

User Manual

PCM-3362

PC/104-plus SBC with Intel[®] Atom[™] N450, VGA, LCD, LAN, USB2.0, SATA, and on-board flash

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Packing List

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

1 x PCM-3362 SBC	
1 x SATA data cable	(p/n: 1700071000)
1 x SATA power cable	(p/n: 1703150102)
1 x Keyboard/Mouse cable	(p/n: 1703060053)
1 x Y cable for KB/MS extension	(p/n: 1700060202)
1 x Ethernet RJ-45 Conn. conversion cable	(p/n: 1700017863)
1 x VGA cable	(p/n: 1700000898)
1 x USB cable (bracket type with two USB ports)	(p/n: 1703100260)
1 x RS-422/485 COM cable	(p/n: 1703040157)
1 x RS-232 COM cable	(p/n: 1701200220)
1 x ATX Power cable	(p/n: 1700002332)
1 x AT Power cable	(p/n: 1700003491)

- 1 x Startup manual
- 1 x CD-ROM (Manual, Driver, Utility)

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

Model No.List	Description				
PCM-3362N-S6A1E	Intel Atom N450 PC/104-Plus SBC, VGA, LVDS, LAN,				
	USB,SATA and on-board flash				

Optional Accessory

1 x heatspreader (p/n:1960047106T001)

Additional Information and Assistance

- 1. Visit the manufacturer's where you can find the latest information about the product.
- 2. Contact your distributor, sales representative, or 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

Declaration of Conformity

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

FCC Class A

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. Opera- thin 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 manflatterer. Discard used batteries according to the manufacturer's instructions.

Contents

Chapter	1	General Information	1
		Introduction	0
	1.1	Introduction	Z
	1.2	Specifications	∠ ?
	1.5	1 2 1 Standard PC/104 plus Picquit SPC Functions	∠ ?
		1.2.2 VGA/LVDS Interface	∠ 2
		1.2.2 VGA/LVDS IIIleIIace	ა ა
		1.2.4 OS support	ວ ວ
		1.2.5 Mechanical and Environmental	ວ ວ
	1 /	Poord lovout: dimonoiono	3 ⊿
	1.4	Eigure 1.1. Roord loyout: Dimensions (Component Side)	4 1
		Figure 1.1 Board layout: Dimensions (Component Side)	4 5
		rigule 1.2 Board layout. Dimensions (Solder Side)	
Chapter	2	Hardware Installation	7
	2.1	Jumpers	8
		Table 2.1: Jumpers	8
	2.2	Connectors	8
		Table 2.2: Connectors	8
	2.3	Locating Connectors & block diagram	9
		Figure 2.1 Connectors (component side)	9
		Figure 2.2 Connectors (solder side)	9
		Figure 2.3 Block diagram	10
	2.4	Setting Jumpers	10
		2.4.1 Clear CMOS (JP1)	11
		Table 2.3: Clear CMOS (JP1)	11
		2.4.2 LVDS Panel Power Select (JP2)	11
		Table 2.4: LVDS Panel Power Select (JP2)	11
		2.4.3 COM3 RS422/RS485 Select (JP3)	12
		Table 2.5: COM3 RS422/RS485 Select (JP3)	12
		2.4.4 PCI I/O Voltage Select (JP4)	12
		Table 2.6: PCI I/O Voltage Select (JP4)	12
	2.5	Installing SODIMMs	12
	2.6	Flash	12
	2.7	High Definition Audio Interface (CN1)	13
	2.8	VGA/LCD interface connections	13
		2.8.1 CRT display connector (CN8)	13
		2.8.2 LVDS connector (CN6)	13
		2.8.3 Panel Inverter Power (CN7)	13
	2.9	USB connectors (CN9 & CN10)	13
	2.10	Front Panel Connector (CN12)	13
	2.11	Buzzer Connector (CN13)	14
	2.12	SATA Connector (CN15)	14
	2.13	COM port connector (CN16 & CN17)	14
		2.13.1 Serial Port RS-422/485 (CN17)	14
	2.14	Giga LAN Connector (CN18)	14
		2.14.1 LAN LED Connector (CN19)	14
	2.15	Keyboard and PS/2 mouse connector (CN20)	14
	2.16	GPIO Connector (CN21)	15
	2.17	ATX Power in connector (CN23)	15
	2.18	Power Connectors (CN24)	15
	2.19	I2C Bus connector (CN25)	15
	2.20	-12 V & -5 V power connector (CN26)	15
	2.21	Watchdog timer configuration	15

