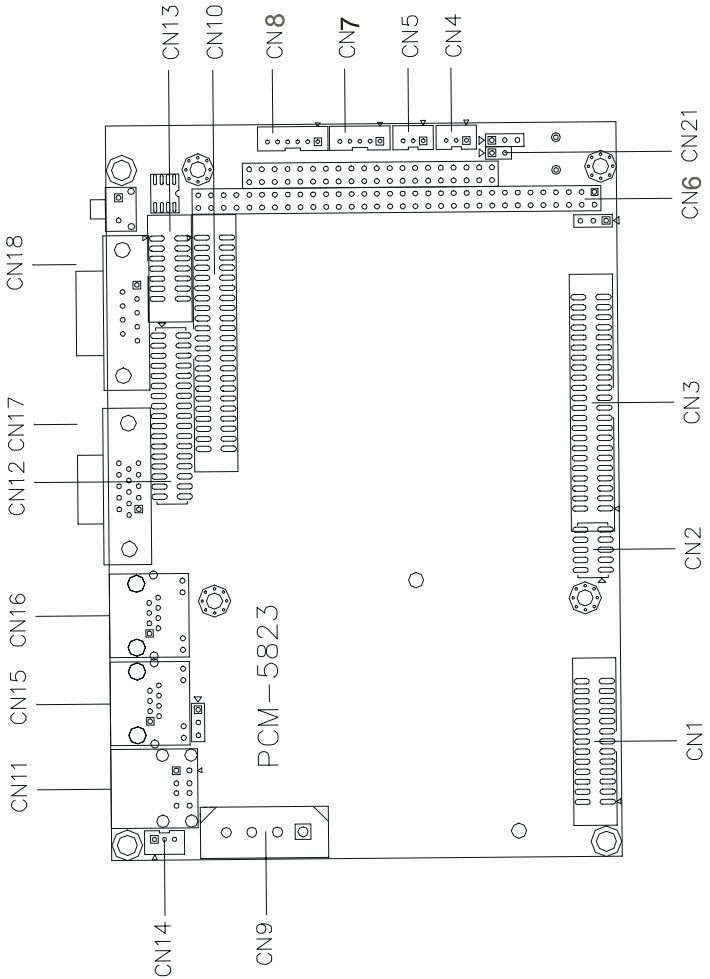


Figure 2-2: Connectors - component side (PCM-5823)

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2.3.2 Solder side

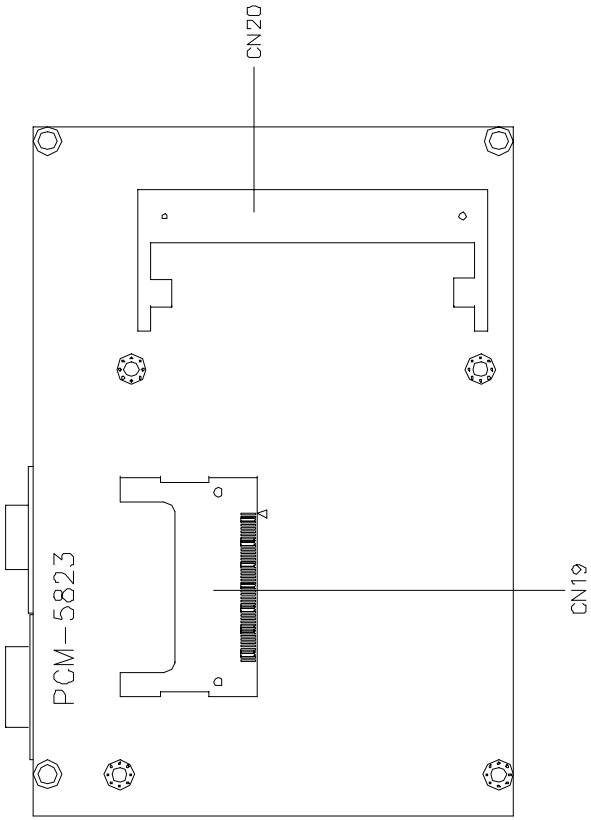


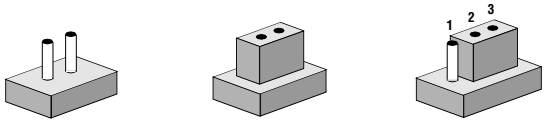
Figure 2-3: Connectors - solder side (PCM-5823)

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2.4 Setting jumpers

2.4.1 Introduction

You may configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



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

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



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

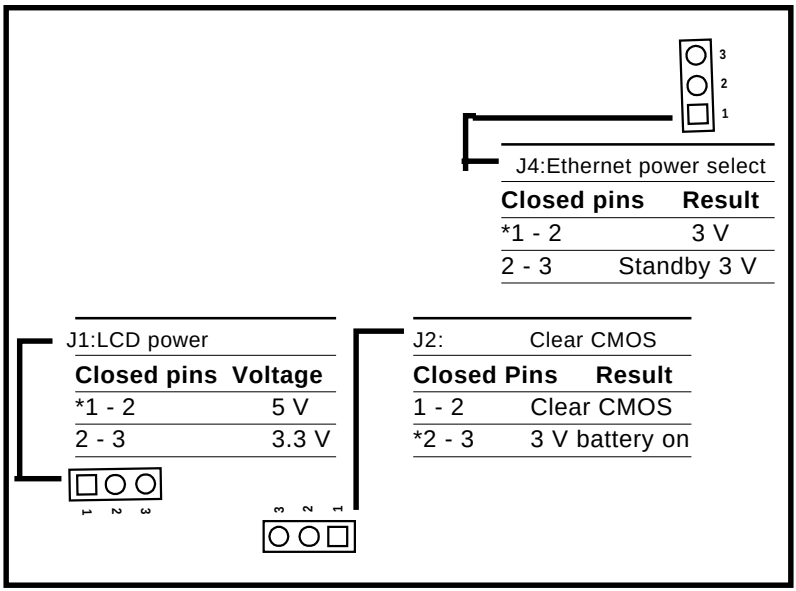
A pair of needle-nose pliers may be helpful when working with jumpers.

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

Generally, you simply need a standard cable to make most connections.

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2.4.2 Settings details



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2.5 Safety precautions

Warning! *Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on because sensitive electronic components can be damaged by the sudden rush of power.*



Caution! *Always ground yourself to remove any static charge before touching the board. 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.*



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2.6 Installing DRAM (SODIMMs)

2.6.1 Introduction

You can install anywhere from 16 MB to 128 MB of on-board DRAM memory using 16, 32, 64 or 128 MB 144-pin SODIMMs (Small Outline Dual In-line Memory Modules).

2.6.2 Installing SODIMMs

Note: The modules can only fit into a socket one way and their gold pins must point down into the SODIMM socket.

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

1. Ensure 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.

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2.7 IDE hard drive connector (CN10)

The built-in Enhanced IDE (Integrated Device Electronics) controller supports up to two IDE devices, including CD-ROM drives, tape backup drives, a large hard disk drive and other IDE devices. It also supports faster data transfer, PIO mode 3, mode 4, and Ultra DMA 33 mode.

2.7.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one or two cables, depending on the drive size. All required cables are included in your PCM-5823 package. 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. However, the required connectors are not included in the PCM-5820 Series package.

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

1. Connect one end of the cable to CN10. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable to 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.)

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 just one drive, set it as the master.

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2.8 CompactFlash™ disk (CN19)

The PCM-5823 Series is equipped with a CompactFlash disk socket on the solder side and it supports the IDE interface CompactFlash disk card. The socket itself is especially designed to prevent any incorrect installation of the CompactFlash disk card. When installing or removing the CompactFlash disk card, please make sure that the system power is off.

The CompactFlash disk card is defaulted as the E: disk drive in your PC system.

2.9 Floppy drive connector (CN12)

You can attach up to two floppy drives to the the PCM-5820 Series' on-board controller. Any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives is possible.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. A 34-pin flat-cable connector is fitted on one end of the cable while the other end sports two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (for the 3½" drives) and a printed-circuit board connector (for the 5¼" drives).

2.9.1 Connecting the floppy drive

1. Plug in the 34-pin flat-cable connector into CN12. Make sure that the red wire corresponds to pin 1 on the connector.
2. Attach the appropriate conector at the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set at the other 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 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

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When connecting a 3½” floppy drive, you may have some difficulties in determining which pin is pin number one. Look for a number on the circuit board indicating pin number one. In addition, you should check if the connector on the floppy drive has an extra slot. If the slot is up, pin number one should be on the right. Please refer to any documentation that came with the drive for more information.

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

If your cable needs to be custom made, you can find the pin assignments for the board's connector in Appendix A.

2.10 Parallel port connector (CN1)

Normally, the parallel port is used to connect the card to a printer. The PCM-5823 Series includes a multi-mode (ECP/EPP/SPP) parallel port, accessed through CN1, a 26-pin flat-cable connector.

You will need an adapter cable if you use a traditional DB-25 connector. The adpater cable should have a 26-pin connector on one end and a 25-DB 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 as IRQ7.

The proper ECP/EPP DMA channel can be selected via the BIOS setup.

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2.11 Keyboard and PS/2 mouse connector (CN8)

The PCM-5823 board provides a mini-DIN keyboard connector, which 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 failure during the power-on self test (POST) after resetting the PC. The PCM-5820 Series board's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows non-keyboard operation in embedded system applications without the system halting during the POST.

2.12 Power connectors

2.12.1 Main power connector +5 V, +12 V (CN9)

Supplies main power to the PCM-5820 Series (+5 V) and devices that require +12 V.

2.12.2 Auxilary power connector (CN4)

Supplies secondary power to peripherals that require -5 V and -12 V.

2.12.3 CPU fan power connector (CN5)

This connector is reserved for an optional fan, which facilitates a better working environment for the CPU.

2.13 IR connector (CN7)

The PCM-5820 Series provides an IrDA port for transfer rates of 115 kbps. This connector supports the optional wireless infrared transmitting and receiving module, which is mounted on the system case. Configuration of the module is done through BIOS setup.

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2.14 AC 97 Audio interfaces (CN2, optional)

The PCM-5823 Series provides an optional module, which provides 16-bit CD quality recording and playback as well as OPL3 compatible FM music. It is supported by all major operating systems and is completely compatible with Sound Blaster Pro.

