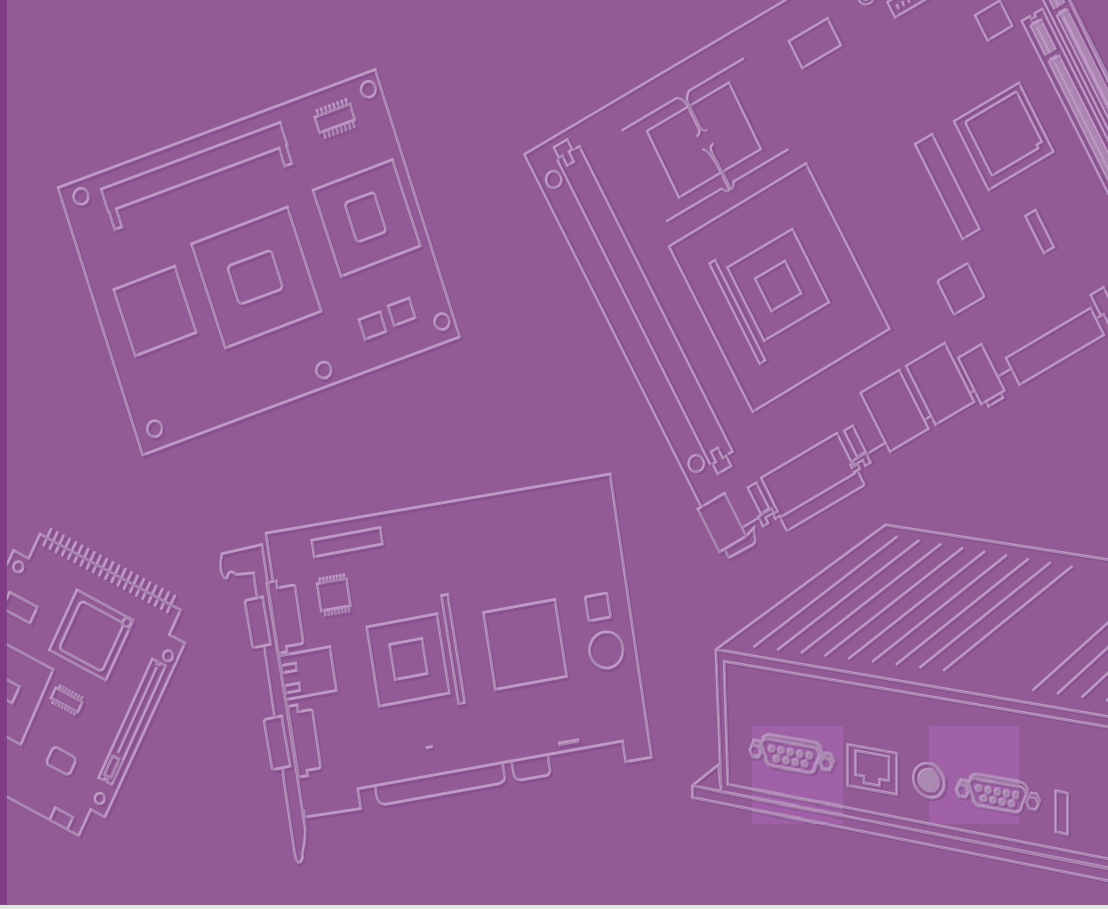

User Manual

PCM-9587 A2

Onboard Intel® Celeron M EBX SBC with Audio, VGA, LCD, SATA

Trusted ePlatform Services

ADVANTECH

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This manual is for the PCM-9587 A2.

Part No. 2006958702 Edition 3

Printed in China September 2010

Packing List

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

- 1 PCM-9587 A2 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)
- 1 AT power cable(p/n:1700016141)
- 1 X Heatsink (50*50*30mm)

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

Order Information

Model No.list	Description
PCM-9587F-M0A2E	Celeron M 600M w/LAN/Audio/LVDS
PCM-9587F-S0A2E	Celeron M 1G w/LAN/Audio/LVDS

Optional accessories

Part No.	Description
PCM-10586-6200E	Wiring kit for PCM-9582/9587
1703100260	USB cable (26 cm)
1703100121	USB cable (12 cm)
PCM-110-00A3E	1-slot PCI riser card for 5.25” biscuits
PCM-120-00A3E	2-slot PCI riser card for 5.25” biscuits
PCM-200-00A2E	PCI-104 to PCI bus module
MIO-3120-00A1E	Mini PCI interface to Wireless 802.11 b/g communication module
MIO-3121-00A1E	Mini PCI to 4 COM Module
MIO-3140-00A1E	Mini PCI interface to SATA storage module
MIO-3150-00A1E	Mini PCI interface to video capture module
MIO-3130-00A1E	Mini PCI interface to Dual LAN Communication Module
MIO-3131-00A1E	Mini PCI interface to Single Giga LAN Communication Module

Declaration of Conformity

FCC Class A

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 equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.*

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Contents

Chapter 1

General Information

This chapter gives background information on the PCM-9587. Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

1.1 Introduction

The PCM-9587 series is a EBX SBC (Single Board Computer) designed with the powerful Intel Celeron M processor, and Intel 852GM and 6300ESB chipsets, which supports Dynamic Video Memory Technology for maximum performance. PCM-9587 series also supports one 184 PIN DIMM socket for ECC DDR memory up to 1GB. These chipsets are specifically for embedded computing and provide an optimized on-board integrated graphics solution.

Other on-board features include 1 EIDE, 2 SATA, 1 FDD, 1 LPT, 4 USB 2.0, 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-9587 A2 complies with EBX form factor (Embedded Board eXpandable). It is compact and suitable 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^{TM}, PCI, and PC/104-Plus^{TM}, hence the PC/104-Plus interface on PCM-9587 A2 brings the advantages of a wide variety of embedded system expansion modules. The expandability can also be fulfilled by the MiniPCI socket on the solder side.

1.2 Features

- Embedded Intel® Celeron® M 600 MHz/Celeron® M 1.0 GHz
- Supports ECC DDR memory up to 1 GB, accept 128/256/512/1024 MB DDR200/266 DRAM
- EBX form factor standard and support for PC/104-Plus bus
- Supports 10/100Base-T Ethernet (Intel 82541PI Giga LAN is optional by request)
- Supports up to two channel 48-bit LVDS interface
- 2 x SATA 150 (RAID 0/1), 4 x COM, 4 x USB 2.0, 8 bit GPIO
- Support PC/104-Plus (PCI + 8-bit ISA), Mini PCI and 1 x PCI Slot

1.3 Specifications

Standard SBC Functions

- **CPU:** Supports onboard Celeron® M processor
- **BIOS**: Award 4 Mbit byte Flash memory
- **System memory:** One 184 pin DIMM sockets, support ECC Double Data Rate (DDR)128 MB to 1 GB, accepts 128/256/512/1000 MB DDR200/266 DRAM.
- System chipset:Intel 852GM GMCH/6300ESB Chipset 400MHz FSB
- **Enhanced IDE interface:** One Enhanced IDE interface supports 2 IDE devices. PIO mode 3 or mode 4, Ultra DMA 100 transfer. 2 Serial ATA standard connector to support SATA 150
- **FDD interface:** Supports one FDD
- **Serial ports:** Three serial RS-232 ports, one serial RS-232/422/485 ports
- **Parallel port:** One parallel port, supports SPP/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**: Winbond W83627, 255 levels timer interval, setup by software
- **USB**: Four USB 2.0 compliant host ports
- **IrDA:** N/A
- **GPIO:** 8-bit general purpose input/output
- **Expansion:** PC/104 Plus(support 8bit ISA, not support ISA DMA mode), PCI and miniPCI

Solid State Disk

- Supports one 50-pin socket for CFC type I/II

VGA/LCD Interface

- **Chipset:** Intel 852GM
- **Frame buffer:** Optimized Shared Memory Architecture, supports up to 64MB frame buffer using system memory
- **Interface:** 4x AGP VGA/LVDS interface
- **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:** 48 bit LVDS x1

DVI

- Chipset: Chrontel CH7010

Ethernet interface

- **Chipset:** Intel 82551ER (82541PI Giga LAN is optional)
- **Ethernet interface:** IEEE 802.3u 100 BASE-T Fast Ethernet compatible (PCM-9587 A2)
- I/O address switchless setting
- Built-in boot ROM

Audio Function

- **Chipset:** Realtek ALC203, AC97
- **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:**ATX, with Vcore 2 phase, +5V power only can work
- **Power Requirement:** (Celeron M 600 with 256MB)
  Max: 2.63A@ 5V, 0.03A @ 12V
  Typical: 2.62A@ 5V, 0.03A @ 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