Chapter 3 AMI BIOS Setup......17

		Figure 3.1 Setup program initial screen	18					
3.1	Enterin	g Setup	18					
3.2	Main S	etup	18					
		Figure 3.2 Main setup screen	19					
	3.2.1	System time / System date	19					
3.3	Advand	ced BIOS Features Setup	19					
		Figure 3.3 Advanced BIOS features setup screen	20					
	3.3.1	CPU Configuration	20					
		Figure 3.4 CPU Configuration Setting	20					
	3.3.2	IDE Configuration	21					
		Figure 3.5 IDE Configuration	21					
	3.3.3	Super I/O Configuration	22					
		Figure 3.6 Super I/O Configuration	22					
	3.3.4	Hardware Health Configuration	22					
		Figure 3.7 Hardware health configuration	22					
	3.3.5	ACPI Settings	23					
		Figure 3.8 ACPI Settings	23					
		Figure 3.9 General ACPI Configuration	23					
		Figure 3.10Advanced ACPI Configuration	24					
		Figure 3.11Chipset ACPI Configuration	24					
	3.3.6	AHCI Configuration	25					
		Figure 3.12 Advanced ACPI Configuration	25					
	3.3.7	APM Configuration	26					
		Figure 3.13APM Configuration	26					
	3.3.8	Event Log Configuration	27					
		Figure 3.14South Bridge ACPI Configuration	27					
	3.3.9	MPS Configuration	27					
		Figure 3.15South Bridge ACPI Configuration	27					
	3.3.10	Smbios Configuration	28					
		Figure 3.16South Bridge ACPI Configuration	28					
	3.3.11	USB Configuration	28					
		Figure 3.17South Bridge ACPI Configuration	28					
		Figure 3.18USB Mass storage Device Configuration	29					
3.4	Advand	ced PCI/PnP Settings	29					
		Figure 3.19PCI/PNP Setup (top)	30					
3.5	Boot Settings							
		Figure 3.20Boot Setup Utility	31					
	3.5.1	Boot settings Configuration	31					
		Figure 3.21 Boot Setting Configuration	31					
3.6	Securit	y Setup	32					
		Figure 3.22Password Configuration	32					
3.7	Advand	ced Chipset Settings	33					
		Figure 3.23Advanced Chipset Settings	33					
	3.7.1	North Bridge Chipset Configuration	33					
		Figure 3.24North Bridge Configuration	33					
		Figure 3.25Video function configuration	34					
	3.7.2	South Bridge Chipset Configuration	34					
		Figure 3.26South Bridge Configuration	34					
3.8	Exit Op	otion	35					
		Figure 3.27Exit Option	35					
	3.8.1	Save Changes and Exit	35					
	3.8.2	Discard Changes and Exit	36					
	3.8.3	Load Optimal Defaults	36					
	3.8.4	Load Fail-Safe Defaults	36					

Chapter	4	Software Introduction & Installation	37
	4.1	S/W Introduction	38
	4.2	4.2.1 Windows XP professional	38 38
		4.2.2 Other OS	38
	4.3	Value-Added Software Services	38
		4.3.1 SUSI Introduction	38
		4.3.3 SUSI Utilities	40
		4.3.4 SUSI Installation	40
		4.3.5 SUSI Sample Programs	42
Chapter	5	Chipset Software Installation Utility	49
	5.1	Before You Begin	50
	5.2		50
	5.3	Windows XP/Vista/Win7 Driver Setup	50
Chapter	6	Integrated Graphic Device Setup	51
	6.1	Introduction	52
	6.2	Windows XP/ Vista /Win7 Driver Setup	52
Chapter	7	LAN Configuration	53
	7.1	Introduction	54
	7.2	Installation	54
	7.3	Windows XP/ Vista /Win7 Driver Setup	54
Appendix	хA	Pin Assignments	55
	A.1	Jumper and Connector Tables	56
Appendix	хB	System Assignments	65
	B.1	System I/O Ports	66
	B 2	I able B.1: System I/O ports	66
	0.2	Table B.2: 1st MB memory map	66
	B.3	DMA channel assignments	66
	R 4	I able B.3: DMA channel assignments	66 67
	D.4	Table B.4: Interrupt assignments	67
Appendix	x C	Mechanical Drawings	69
	C.1	Board Mechanical Drawings	70
		Figure C.1 PCIVI-3302 iviecnanical Drawing (Component Si Figure C.2 PCM-3362 Mechanical Drawing (Solder Side)	ue). 70
	C.2	Heatsink Mechanical Drawings	72
		Figure C.3 PCM-3362N Heatsink Mechanical Drawing	
	C 3	Figure C.4 PCM-3362Z/Z2 Heatsink Mech Dwg, wide temp Optional Heat spreader Mechanical Drawings	י 12 ד2
	0.0	Figure C.5 PCM-3362 optional Heatspreader Mech Drawin	g73