2.15 Serial ports (CN18, CN13)

The PCM-5823 Series offers two serial ports: one RS-232 and one RS-232/422/485. These ports allow you to connect to any serial device (a mouse, printers, etc.) or communication network.

2.15.1 COM1 RS-232 port (CN18)

The serial port connectors are mounted on the bottom edge of the card. The 9-pin D-SUB connector to the left of the card is the RS-232 port.

2.15.2 COM2 RS-232/422/485 selection (CN13)

The secondary port located above COM1, consists of a 14-pin, dual-in-line, male header and can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via SW2 (pin1 to pin2)

Table 2-3 COM2 select (SW2)

Result	SW2-1	SW2-2	SW2-3
*RS-232	on	off	off
RS-422	off	on	off
RS-485	off	off	on

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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 PCM-5820 Series board's ports.

Table 2-4: Serial port default settings

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

2.16 VGA interface connections

The PCM-5823 Series board's SVGA interface can facilitates conventional CRT displays as well as active LCD displays. The card has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

2.16.1 CRT display connector (CN18)

CN18 is a 15-pin, D-SUB connector commonly used for conventional CRT displays.

Detailed information on pin assignments for CRT display connector CN18 is given in Appendix A.

2.16.2 Flat panel display connector (CN12)

CN12 consists of a 44-pin, dual-in-line header.

The power supply (+12 V) for CN12 is dependant on the supply connected to the board. Therefore make sure that CN9 is connected to a +12 V power supply.

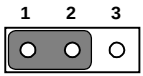
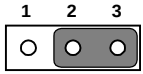
The PCM-5823 Series provides a bias control signal on CN12 which can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V or +3.3 V) and panel video signals are stable. Under normal operation the control signal (ENAVEE) is active high. When the PCM-5823 Series board's power is applied, the control signal is low until just after the relevant flat panel signals are present.

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2.16.3 LCD power setting (J1)

The PCM-5823 Series' PCI SVGA interface supports 5 V and 3.3 V LCD displays. By changing the setting of J1, you can select the panel video signal level to be 5 V or 3.3 V.

Table 2-5: LCD power setting

	*5 V	3.3 V
J1		

* default setting

Configuration of the LCD type is done completely via the software utility. You do not have to set any jumpers. Refer to Chapter 3 for software setup details.

Refer to Chapter 3 for details on connecting the two standard LCDs: Toshiba LTM10C042 and LTM 12C275A.

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2.18 Dual Ethernet interface connections

The PCM-5823 is equipped with a high performance 32-bit PCI Ethernet interface which is fully compliant with IEEE 802.3u 10/100 Mbps CSMA/CD standards.

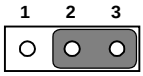
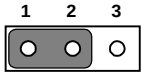
2.18.1 100Base-T RJ-45 connector (CN15. CN16)

100Base-T connections are made via the on-board RJ-45 connector.

2.18.2 Ethernet power select (J4)

PCM-5820 Series supports (WOL) wake up on LAN function, to activate this function, select "standby 5V" mode on J4.

Table 2-6: Ethernet power select

	*+5 V	Standby 5 V
J4		

* default setting

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2.19 Ethernet LED and HDD/power LEDs

2.19.1 LED1 (Ethernet LED)

Table 2-7: Ethernet LED setup

LED	Setting
Green lamp	Tx
Yellow lamp	Link

The LED should be set so that when the cable is connected, the yellow lamp is activated; and when data is transmitted, the green lamp is activated.

2.19.2 D9, D10 (Power and HDD LED)

Table 2-8: HDD/power LED setup

LED	Setting
Green lamp	Power
Yellow lamp	HDD

The LED should be set so when the HDD is accessed the yellow lamp is activated, and when the power is on the green lamp is activated.

2.20 Watchdog timer configuration

An on-board watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This

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is an invaluable protective device for standalone or unmanned applications. Setup involves one jumper and running the control software (refer to Appendix C).

2.20.1 Watchdog timer action (SW2)

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 pin4 and pin5 of SW2 as shown below:

Table 2-9: SW2 Watchdog timer action

Result	SW2-4	SW2-5
*System reset	on	off
IRQ11	off	on

*default setting

2.21 USB connectors (CN11)

The PCM-5823 Series board provides two USB (Universal Serial Bus) interfaces which gives complete Plug and Play, and hot swaps 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 two 10-pin flat-cable connectors, CN11. You will need an adapter cable if you use a standard USB connector.

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

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2.23 ATX power control conn. (CN14, CN2)

The PCM-5823 Series offers two serial ports: one RS-232 and one RS-232/422/485. These ports allow you to connect to any serial device (a mouse, printers, etc.) or communication network.

2.23.1 ATX feature connector (CN14) and power button (CN 21)

The PCM-5823 can support an advanced power button if an ATX power supply is used. To enable the power button:

1. Take the specially designed ATX-to-PS/2 power cable

2. Connect the 3-pin plug of the cable to the CN14 (ATX feature connector).

3. Connect the power on/off button to pin 2,4 of CN 21. (A momentary contact type of button should be used.)

Important: Be 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 up your system.

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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 is covered in Chapter 4.

Sections include:

- LCD display configuration
- Connections for two standard LCDs

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3.1 Introduction

The PCM-5823 system BIOS and custom drivers are located in a 256 KB, 32-pin Flash ROM device, designated U10. A single Flash chip holds the system BIOS and VGA BIOS. The display type 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 Utility CD disk

The PCM-5823 is supplied with a software utility on CD-ROM. This disk contains the necessary file for setting up the VGA display. Directories and files on the disk are as follows:



Figure 3-1: Contents of the PCM-5823 Series utility disk

AWDFLASH.EXE
This program allows you to update the BIOS Flash ROM.

5823V110.BIN
This binary file contains the system BIOS.

CBROM.EXE
This program allows you to combine your own VGA BIOS with system BIOS (5823V110.BIN).

RSET8139.EXE

This program enables you to view the current Ethernet configuration, reconfigure the Ethernet interface (medium type, etc.), and execute useful diagnostic functions.

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3.3 VGA display software configuration

The PCM-5823 on-board VGA/LCD interface supports an 18-bit TFT LCD, flat panel displays and traditional analog CRT monitors. The interface can drive CRT displays with resolutions up to 1024 x 768 in 16 bpp. It is also capable of driving color panel displays with resolutions of 1024 x 768 in 18 bpp. The LCD type is configured completely via the software utility, so you do not have to set any jumpers. Configure the LCD type as follows:

1. Apply power to the PCM-5823 Series with a color TFT display attached. This is the default setting for the PCM-5823 Series. Make sure that the AWDFLASH.EXE and *.BIN files are located in the working drive.

Note: Make sure 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:

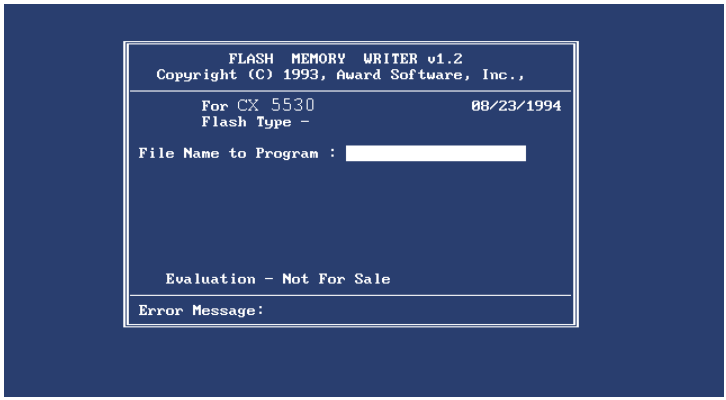


Figure 3-2: BIOS VGA setup screen

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3. At the prompt, type in the BIN file which supports your display. When you are sure that you have entered the file name correctly press <Enter>. The screen will ask “Do you want to save?” If you wish to continue press Y. If you change your mind or have made a mistake press N.

4. If you decide to continue, the screen will issue a prompt which will then ask “Are you sure to program (Y/N)?” If you wish to continue, press Y. 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.

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3.4 Connections for two standard LCDs

3.4.1 Connections for Toshiba LTM10C042 (640 x 480 TFT color LCD)

Table 3-1: Connections for Toshiba LTM10C042

LTM10C042		PCM-5823 Series CN12	
Pin	**Name**	**Pin**	**Name**
1	GND	3	GND
2	CLK	35	SHFCLK
3	GND	4	GND
4	R0	27	PD12
5	R1	28	PD13
6	R2	29	PD14
7	GND	8	GND
8	R3	30	PD15
9	R4	31	PD16
10	R5	32	PD17
11	GND	33	GND
12	G0	19	PD6
13	G1	20	PD7
14	G2	21	PD8
15	GND	33	GND
16	G3	22	PD9
17	G4	23	PD10
18	G5	24	PD11
19	GND	34	GND
20	ENAB	37	M
21	GND	34	GND
22	B0	11	PD0
23	B1	12	PD1
24	B2	13	PD2
25	GND	39	GND
26	B3	14	PD3
27	B4	15	PD4
28	B5	16	PD5
29	GND	39	GND
30	VDD	5	+5 V
31	VDD	6	+5 V

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3.4.2 Connections for Toshiba LTM12C275A (800 x 600 TFT color LCD)

Table 3-2: Connections for Toshiba LTM12C275A

LTM12C275A		PCM-5823 Series **CN12**	
Pin	**Name**	**Pin**	**Name**
1	GND	3	GND
2	NCLK	35	SHFCLK
3	NC	-	NC
4	NC	-	NC
5	GND	4	GND
6	R0	27	PD12
7	R1	28	PD13
8	R2	29	PD14
9	R3	30	PD15
10	R4	31	PD16
11	R5	32	PD17
12	GND	8	GND
13	G0	19	PD6
14	G1	20	PD7
15	G2	21	PD8
16	G3	22	PD9
17	G4	23	PD10
18	G5	24	PD11
19	GND	33	GND
20	B0	11	PD0
21	B1	12	PD1
22	B2	13	PD2
23	B3	14	PD3
24	B4	15	PD4
25	B5	16	PD5
26	ENAB	37	M/DE
27	GND	34	GND
28	VCC	5	+5 V
29	VCC	6	+5 V
30	GND	39	GND

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3.5 Ethernet interface configuration

The PCM-5823 Series' on-board Ethernet interface supports all major network operating systems. To configure the medium type, to view the current configuration, or to run diagnostics, do the following:

1. Power the PCM-5823 Series on. Make sure that the RSET8139.EXE file is located in the working drive.
2. At the prompt, type RSET8139.EXE and press <Enter>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and Down keys. To change a selected item, press <Enter>, and a screen will appear with the available options. Highlight your option and press <Enter>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
4. After you have made your selections and are sure this is the configuration you want, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen that shows the format and result of any diagnostic tests undertaken.

