

PCM-9584

**Onboard Intel® Pentium M EBX
SBC with Audio, VGA/2 LVDS
and LAN**

User Manual

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This manual is for the PCM-9584.

Part No. 2006958410

1st Edition,

July 2006

Packing List

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

- 1 PCM-9584 all-in-one single board computer
- 1 CD disk for utility and drivers
- 1 startup manual
- 1 Mini Jumper*10 PCS Package (p/n: 9689000002)
- 1 ATX power cable (p/n:1700001112)

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

Model No. List	Description
PCM-9584G-00A1E	PCM-9584 A1 01 GigaLAN PM SKT479, ROHS
PCM-9584FG-S4A1E	PCM-9584 A1 01 GigaLAN PentiumM 1.4G, ROHS
PCM-9584FG-U0A1E	PCM-9584 A1 01 GigaLAN PentiumM 2.0G, ROHS

FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and*
- 2. This device must accept any interference received, including interference that may cause undesired operation*

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

Caution!



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

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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

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General Information

This chapter gives background information on the PCM-9584.

Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

Chapter 1 Introduction

1.1 Introduction

The PCM-9584 series is a 5.25" SBC (Single Board Computer) designed with powerful Intel Pentium M or Celeron M processors, with Intel 915GM and ICH6M chipset, which supports enhanced Intel "SpeedStep" technology and dynamic video memory technology for maximum performance, PCM-9584 also supports two x 200-pin SODIMM Double Data Rate (DDR2) with ECC DDR memory up to 1GB. These chipsets are specifically for embedded computing and provide an optimized onboard integrated graphics solution. "SpeedStep" technology intelligently focuses system power where the CPU needs it and automatically regulates power usage to preserve battery life.

Other onboard features include 1 EIDE, 2 SATAs, 1 LPT, 6 USB2.0s, 4 serial ports (3 x RS-232 and 1 x RS-232/422/485), PS/2 Keyboard/mouse and watchdog. The SSD solution supports Type I/II CompactFlash cards. The PCM-9584 complies with EBX form factor (Embedded Board eXpandable). It is small enough for embedded applications, yet large enough to contain the functions of a full embedded computer system. The EBX system expansion is based on popular existing industry standards-PC/104, PCI, PC/104-Plus, hence the PC/104-Plus interface on PCM-9584 brings the advantages of the wide variety of embedded system oriented expansion modules. The expandability can also be fulfilled by the MiniPCI socket on the solder side.

1.2 Features

- Embedded Dothan CPU (2MB L2 cache), Intel® Celeron® M 90 nm and Pentium® M
- Supports 533 MHz DDR2 DIMM
- Supports dual Display (36-bit LVDS , 48-bit LVDS)
- Supports 2 x Ethernet up to 10/100/1000Mbps
- Supports 6 x USB 2.0 ports
- Supports 4 COMs
- Supports 48-bit (24 x 2 Channel) LVDS
- PC/104+, PC/104 Supported

1.3 Specifications

Standard SBC Functions

- **CPU:** Embedded Intel® Pentium® M (Banias/Dothan) and Celeron® M processor supported
- **BIOS:** AWARD® 512K byte Flash BIOS
- **System memory:** 2 x 200-pin SODIMM sockets, Double Data Rate (DDR2) 128 MB to 2 GB, accepts 128/256/512/1024 MB DDR2 up to 400/533 DRAM.
- **System chipset:** Intel 915GM GMCH/ICH6M Chipset
- **2nd cache memory:** Depends on CPU from 512 KB to 2 MB
- **Enhanced IDE interface:** One Enhanced IDE interface supports 2 IDE devices. PIO mode 3 or mode 4 with Bus Mastering up to 14MB/sec., Ultra DMA 100 transfer mode up to 100MB/sec. SATA 150 x 2
- **Serial ports:** Three serial RS-232 ports, one serial RS-232/422/485 ports
- **Parallel port:** One parallel port, supports EPP/ECP mode
- **Keyboard/mouse connector:** Supports standard PS/2 keyboard and a PS/2 mouse
- **Power management:** APM Rev. 1.2 compliant power management ACPI support
- **Watchdog timer:** 255 levels timer interval, setup by software, super I/O integrated. SMSC Controller
- **USB:** Six USB 2.0 compliant host ports
- **IrDA:** N/A
- **GPIO:** 8-bit general purpose 4 input/4 output
- **Expansion:** Supports PCI 104+, miniPCI interface and 1x PCI slot
- **ISA:** 8bit ISA at PC/104

Solid State Disk

- CFC type I/II (shared 2nd IDE Channel)/uDOC (option)

VGA/LCD Interface

- **Chipset:** Intel 915GM
- **Frame buffer:** Optimized Shared Memory Architecture, supports up to 128MB frame buffer using system memory
- **Interface:** Dual channel LVDS panel supports up to UXGA panel resolution
- **Display mode:** CRT Modes: pixel resolution up to 1600 x 1200 at 85-Hz and 2048 x 1536 at 75-Hz
- **LCD mode:** Dual channel LVDS panel support up to UXGA panel resolution with frequency range from 25-MHz to 112-MHz
- **LVDS:** Supports dual channel (36-bit/48-bit) LVDS LCD panel

TV-Out/DVI

- **Chipset:** 915GM
Supports both NTSC/PAL, S-video and composite video
Supports NTSC and PAL formats, S-video and composite video

Ethernet interface

- **Chipset:**
2 x BroadCOM BCM5721
IEEE 802.3u 100 BASE-T
IEEE 802.3 ab 1000 BASE-T

- **I/O address switchless setting**

- **Built-in boot ROM**

Audio Function

- **Chipset:** ICH6, Audio codec ALC 202
- **Audio controller:** AC'97 3D surround stereo sound
Supports Speaker out, CD-input, Line-in, Line-out, Microphone

Mechanical and Environmental

- **Dimensions:** (L x W)203 x 146 mm (8" x 5.75")
- **Power supply Voltage:**+5V $\pm 5\%$, +12V $\pm 5\%$
- **Power Requirement:**

(Pentium M @ 1.4GHz)

Max(HCT):2.42A @ 5V, 1.01A @ 12V

Suspend: 1.86A @ 5V, 0.48A @ 12V

(Pentium M with 2.0GHz)

Max(HCT):2.43A @ 5V, 1.65A @ 12V

Suspend: 1.87A @ 5V, 0.75A @ 12V

- **Operating temperature:**0 ~ 60° C (32~140° F)
- **Operating Humidity:**0% ~ 90% Relative Humidity, non-condensing
- **Weight:** 0.85 kg (weight of total package)

1.4 Board layout: dimensions

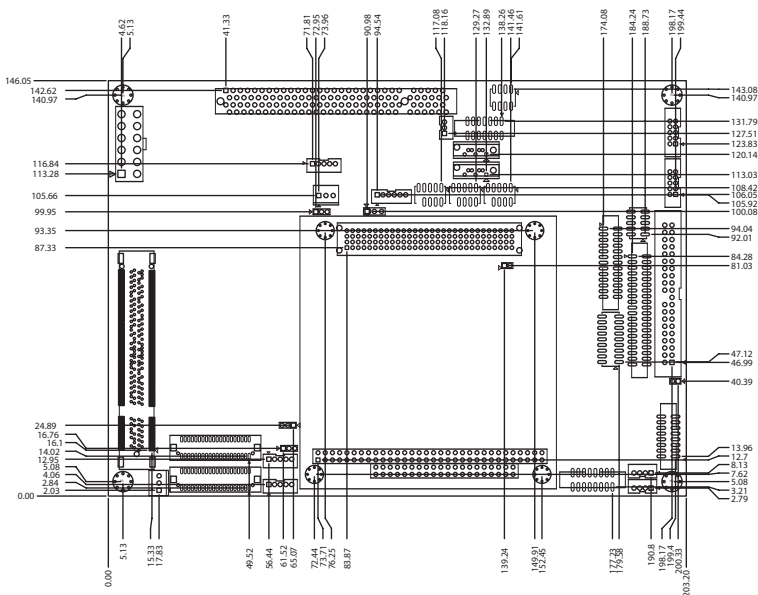


Figure 1.1: Board layout: dimensions (component side)

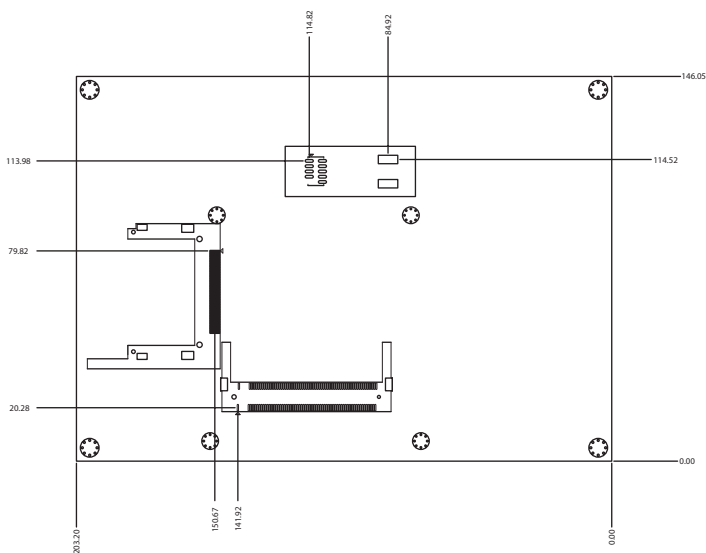


Figure 1.2: Board layout: dimensions (solder side)

Note: In Power off status to clear CMOS, auto boot up will appear when power on.

Installation

This chapter explains the setup procedures of PCM-9584 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 PCM-9584 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

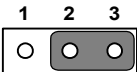
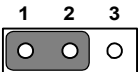
Table 2.1: Jumpers

Label	Function
JP1	PCIVIO POWER Select
JP2	CLEAR CMOS
JP3	COM2 RS232/422/485 Select
JP4	VDD_LVDS_PANEL POWER Select
JP5	VDD_FP POWER Select
JP6	+VCCA_PROC_IN Select
JP7	Compact Flash Master/Slave Select

2.1.1 Jumpers setting drawing

JP1: PCI VI/O POWER Select

PIN	FUNCTION
1-2	With +5V
2-3	With +3.3V



JP2 CLEAR CMOS

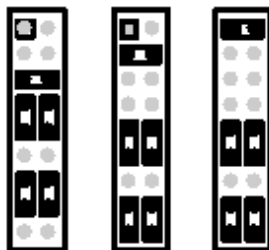
1-2	CLEAR CMOS
NONE	NORMAL



<i>JP3</i>	<i>COM2 RS232/422/485 Select</i>
(5-6).(7-9) (8-10) (13-15) (14-16)	RS232
(3-4) (9-11) (10-12) (15-17) (16-18)	RS422
(1-2) (9-11) (10-12) (15-17) (16-18)	RS485

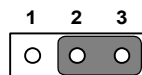
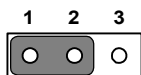
Com2 Jumper Settings

RS-232 RS-422 RS-485

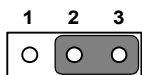
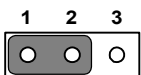


<i>JP3</i>	<i>COM2 RS232/422/485 Select</i>		
PINS	RS-232	RS-422	RS-485
1,2	Open	Open	Close
3,4	Open	Close	Open
5,6	Close	Open	Open
7,9	Close	Open	Open
8,10	Close	Open	Open
9,11	Open	Close	Close
10,12	Open	Close	Close
13,15	Close	Open	Open
14,16	Close	Open	Open
15,17	Open	Close	Close
16,18	Open	Close	Close

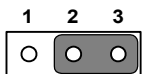
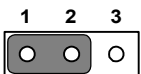
<i>JP4</i>	<i>VDD_LVDS_PANEL POWER Select</i>
1-2	3.3V
2-3	5V



<i>JP5</i>	<i>VDD_FP POWER Select</i>
(1-2)	3.3V
(2-3)	5V



<i>JP6</i>	<i>+VCCA_PROC_IN Select</i>
(1-2)	533MHz FSB & ULV P-M CPU
(2-3)	400MHz FSB CPU



<i>JP7</i>	<i>Compact Flash Master/Slave Select</i>
(1-2)	Master
(NONE)	Slave



2.2 Connectors

Onboard connectors link the PCM-9584 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors.