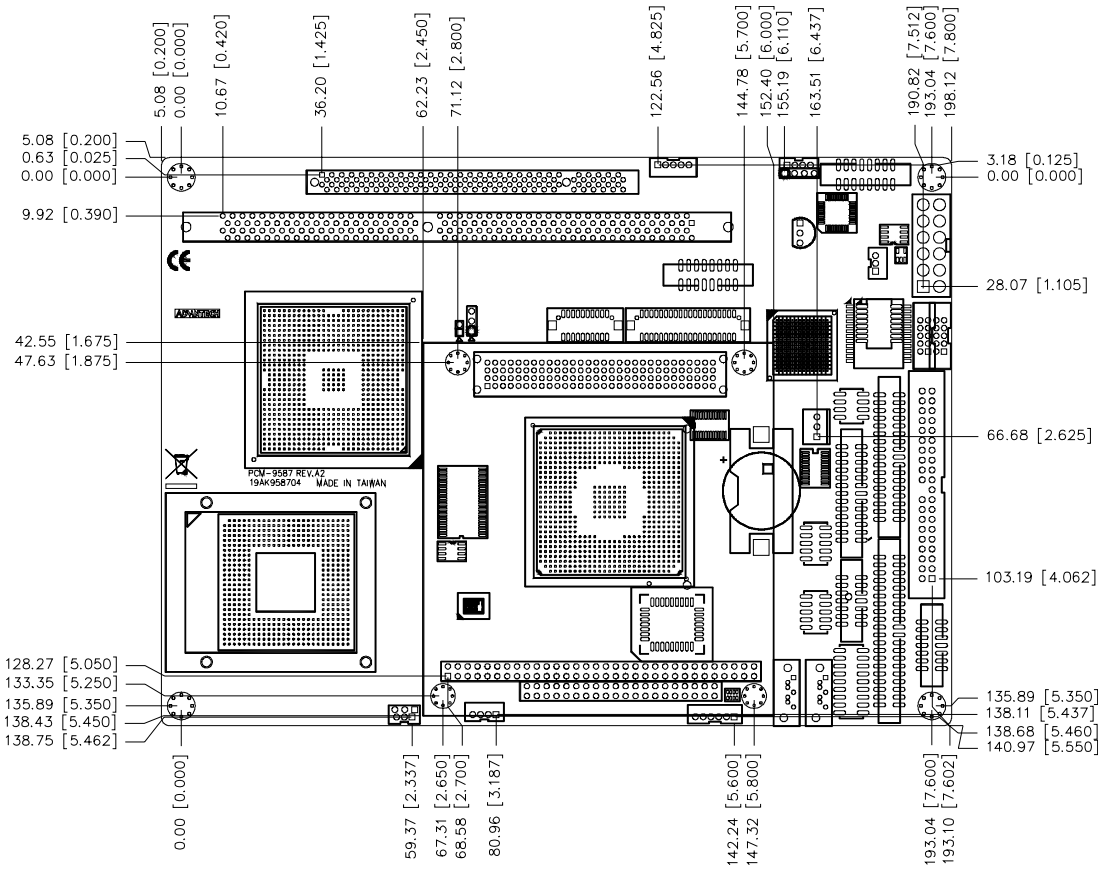


Figure 1.1 Board layout: dimensions (component side)

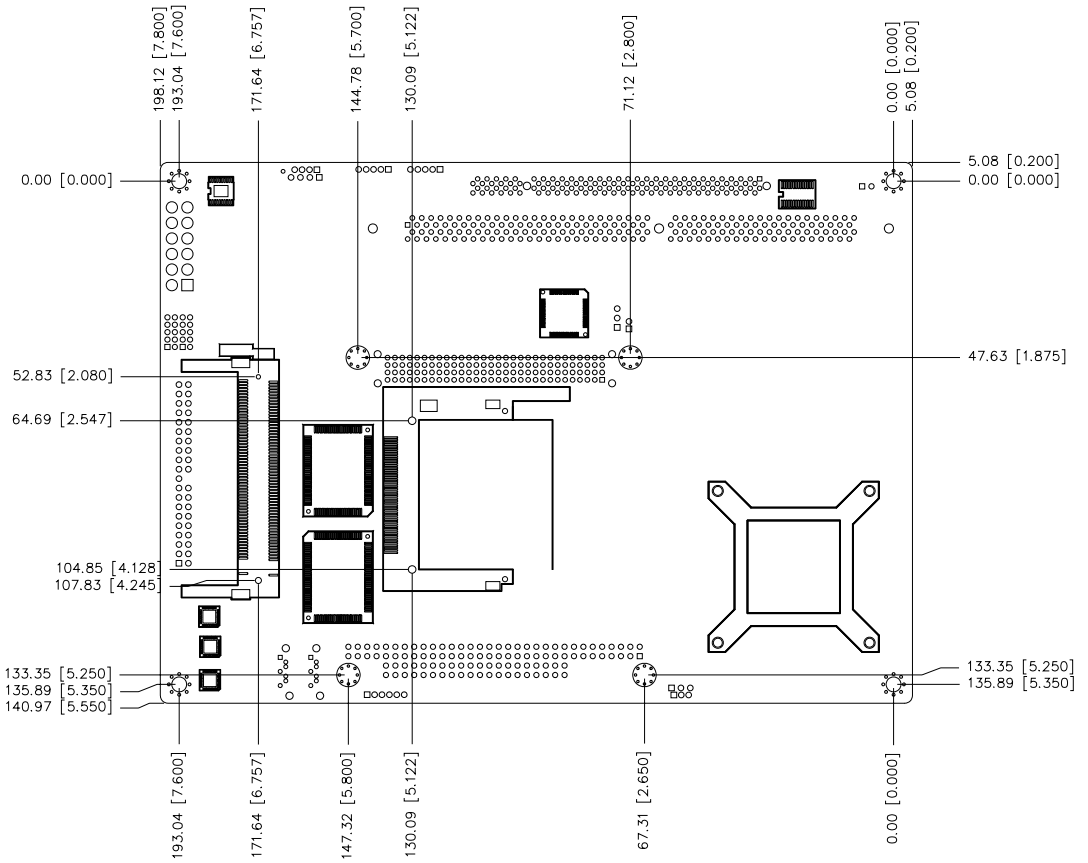


Figure 1.2 Board layout: dimensions (solder side)

Chapter 2

Installation

This chapter explains the setup procedures of PCM-9587 A2 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.

2.1 Jumpers

The PCM-9587 A2 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

Table 2.1: Jumpers

Label	Function
J1	LCD Voltage Select
J2	PC104+ VIO Select
J3	Clear CMOS function Select
J5	COM2 RS232/422/485 function Select
J6	AT/ATX Power mode select

2.1.1 Jumpers setting drawing

Table 2.2: J1: LCD Voltage Select

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

Table 2.3: J2: PC104+ VIO Select

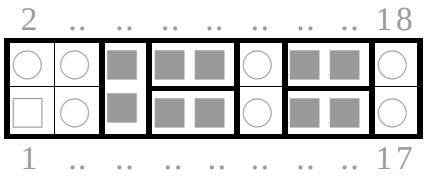
PIN	FUNCTION
1-2	VIO = +5 V *
2-3	VIO = +3.3 V

Table 2.4: J3: Clear CMOS function Select

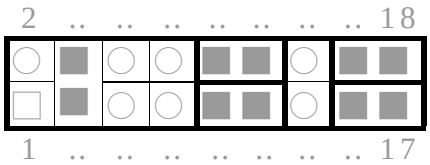
PIN	FUNCTION
1-2 Open	Normal*
1-2 Close	Clear CMOS

Table 2.5: J5: COM2 RS 232/422/485 Select			
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

RS-232



RS-422



RS-485

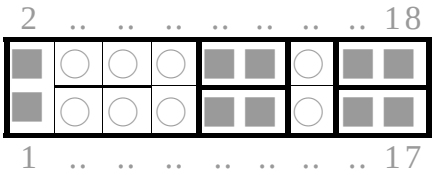
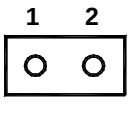
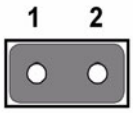


Table 2.6: J6: AT/ATX Power Mode Select	
PIN	**FUNCTION**
1-2 Open	ATX mode (default)
1-2 Close	AT mode





When you select AT mode J6(1-2) close, the following action is needed:

1. Set the Power Selection to AT type (get into BIOS setting -> Power management setup -> AT/ATX power selection).
2. Change with power cable 1700016141.

2.2 Connectors

On-board connectors link the PCM-9587 A2 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 2.7: Connectors

Label	Function
CN1	LCD Backlight connector
CN3	CD-IN connector
CN4	Audio output connector
CN5	Power input connector
CN6	-12V and -5V connector
CN7	VGA connector
CN8	LVDS connector
CN9	DVI connector
CN10	Gigabit LAN connector (Optional)
CN11	10/100M LAN connector
CN12	Gigabit LAN led connector (Optional)
CN13	System FAN connector
CN14	Floppy connector
CN15	Primary HDD connector
CN16	Printer port connector
CN17	PC104 and PC104+ connector
CN18	USB port 3/4
CN19	DIO connector
CN20	USB port 1/2
CN21	COM port 1/2/3/4 connector
CN22	Front panel connector
CN23	SATA connector 1
CN24	SATA connector 2
CN25	CPU FAN connector
CN26	Extension SMBUS connector
CN27	KB / Mouse connector
CN28	CPU FAN connector (wafer box) (Optional)
CN29	MINI-PCI connector
CN30	CompactFlash card connector
PCI1	Extension PCI slot