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CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

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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 bootup 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 PCM-5823 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.

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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 <Del> immediately. This will allow you to enter Setup.

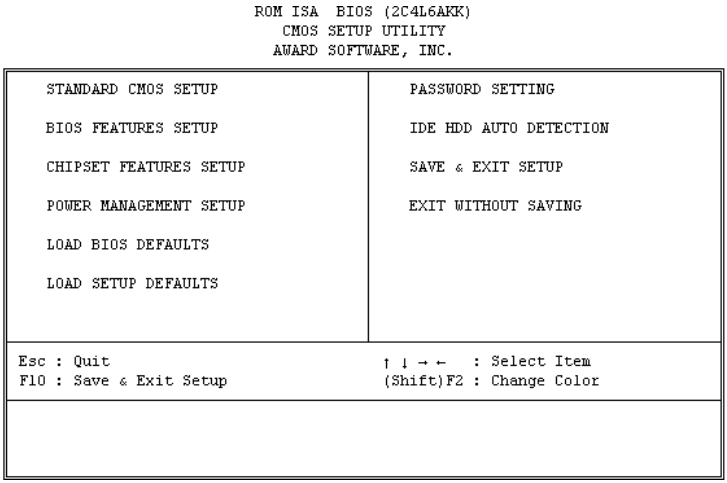


Figure 4-1: BIOS setup program initial screen

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4.2.2 Standard CMOS setup

When you choose the STANDARD CMOS SETUP 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.

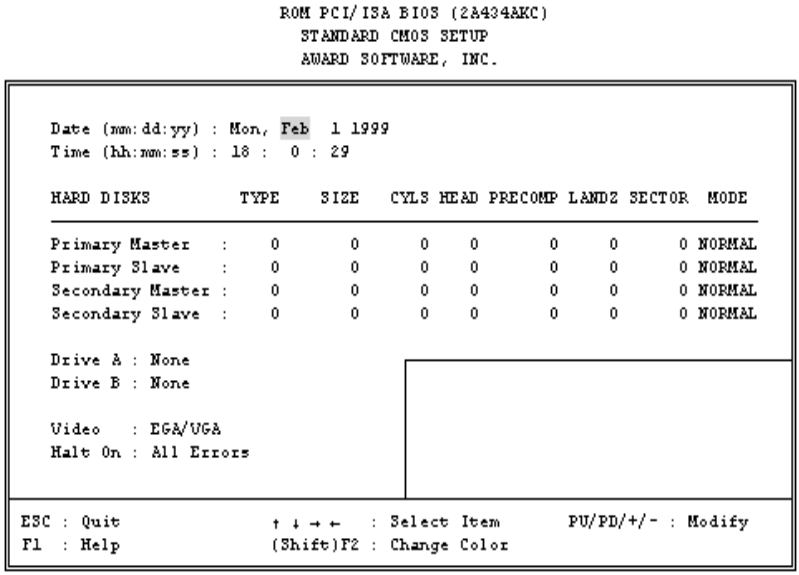


Figure 4-2: CMOS setup screen

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4.2.3 BIOS features setup

By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-5823 Series.

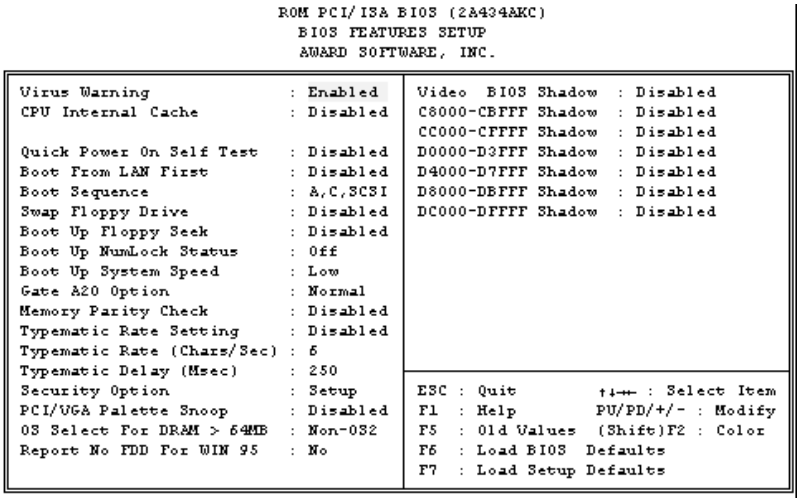


Figure 4-3: BIOS features setup

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4.2.4 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 PCM-5823 Series.

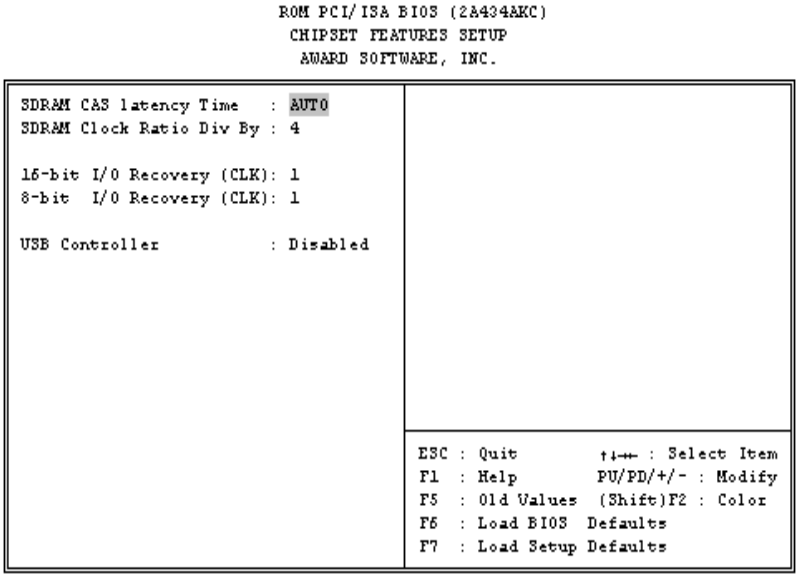


Figure 4-4: Chipset features setup

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4.2.5 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 PCM-5823 Series.

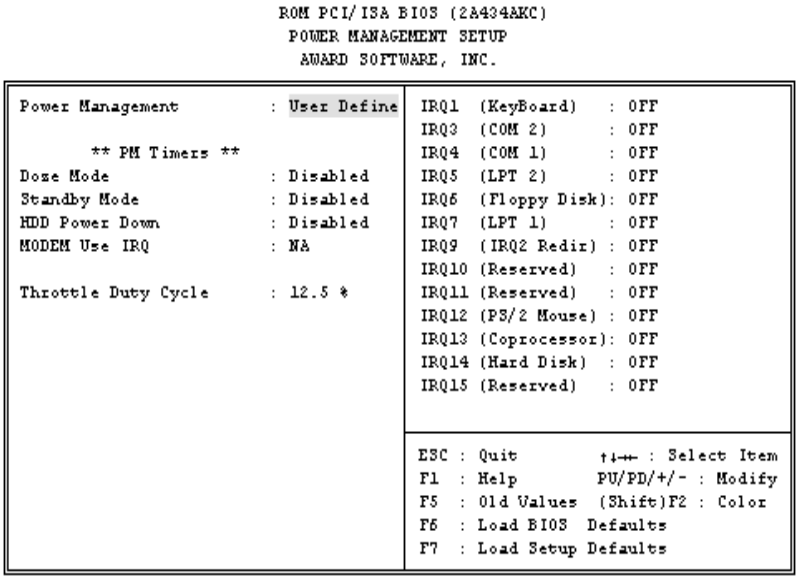


Figure 4-5: Power management setup

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4.2.6 PnP/PCI configuration

By choosing the PnP/PCI CONFIGURATION option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-5823 Series.

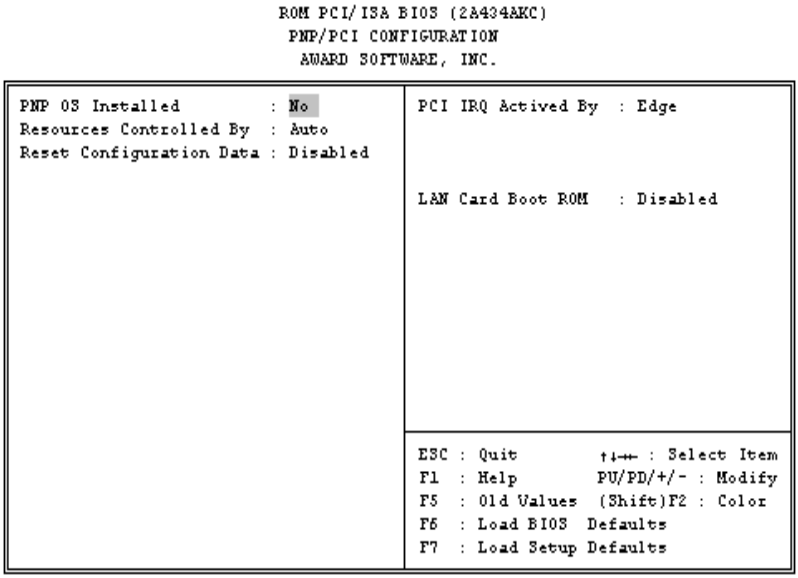


Figure 4-6: PnP/PCI configuration

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4.2.7 Integrated peripherals

By choosing the INTEGRATED PERIPHERALS option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-5823 Series. The PANEL TYPE by default supports a 18-bit 640 x 480 TFT LCD panel display.