Table 2.2:

CN1	ATX Power connector
CN2	LAN LED
CN4	PCI -5V & -12V Input
CN5	SYSTEM PANEL
CN6	LAN1 connector
CN7	SATA2 connector
CN8	TV OUT connector
CN9	SATA1 connector
CN10	LAN2 connector
CN11	CPU FAN connector
CN12	USB5/6 connector
CN13	USB3/4 connector
CN14	USB1/2 connector
CN15	KB/MS connector
CN16	GPIO connector
CN17	Print Port connector
CN18	IDE connector
CN19	COM1/2/3/4 connector
CN20	PC104+ connector
CN21	AUDIO connector
CN22	LVDS connector
CN23	LCD Backlight
CN24	CD-IN connector
CN25	48bit LVDS connector
CN26	CRT connector
CN27	SYS FAN connector
CN28	Inverter connector
CN29	SPK-OUT connector

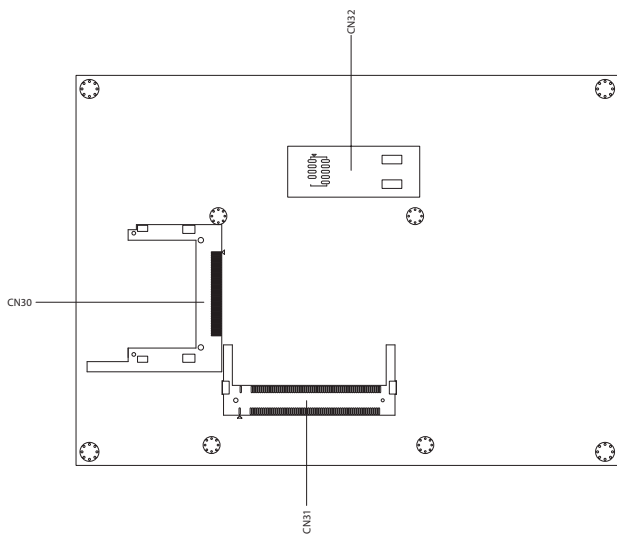
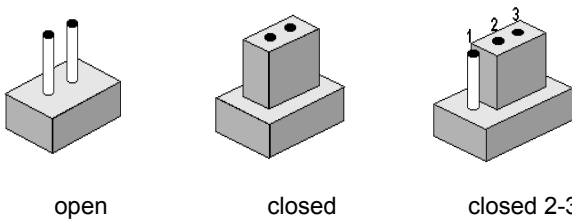


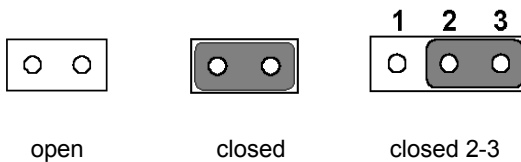
Figure 2.2: Jumper & Connector (solder side)

2.4 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.

2.5 Clear CMOS (JP2)

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. Push JP2
3. Turn on the system. The BIOS is now reset to its default setting

2.6 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.

2.7 IDE, CDROM hard drive connector (CN18)

The PCM-9584 provides 1 IDE channel which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCM-9584's internal controller. The PCM-9584's IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4 and UDMA/100. The secondary channel supports UDMA/33 only.

2.7.1 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 CN18. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

If desired, connect a second drive as described above.

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

2.8 Solid State Disk

The PCM-9584 provides a CompactFlash™ card socket and DiskOnChip socket for Solid state disk solutions.

2.8.1 CompactFlash (CN30)

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

2.9 Parallel port connector (CN17)

Normally, the parallel port is used to connect the card to a printer. The PCM-9584 includes a multi-mode (ECP/EPP/SPP) parallel port accessed via CN17 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/SPP DMA channel via BIOS setup.

2.10 Keyboard and PS/2 mouse connector (CN15)

The PCM-9584 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 PCM-9584'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.

2.11 Front Panel Connector (CN5)

Next, you may want to install external switches to monitor and control the PCM-9584. These features are optional: install them only if you need them. The Front Panel connector (CN5) is a 14-pin male, dual in-line header. It provides connections for a hard disk access indicator, LAN Act., LAN Link, hardware reset, ATX power ON/OFF switch connector, and power on indicator.

2.11.1 Power & HDD LED (pin 1-4 of CN5)

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

2.11.2 Reset switch (pin 13-14 of CN5)

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

2.12 Power connectors (CN11,CN1)

2.12.1 ATX power connector, +5V (CN1)

Supplies main power to the PCM-9584 (+5V) and to devices that require it.

2.12.2 CPU -12V and -5V connector (CN4)

Supplies -5V/-12V for ISA/PCI device.

2.13 ATX power ON/OFF switch con. pin 11-12 of CN5

2.13.1 ATX feature (CN5) & soft power switch (CN5)

The PCM-9584 can support an advanced soft power switch function, if an ATX power supply is used. To enable the soft power switch function connect the power on/off button to CN5. (A momentary type of button should be used.)

Important	<i>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.</i>
-----------	--

2.14 Audio AC'97 Link interfaces (CN21)

The PCM-9584 is equipped with a high quality audio interface, 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.

2.14.1 Audio connector(CN21)

The PCM-9584 provides all major audio signals on a 16-pin flat-cable connector, CN21. The audio signals include Microphone in (mono), Line in (stereo), Line out (stereo) and Speaker out (stereo). You will need an adapter cable if you use traditional jack connectors for these audio signals.

2.14.2 CD audio-in connector (CN24)

All CD-ROM drives can provide analog audio signal output when used as a music CD player. The CN24 on PCM-9584 is a connector to input CD audio signal into the audio controller. The audio cable of your CD-ROM drive will be used to connect to CN24.

2.15 COM port connector (CN19)

The PCM-9584 provides four RS-232 serial ports (COM1,3,4:RS-232, COM2: RS-232/422/485) in one COM port connector. The COM port connector is a 40-pin, DF13A-40DP-1.25V (Hirose Electric Co., Ltd.). 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 C. COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via JP2.

2.16 VGA/LVDS interface connections (CN26, CN22)

The PCM-9584's AGP SVGA interface can drive conventional CRT displays and is capable of driving a wide range of LVDS flat panel displays. The board has three connectors to support these displays: one for standard CRT VGA monitors, one for LVDS type LCD panels and one for DVI type LCD panels.

2.16.1 CRT display connector (CN26)

CN26 is a 16-pin, dual-inline header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN26 to a standard 15-pin D-SUB connector commonly used for VGA. Users can drive a standard progressive scan analog monitor with pixel resolution up to 1600 x 1200 at 85 Hz and up to 2048 x 1536 at 75 Hz. Pin assignments for CRT display connector CN26 are detailed in Appendix C.

2.16.2 LVDS LCD panel connector (CN22)

The PCM-9584 uses the Intel 855 GME chipset that supports single- or dual-channel LVDS panel up to UXGA panel resolution with frequency range from 15MHz to 112MHz.

The PCM-9584 supports single or dual-channel LVDS panels up to UXGA panel resolution with frequency range from 25MHz to 112MHz. The display mode can be 2 channel (2 x 18bit) LVDS LCD panel displays, or optional (2 x 24bit) LVDS LCD panel display. Users can connect to either an 18, 24, 36 or 48bit LVDS LCD with CN22.

2.17 TV-out interface (CN8)

The PCM-9584 board provides TV-out function via CN8. This consists of a 5-pin wafer box header. Output supports composite video, S-video and SCART(RBG). TV-out generators use both NTSC and PAL formats. It supports up to 1024 by 768 with full vertical and horizontal underscan

capability. To set up your video interface run the appropriate installation program located on the utility disk.

2.18 Ethernet configuration (CN6, CN10)

2.18.1 100Base-T connector (CN6, PCM-9584)

10/100/1000 Base-T connects to the PCM-9584FG via an adapter cable to a 10-pin polarized header.

2.18.2 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.

2.19 USB connectors (CN12,CN13,CN14)

The PCM-9584 board provides up to four USB (Universal Serial Bus) 1.1/2.0 ports. This gives complete Plug and Play, and hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 1.1, and are fuse protected.

The PCM-9584 supports three 5 x2 pin header connector for USB 1,2 (CN14), USB3,4 (CN13), USB5,6 (CN12). You will need an USB cable if you use USB connectors. The USB interfaces can be disabled in the system BIOS setup.

2.20 LCD Backlight connector (CN23)

The LCD inverter is connected to CN23 via a 5-pin connector to provide +5V/+12V power.

2.21 SATA Connector (CN7, CN9)

PCM-9584 can support Serial ATA by two COMAX C504C connectors (SA1, SA2), data transfer rates up to 150 Mbyte/s, enabling very fast data and file transfer, and independent DMA operation on two ports. It also supports alternate Device ID and RAID Class Code option for support of Soft RAID.

2.22 DI/O connector (CN16)

The PCM-9584 supports DIO interface by CN16, which is a 7 x 2 dual line pin header, supply 8 general purpose input or output ports.

2.23 CPU Fan power supply connector (CN11)

Provides power supply +12V to CPU cooling fan, and fan speed detects signal input.

Software Configuration

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

Sections include:

- Introduction
- Connections for standard LCDs
- Ethernet interface configuration.

Chapter 3 Software Configuration

3.1 Introduction

The PCM-9584 system BIOS and custom drivers are located in a 256 Kb flash ROM device designated U6. A single flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings. This method minimizes the number of chips and difficulty of configuration. To set different types of LCD panels, please choose “panel type” from the “integrated peripherals” menu in CMOS setup.

3.2 Connections to Three Standard LCDs

The following tables illustrate typical LCD connection pinouts for the PCM-9584.

3.2.1 LG LM150X06 (1024x768(16 colors) LVDS LCD)

<i>Table 3.1: Connections to LCD/ Flat Panel (CN16)</i>			
LCD Connector		Flat Panel Connector	
Unipac-UB104S01		DF-13 40P	
Pin	Signal	Pin	Signal
1	Vcc	1	3.3V
2	Vcc	2	3.3V
3	GND	3	GND
4	GND	4	GND
5	RxIN0-	7	LVDS_YAM0R
6	RxIN0+	9	LVDS_YAP0R
7	GND	11	GND
8	RxIN1-	13	LVDS_YAM1R
9	RxIN1+	15	LVDS_YAP1R
10	GND	17	GND
11	RxIN2-	19	LVDS_YAM2R
12	RxIN2+	21	LVDS_YAP2R
13	GND	23	GND
14	CKIN-	25	LVDS-CLKAMR
15	CKIN+	27	LVDS-CLKAPR

Table 3.1: Connections to LCD/ Flat Panel (CN16)			
LCD Connector		Flat Panel Connector	
Unipac-UB104S01		DF-13 40P	
Pin	Signal	Pin	Signal
16	GND	29	GND
17	NC		
18	NC		
19	GND	33	GND
20	GND	34	GND

* LCD connector type: HRS DF 19K-20P-1H or compatible

CHAPTER 4

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 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-9584 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.