2.3 Locating jumpers and Connectors

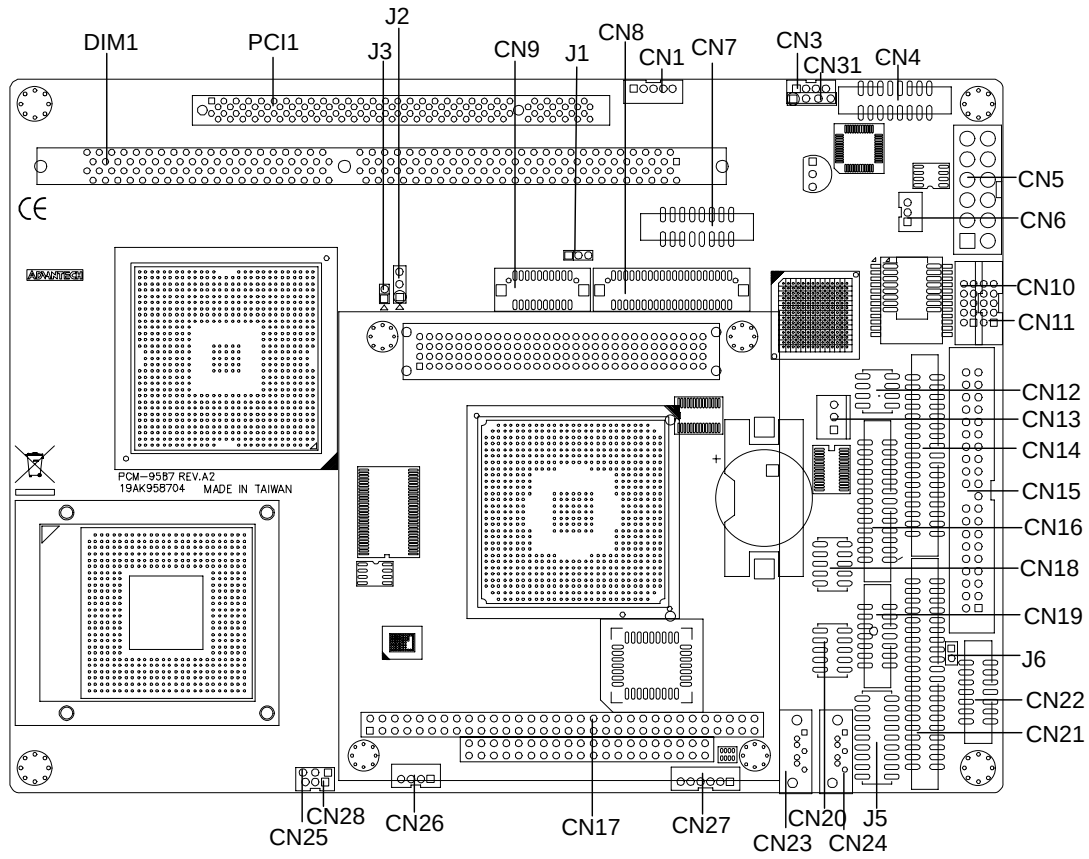


Figure 2.1 Jumper & Connector (component side)

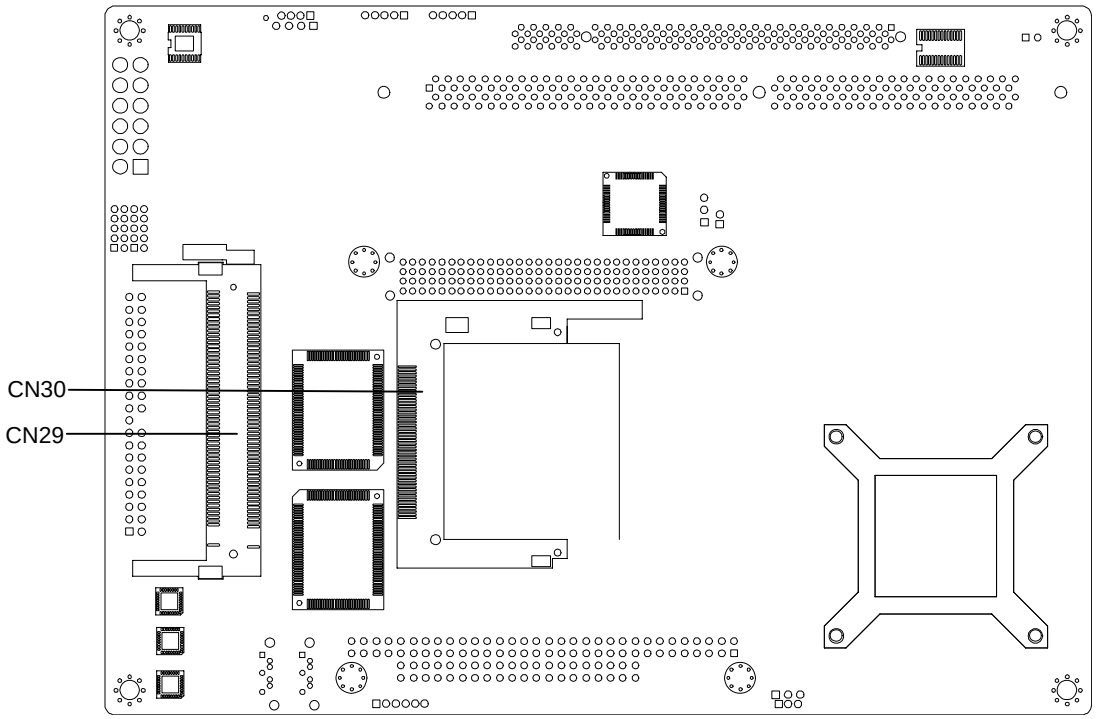
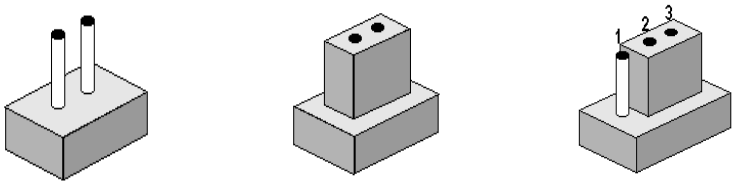


Figure 2.2 Jumper & Connector (solder side)

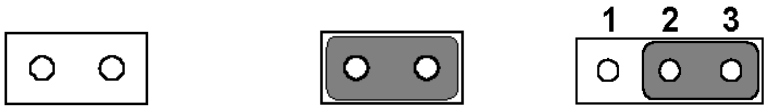
2.4 Setting Jumpers

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.



open closed closed 2-3

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



open closed closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

2.5 Clear CMOS (J3)

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 J3.
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 (CN15)

The PCM-9587 A2 provides 1 IDE channel which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCM-9587’s internal controller. The PCM-9587's IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4 and UDMA/100.

2.7.1 Connecting the hard drive

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

1. Connect one end of the cable to CN15. 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.)

2.8 Solid State Disk

The PCM-9587 A2 provides a CompactFlash™ card socket.

2.8.1 CompactFlash (CN30)

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

2.9 Floppy drive connector (CN14)

You can attach up to two floppy drives to the PCM-9587's on-board controller. This is useful with 34 pin dual FDD cable (part no:1701340603).

You can use any combination of 5.25"(360 KB and 1.2MB) and/or 3.5"(720 KB, 1.44MB, and 2.88 MB) drives. An appropriate 34 pin flat cable is required.

2.9.1 Connecting the floppy drive

1. Plug the 34-pin dual FDD-cable connector into CN14 of PCM-9587 A2 board. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector at the end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to A: drive. The set in the middle connects to the B: drive.

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

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

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

2.10 Parallel port connector (CN16)

Normally, the parallel port is used to connect the card to a printer. The PCM-9587 A2 includes a multi-mode (ECP/EPP/SPP) parallel port accessed via CN16 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.

2.11 Keyboard and PS/2 mouse connector (CN27)

The PCM-9587 A2 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-9587'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.

2.12 Front Panel Connector (CN22)

Next, you may want to install external switches to monitor and control the PCM-9587. These features are optional: install them only if you need them. The Front Panel connector (CN22) 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.

2.12.1 Power & HDD LED (pin 1-4 of CN22)

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

2.12.2 Reset switch (pin 13-14 of CN22)

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.

2.13 Power connectors (CN25,CN5)

2.13.1 ATX power connector, +5V (CN5)

Supplies main power to the PCM-9587 A2 (+5V) and to devices that require it.

2.13.2 CPU Fan power supply connector (CN25)

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

2.14 ATX power ON/OFF switch con. pin 11-12 of CN22

2.14.1 ATX feature (CN5) & soft power switch (CN22)

The PCM-9587 A2 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 CN22. (A momentary type of button should be used.)

Note! *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.*

2.15 Audio AC'97 Link interfaces (CN4)

The PCM-9587 A2 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.

2.15.1 Audio connector(CN4)

The PCM-9587 A2 provides all major audio signals on a 16-pin flat-cable connector, CN4. 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.

2.15.2 CD audio-in connector (CN3)

All CD-ROM drives can provide analog audio signal output when used as a music CD player. The CN3 on PCM-9587 A2 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 CN3.

2.16 COM port connector (CN21)

The PCM-9587 A2 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, 20*2P 180D(M) 2.0mm, connector. It provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix C. COM2 can be configured to operate in RS-232,RS-422, or RS-485 mode. This is done via J5.

2.17 VGA/LVDS interface connections (CN7, CN8, CN9)

The PCM-9587'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.

2.17.1 CRT display connector (CN7)

CN7 is a 16-pin, dual-inline header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN7 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 CN7 are detailed in Appendix B.