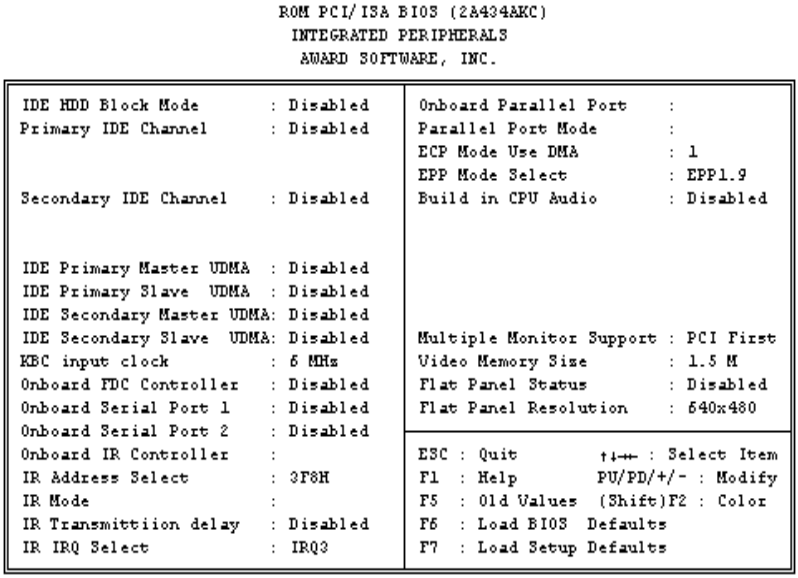


Figure 4-7: Integrated peripherals

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4.2.8 Load BIOS defaults

LOAD BIOS DEFAULTS loads the default system values directly from ROM. If the stored record created by the Setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-5823 Series on.

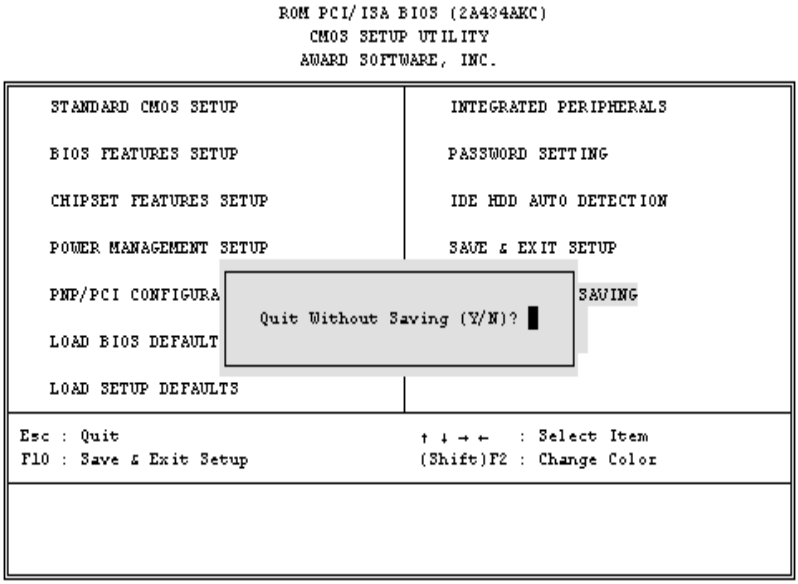


Figure 4-8: Load BIOS defaults screen

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4.2.9 Change password

To change the password, choose the PASSWORD SETTING option form the Setup main menu and press <Enter>.

1. If the CMOS is bad or this option has never been used, a default password is stored in the ROM. The screen will display the following messages:

   Enter Password:

   Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

   Confirm Password:

   Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most eight (8) characters long.

Remember - to enable this feature, you must first select either Setup or System in the BIOS FEATURES SETUP.

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4.2.10 Auto detect hard disk

The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration.

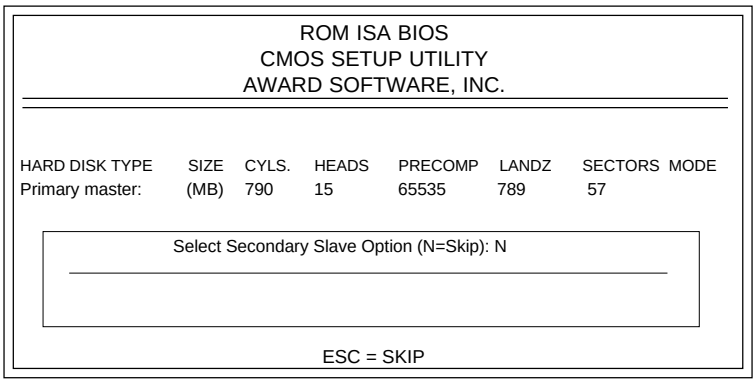


Figure 4-9: IDE HDD auto detection screen

4.2.11 Save & exit setup

If you select this option and press <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 compare this to what it finds as it checks the system. This record is required for the system to operate.

4.2.12 Exit without saving

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

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CHAPTER 5

SVGA Setup

- Introduction
- Installation of SVGA driver for Windows 95/98/NT

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5.1 Introduction

The PCM-5823 Series has an on-board LCD/VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PCM-5823 uses a Cyrix CX5530 chipset for its SVGA controller. It supports many popular 18-bit LCD displays and conventional analog CRT monitors. The VGA BIOS supports LCD. 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 as if they were analog monitors.

5.1.2 Display memory

With 1 ~ 4 MB share 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 in BIOS for true-color resolution of 1024 x 768.

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5.2 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 are using within your PCM-5823.

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 1: The CD-ROM drive is designated as "D:" throughout this chapter.

Note 2: <Enter> means pressing the “Enter” key on the keyboard.

Note 3: When you are using a CRT display, please make sure that your flat panel resolution settings (in the BIOS setup) are the same as your VGA resolution settings (in Windows). Otherwise your display may behave strangely.

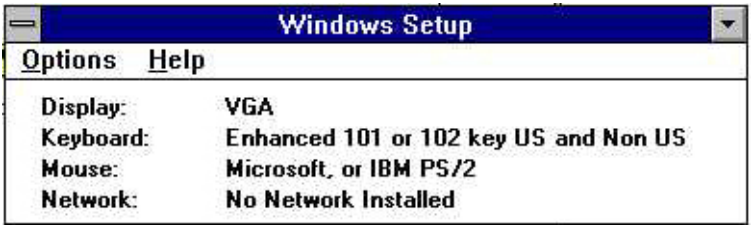
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5.2.1 Installation for Windows 3.1

1. In the Windows 3.1 Main screen, click on the "Windows Setup" icon.

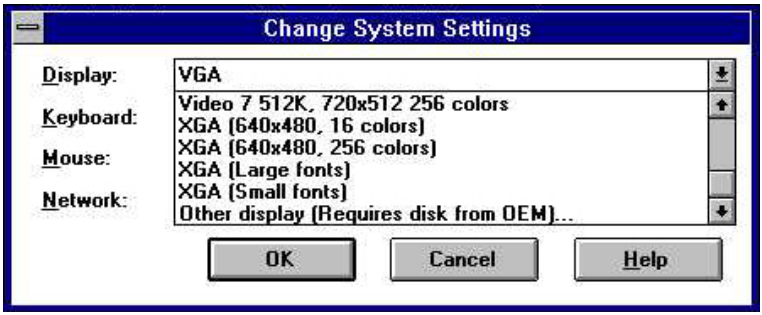


2. In the "Windows Setup" window, choose "Options", then select "Change System Settings".



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3. In the "Change System Settings" window, select the "Display" item. In the dropdown selection, select "Other display (Requires disk from OEM)".



4. Type in the correct path like the window below, where drive "D" is the CD ROM drive. For example,
D:\ Biscuit\ 5820 \ VGA.100 \ Win31



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5. Select the display type and preferred resolution, then click "OK".



6. Choose "Restart Windows"



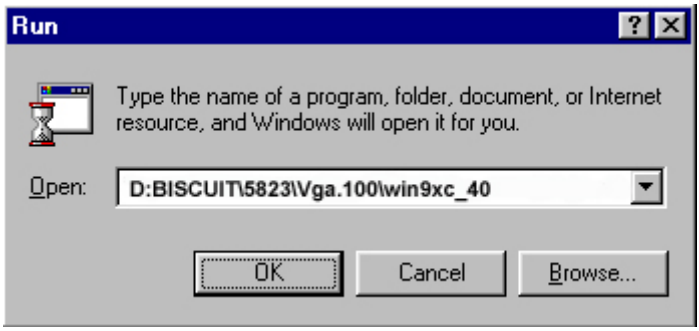
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5.2.2 Installation for Cyrix MediaGX Certified drivers for Windows 95/980. Insert the disk into the CD-ROM drive.

1. Select "Start" then "Run".

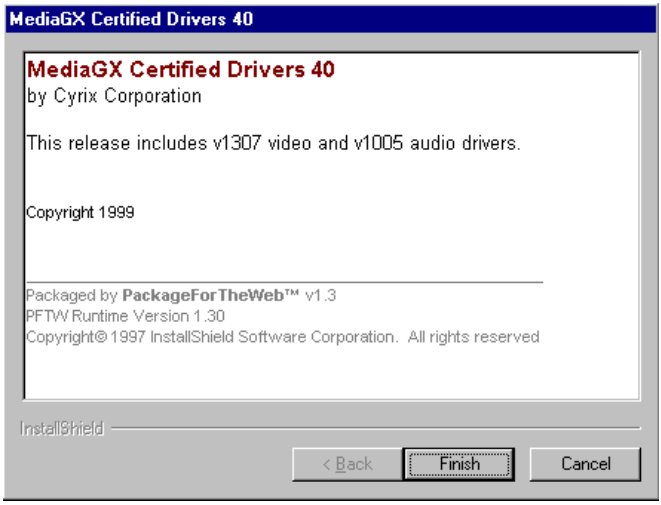
Type the correct path for the driver (like the example below)
"D:\BISCUIT\5823\VGA\Win9xc_40"

Click "OK"

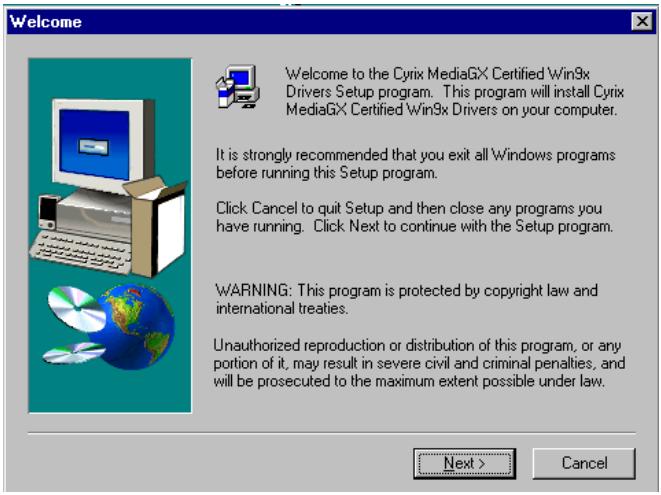


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2. Click "Finish" to continue.