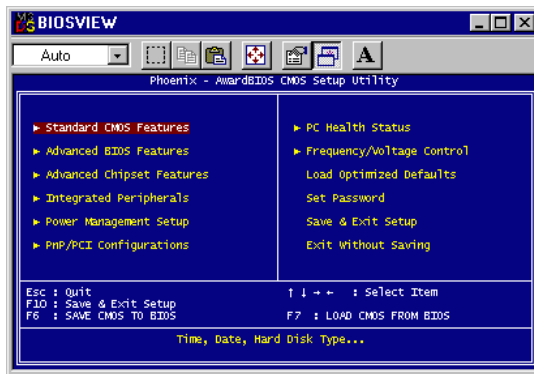


Figure 4.1: BIOS setup program initial screen

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.

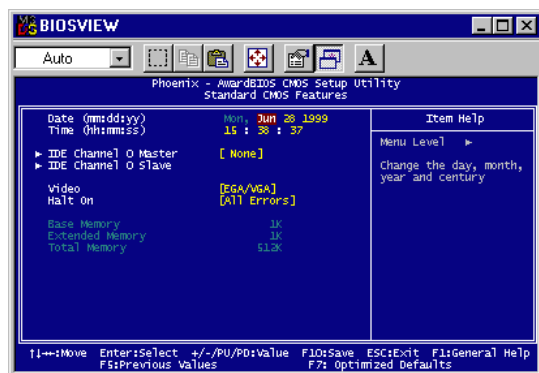


Figure 4.2: CMOS Features setup

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 PCM-9584 Series.

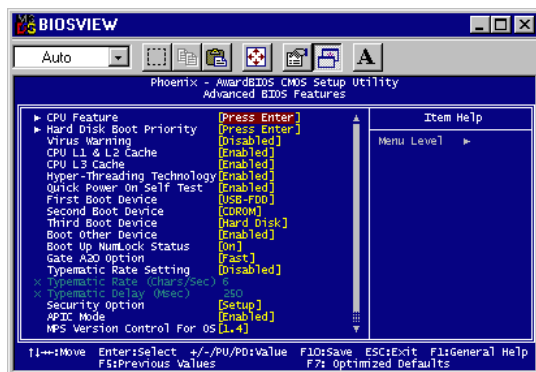


Figure 4.3: Advanced BIOS Features setup

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 PCM-9584 Series.

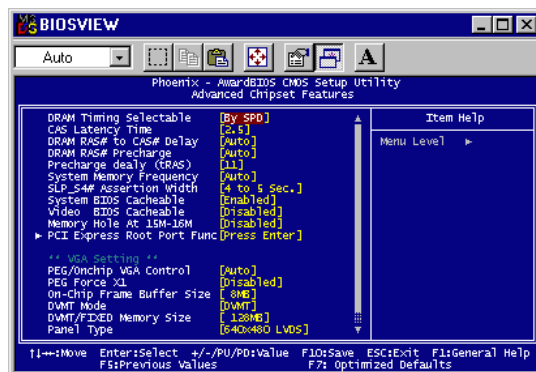


Figure 4.4: Advanced Chipset Features setup

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 PCM-9584 Series.

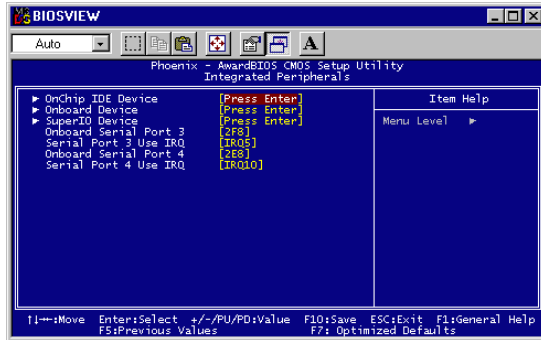


Figure 4.5: Integrated Peripherals

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 PCM-9584 Series.

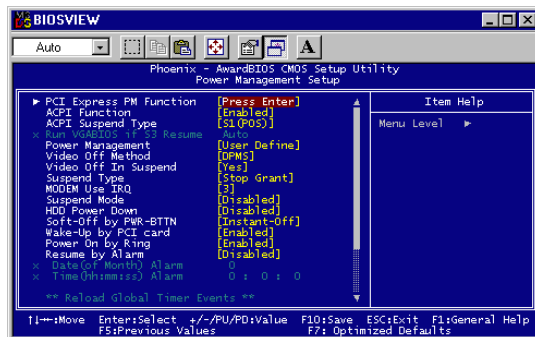


Figure 4.6: Power Management Setup

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 PCM-9584 Series.

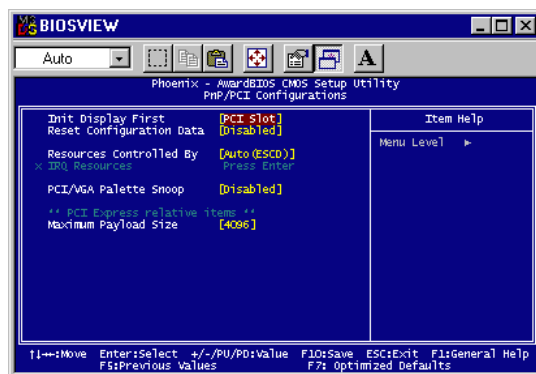


Figure 4.7: PnP/PCI Configurations

4.2.8 PC Health Status

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

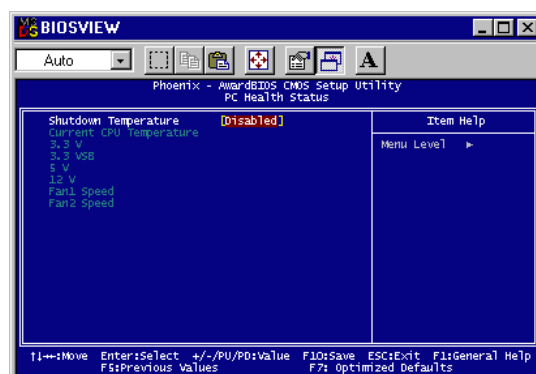


Figure 4.8: PC Health Status

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 PCM-9584

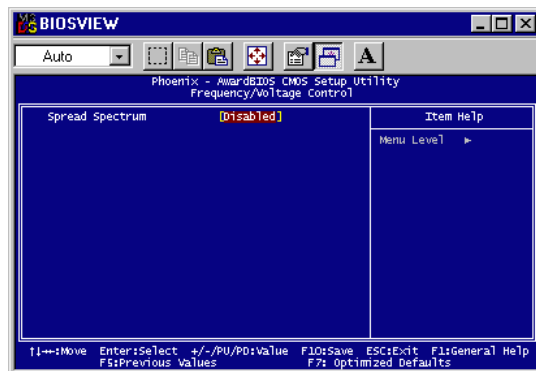


Figure 4.9: Frequency/Voltage Control

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

4.2.10 Load Optimized Defaults

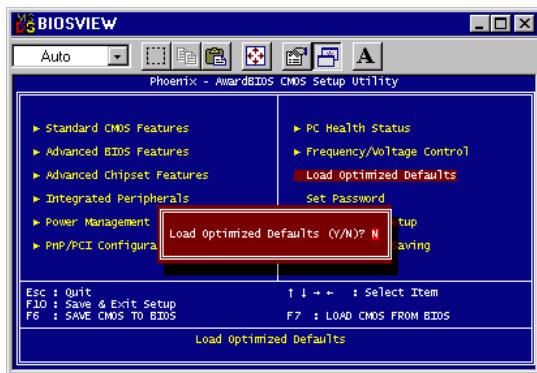


Figure 4.10: Load Optimized Defaults

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 PCM-9584 Series system on.

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>.
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.

PCI Graphic

Introduction

Installation of PCI Graphic drivers

-for Windows 98/2000/XP

Further information

Chapter 5 PCI Graphic Setup

5.1 Introduction

The PCM-9584 has an onboard PCI/AGP flat panel/VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PCM-9584 uses an Intel Montara-GM/GM+ GMCH chipset for its graphic controller. It supports LVDS LCD displays, conventional analog CRT monitors, DVI connection, and TV-out function.

5.1.2 Display memory

The Intel Montara-GM/GM+ GMCH chip can support up to 64MB frame buffer shared with system memory; the VGA controller can drive CRT displays up to 1600 x 1200 at 85-Hz and 2048 x 1536 at 75-Hz, color panel displays in LVDS model with resolutions up to UGXA panel resolution with frequency range from 25 MHz to 112 MHz, or DVI model at a pixel resolution up to 1600 x 1200 at 85 Hz.

5.1.3 Display types

CRT and panel displays can be used simultaneously. The PCM-9584 can be set in one of six configurations: CRT only, LVDS only, both CRT and LFP (LVDS), EFP (DVO to DVI), TV, both CRT and EFP (DVO to DVI). The system is initially set to simultaneous display mode - CRT and LFP (LDVS). If you want to enable other display mode, please set up manually. Set up example is shown as in the following chapters.

5.1.4 Dual/Simultaneous Display

The PCM-9584 uses an Intel Montara-GM/GM+ GMCH Chromtel 7017 controller that is capable of providing simultaneous dual view display of the same content on a flat panel and CRT.

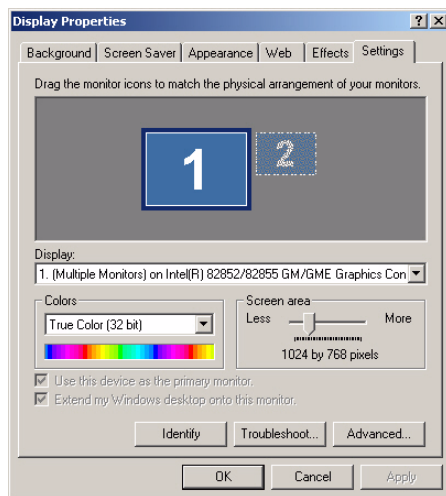
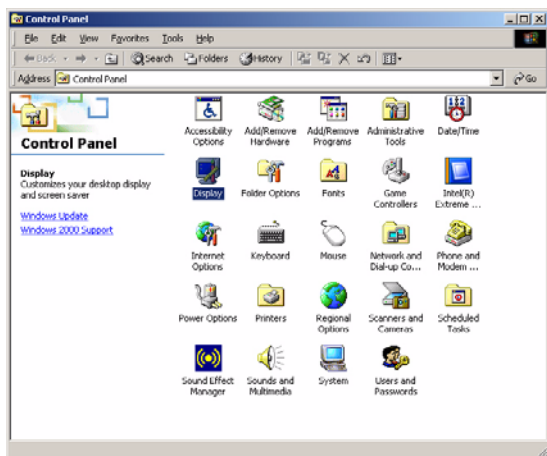
To set up dual view (simultaneous mode) under Windows 9x, Windows ME, Windows NT/2000/XP, follow these steps:

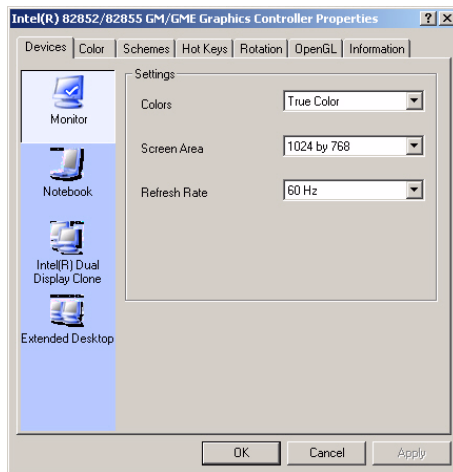
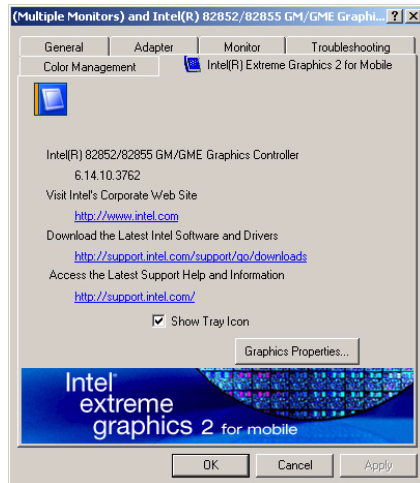
Step 1. Open the Control panel, and select "Display".