2.17.2 LVDS LCD panel connector (CN8)

The PCM-9587 A2 uses the Intel 852 GM chipset that supports single- or dual-channel LVDS panel up to UXGA panel resolution with frequency range from 15MHz to 112MHz.

The PCM-9587 A2 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 connector to either an 18, 24, 36 or 48bit LVDS LCD with CN8.

2.17.3 DVI LCD panel connector(CN9)

Digital Visual Interface (DVI) is the standard interface for high-performance connection between PCs and Flat Panel Displays, Digital CRT displays, Projectors, and HDTV. The PCM-9587 A2 is able to drive a DVI connector display at a pixel resolution up to 1600 x 1200 at 85Hz.

Panel type and Resolution mode selection

Customer can select display type and boot number from BIOS menu selection.

Table 2.8: CN9: DVI connector

PIN	Signal	PIN	Signal
1	C0#	2	VCC_DVI
3	C0	4	CK#
5	GND	6	CK
7	C1#	8	GND
9	C1	10	DVI_CLK
11	GND	12	DVI_DATA
13	C2#	14	HP_DET
15	C2	16	MI2C_DATA
17	VCC_DVI	18	MI2C_CLK
19	NC	20	NC

2.18 Ethernet configuration (CN11)

The PCM-9587 A2 is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

2.18.1 100Base-T connector (CN11)

10/100Base-T connects to the PCM-9587 A2 via an adapter cable to a 10-pin polarized header (CN11).

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 (CN18,CN20)

The PCM-9587 A2 board provides up to four USB (Universal Serial Bus) 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-9587 A2 support three 5 x 2 pin header connector for USB1,2 (CN20), USB3,4 (CN18). You will need an USB cable if you use USB connectors. The USB interfaces can be disabled in the system BIOS setup.

Table 2.9: CN18: USB port 3/4

PIN	Signal	PIN	Signal
1	VCC	2	VCC
3	DAT2-	4	DAT3-
5	DAT2+	6	DAT3+
7	GND	8	GND
9	GND	10	NC

Table 2.10: CN20: USB PORT 1/2

PIN	Signal	PIN	Signal
1	VCC	2	VCC
3	DAT0-	4	DAT1-
5	DAT0+	6	DAT1+
7	GND	8	GND
9	GND	10	NC

2.20 LCD Backlight connector (CN1)

The LCD inverter is connected to CN1 via a 5-pin connector to provide +5V/+12V power.

2.21 SATA Connector (CN23, CN24)

PCM-9587 A2 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 DIO connector (CN19)

The PCM-9587 A2 supports DIO interface by CN19, which is a 7 x 2 dual line pin header, supplies 8 general purpose input or output ports.

2.23 -12V and -5V connector (CN6)

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

2.24 Extension SMBUS connector (CN26)

4-pin connector reserved for extra SMBus device.

2.25 System FAN connector (CN13)

The board supports one system housing cooling fan connector on the motherboard. The connector is 3-pin headers and support fan speed monitoring. A temperature monitor detects the internal system temperatures, which is displayed in the PC Health section of the CMOS Setup Utility.

Table 2.11: CN13: System FAN connector

PIN	Signal
1	GND
2	+12V
3	Detection

Note! *PCM-9587 A2 ISA bus only supports 8 bit.*

Chapter 3

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.

3.1 Introduction

The PCM-9587 A2 system BIOS and custom drivers are located in a 512 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 Standard LCDs

The following tables illustrate typical LCD connection pinouts for the PCM-9587.

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

Table 3.1: Connections to LCD/ Flat Panel (CN8)

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
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.

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-9587 A2 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 <Del> immediately. This will allow you to enter Setup.

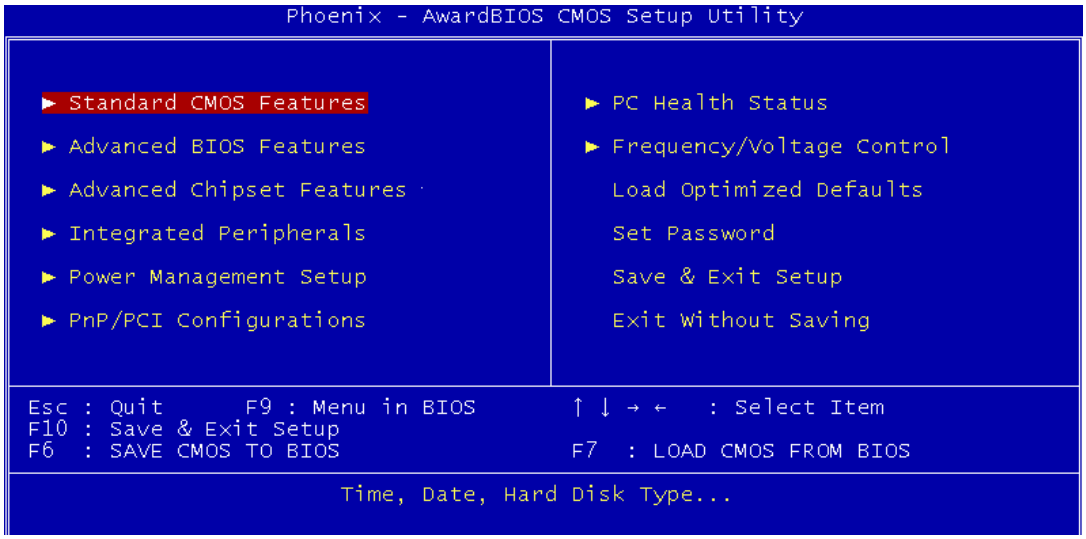


Figure 4.1 BIOS setup program initial screen

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.

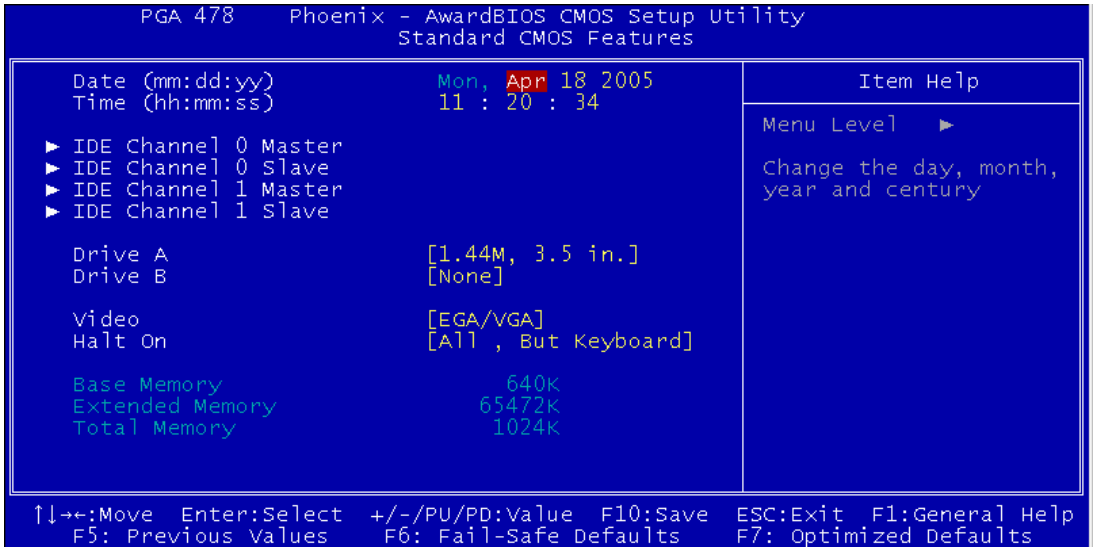


Figure 4.2 CMOS Features setup

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-9587 A2 Series.

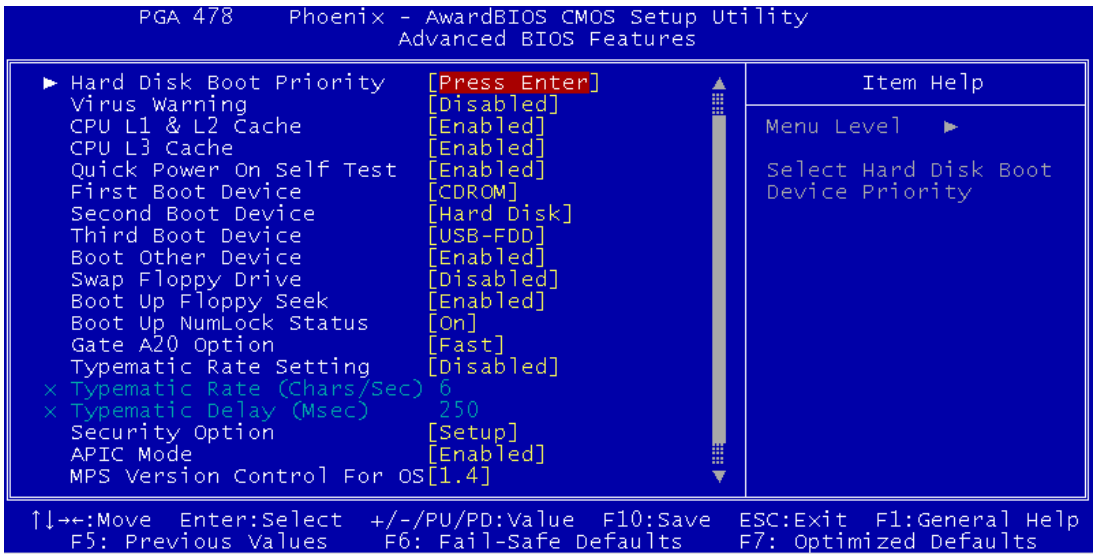


Figure 4.3 Advanced BIOS Features setup

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-9587 A2 Series.