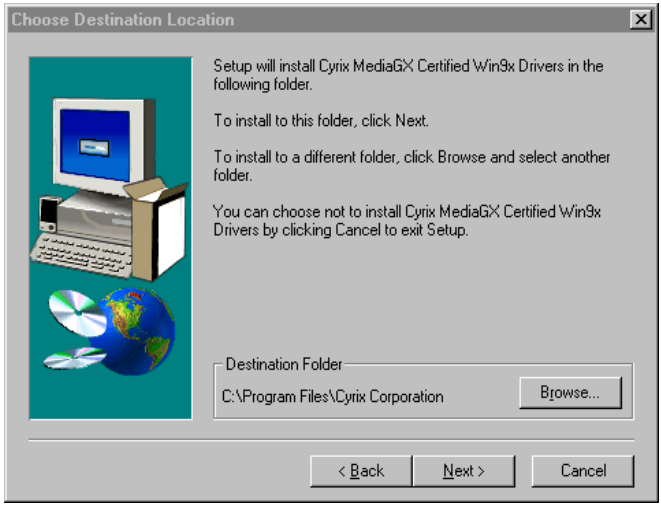


3. Click "Next" to proceed to the next step. Click "Yes" after you read the license agreement.

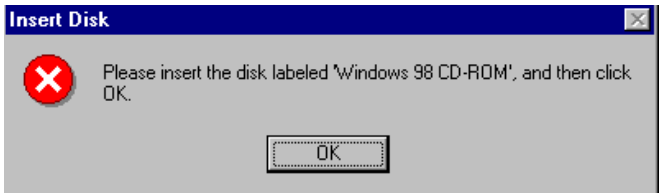


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4. Follow the instructions which appear on the screen.



5. Insert the Win95/ 98 CD-ROM into the CD-ROM drive. Type the correct path for the Win9 x source file.



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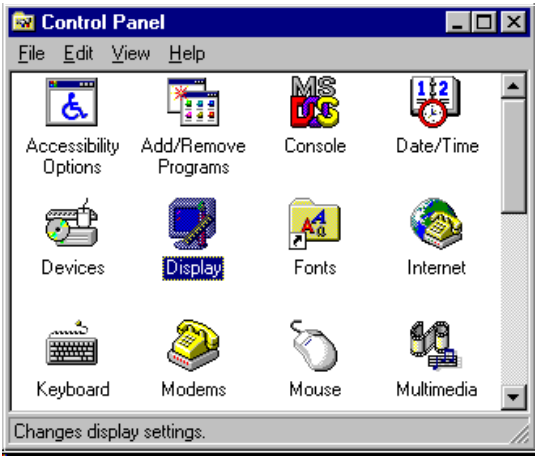
6. Choose "Yes", then click "Finish" to restart the computer.



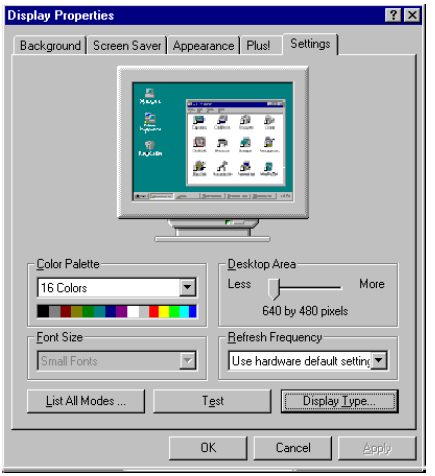
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5.2.3 Installation for Windows NT

1. a. Select "Start", "Settings" then "Control Panel" to get to the screen below.
   b. Double click on the "Display" icon.

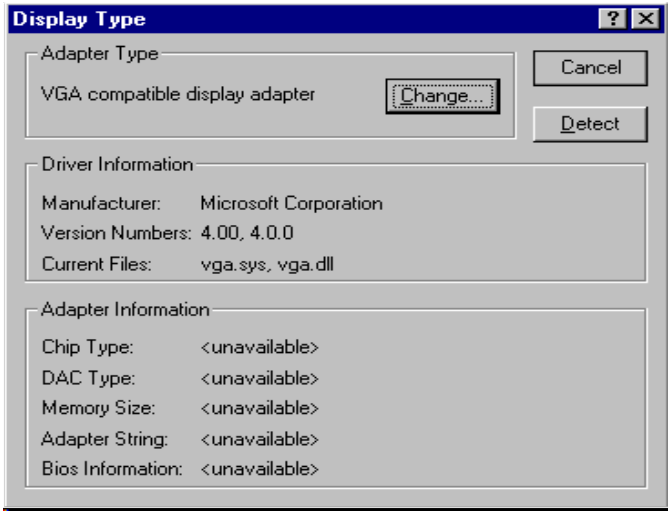


2. a. Choose the "Settings" selection.
   b. Click the "Display Type" button.

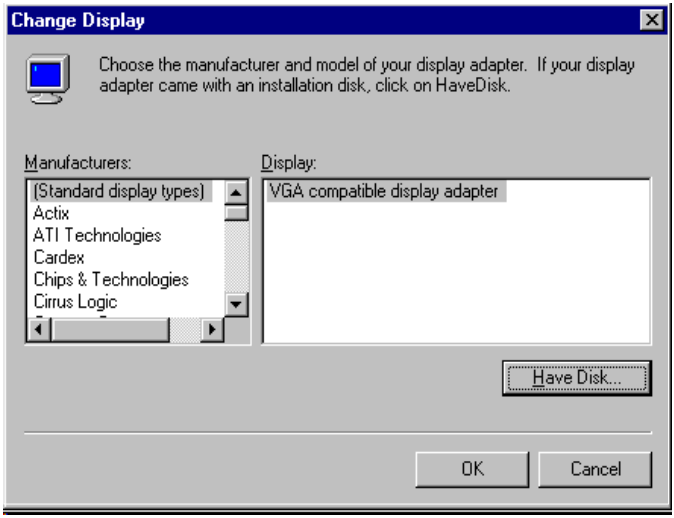


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3. Press the "Change..." button.

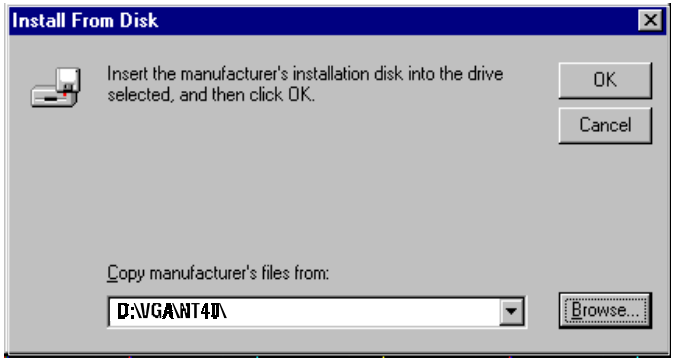


4. Click on the "Have Disk..." button

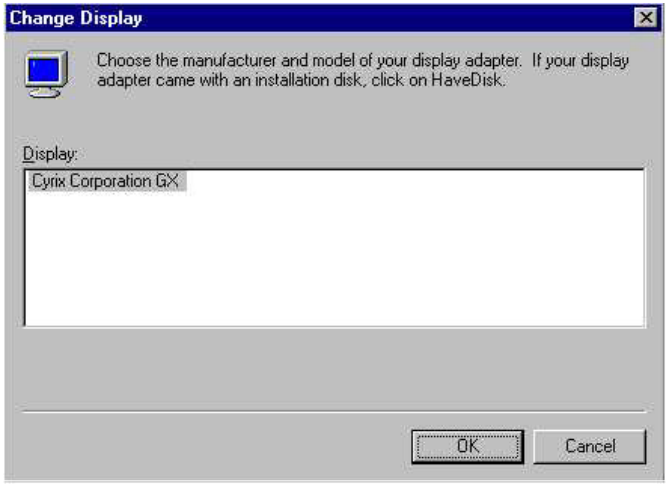


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5. a. Insert the disk into the CD-ROM drive.
   b. Type "D:\Biscuit\5823\VGA\WINNT\VGA.110\"
   c. Press "OK".



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



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7. Press "Yes" to proceed.

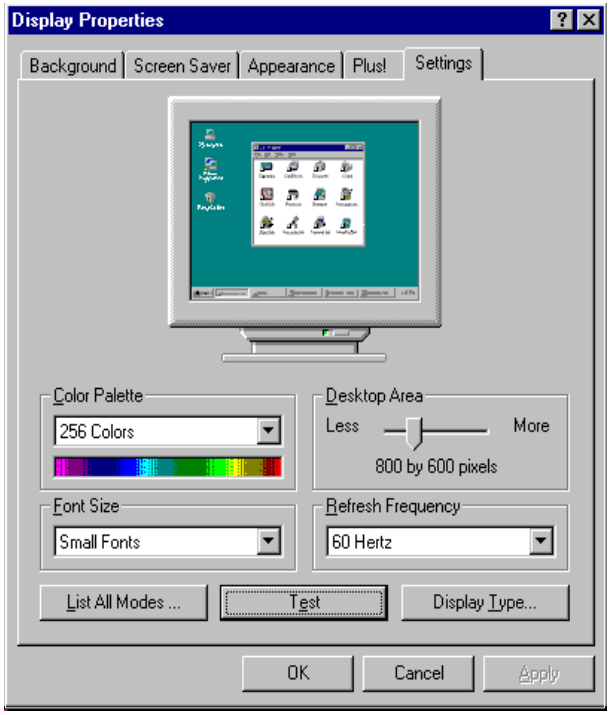


8. Press "OK" to reboot.



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



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5.3 Further information

For further information about the PCI/SVGA installation in your PCM-5823, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Cyrix web site: **www.national.com**

Advantech web sites: **www.advantech.com**
www.advantech.com.tw

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CHAPTER 6

Audio

- Introduction
- Installation of audio driver for Windows 95/98/NT

Note: This chapter introduces the optional AC97 audio module.