Step 2. Select "Settings".

Step 3. Select "Advanced", "Graphic Properties."

Step 4. Select "Devices" mode and click "OK".





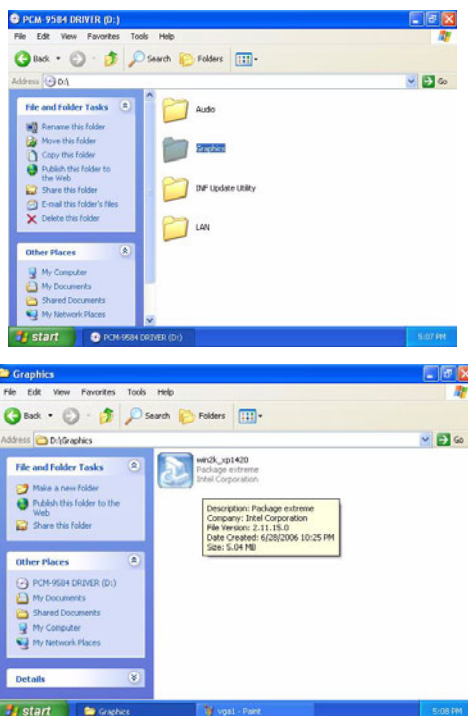
5.2 Installation of the PCI Graphic driver

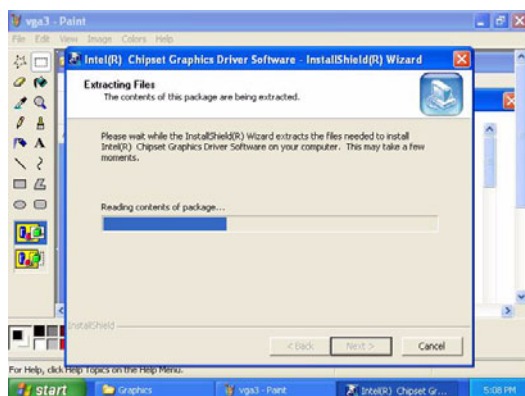
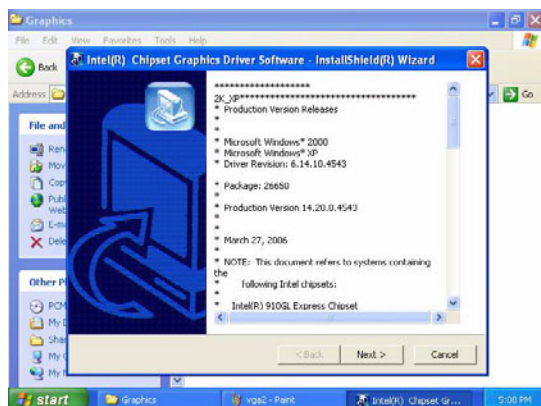
Complete the following steps to install the PCI graphic driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PCM-9584.

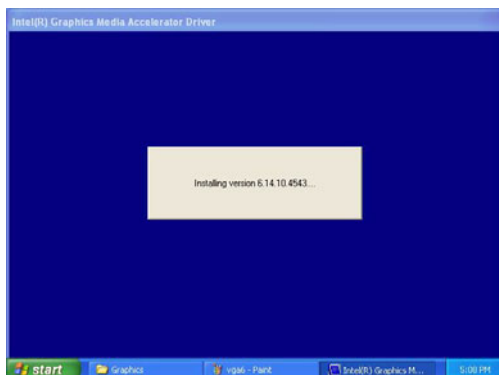
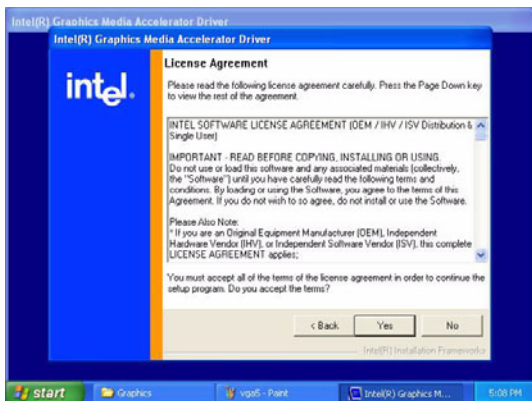
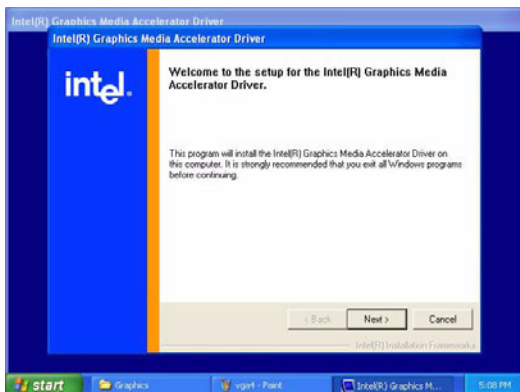
- Notes:**
1. The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.
 2. For convenience, the CD-ROM drive is designated as "D" throughout this chapter.

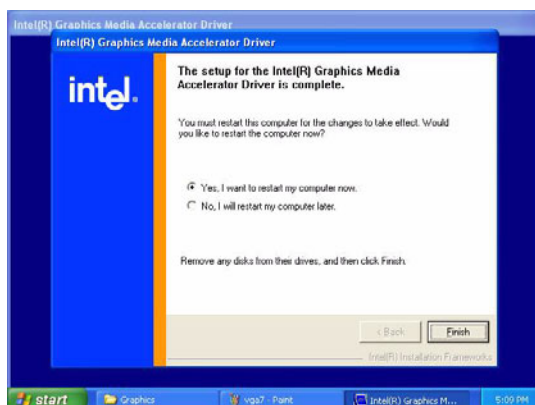
5.2.1 Installation for Windows 98/ME/2000/XP

To install PCI Graphic driver for Windows 98/2000/XP, please run the set up wizard "win2k_xp1420" in CD-ROM. Example installation steps are shown below:









5.3 Further Information

For further information about the AGP/VGA installation in your PCM-9584, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

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

Audio Setup

The PCM-9584 is equipped with an audio interface that records and plays back CD-quality audio. This chapter provides instructions for installing the software drivers included on the audio driver diskettes.

Chapter 6 Audio Setup

6.1 Introduction

The PCM-9584's on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the Intel ICH4 audio controller. The audio interface can record, compress, and play back voice, sound, and music with built-in mixer control.

6.2 Driver installation

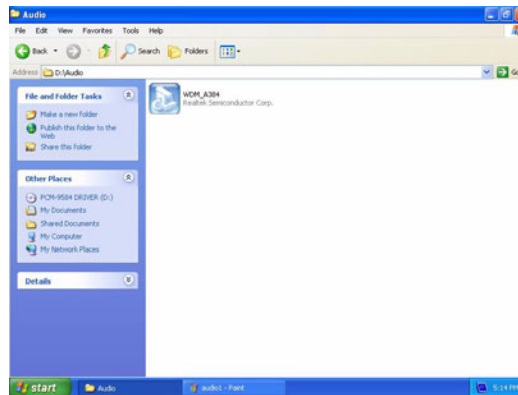
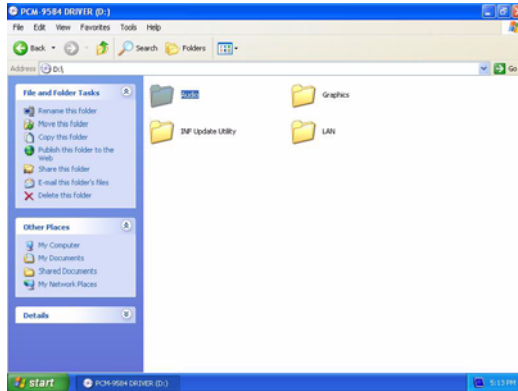
6.2.1 Before you begin

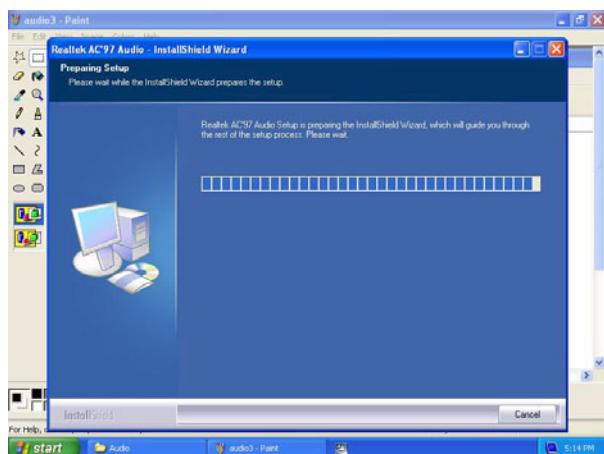
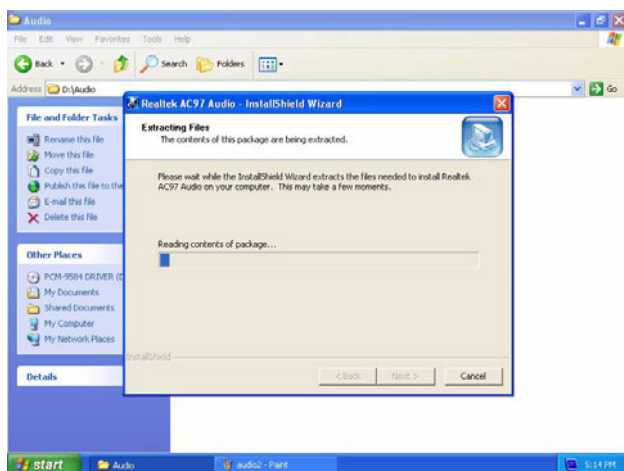
Please read the instructions in this chapter carefully before you attempt installation. The audio drivers for the PCM-9584 board are located on the audio driver CD. Run the supplied SETUP program to install the drivers; don't copy the files manually.