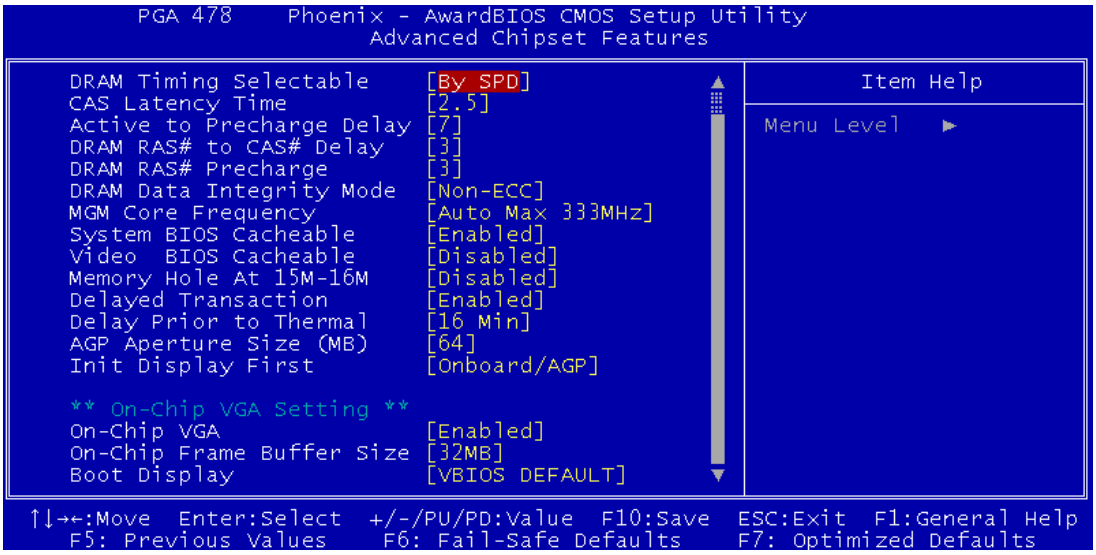


Figure 4.4 Advanced Chipset Features setup

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-9587 A2 Series.

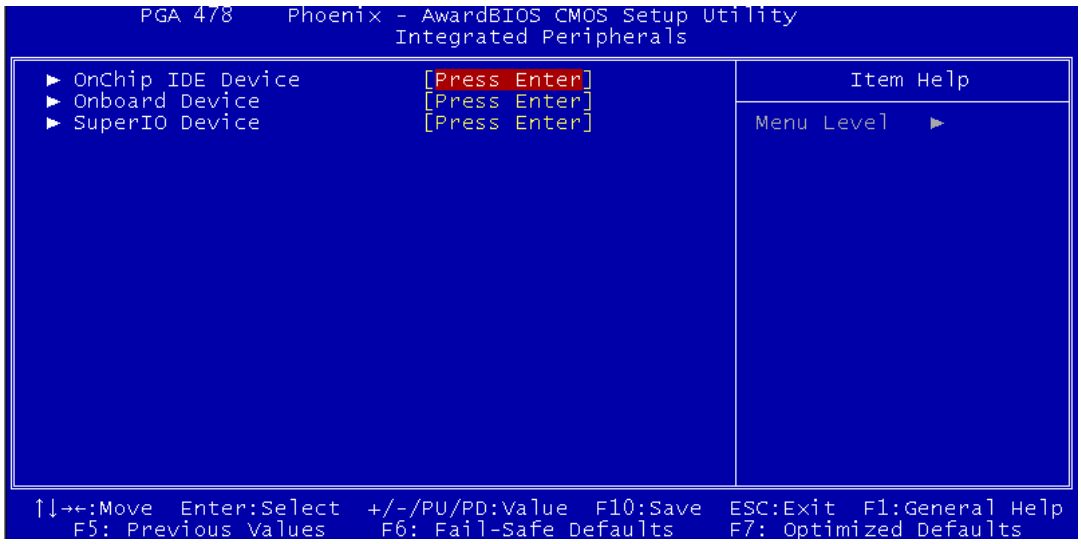


Figure 4.5 Integrated Peripherals

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-9587 A2 Series.

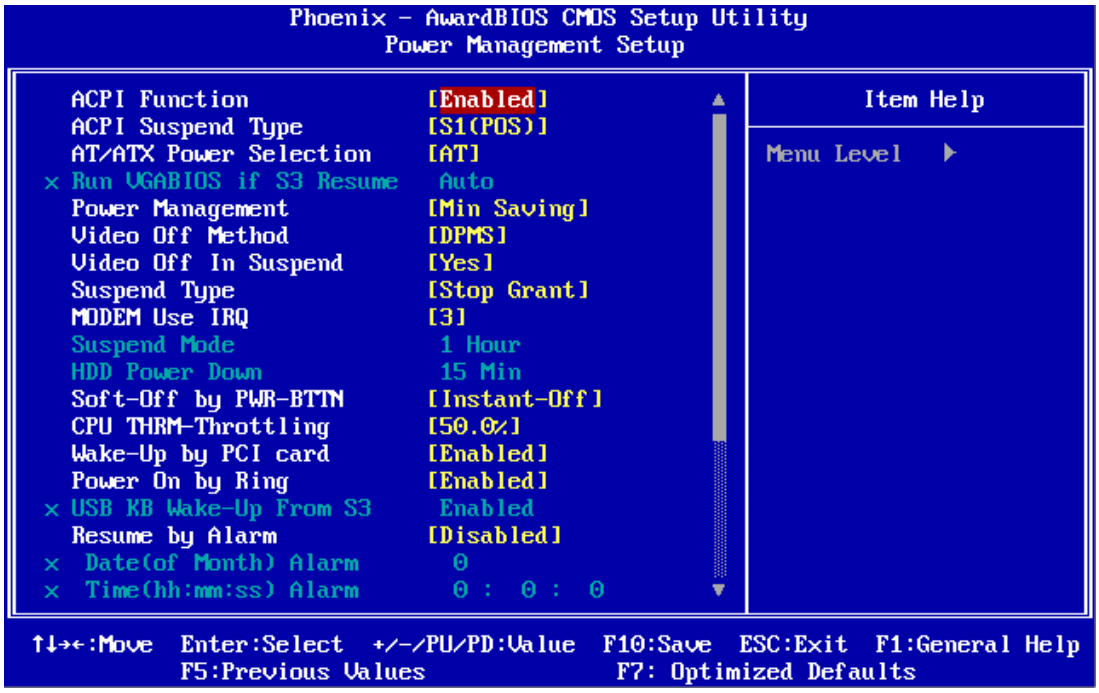


Figure 4.6 Power Management Setup

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-9587 A2 Series.