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6.1 Introduction

The PCM-5823 Series' on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the CX5530 audio controller from Cyrix Corporation. The audio interface can record, compress, and play back voice, sound, and music with a built-in mixer control. The PCM-5823 Series' on-board audio interface also supports the Plug and Play (PnP) standard and provides PnP configuration for audio, FM, and MPU-104 logical devices. It is compatible with AC97 version 2.0, voice, and music functions. The ESFM synthesizer is register compatible with the OPL3 and has extended capabilities.

6.2 Installation of audio driver

Before installing the audio driver, please take note of the procedures detailed below. You must know which operating system you are using in your PCM-5823 Series, and then refer to the corresponding installation flow chart. Just follow the steps in the flow chart. You can quickly and successfully complete the installation, even though you are not familiar with instructions for Windows.

Note: The CD-ROM drive is designated as "D" throughout this chapter.

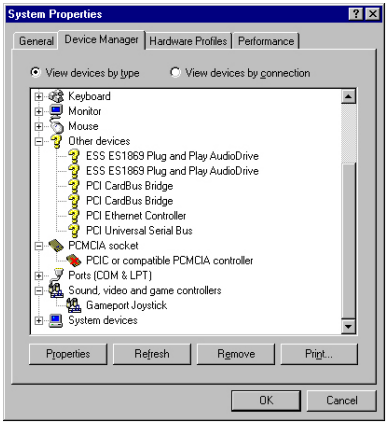
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6.2.1 Installation for Windows 95/98

1. a. Select "Start", "Settings", "Control Panel", "System" then "Device Manager".

   b. Click the "Other Devices" item.

   c. Remove items related to CX 5530



2. a. Select "Add new hardware".

   b. Click "Next".



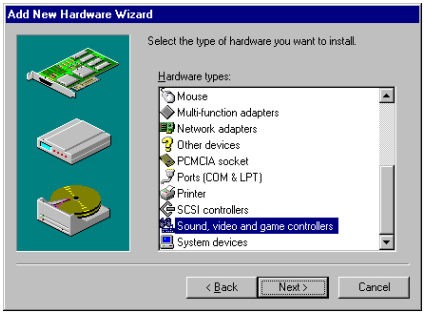
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3. a. Choose "No", Click "Next".

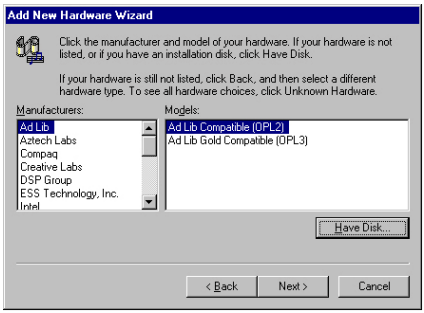


4. a. Select "Sound, video..."

   b. Click "Next".



5. a. Click "Have Disk".



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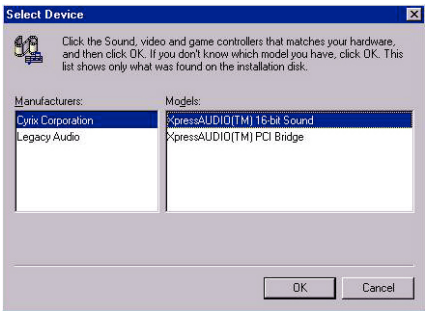
6. a. Insert the disc into the CD-ROM drive.

   b. Type the correct path

   "D:\5823\VGA\Win9X\Audio" and click the "OK" button.



7. a. Select "ES1869 Control Interface".

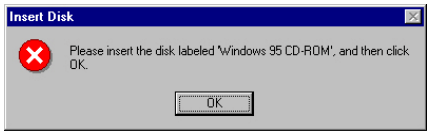


8. a. Click "Finish" to complete.



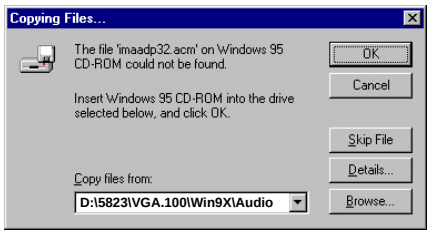
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9. a. Click "OK".



10. a. Insert Windows 95 CD.

    b. Type the path of your Windows 95 disc and click "OK".



11. a. Click "Yes" to restart..

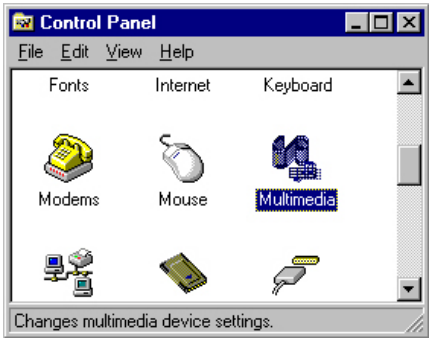


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6.2.2 Installation for Windows NT

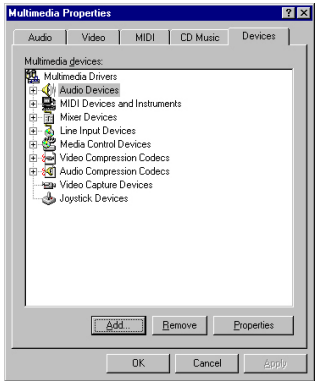
1. a. Select "Start", "Settings", "Control Panel".

   b. Double click "Multimedia".



2. a. Select the "Devices" item.

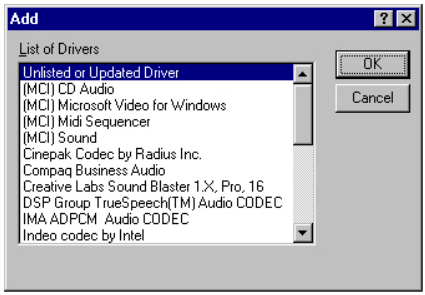
   b. Click "Add".



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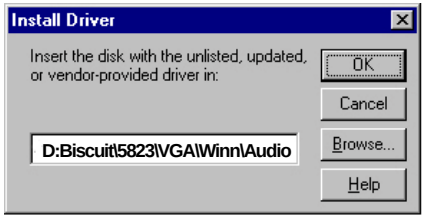
3. a. Select the "Unlisted...." item.

   b. Click "OK".



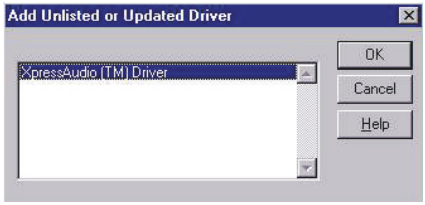
4. a. Insert the disc into the CD-ROM drive.

   b. Type "D:Biscuit\5823\VGA



5. a. Choose the highlighted item.

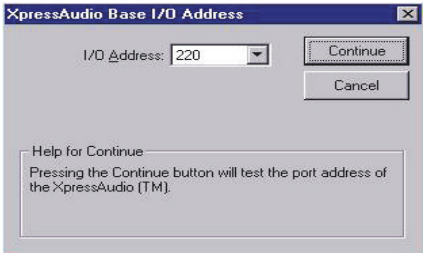
   b. Click the "OK' button.



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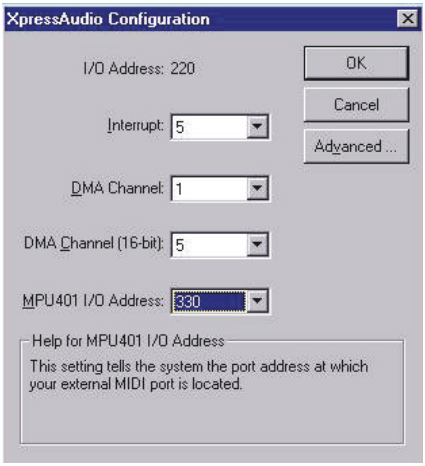
6. a. Set the I/O address.

   b. Click "Continue".



7. a. Set Xpress Audio configuration.

   b. Click "OK" to restart.



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CHAPTER 7

PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

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

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7.1 Introduction

The PCM-5823 Series 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.

7.2 Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCM-5820 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. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

7.2.1 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.

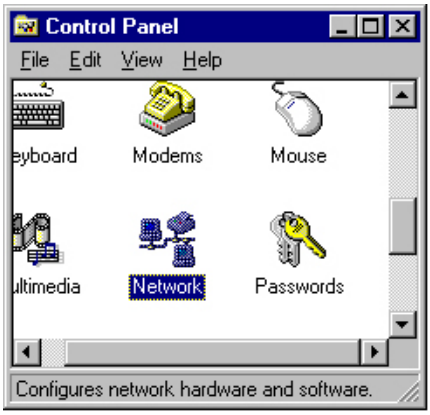
The installation procedures for various servers can be found on CD-ROM; the correct path being "D:\5823\Ethernet.100\wfw311".

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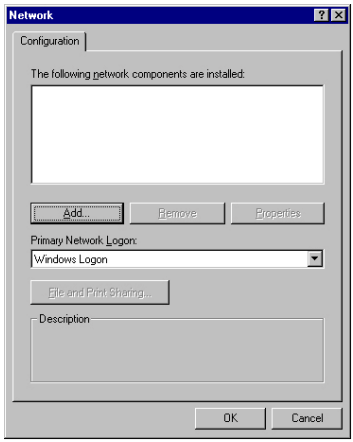
7.2.2 Installation for Windows 95/98

1. a. Select "Start", "Settings". "Control Panel".

   b. Double click "Network".

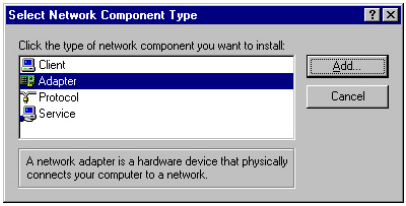


2. a. Click "Add" and prepare to install network functions.