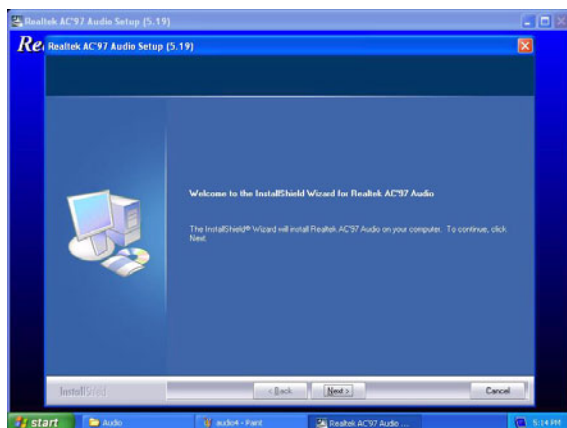
- Note:**
- 1. Before trying to install the driver, go to Chapter 3 to use the "Chipset Software Installation Utility" first.*
 - 2. The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

6.2.2 Windows 9x/2000/Me/XP drivers

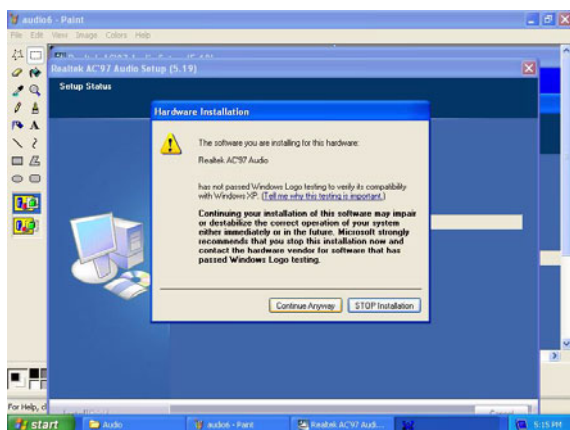
Step 1. To install Audio driver for Windows 98/2000/XP, please run the set up wizard "Install Shield Wizard for Realtek AC'97 Audio" in CD-ROM. Example installation steps are shown below.



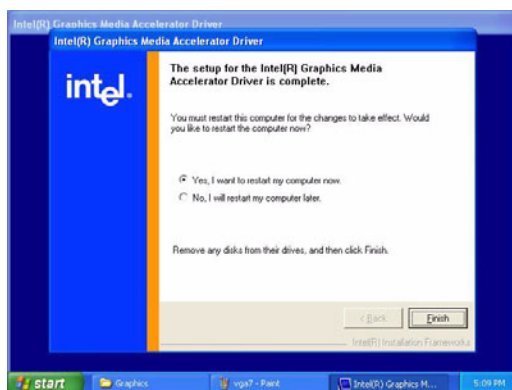




Step 2. In the Hardware Update Wizard window, click "Continue anyway".



Step 3. In the following Hardware Update Wizard window, click "Finish" for Windows to complete audio driver installation.



LAN Configuration

- Introduction
- Features
- Installation of Ethernet Driver for
 - Windows 2000 Drivers Setup Steps
 - Windows NT Drivers Setup Steps
 - Windows Wake-on-LAN Setup

Chapter 7 LAN Configuration

7.1 Introduction

The PCM-9584 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.

7.2 Features

- Intel 82551 10/100Base-T Ethernet LAN controller
- Optional Intel 82541 10/100/1000 Base-T Ethernet LAN controller
- Supports Wake-on-LAN remote control function.
- PCI Bus Master complies with PCI Rev. 2.2
- Complies with 100Base-TX, and 10Base-T applications.
- Single RJ-45 connector gives auto-detection of 10 Mbps or 100 Mbps network data transfer rates and connected cable types.
- Enhancements on ACPI & APM.
- Complies with PCI Bus Power Management Interface Rev. 1.1,
- ACPI Rev. 2.0, and Device Class Power Management Rev. 1.0.

7.3 Installation of Ethernet Driver

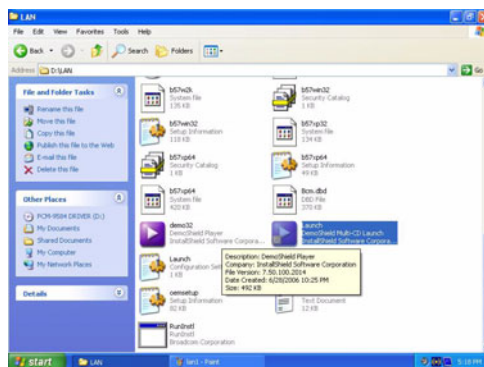
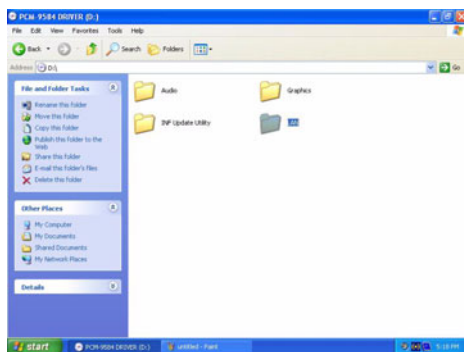
Please read the instructions in this chapter carefully before you attempt installation. The drivers for the PCM-9584 board are located on the audio driver CD. Run the supplied SETUP program to install the drivers; don't copy the files manually.

Note:

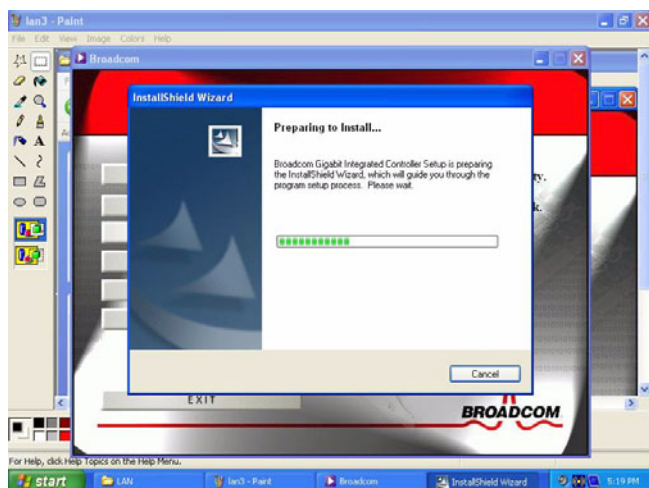
1. Before trying to install the driver, go to Chapter 3 to use the "Chipset Software Installation Utility " first.
2. The files on the software installation diskette are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.

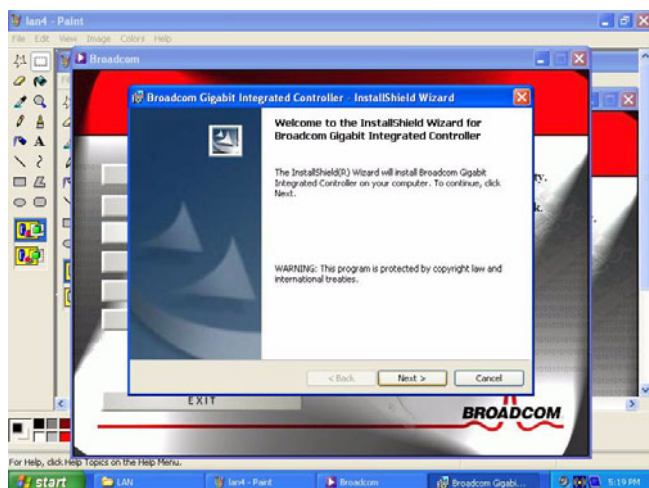
7.3.1 Installation for Windows 98, 2000 & XP

To install LAN driver for Windows 98/2000/XP, please run "NetXtreme" in CD-ROM. Example installation steps are shown below.

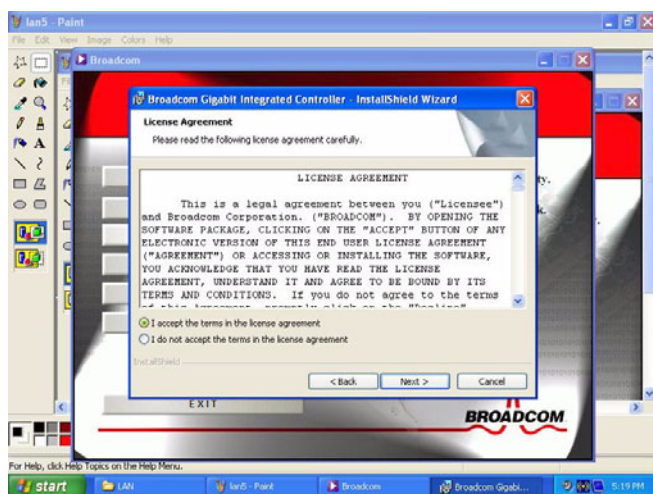


1. Click “DRIVER INSTALLER” and prepare to install network

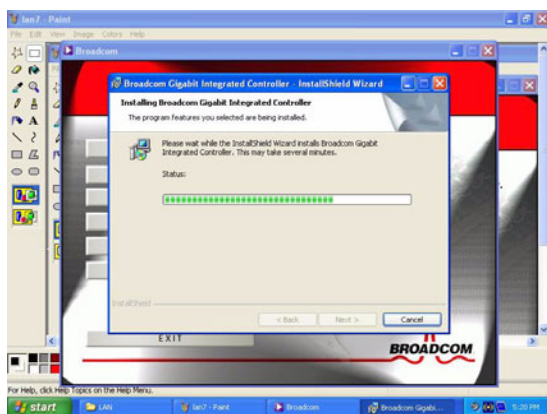
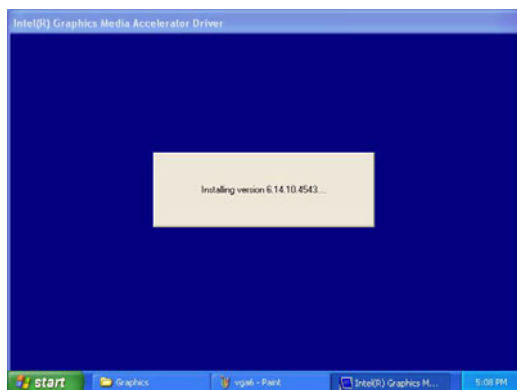




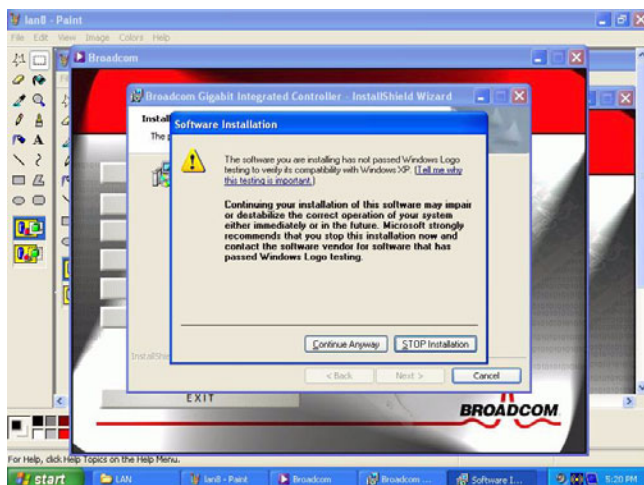
2. Click "I accept the terms in the license agreement"



3.
Click “Install”



4. Click "Continue Anyway" to complete the procedure to install the driver



7.4 Further information

Intel website: www.intel.com

Advantech websites: www.advantech.com

www.advantech.com.tw

Programming the GPIO and Watchdog Timer

The PCM-9584 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 Prog. GPIO & W'dog Timer

A.1 Supported GPIO Register

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

A.1.1 GPIO Registers

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

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

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

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

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

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

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

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

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

Extended Function Index Registers (EFIRs)

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

Extended Function Data Registers (EFDRs)

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

A.1.2 GPIO Example program-1

Enter the extended function mode, interruptible double-write

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

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

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

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

Exit extended function mode

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

A.2 Watchdog programming

Bellow is a sample of programming code for controlling the Watchdog Timer function.