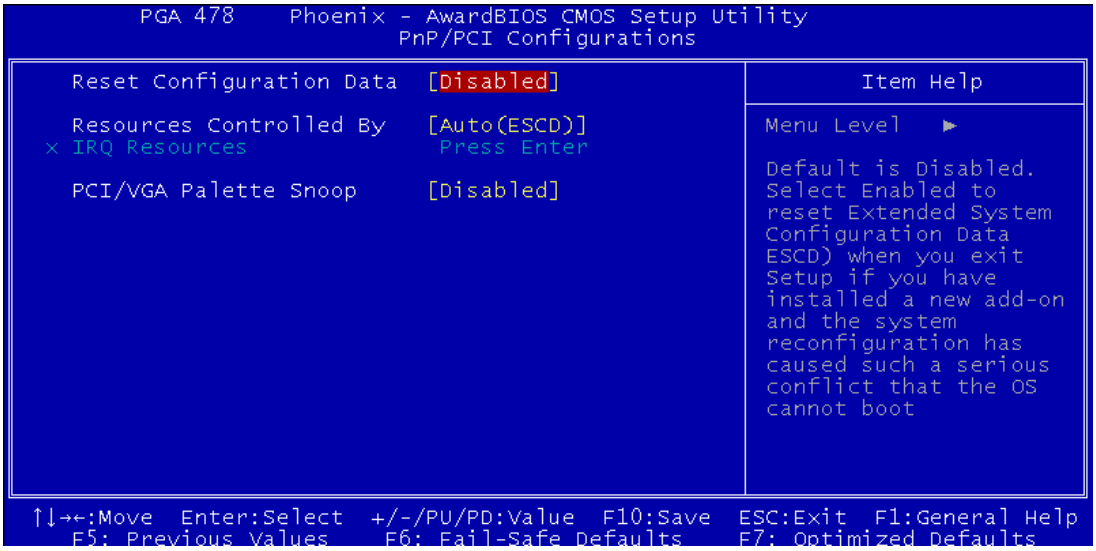


Figure 4.7 PnP/PCI Configurations

4.2.8 PC Health Status

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

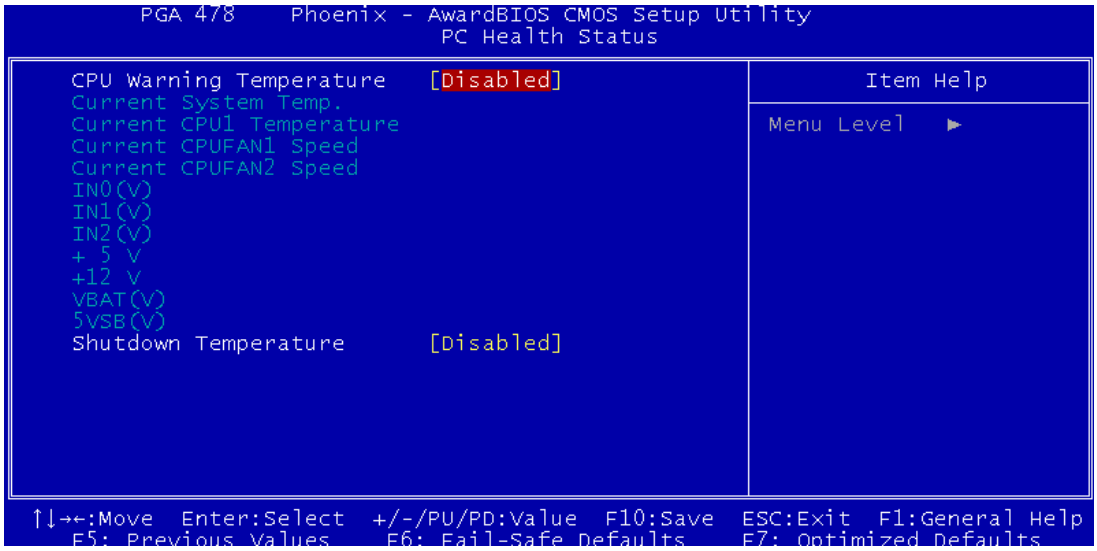


Figure 4.8 PC Health Status

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-9587.

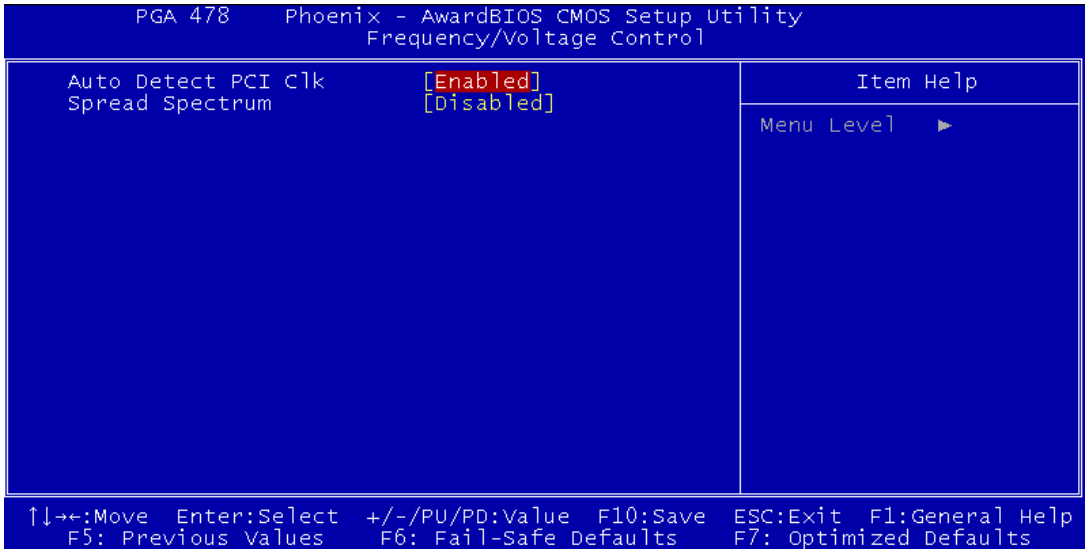


Figure 4.9 Frequency/Voltage Control

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

4.2.10 Load Optimized Defaults

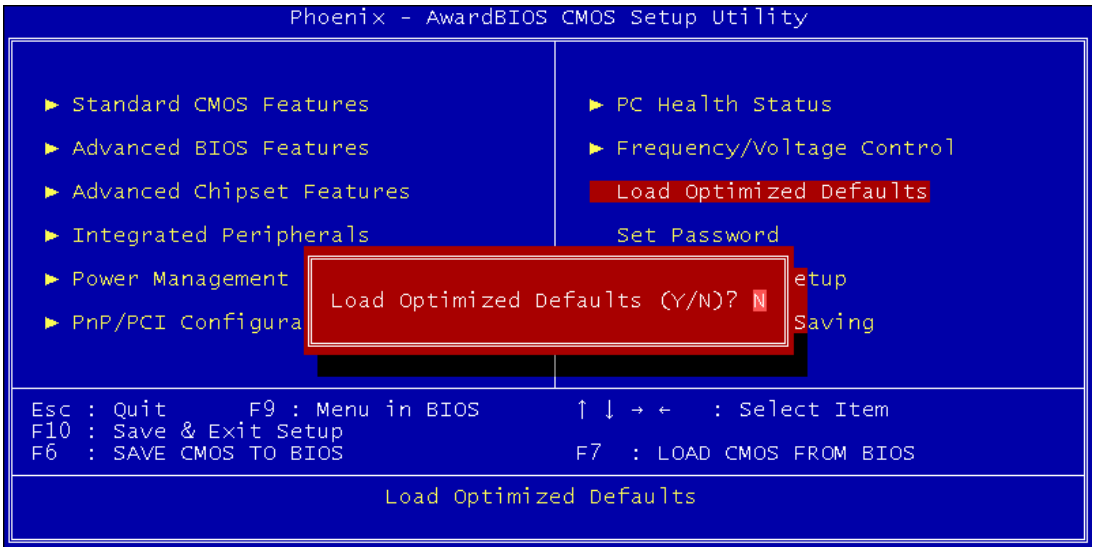


Figure 4.10 Load Optimized Defaults

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-9587 A2 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>.

4.3 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.

4.3.1 Exit Without Saving

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

Appendix A

Programming the GPIO and Watchdog Timer

The PCM-9587 A2 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

A.1 Supported GPIO Register

Below are detailed descriptions of the GPIO addresses and a 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
```

Note! *The input/output data (**) is a value of time interval. The value range is from 01 (hex) to 3F (hex), and the related time interval is 1 sec. to 62 sec.*

Data	*Time Interval*
01	*1 sec.*
02	*2 sec*
03	*3 sec*
04	*4 sec*

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
```

Appendix B

Pin Assignments

This appendix provides specialized information regarding:

B.1 LCD Backlight Connector (CN1)

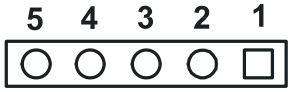


Table B.1: LCD Backlight Connector (CN1)	
Pin	**Signal**
1	+12 V
2	GND
3	LVDS_BKLTEN
4	VBR
5	+5 V

B.2 CD-IN Connector (CN3)

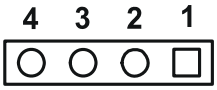


Table B.2: CD-IN Connector (CN3)	
Pin	**Signal**
1	CD_R
2	GND
3	GND
4	CD_L

B.3 Audio Output Connector (CN4)

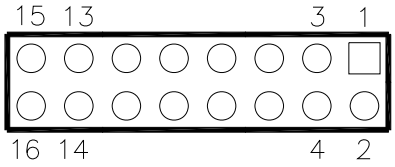


Table B.3: Audio Output Connector (CN4)			
Pin	**Signal**	**Pin**	**Signal**
1	SPK_R+	2	SPK_R-
3	SPK_L+	4	SPK_L-
5	LOUT_R	6	LOUT_L
7	A_GND	8	A_GND
9	LIN_R	10	LIN_L
11	A_GND	12	A_GND

Table B.3: Audio Output Connector (CN4)			
13	NC	14	MIC_L
15	MIC_R	16	A_GND

B.4 Power input Connector (CN5)

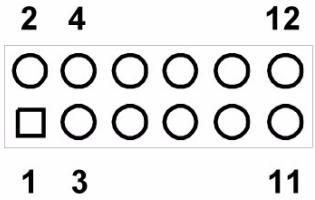


Table B.4: Power input Connector (CN5)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	GND
3	VCC	4	GND
5	VCC	6	5VSB
7	GND	8	PSON#
9	VCC	10	GND
11	VCC	12	+12V

B.5 -12V and -5V Connector (CN6)

Table B.5: -12V and -5V Connector (CN6)	
Pin	**Signal**
1	-5V
2	GND
3	-12V

B.6 VGA Connector (CN7)

Table B.6: VGA Connector (CN7)			
Pin	**Signal**	**Pin**	**Signal**
1	VGA_R	2	VGA_VCC
3	VGA_G	4	GND
5	VGA_B	6	NC
7	NC	8	VGA_DATA
9	GND	10	VGA_HS
11	GND	12	VGA_VS
13	GND	14	VGA_CLK
15	GND	16	NC

B.7 LVDS Connector (CN8)