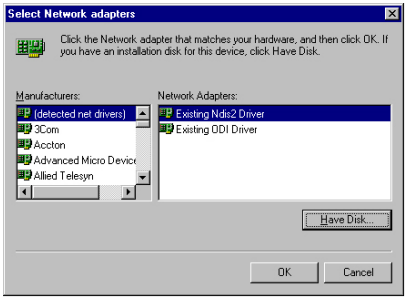


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3. a. Select the "Adapter" item to add the Ethernet card.



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



5. a. Insert the CD into the D:\drive.

   b. Fill in "D:\5823\Ethernet.100\Win95\".

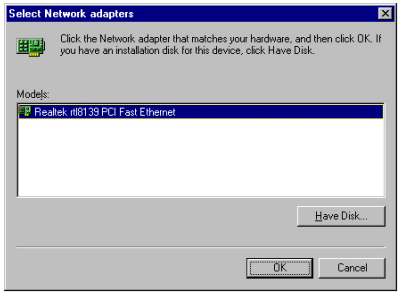
   c. Click "OK".



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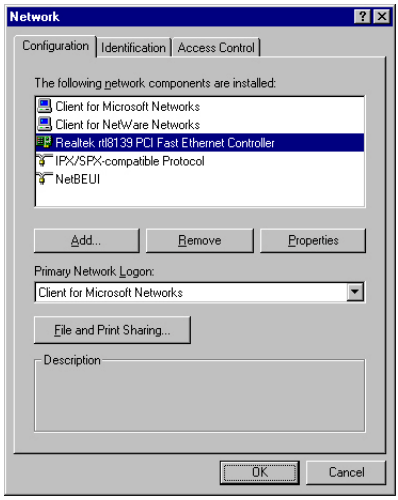
6. a. Choose the "Realtek" item.

   b. Click "OK".



7. a. Make sure the configurations of relative items are set correctly.

   b. Click "OK" to reboot.



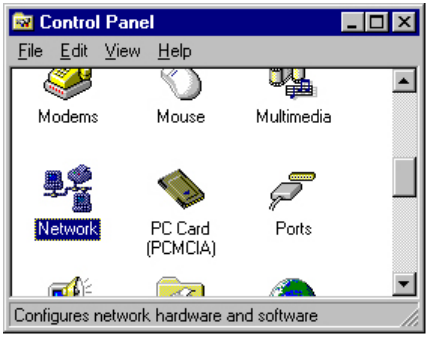
Note: *The correct path for Windows 98 is: "D:\5823\Ethernet.100\Win98"*

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7.2.3 Installation for Windows NT

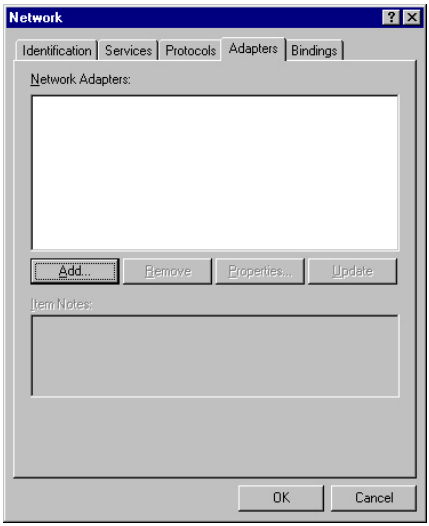
1. a. Select "Start", "Settings", "Control Panel".

   b. Double click "Network".



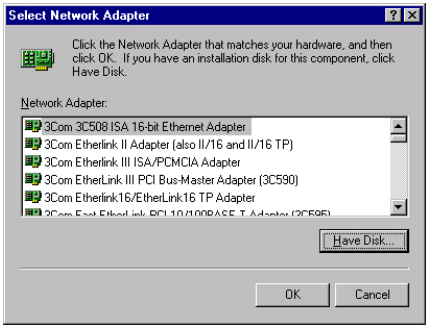
2. a. Choose the "Adapters" label.

   b. Click the "Add" button.



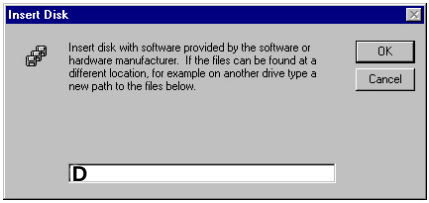
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3. a. Press "Have Disk".



4. a. Type "D"

   b. Press "OK"



5. a. Insert the CD into D:\drive.

   b. Fill in "D:\5823\Ethernet.100\Winnt\".

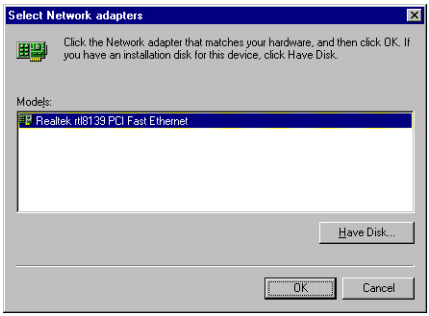
   c. Click "OK".



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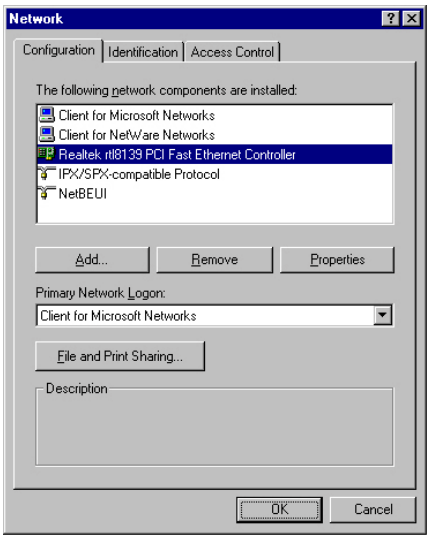
6. a. Choose the "Realtek" item.

   b. Click "OK".



7. a. Make sure the configurations of relative items are set correctly.

   b. Click "OK" to reboot..



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7.3 Further information

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

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

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APPENDIX A

Pin Assignments

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

- CRT display connector
- Flat panel display connector
- COM2 RS-232/422/485 serial port connector
- Keyboard and mouse connector
- Main power connector
- IDE hard drive connector
- COM1 RS-232 serial port
- Ethernet 10Base-T connector
- Auxilary power connector
- Floppy drive connector
- Parallel port connector
- IR connector
- USB connector
- AC97 Audio connector
- CPU fan power connector
- ATX power feature connector
- ATX power button & power LED connector
- CFC connector

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CRT display connector (CN17)

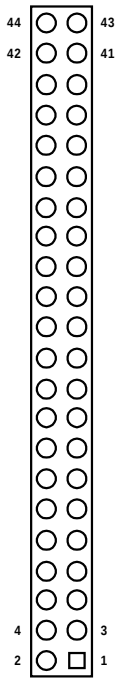
Table A-1: CRT display connector

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

LCD connector (CN3)

Table A-2: Flat panel display connector

Pin	Function	Pin	Function
1	+12 V	2	+12 V
3	GND	4	GND
5	Vcc_LCD	6	Vcc_LCD
7	N/C	8	GND
9	N/C	10	N/C
11	PD0	12	PD1
13	PD2	14	PD3
15	PD4	16	PD5
17	N/C	18	N/C
19	PD6	20	PD7
21	PD8	22	PD9
23	PD10	24	PD11
25	N/C	26	N/C
27	PD12	28	PD13
29	PD14	30	PD15
31	PD16	32	PD17
33	GND	34	GND
35	SHFCLK	36	FLM
37	DE (M)	38	LP
39	GND	40	ENABKL
41	N/C	42	N/C
43	VSAFE (ENAVDD)	44	Vcc_LCD



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COM2 RS-232/422/485 serial port (CN13)

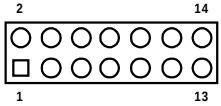


Table A-3: COM2 RS-232/422/485 series port

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

Keyboard and mouse connnector (CN8)

Table A-4: Keyboard and mouse connector

Pin	Signal
1	KB DATA
2	MS DATA
3	GND
4	V_{CC}
5	KB CLOCK
6	MS CLOCK

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Main power connector (CN9)

Table A-5: Main power connector

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

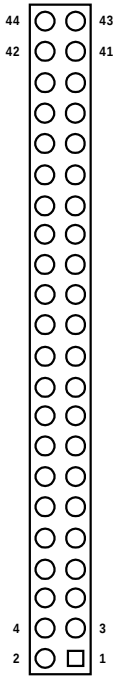


IDE hard drive connector (CN10)

Table A-6: IDE hard drive connector

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	DRQ*	22	GND
23	IO WRITE*	24	GND
25	IO READ*	26	GND
27	IO CHANNEL READY	28	N/C
29	ACK	30	GND
31	IRQ14 (IDE IRQ)	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
41	VCC	42	VCC
43	GND	44	N/C

* low active



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COM1 RS-232 serial port (CN18)

Table A-7: COM1 RS-232 serial port

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

Ethernet 100Base-T connector (CN15, CN16)

Table A-8: Ethernet 100Base-T connector

Pin	Signal
1	XMT+
2	XMT-
3	RCV+
4	N/C
5	N/C
6	RCV-
7	N/C
8	N/C

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Auxilary power connector (CN4)



Table A-9: Peripheral power connector

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

Floppy drive connector (CN12)

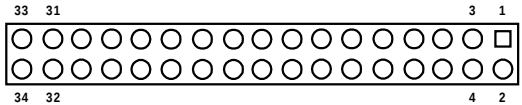


Table A-10: Floppy drive connector

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

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Parallel port connector (CN1)

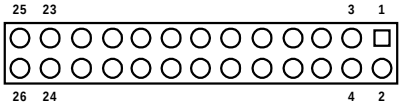


Table A-11: Parallel port connector

Pin	Signal
1	STROBE*
2	AUTOFD*
3	D0
4	ERROR*
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	GND

* low active

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IR connector (CN7)

Table A-12: IR connector

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



USB connector (CN4)

Table A-13: USB connector

Pin	Signal	Pin	Signal
1	USBVCC (5 V)	2	USB VCC (5 V)
3	DATA 0-	4	DATA 1-
5	DATA 0+	6	DATA 1+
7	GND	8	GND
9	GND	10	N/C

AC97 Audio connector (optional) (CN2)