Enter the extended function mode, interruptible double-write

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

Configured logical device 8, configuration register CRF6

```
MOV DX,2EH
MOV AL,07H; point to Logical Device Number Reg.
OUT DX,AL
MOV DX,2FH
MOV AL,08H; select logical device 8
OUT DX,AL;
MOV DX,2EH
MOV AL,30H;Set watch dog activate or inactivate
OUT DX,AL
MOV DX,2FH
MOV AL,01H; 01:activate 00:inactivate
OUT DX,AL;
MOV DX,2EH
MOV AL,F5H; Setting counter unit is second
OUT DX,AL
MOV DX,2FH
MOV AL,00H
OUT DX,AL;
```

```
MOV DX,2EH
MOV AL,F6H
OUT DX,AL
MOV DX,2FH
MOV AL,05H; Set 5 seconds
OUT DX,AL

;-----
; Exit extended function mode |
;-----

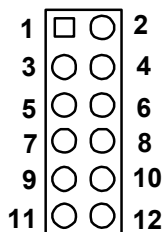
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

Pin Assignments

This appendix provides specialized information regarding:

Table B.1: CN1 ATX Power Connector

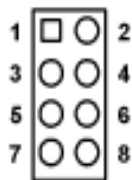
Part Number	1655412090
Footprint	atxcon-2X6-42
Description	Power CONN. 6*2 180D W/Fixed Lock 4200-WS-A1



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	GND	GND	
3	+5V	PWR	+5V
4	GND	GND	
5	+5V	PWR	+5V
6	5VSB	PWR	+5V
7	GND	GND	
8	PWR_PSON#	IN	+5V
9	+5V	PWR	+5V
10	GND	GND	
11	+5V	PWR	+5V
12	+12V	PWR	+12V

Table B.2: CN2 LAN LED

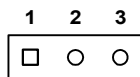
Part Number	1653004260
Footprint	JH4X2S-2M
Description	PIN HEADER 4*2P 180D(M) 2.0mm SMD



Pin	Pin Name	Signal Type	Signal Level
1	V2.5_LAN1	PWR	+2.5V
2	GND	GND	
3	LAN1_LINKLED	OUT	Analog
4	LAN2_LINKLED	OUT	Analog
5	LAN1_ACTLED	OUT	Analog
6	LAN2_ACTLED	OUT	Analog
7	LAN1_LINK1000#	OUT	Analog
8	LAN2_LINK1000#	OUT	Analog

Table B.3: CN4 PCI -5V & -12V Input

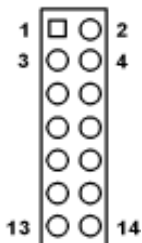
Part Number	1655303020
Footprint	WHL3V-2M
Description	WAFER BOX 2.0mm 3P 180D w/LOCK



Pin	Pin Name	Signal Type	Signal Level
1	-5V	PWR	-5V
2	GND	GND	
3	-12V	PWR	-12V

Table B.4: CN5 SYSTEM PANEL

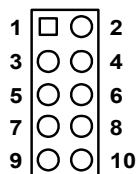
Part Number	1653007260
Footprint	BH22X2SV
Description	PIN HEADER SMD 7*2P 180DMALE P=2.0mm



Pin	Pin Name	Signal Type	Signal Level
1	HDLEDA#	PWR	+5V
2	HDLEDC#	OUT	Analog
3	POWER LED	OUT	+5V
4	GND	GND	
5	SUPLED	OUT	Analog
6	GND	GND	+5V
7	NC		
8	NC		
9	NC		
10	NC		
11	VCC_DUAL	PWR	+5V
12	FP_PSIN	IN	Analog
13	GND	GND	
14	SWIN_RST#	IN	Analog

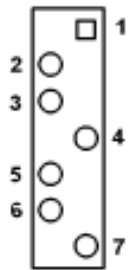
Table B.5: CN6 LAN1 CONNECTOR

Part Number	1653205201
Footprint	BH5X2DV-2M
Description	BOX HEADER 5*2P (M) 180D2.0mm



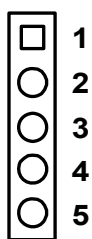
Pin	Pin Name	Signal Type	Signal Level
1	NC		
2	NC		
3	L1_RJ45_7	I/O	Analog
4	L1_RJ45_8	I/O	Analog
5	L1_RJ45_4	I/O	Analog
6	L1_RJ45_5	I/O	Analog
7	L1_RJ45_3	I/O	Analog
8	L1_RJ45_6	I/O	Analog
9	L1_RJ45_1	I/O	Analog
10	L1_RJ45_2	I/O	Analog

Table B.6: CN7 SATA2 connector	
Part Number	1654907000
Footprint	SATA
Description	CONN Serial ATA DIP 7P 180D(M) 1.27mm



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX1P	I/O	Analog
3	SATA_TX1N	I/O	Analog
4	GND	GND	
5	SATA_RX1N	I/O	Analog
6	SATA_RX1P	I/O	Analog
7	GND	GND	

Table B.7: CN8 TV OUT connector	
Part Number	1655305020
Footprint	WHL5V-2M
Description	WAFER BOX 2.0mm 5P 180D MALE W/LOCK



Pin	Pin Name	Signal Type	Signal Level
1	Y_OUT	OUT	
2	C_OUT	OUT	
3	GND	GND	
4	GND	GND	
5	COM_OUT	OUT	

Table B.8: CN9 SATA1 connector

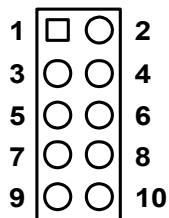
Part Number	1654907000
Footprint	SATA
Description	CONN Serial ATA DIP 7P 180D(M) 1.27mm



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX0P	I/O	Analog
3	SATA_TX0N	I/O	Analog
4	GND	GND	
5	SATA_RX0N	I/O	Analog
6	SATA_RX0P	I/O	Analog
7	GND	GND	

Table B.9: CN10 LAN2 CONNECTOR

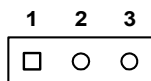
Part Number	1653205201
Footprint	BH5X2DV-2M
Description	BOX HEADER 5*2P (M) 180D2.0mm



Pin	Pin Name	Signal Type	Signal Level
1	NC		
2	NC		
3	L2_RJ45_7	I/O	Analog
4	L2_RJ45_8	I/O	Analog
5	L2_RJ45_4	I/O	Analog
6	L2_RJ45_5	I/O	Analog
7	L2_RJ45_3	I/O	Analog
8	L2_RJ45_6	I/O	Analog
9	L2_RJ45_1	I/O	Analog
10	L2_RJ45_2	I/O	Analog

Table B.10: CN11 CPU FAN connector

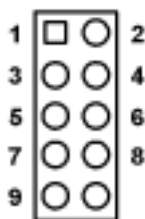
Part Number	1655003010
Footprint	JH5X2S-2M
Description	Wafer 2.54mm 3P 180D(M) DIP W/LOCK22272031 Molex



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	+12V	PWR	+12V
3	FANIO2	OUT	

Table B.11: CN12 USB5/6 connector

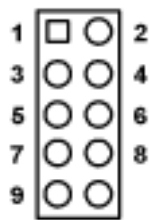
Part Number	1653005260
Footprint	JH5X2S-2M
Description	PIN HEADER 5*2P 180D(M) 2.0mm SMD



Pin	Pin Name	Signal Type	Signal Level
1	USBV3	PWR	+5V
2	USBV3	PWR	+5V
3	USBD4-	I/O	USB
4	USBD5-	I/O	USB
5	USBD4+	I/O	USB
6	USBD5+	I/O	USB
7	GND	GND	
8	GND	GND	

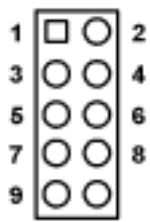
9	GND	GND
10	NC	

<i>Table B.12: CN13 USB3/4 connector</i>		
Part Number	1653005260	
Footprint	JH5X2S-2M	
Description	PIN HEADER 5*2P 180D(M) 2.0mm SMD	



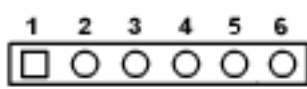
Pin	Pin Name	Signal Type	Signal Level
1	USBV2	PWR	+5V
2	USBV2	PWR	+5V
3	USBD2-	I/O	USB
4	USBD3-	I/O	USB
5	USBD2+	I/O	USB
6	USBD3+	I/O	USB
7	GND	GND	
8	GND	GND	
9	GND	GND	
10	NC		

Table B.13: CN14 USB1/2 connector	
Part Number	1653005260
Footprint	JH5X2S-2M
Description	PIN HEADER 5*2P 180D(M) 2.0mm SMD



Pin	Pin Name	Signal Type	Signal Level
1	USBV1	PWR	+5V
2	USBV1	PWR	+5V
3	USBD1-	I/O	USB
4	USBD2-	I/O	USB
5	USBD1+	I/O	USB
6	USBD2+	I/O	USB
7	GND	GND	
8	GND	GND	
9	GND	GND	
10	NC		

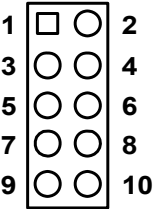
Table B.14: CN15 KB/MS	
Part Number	1653205260
Footprint	BH5X2SV
Description	BOX HEADER DIP 6*1 180D (M) 2.0mm



Pin	Pin Name	Signal Type	Signal Level
1	KB-CLK	IN	+5V

2	KB-DATA	IN	+5V
3	MS-CLK	IN	+5V
4	GND	PWR	
5	+5V	PWR	+5V
6	MS-DATA	IN	+5V

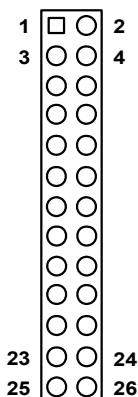