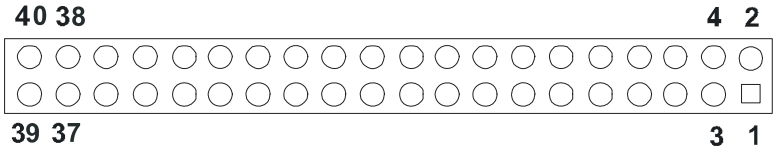


Table B.7: CN8 LVDS connector

Signal	Pin	Pin	Signal
VDD_FP	1	2	VDD_FP
GND	3	4	GND
VDD_FP	5	6	VDD_FP
YAM0	7	8	YBM0
YAP0	9	10	YBP0
GND	11	12	GND
YAM1	13	14	YBM1
YAP1	15	16	YBP1
GND	17	18	GND
YAM2	19	20	YBM2
YAP2	21	22	YBP2
GND	23	24	GND
CLKAM	25	26	CLKBM
CLKAP	27	28	CLKBP
GND	29	30	GND
DCLK	31	32	DDAT
GND	33	34	GND
YAM3	35	36	YBM3
YAP3	37	38	YBP3
BKLTEN	39	40	NC

B.8 DVI Connector (CN9)

Table B.8: DVI Connector (CN9)

Pin	**Signal**	**Pin**	**Signal**
1	C0#	2	VCC_DVI
3	C0	4	CK#
5	GND	6	CK
7	C1#	8	GND
9	C1	10	DVI_CLK
11	GND	12	DVI_DATA
13	C2#	14	HP_DET
15	C2	16	MI2C_DATA
17	VCC_DVI	18	MI2C_CLK
19	NC	20	NC

B.9 Gigabit LAN Connector (CN10 Optional)

Table B.9: Gigabit LAN Connector (CN10)			
Pin	**Signal**	**Pin**	**Signal**
1	NC	2	NC
3	RJ45_7	4	RJ45_8
5	RJ45_4	6	RJ45_5
7	RJ45_3	8	RJ45_6
9	RJ45_1	10	RJ45_2

B.10 10/100M LAN Connector (CN11)

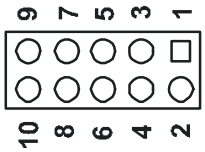


Table B.10: 10/100M LAN Connector (CN11)	
Pin	**Signal**
1	VCC_LAN
2	ACTLED
3	RX+
4	RX-
5	LILED
6	GND
7	NC
8	GND
9	TX+
10	TX-

B.11 Gigabit LAN LED Connector (CN12 Optional)

Table B.11: Gigabit LAN LED Connector (CN12)			
Pin	**Signal**	**Pin**	**Signal**
1	VCC_LAN25	2	GND
3	LINK	4	ACT
5	LINK100	6	LINK1000
7	NC	8	NC

B.12 System FAN Connector (CN13)

Table B.12: System FAN Connector (CN13)	
Pin	**Signal**
1	GND
2	+12V

Table B.12: System FAN Connector (CN13)	
3	Detection

B.13 Floppy Disk Drive Connector (CN14)

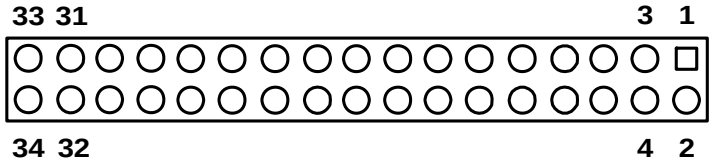


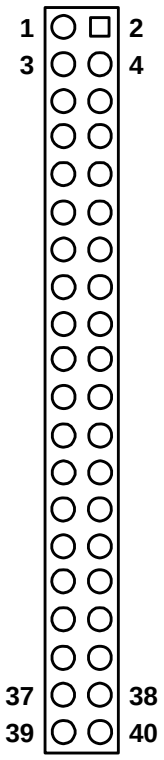
Table B.13: Floppy Disk Drive Connector (CN14)

Pin	Signal	Pin	Signal
1	GND	2	RWC#
3	GND	4	NC
5	GND	6	DS1
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	DSB#
13	GND	14	DSA#
15	GND	16	MOB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WD#
23	GND	24	WE#
25	GND	26	TRACK0#
27	GND	28	WP#
29	GND	30	RDATA#
31	GND	32	HEAD
33	GND	34	DSKCHG#

B.14 Primary HDD Connector (CN15)

Table B.14: Primary HDD Connector (CN15)

Pin	Signal	Pin	Signal
1	Reset	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	KEY
21	DREQ	22	GND
23	DIOW	24	GND
25	DIOR	26	GND
27	IORDY	28	GND
29	DACK	30	GND
31	IDE IRQ14	32	NC
33	ADDR 1	34	66DET
35	ADDR 0	36	ADDR 2
37	CS1	38	CS3
39	DASP	40	GND

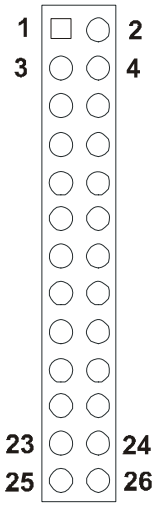


B.15 Printer Port Connector (CN16)

Table B.15: Printer Port Connector (CN16)

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

* low active



B.16 USB Connector (CN18,20)

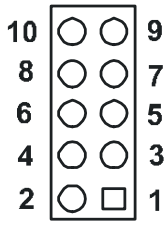


Table B.16: USB Connector (CN18,20)

Pin	Signal	Pin	Signal
1	+5 V	2	+5 V
3	UV0-/2-/4-	4	UV1-/3-/5-
5	UV0+/2+/4+	6	UV1+/3+/5+
7	GND	8	GND
9	GND	10	NC

B.17 DIO Connector (CN19)

Table B.17: DIO Connector (CN19)

Pin	Signal	Pin	Signal
1	DIO IN0	2	DIO OUT0
3	GND	4	GND
5	DIO IN1	6	DIO OUT1
7	VCC	8	NC
9	DIO IN2	10	DIO OUT2
11	GND	12	GND
13	DIO IN3	14	DIO OUT3

B.18 COM Port Connector (CN21)

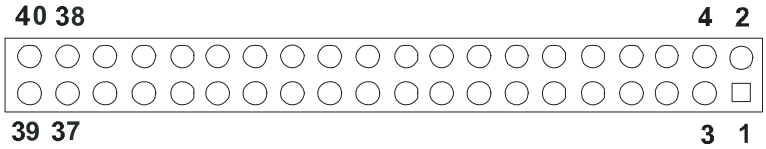


Table B.18: COM Port Connector (CN21)			
Pin	Signal	Pin	Signal
1	COM1 DCD	2	COM1 DSR
3	COM1 RX	4	COM1 RTS
5	COM1 TX	6	COM1 CTS
7	COM1 DTR	8	COM1 RI
9	GND	10	GND
11	COM2 DCD/485TX-	12	COM2 DSR
13	COM2 RX /485TX+	14	COM2 RTS
15	COM2 TX /485RX+	16	COM2 CTS
17	COM2 DTR/485RX-	18	COM2 RI
19	GND	20	GND
21	COM3 DCD	22	COM3 DSR
23	COM3 RX	24	COM3 RTS
25	COM3 TX	26	COM3 CTS
27	COM3 DTR	28	COM3 RI
29	GND	30	GND
31	COM4 DCD	32	COM4 DSR
33	COM4 RX	34	COM4 RTS
35	COM4 TX	36	COM4 CTS
37	COM4 DTR	38	COM4 RI
39	GND	40	GND

B.19 Front Panel Connector (CN22)

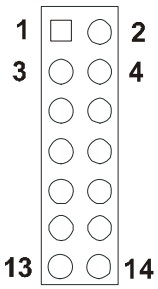


Table B.19: Front panel Connector (CN22)			
Pin	**Signal**	**Pin**	**Signal**
1	HDD LED+	2	HDD LED-
3	Power LED+	4	GND
5	Suspend LED	6	GND
7	LAN ACT+	8	LAN ACT-
9	LAN Link+	10	LAN Link-
11	VCC_DUAL	12	ATX Power Button
13	GND	14	Reset

B.20 SATA Connector 1 (CN23)

Table B.20: SATA Connector 1 (CN23)	
Pin	**Signal**
1	GND
2	TX0
3	TX0#
4	GND
5	RX0#
6	RX0
7	GND

B.21 SATA Connector 2 (CN24)

Table B.21: SATA Connector 2 (CN24)	
Pin	**Signal**
1	GND
2	TX1
3	TX1#
4	GND
5	RX1#
6	RX1
7	GND

B.22 CPU FAN Connector (CN25)

Table B.22: CPU FAN Connector (CN25)	
Pin	**Signal**
1	GND
2	+12V
3	SPEED DETECT

B.23 Extension SMBUS Connector (CN26)

Table B.23: Extension SMBUS Connector(CN26)	
Pin	**Signal**
1	GND
2	SMBDATA
3	SMBCLK
4	3VSB

B.24 Keyboard and PS/2 Mouse Connector (CN27)

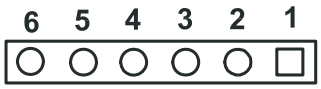


Table B.24: Keyboard and Mouse Connector (CN27)

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

B.25 CPU FAN Connector (wafer box) (Optional) (CN28)

Table B.25: CPU FAN Connector (wafer box)(Optional)(CN28)

Pin	Signal
1	Detection
2	VCC 5V
3	GND

B.26 Mini PCI Connector(CN29)

Table B.26: Mini PCI Connector (CN29)