Appendix D	Watchdog Timer and GPIO sample code7	75
D.1	Watchdog Timer sample code	.76
D.2	GPIO sample code	.77



General Information

This chapter gives background information on the PCM-3362.

- Sections include:
- Introduction
- Features
- Specifications
- Board layout and dimensions

1.1 Introduction

The PCM-3362 is a fanless, low power, small size (96X90mm), performance PC/104plus SBC (Single Board Computer) geared to satisfy the needs for various industrial computing equipment. PCM-3362 is ideal for communication, environment monitoring, factory automation, military, and medical applications that require flat panel support using digital displays with LVDS interfaces and single Ethernet ports.

For those who want superior performance for various low-power embedded applications, PCM-3362 uses an Intel[®] Atom[™] N450 processor, supporting DDRII 667 SDRAM up to 2GB.

PCM-3362 has an integrated graphic core of Intel[®] Embedded Gen3.5+ graphic technology with 224 MB shared memory. This feature makes PCM-3362 is capable of handling complex and intense 2D/3D graphic processing, its VGA and LVDS dual video outputs also make it suitable for applications requiring dual display or digital panel display capabilities.

PCM-3362 offers convenient connector layout, easy assembly, multiple I/Os, and includes a single 10/100/1000 Mbps Ethernet, four USB (Universal Serial Bus) 2.0, one SATA2 interface, 8-bit general purpose Input/Output, two RS-232 serial ports and one RS-422/485 serial port for easy system expansibility. PC/104-plus self-stack-ing rugged mechanical architecture and extended temperature operation makes it ideal for outdoor applications in the military and transportation fields.

Supported operating systems include Windows 7, Windows XP, XP Embedded, Windows CE, and Linux. PCM-3362 also offers drivers and APIs for application development including I^2C , GPIO, watchdog timer, hardware monitor, panel backlight on/off, and brightness control.

1.2 Features

- IIntel[®] Atom[™] N450 Processor
- Supports DDR2 667 memory
- Supports 18-bit LVDS LCD interface
- Supports 1 X SATA2 interface
- Supports 2GB on-board flash
- Supports 1 x 10/100/1000 Mbps Fast Ethernet
- Supports four USB2.0 ports
- Supports two serial RS-232 ports (COM1/2), one RS-422/485 port(COM3)
- PC/104-plus expansion interface

1.3 Specifications

1.3.1 Standard PC/104-plus Biscuit SBC Functions

- CPU: Intel[®] Atom[™] N450 processor, up to 1.67 GHz
- System Memory: supports Double Data Rate (DDR) DDR2 667 SDRAM up to 2GB

Note!

PCM-3362 cannot support DDR2 533 SDRAM.



- 2nd Cache Memory: 512 KB on the processor
- System Chipset: Intel® ICH8M
- BIOS: AMI 16Mbit Flash BIOS
- Watchdog timer: 255 levels timer interval
- **Expansion Interface:** PC/104-Plus (ISA and PCI bus)
- Battery: Lithium 3V/210 mAH
- Power management: ACPI supported
- Serial ATA: One Serial ATA2 interface, Speed up to 300MB/s
- **Flash:** On board 2GB flash (IDE interface)
- Serial ports: Two serial RS-232 ports (COM1/2), one RS-422/485 port(COM3)
- Keyboard/mouse connector: Supports one standard PC/AT keyboard and a PS/2 mouse
- USB: Four USB 2.0 ports compliant universal serial bus ports
- **GPIO:** 8 bit general purpose Input/Output
- High Definition Audio: PCM-3362 can provide audio function with the optional audio extension module PCA-AUDIO-HDA1E and specific audio cable.