<i>Table B.15: CN16 GPIO</i>			
Part Number	1653005261		
Footprint	JH5X2S-2M		
Description	PIN HEADER SMD 5*1P	180D(M)	2.0mm



Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	GPIO4	I/O	+5V
3	GPIO0	I/O	+5V
4	GPIO5	I/O	+5V
5	GPIO1	I/O	+5V
6	GPIO6	I/O	+5V
7	GPIO2	I/O	+5V
8	GPIO7	I/O	+5V
9	GPIO3	I/O	+5V
10	GND	GND	

Table B.16: CN17 Print Port connector

Part Number	1653213260
Footprint	BH13X2SV
Description	BOX HEADER 13*2P 180D(M) 2.0mm SMD

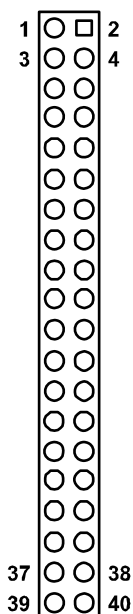


Pin	Pin Name	Signal Type	Signal Level
1	PIO_STB	Out	+5V
2	LPT_AFD#	Out	+5V
3	PIO_PD0	I/O	+5V
4	LPT_ERR#	In	+5V
5	PIO_PD1	I/O	+5V
6	LPT_INIT#	Out	+5V
7	PIO_PD2	I/O	+5V
8	LPT_SLIN#	Out	+5V
9	PIO_PD3	I/O	+5V
10	GND	GND	
11	PIO_PD4	I/O	+5V
12	GND	GND	
13	PIO_PD5	I/O	+5V
14	GND	GND	
15	PIO_PD6	I/O	+5V
16	GND	GND	

17	PIO_PD7	I/O	+5V
18	GND	GND	
19	LPT_ACK#	In	+5V
20	GND	GND	
21	LPT_BUSY	In	+5V
22	GND	GND	
23	LPT_PE	In	+5V
24	GND	GND	
25	LPT_SLCT	In	+5V
26	NC		

Table B.17: CN18 IDE connector

Part Number	1653220205
Footprint	BH20X2DV-1
Description	BOX HEADER 20*2P 180D(M) 2.54mm DIP NO.20P



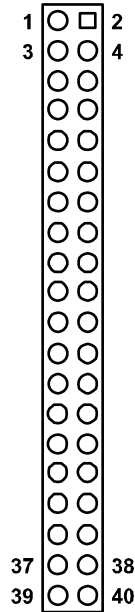
Pin	Pin Name	Signal Type	Signal Level
1	RESET#	Out	+5V

2	GND	GND	
3	DD7	I/O	+5V
4	DD8	I/O	+3.3V
5	DD6	I/O	+5V
6	DD9	I/O	+5V
7	DD5	I/O	+5V
8	DD10	I/O	+5V
9	DD4	I/O	+5V
10	DD11	I/O	+5V
11	DD3	I/O	+5V
12	DD12	I/O	+5V
13	DD2	I/O	+5V
14	DD13	I/O	+5V
15	DD1	I/O	+5V
16	DD14	I/O	+5V
17	DD0	I/O	+5V
18	DD15	I/O	+5V
19	GND	GND	
21	DMARQ	Out	+5V
22	GND	GND	
23	DIOW#	Out	+5V
24	GND	GND	
25	DIOR#	Out	+5V
26	GND	GND	
27	IORDY	Out	+5V
28	CSEL	Out	+5V
29	DMACK#	Out	+5V
30	GND	GND	
31	INTRQ	In	+5V
32	NC		
33	DA1	In	+5V
34	PDIAG#	In	+5V
35	DA0	In	+5V

36	DA2	In	+5V
37	CS#1	Out	+5V
38	CS#3	Out	+5V
39	DASP#	Out	+5V
40	GND	GND	

Table B.18: CN19 COM1/2/3/4 connector

Part Number	1653220260
Footprint	BH20X2SV
Description	BOX HEADER SMD 20*2P 180D(M) 2.0mm



Pin	Pin Name	Signal Type	Signal Level
1	DCDA#	IN	+5V
2	DSRA#	IN	+5V
3	SINA	IN	+5V
4	RTSA#	I/O	+5V
5	SOUTA	OUT	+5V
6	CTSA#	IN	+5V

7	DTRA#	I/O	+5V
8	RIA#	IN	+5V
9	GND	GND	
10	GND	GND	
11	CM2_1	In	+5V
12	DSRB#	In	+5V
13	CM2_2	In	+5V
14	RTSB#	I/O	+5V
15	CM2_3	Out	+5V
16	CTSB#	In	+5V
17	CM2_4	I/O	+5V
18	RIB#	In	+5V
19	GND	GND	
20	GND	GND	
21	DCDC#	In	+5V
22	DSRC#	In	+5V
23	SINC	In	+5V
24	RTSC#	I/O	+5V
25	SOUTC	Out	+5V
26	CTSC#	In	+5V
27	DTRC#	I/O	+5V
28	RIC#	In	+5V
29	GND	GND	
30	GND	GND	
31	DCDD#	In	+5V
32	DSRD#	In	+5V
33	SIND	In	+5V
34	RTSD#	I/O	+5V
35	SOUTD	Out	+5V
36	CTSD#	In	+5V
37	DTRD#	I/O	+5V
38	RID#	In	+5V
39	GND	GND	

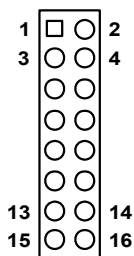
40	GND	GND
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Table B.19: CN20 PC104+ Connector

Part Number	165313222A,165312022A,1653130428		
Footprint	PC104-PLUS		
Description			
Pin	Pin Name	Signal Type	Signal Level

Table B.20: CN21 AUDIO connector

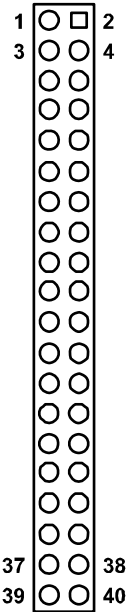
Part Number	1653208260
Footprint	BH8X2SV
Description	BOX HEADER 8*2P 180D(M) 2.00mm



Pin	Pin Name	Signal Type	Signal Level
1	SPK_R+	Out	Analog
2	SPK_R-	Out	Analog
3	SPK_L+	Out	Analog
4	SPK_L-	Out	Analog
5	LOUT_R	Out	Analog
6	LOUT_L	Out	Analog
7	AGND	GND	
8	AGND	GND	
9	LINR	IN	Analog
10	LINL	IN	Analog
11	AGND	GND	
12	AGND	GND	

13	NC		
14	MIC_L	IN	Analog
15	MIC_R	IN	Analog
16	AGND	GND	

<i>Table B.21: CN22 LVDS Connector</i>			
Part Number	1653920200		
Footprint	SPH20X2		
Description	*CONN. DF13-40DP-1.25V		



Pin	Pin Name	Signal Type	Signal Level
1	VDD_FP	PWR	+5V/+3.3V
2	VDD_FP	PWR	+5V/+3.3V
3	GND		
4	GND		
5	VDD_FP	PWR	+5V/+3.3V
6	VDD_FP	PWR	+5V/+3.3V
7	LVDS_A_D0N	OUT	LVDS

8	LVDS_B_D0N	OUT	LVDS
9	LVDS_A_D0P	OUT	LVDS
10	LVDS_B_D0P	OUT	LVDS
11	GND		
12	GND		
13	LVDS_A_D1N	OUT	LVDS
14	LVDS_B_D1N	OUT	LVDS
15	LVDS_A_D1P	OUT	LVDS
16	LVDS_B_D1P	OUT	LVDS
17	GND		
18	GND		
19	LVDS_A_D2N	OUT	LVDS
20	LVDS_B_D2P	OUT	LVDS
21	LVDS_A_D2N	OUT	LVDS
22	LVDS_B_D2P	OUT	LVDS
23	GND		
24	GND		
25	LVDS_A_CLKN	OUT	LVDS
26	LVDS_B_CLKN	OUT	LVDS
27	LVDS_A_CLKP	OUT	LVDS
28	LVDS_B_CLKP	OUT	LVDS
29	GND		
30	GND		
31	LVDS_DCLK	I/O	+3V~+5V
32	LVDS_DDAT	I/O	+3V~+5V
33	GND		
34	GND		
35	NC		
36	NC		
37	NC		
38	NC		
39	NC		
40	NC		

Table B.22: CN23 LCD Backlight

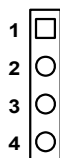
Part Number	1655305020
Footprint	WHL5V-2M
Description	WAFER BOX 2.0mm 5P 180D MALE W/LOCK



Pin	Pin Name	Signal Type	Signal Level
1	+12V	PWR	+12V
2	GND	GND	
3	LVDS_BKLTEN	OUT	+3.3V
4	VBR	OD	+3.3V
5	+5V	PWR	+5V

Table B.23: CN24 CD_IN connector

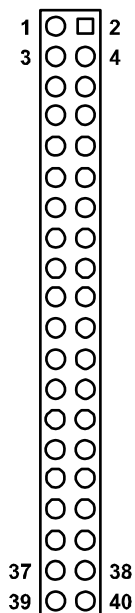
Part Number	1655304020
Footprint	WHL4V-2M
Description	WAFER BOX 2.0mm 4P 180D MALE W/LOCK 2001-WS-4



Pin	Pin Name	Signal Type	Signal Level
1	CD_R	OUT	Analog
2	CD_GND	GND	
3	CD_GND	GND	
4	CD_L	OUT	Analog

Table B.24: CN25 48bit LVDS Connector

Part Number	1653920200
Footprint	SPH20X2
Description	*CONN. DF13-40DP-1.25V

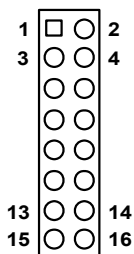


Pin	Pin Name	Signal Type	Signal Level
1	VDD_LVDS_PANEL	PWR	+5V/+3.3V
2	VDD_LVDS_PANEL	PWR	+5V/+3.3V
3	GND		
4	GND		
5	VDD_LVDS_PANEL	PWR	+5V/+3.3V
6	VDD_LVDS_PANEL	PWR	+5V/+3.3V
7	L1-LVDS0_N0	OUT	LVDS
8	L1-LVDS1_N0	OUT	LVDS
9	L1-LVDS0_P0	OUT	LVDS
10	L1-LVDS1_P0	OUT	LVDS
11	GND		

12	GND		
13	L1-LVDS0_N1	OUT	LVDS
14	L1-LVDS1_N1	OUT	LVDS
15	L1-LVDS0_P1	OUT	LVDS
16	L1-LVDS1_P1	OUT	LVDS
17	GND		
18	GND		
19	L1-LVDS0_N2	OUT	LVDS
20	L1-LVDS1_N2	OUT	LVDS
21	L1-LVDS0_P2	OUT	LVDS
22	L1-LVDS1_P2	OUT	LVDS
23	GND		
24	GND		
25	L1-LVDS0_CON	OUT	LVDS
26	L1-LVDS1_CON	OUT	LVDS
27	L1-LVDS0_COP	OUT	LVDS
28	L1-LVDS1_COP	OUT	LVDS
29	GND		
30	GND		
31	L1-LVDS_CLK	I/O	+3V~+5V
32	L1-LVDS_DATA	I/O	+3V~+5V
33	GND		
34	GND		
35	L1-LVDS0_N3	I/O	+3V~+5V
36	L1-LVDS1_N3	I/O	+3V~+5V
37	L1-LVDS0_P3	I/O	+3V~+5V
38	L1-LVDS1_P3	I/O	+3V~+5V