Pin	Signal	Pin	Signal
1	TIP Key	2	RING Key
3	8PMJ-33, 4	4	8PMJ-13, 4
5	8PMJ-63, 4	6	8PMJ-23, 4
7	8PMJ-73, 4	8	8PMJ-43, 4
9	8PMJ-83, 4	10	8PMJ-53, 4
11	LED1_GRNP	12	LED2_YELP
13	LED1_GRNN	14	LED2_YELN
15	CHSGND	16	RESERVED
17	INTB#	18	5V
19	3.3V	20	INTA#
21	RESERVED	22	RESERVED
23	GROUND	24	3.3VAUX
25	CLK	26	RST#
27	GROUND	28	3.3V

B.27 CompactFlash Card Connector (CN30)

Table B.27: CompactFlash Card Connector (CN30)			
Pin	**Signal**	**Pin**	**Signal**
1	GND	2	SDD3
3	SDD4	4	SDD5
5	SDD6	6	SDD7
7	SDCS#1	8	GND
9	GND	10	GND
11	GND	12	GND
13	+5V	14	GND
15	GND	16	GND
17	GND	18	SDA2
19	SDA1	20	SDA0
21	SDD0	22	SDD1
23	SDD2	24	NC
25	NC	26	NC
27	SDD11	28	SDD12
29	SDD13	30	SDD14
31	SDD15	32	SDCS#3
33	NC	34	SDIOR
35	SDIOW	36	+5V
37	IRQ15	38	+5V
39	CSEL	40	NC
41	IDERST	42	SDIORDY
43	NC	44	+5V
45	SDDASP	46	S66DET
47	SDD8	48	SDD9
49	SDD10	50	GND

Appendix C

System Assignments

This Appendix contains information of a detailed nature.

It includes:

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

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)
  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

Appendix D

Optional Extras for the PCM-9587

The PCM-9587 A2 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-10586-6200E Cable kit for PCM-9587 A2

Table D.1: PCM-10586-6200E wiring kit 9587

Part No.	Cable Description	PCM-9587F Connector	Terminating Connector
1701340603	Dual floppy, 3.5" and 5.25" (34p)	CN14	34-pin dual floppy
1700260250	Parallel Port	CN16	26pin,female DSUB
1700001296	VGA CRT	CN7	2 x 8-pin header (2 mm) 15-pin DSUB
1703060191	KB/mouse cable	CN27	6-pin circular DIN
1701400181	COM 1-4 cable	CN21	40-pin, 9-pin male DSUB x 4
1700160160	Audio cable	CN4	F3.5 mm 16-pin, 5 female phone jacks
1701400452	3.5" IDE DMA/66 (40p)	CN15	40-pin, 2.54 mm, female IDC (450 mm)
1703100260	USB cable	CN20	10-pin, IDE 2.0 mm, USB x 2 (26 cm)
1700071000	SATA cable	CN23	7P/7P 100CM
1700000410	TMDS cable	CN9	Cable DVI- 26P/DF13-20P 20 cm
1701100202	Network, 10/100 Base-T	CN11	F cable RJ45/IDE#2 10P 20CM

Appendix E

Mechanical Drawings

E.1 Mechanical Drawings

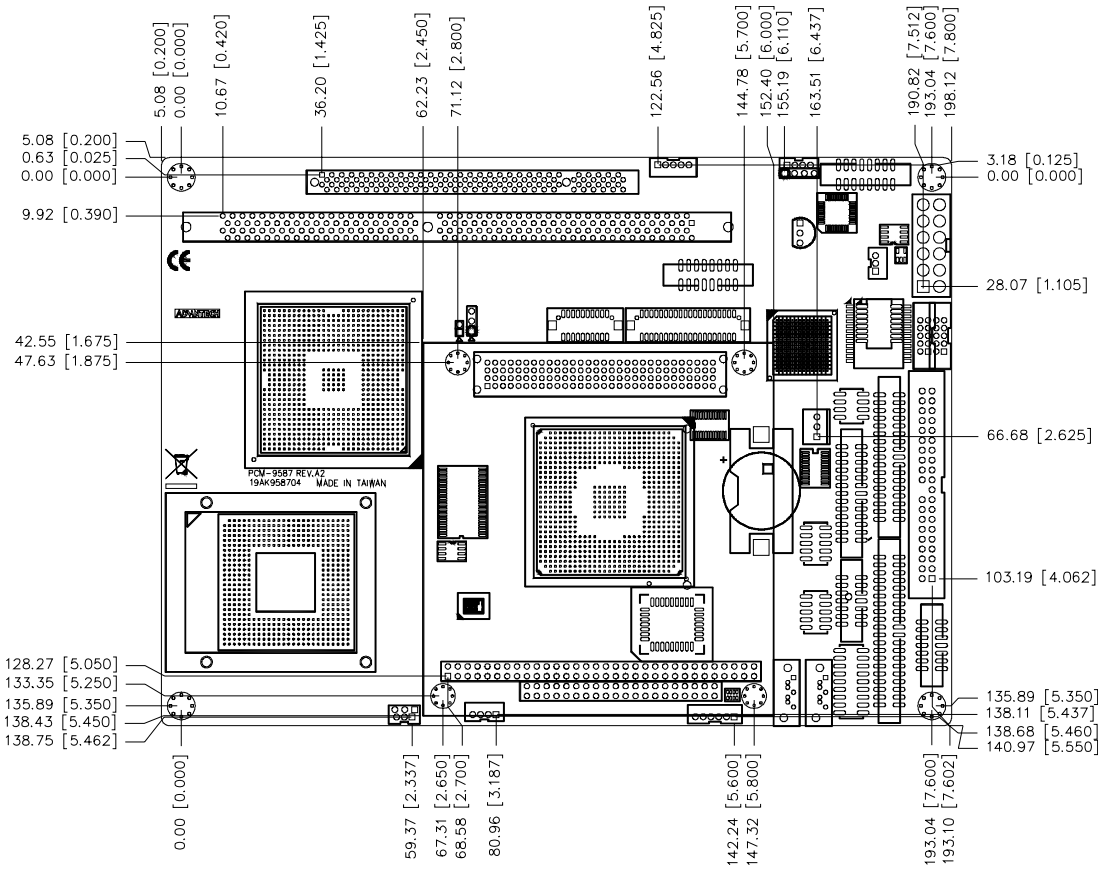


Figure E.1 PCM-9587 A2 Mechanical Drawing (component side)

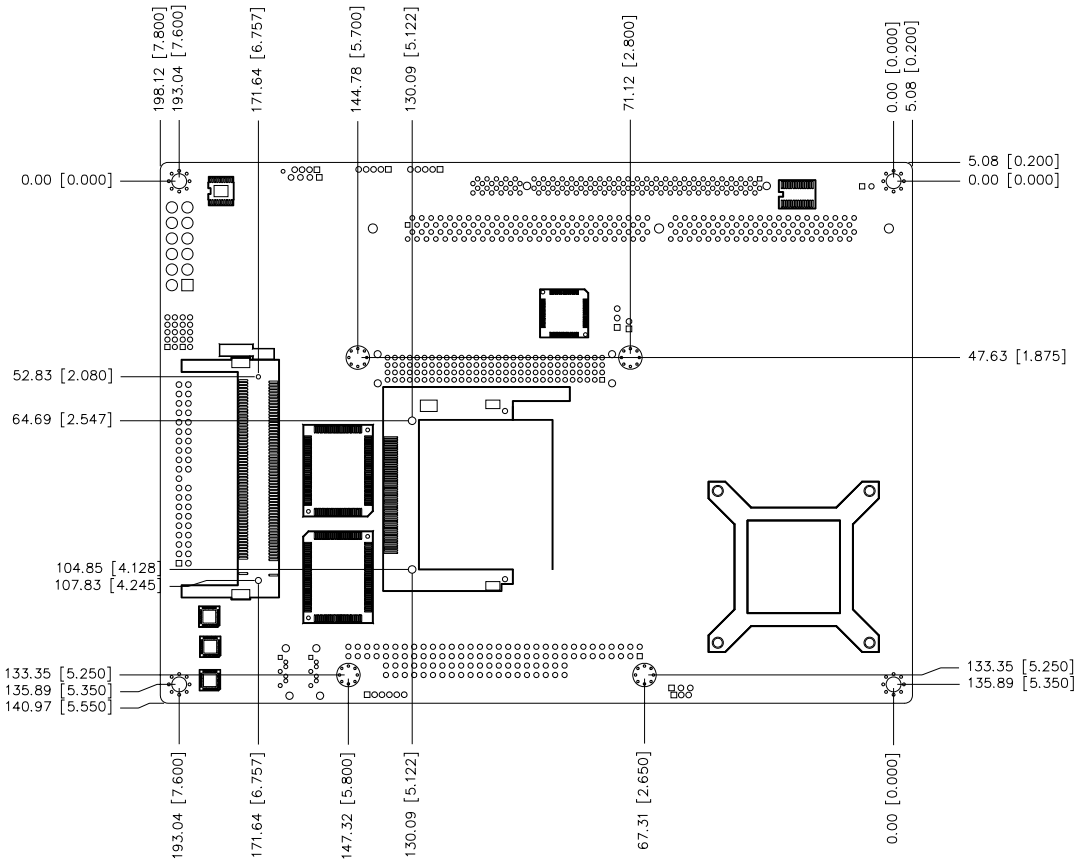


Figure E.2 PCM-9587 A2 Mechanical Drawing (solder side)

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