1.3.2 VGA/LVDS Interface

- Controller: Integrated graphic core of Embedded Gen3.5+ technology
- VRAM: 224 MB shared system memory
- Output Interfaces:
 - VGA: Supports up to SXGA 1400 x 1060 @ 60Hz
 - LVDS: Singe channel 18-bit LVDS up to WXGA 1366 x 768
 - Dual Display: CRT + LVDS, support extended mode and clone mode

1.3.3 Ethernet Interface

- Supports Single 10/100/1000 Mbps Ethernet networking
- **Controller:** Intel[®] 82567V

1.3.4 OS support

This board supports Win7, Win XP, Win CE and Win XPe.

1.3.5 Mechanical and Environmental

- Dimensions: 96 x 90 mm (3.8" x 3.5") Mechanical Drawing (dxf file) is available.
- Power Supply Type: AT/ATX
- Power Requirement: +5 V ± 5%, +12 V ± 5% (Optional), (5 V only, 12 V optional for PC104 add on card and LCD inverter)
- **Power Consumption:** (Intel[®] Atom[™] N450, 1GB DDRII 667)
 - Power on Load: +5 V @ 2.28 A, +12 V @ 5mA
 - Max load: +5 V @ 2.37 A, +12 V @ 7mA
 - Idle mode: +5 V @ 2 A, +12 V @ 5mA

Power Consumption Conditions:

- Test software: Maxpower + 3DMark 2005

- Power on Boot: Measure the maximum current value of between system power on and boot-up to O.S.
- Max. load: Measure the maximum current value which system under maximum load (CPU: Top speed, RAM &Graphic: Full loading)
- Idle mode: Measure the current value when system in windows mode and without running any program
- Operating temperature: 0 ~ 60°C (32 ~ 140°F) (operation humidity: 40°C @ 85% RH Non-Condensing)
- Weight: 0.85 kg (reference 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)

PCM-3362 User Manual



Hardware Installation

This chapter explains the setup procedures of the PCM-3362 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-3362 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	
JP1	CLEAR CMOS
JP2	LVDS Panel Power Select
JP3	COM3 RS422/RS485 Select
JP4	PCI I/O Voltage Select

2.2 Connectors

Onboard connectors link the PCM-3362 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: Connectors				
Label	Function			
CN1	HD Audio Connector			
CN4	SO-DIMM Connector			
CN6	LVDS Connected			
CN7	Panel Inverter Connector			
CN8	VGA Connector			
CN9	USB Port0/1 Connector			
CN10	USB Port2/3 Connector			
CN12	Front panel Connector			
CN13	Buzzer Connector			
CN15	SATA Connector			
CN16	COM1~COM2 Connector			
CN17	RS422/485 Connector			
CN18	LAN Connector			
CN19	LAN LED Connector			
CN20	PS2 Keyboard/Mouse Connector			
CN21	GPIO Connector			
CN23	ATX Power In Connector			
CN24	Power In Connector			
CN25	I2C BUS connector			
CN26	-12 V & -5 V power connector			
P1	PC104-plus Connector			
BH1	RTC Battery Connector			



Figure 2.1 Connectors (component side)



Figure 2.3 Block diagram

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

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.

2.4.1 Clear CMOS (JP1)

The PCM-3362 single board computer contains a jumper that can erase CMOS data and reset the system BIOS information. Normally this jumper should be set with pins 1-2 closed. If you want to reset the CMOS data, set CMOS1 to 2-3 closed for just a few seconds, and then move the jumper back to 1-2 closed. This procedure will reset the CMOS to its default setting.



Warning! To avoid damaging the computer, always turn off the power supply before clearing CMOS.





Table 2.3: Clear CMOS (JP1)					
Setting	Function				
1-2	Normal (default)				
2-3	Clear CMOS				

2.4.2 LVDS Panel Power Select (JP2)



2.4.3 COM3 RS422/RS485 Select (JP3)



2.4.4 PCI I/O Voltage Select (JP4)

The PCI Host board will always determine the PCI signaling level on the bus by setting all VI/O pins to either 3.3 V or 5 V. If VI/O is set to 3.3 V, then the system will use 3.3 V I/O signaling, likewise, if VI/O is set to 5 V, then the system will use 5 V I/O signaling. Some PCI host modules may only allow one of the options, while others may provide a jumper to allow the user to select the signaling level. Once the signaling level is selected, the remaining boards in the system must use that signaling level.