39	NC		
40	L1-LCON		

Table B.25: CN26 CRT connector

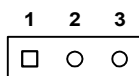
Part Number	1653208260
Footprint	BH8X2SV
Description	BOX HEADER 8*2P 180D(M) 2.00mm



Pin	Pin Name	Signal Type	Signal Level
1	VGA_R	OUT	Analog
2	VGA VCC5	PWR	+5V
3	VGA_G	OUT	Analog
4	GND	GND	
5	VGA_B	OUT	Analog
6	NC		
7	NC		
8	VGA_DDAT	OUT	Analog
9	GND	GND	
10	VGA_HS	OUT	+2.5V
11	GND	GND	
12	VGA_VS	OUT	+2.5V
13	GND	GND	
14	VGA_DCLK	OUT	+2.5V
15	GND	GND	
16	NC		

Table B.26: CN27 SYS FAN connector

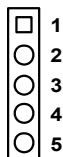
Part Number	1655003010
Footprint	JH5X2S-2M
Description	Wafer 2.54mm 3P 180D(M) DIP W/LOCK22272031 Molex



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	+12V	PWR	+12V
3	FANIO2	OUT	

Table B.27: CN28 Inverter connector

Part Number	1655305020
Footprint	WHL5V-2M
Description	WAFER BOX 2.0mm 5P 180D MALE W/LOCK



Pin	Pin Name	Signal Type	Signal Level
1	+12V	PWR	+12V
2	GND	GND	
3	LVDS1_BKLTEN	OUT	+3.3V
4	LVDS1_VBR	OD	+3.3V
5	+5V	PWR	+5V

Table B.28: CN29 SPK-OUT connector

Part Number	1655304020		
Footprint	WHL4V-2M		
Description	WAFER BOX 2.0mm 4P 180D MALE W/LOCK 2001-WS-4		
Pin	Pin Name	Signal Type	Signal Level
1	SPK_R-	OUT	Analog
2	SPK_R+	OUT	Analog
3	SPK_L+	OUT	Analog
4	SPK_L-	OUT	Analog

Table B.29: CN30 Compack II W/Ejector

Part Number	1653025215		
Footprint	COMPACT-T12		
Description	HEADER for CF Type II 50P 90D(M)Standoff 2.0mm		
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	IDE_PDD3	I/O	+5V
3	IDE_PDD4	I/O	+5V
4	IDE_PDD5	I/O	+5V
5	IDE_PDD6	I/O	+5V
6	IDE_PDD7	I/O	+5V
7	IDE_PDCS#1	OUT	+5V
8	GND	GND	
9	GND	GND	
10	GND	GND	
11	GND	GND	
12	GND	GND	
13	+5V	PWR	+5V
14	GND	GND	
15	GND	GND	
16	GND	GND	

17	GND	GND	
18	IDE_PDA2	IN	+5V
19	IDE_PDA1	IN	+5V
20	IDE_PDA0	IN	+5V
21	IDE_PDD0	I/O	+5V
22	IDE_PDD1	I/O	+5V
23	IDE_PDD2	I/O	+5V
24	NC		
25	GND	GND	
26	NC		
27	IDE_PDD11	I/O	+5V
28	IDE_PDD12	I/O	+5V
29	IDE_PDD13	I/O	+5V
30	IDE_PDD14	I/O	+5V
31	IDE_PDD15	I/O	+5V
32	IDE_PDCS#3	OUT	+5V
33	NC		
34	IDE_PDIO#	OUT	+5V
35	IDE_PDIOW#	OUT	+5V
36	IDE_WE#	OUT	+5V
37	IDE_IRQ	IN	+5V
38	+5V	PWR	+5V
39	CF_CSEL#	OUT	+5V
40	NC		
41	RESET#	OUT	+5V
42	IDE_PDIORDY	OUT	+5V
43	IDE_PDDREQ	OUT	+5V
44	IDE_PDDACK#	OUT	+5V
45	IDEACTS#	I/O	+5V
46	IDE_P66DET#	IN	+5V
47	IDE_PDD8	I/O	+5V
48	IDE_PDD9	I/O	+5V
49	IDE_PDD10	I/O	+5V

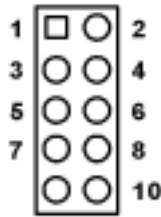
50	GND
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Table B.30: CN31 MINI PCI connector

Part Number	16542C4701		
Footprint	MINIPCI-C		
Description	MINI PCI 124PIN SMD FOR TYPE 3 180D(F) H=5.6		
Pin	Pin Name	Signal Type	Signal Level

Table B.31: CN32 MIO USB connector

Part Number	1653005260		
Footprint	JH5X2S-2M		
Description	PIN HEADER 5*2P 180D(M) 2.0mm SMD		



Pin	Pin Name	Signal Type	Signal Level
1	USBV4	PWR	+5V
2	USBV4	PWR	+5V
3	USBD6-	I/O	USB
4	USBD7-	I/O	USB
5	USBD6+	I/O	USB
6	USBD7+	I/O	USB
7	GND	GND	
8	GND	GND	
9	NC	GND	
10	VCC3	PWR	+3.3V

System Assignments

This Appendix contains information of a detailed nature: It includes:

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

Appendix C System Assignments

C.1 System I/O Ports

Table C.1: System I/O Ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
170- 178	Fixed disk (2nd IDE)
200-207	Reserved (Game I/O)
278-27F	Parallel printer port 2 (LPT 3)
2E8-2EF	Series port 4
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8-3EF	Series port 3
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* PNP audio I/O map range from 220 ~ 250H (16 bytes)

Table C.1: System I/O Ports

Addr. range (Hex)	Device
MPU-401 select from 300 ~ 330H (2 bytes)	

C.2 1st MB memory map

Table C.2: 1st MB memory map

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

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

* E0000 - EFFFF is reserved for BIOS POST

C.3 DMA channel assignments

Table C.3: DMA channel assignments

Channel	Function
0	Available
1	Reserved (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)

C.4 Interrupt assignments

Table C.4: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	COM2
IRQ 4	COM1
IRQ 5	COM4
IRQ 6	FDD
IRQ 7	LPT1
IRQ 8	RTC
IRQ 9	Reserved (audio)
IRQ 10	COM3
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

Optional Extras for the PCM-9584

Appendix D Optional Extras

The PCM-9584 requires several cables for normal operation. You can make them yourself or purchase an optional cable kit assembly, which includes the following

D.1 PCM-10586-9584E Cable kit for PCM-9584

Table D.1: PCM-10586-9584E Cable kit for PCM-9584

Part No.	Cable Description	PCM-9584 connector	Terminal Connector
1703060191	KB/Mouse CABLE	CN15	Cable 6P-2.0mm Housing/ 6P (PS/2)/6P (K/B) 19cm
1703050106	TV-Out CABLE	CN8	Cable 5P S/TV-Video out 10cm
1700260250	Parallel Port CABLE	CN17	Cable 25cm 25P to 26P ASSY LPT Port 2.0mm
1701400452	IDE CABLE	CN18	FLAT CABLE 40P GRAY FOR DMA-66 PIN20 I.P. 45CM
1700001296	VGA CRT CABLE	CN26	VGA Cable D-SUB 15P to 16P 2.0mm L:150mm K
1700160160	Audio CABLE	CN21	Cable 16Pin(2.0mm) Audio 16cm PCM-5820/L
1701400181	COM1-4	CN19	FLAT CABLE 18CM IDC40P 2.0mm/4COM PCM-9570 USE
1700002142	LAN CABLE	CN6.CN10	LAN Cable IDC10P 2.0mm/RJ45 20CM PCM-9584
1700071000	SATA CABLE	CN7.CN9	CABLE Serial ATA 7P/7P 100cm MOLEX
1703100260	USB CABLE	CN12.CN13.CN14	"Wire 10P 26cm IDE 2.0mm For USB 2 PORT 1.9

D.2 ATX Power Control Cable (CN1)

part no.: 1700001112

Mechanical Drawings

Appendix E Mechanical Drawings

E.1 Mechanical Drawings

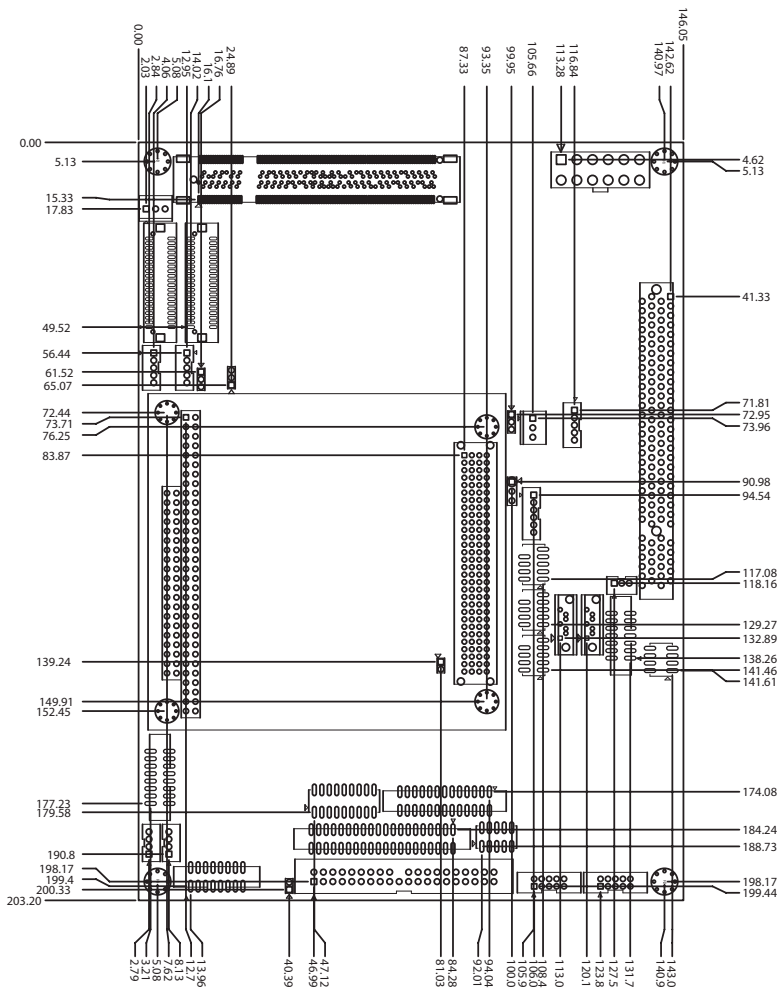


Figure E.1: PCM-9584 Mechanical Drawing (component side)

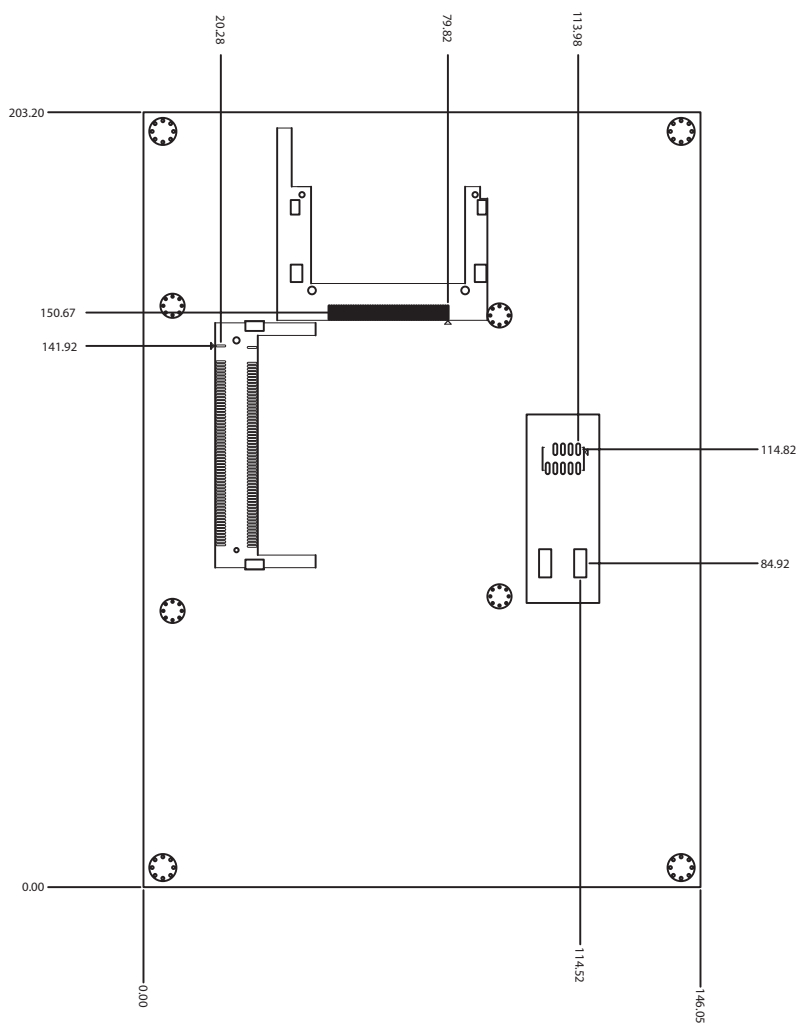


Figure E.2: PCM-9584 Mechanical Drawing (solder side)