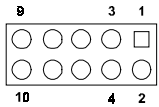


Table A-14: Audio connector

Pin	Signal	Pin	Signal
1	VCC	2	CLK
3	SDATAIN	4	GND
5	GND	6	SYNC
7	SDATAOUT	8	PRESET
9	VCC	10	PCBEEP

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CPU fan power connector (CN5)

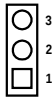


Table A-17: CPU fan power connector

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

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ATX power stand by (feature) connector (CN14)

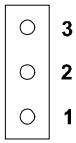


Table A-20: ATX power feature connector (CN23)

Pin	Signal
1	5VSB (Stand-by voltage)
2	NC
3	VPSON

ATX power button & power LED connector (CN21)



Table A-21: ATX power button & power LED connector (CN24)

Pin	Signal
1	LED+
2	Button+
3	LED- (GND)
4	Button- (GND)

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APPENDIX B

System Assignments

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

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B.1 System I/O ports

Table B-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
170- 178	2nd fixed disk for CompactFlash
1F0-1F8	1st fixed disk
200-207	Game I/O
278-27F	Reserved
2F8-2FF	Serial port 2
378-37F	Parallel printer port 1 (LPT2)
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
443	Watchdog timer

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

** default setting

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B.2 DMA channel assignments

Table B-2: DMA channel assignments

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

* Audio DMA default setting: DMA 1.5

Audio High DMA select: DMA 1.3

Audio Low DMA select: DMA 5.6.7

** Parallel port DMA default setting: DMA 3

Parallel port DMA select: DMA 1.3

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B.3 Interrupt assignments

Table B-3: Interrupt assignments

Interrupt#	Interrupt source
NMI	Parity error detected
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 8	Real-time clock
IRQ 9	Reserve
IRQ 10	Available
IRQ 11	Reserved for watchdog timer
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Preliminary IDE
IRQ 15	Secondary IDE for CompactFlash
IRQ 3	Serial communication port 2
IRQ 4	Serial communication port 1
IRQ 5	Audio*
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

* Audio default setting: IRQ5
  USB and Ethernet IRQ is automatically set by the system

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B.4 1st MB memory map

Table B-4: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
D800h - EFFFh	Unused
D000 - D400H	Available
C800h - D7FFh	Ethernet ROM*
C000h - C7FFh	VGA BIOS
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Reserved for graphic mode usage
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

* default setting

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APPENDIX C

LCD Services

This appendix contains information of a detailed or specialized nature. It includes information about 18-bit TFT LCD interfaces.

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C.1 LCD services

LCD screens are very popular on Advantech's CPU cards, Biscuit PCs and POS series products, such as the PCM-5864, PCM-9570, PCM-4823, POS-760 and PCA-6751. "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 the 18-bit TFT display support list, please contact our customer service department for more detailed information and service files. See our web site at: **http://support.advantech.com/**

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APPENDIX D

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

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D.1 Installing PC/104 modules

The PCM-5823 PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCM-5823 is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCM-5823 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.

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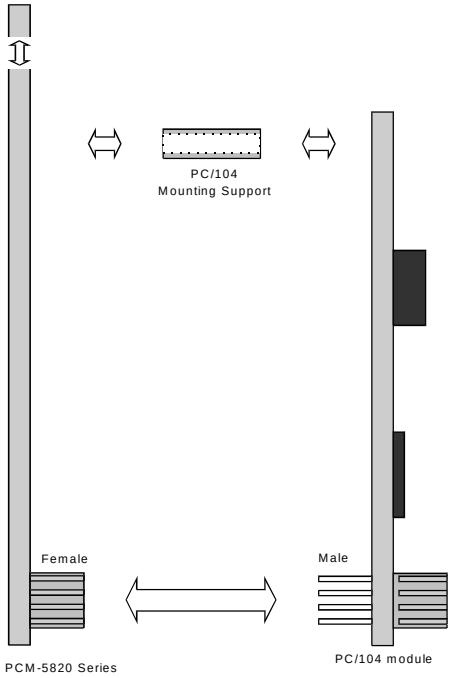


Figure D-1: PC/104 module mounting diagram

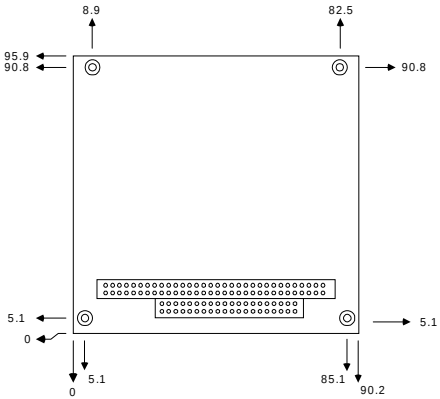


Figure D-2: PC/104 module dimensions (mm) (±0.1)

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Table D-1: PC/104 connectors (CN6)

Pin Number	Signal Row A	Row B	Signal 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

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APPENDIX E

Programming the Watchdog Timer

The PCM-5823 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial standalone or unmanned environments.

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E.1 Programming the watchdog timer

Jumper J3 controls the watchdog settings. The default configuration of the timer is enabled via a system reset.

To enable the watchdog timer, you must write a program which writes 1 to I/O port address 443 (hex) at regular intervals. The first time your program reads the port, it enables the watchdog timer. After that, your program must write 1 to the port at time interval of less than 1.6 seconds, otherwise the watchdog timer will activate and reset the CPU or generate an interrupt on IRQ11. When you want to disable the watchdog timer, your program should write 0 to I/O port 443.

If CPU processing comes to a standstill because of EMI or a software bug, your program's signals to I/O port 443 to the timer will be interrupted. The timer will then automatically reset the CPU or invoke an IRQ, and data processing will continue normally.

You must write your program so that it writes 1 to I/O port 443 at an interval shorter than the timer's preset interval. The timer's intervals have a tolerance of ± 30%, so you should program an instruction that will refresh the timer about every second.

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

```
10        REM  Watchdog timer example program
20        X=Out &H443, 1 REM  Enable and refresh the
          watchdog
30        GOSUB 1000 REM  Task #1, takes 1 second to
          complete
40        X=Out &H443, 1 REM  Refresh the watchdog
50        GOSUB 2000 REM  Task #2, takes 1 second to
          complete
60        X=Out &H443, 0 REM  Disable the watchdog
70        END
1000      REM  Subroutine #1, takes 1 second to
          complete
  .
  .
  .
1070      RETURN
2000      REM  Subroutine #2, takes 1 second to
          complete
  .
  .
  .
2090      RETURN
```


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APPENDIX F

Mechanical Drawings

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F.1 Component side

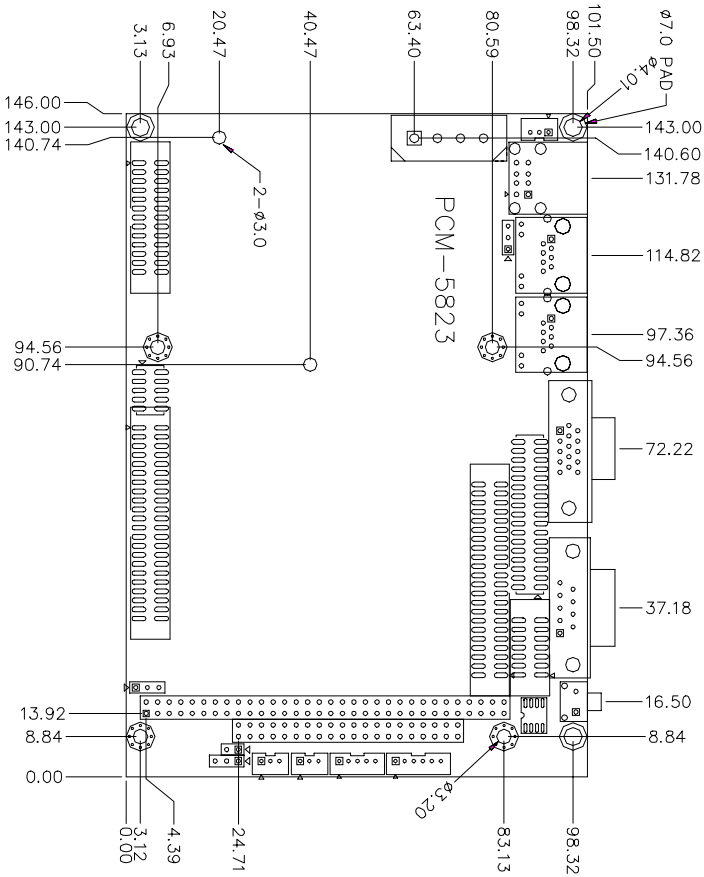


Figure F-1: Board Dimensions component side

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F.2 Solder side

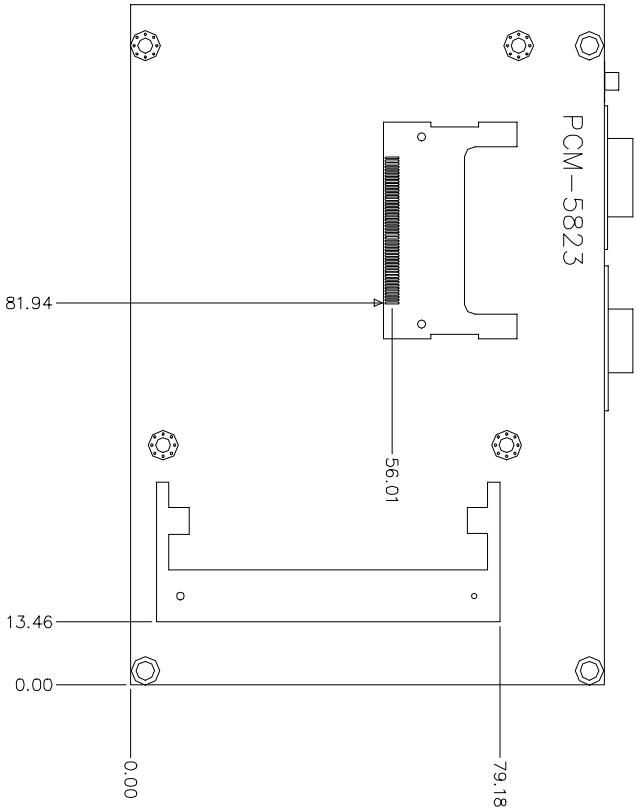


Figure F-2: Board Dimensions solder side

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