Table 2.6: PCI I/O Voltage Select (JP4)					
Setting Function					
1-2	5 V (default)				
2-3	3.3 V				

2.5 Installing SODIMMs

The procedures for installing SODIMMs are described below. Please follow these steps carefully. You can install SDRAM memory modules using 200-pin SODIMMs (Small Outline Dual In-line Memory Modules).

- 1. Ensure that all power supplies to the system are switched off.
- 2. Tilt the SODIMM card just above the board and slide it into the housing card slot.
- 3. Push the module into the socket until the module gently snaps in. There should only be a slight insertion force to engage the module into the contacts. Make sure that the module and the housing are aligned and locked in place.

2.6 Flash

The board provides onboard NAND Flash memory to replace CF socket. NANDriveTM integrated circuits (IC) are high-performance, fully-integrated, embedded flash solid state drives. They combine an integrated ATA Controller in a multi-chip package. These products are ideal for industrial grade solid state mass storage applications offering new and expanded functionality while enabling cost effective designs. PCM-3362 supports 2GB industrial grade NAND NANDriveTM IC and up to 4GB for option. Flash endurance is about 100 Million write cycles. Data Retention is about 10 Years. PCM-3362's NANDriveTM IC supports up to Ultra DMA Mode-4 and endures in wide temperature range of -40°C to +85°C for industrial operation.

2.7 High Definition Audio Interface (CN1)

The PCM-3362 provides high definition audio interface. It can support high definition audio stereo by customized audio module that has codec onboard or by PCA-AUDIO-HDA1E module through specific cable.

2.8 VGA/LCD interface connections

The PCM-3362's VGA interface can drive conventional CRT displays and is capable of driving a wide range of LVDS flat panel displays. The board has two connectors to support these displays: one for standard CRT VGA monitors, one for LVDS type LCD panels.

2.8.1 CRT display connector (CN8)

CN8 is a 12-pin, dual-inline header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN8 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 SXGA 1400 x 1060 @ 60Hz. Pin assignments for CRT display connector CN8 are detailed in Appendix A.

2.8.2 LVDS connector (CN6)

The PCM-3362 uses the Intel Atom N450 that supports single -channel 18-bit LVDS panel up to WXGA 1366 x 768 UXGA panel resolution.

2.8.3 Panel Inverter Power (CN7)

The LCD inverter is connected to CN7 via a 5-pin connector to provide +5 V/+12 V power to the LCD display. JP2 provides inverter voltage selection function, closing Pin 1, 2 is for 5 V power input inverter; closing Pin 2, 3 is for 3.3 V power input inverter.

2.9 USB connectors (CN9 & CN10)

The board provides up to four USB (Universal Serial Bus) ports using Plug and Play. The USB interfaces comply with High Speed USB specification Rev. 2.0 which supports 480 Mbps transfer rate, and are fuse protected.

The USB interface is accessed through two 5 x 2-pin pin header connectors. You will need an adapter cable if you use a standard USB connector. The adapter cable has a 5 x 2-pin connector on one end and a USB connector on the other. The USB interfaces can be disabled in the system BIOS setup.

2.10 Front Panel Connector (CN12)

You may want to install external switches to monitor and control the PCM-3362. These features are optional: install them only if you need them.

Power Button(Pin1 & Pin2)

PCM-3362 supports power on/off button.

Reset (Pin3 & Pin4)

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset.

POWER LED (Pin5 & Pin6)

POWER LED indicator would light when the power is on.

HDD LED (Pin7 & Pin8)

The HDD LED indicator for hard disk access is an active low signal.

2.11 Buzzer Connector (CN13)

PCM-3362 provides one buzzer connector to connect buzzer for alert function. Buzzer, P/N:1750005282, can be selected to install on board.

2.12 SATA Connector (CN15)

In addition to on board 2GB flash, PCM-3362 features one high performance serial ATA interfaces (up to 300 MB/s) that eases cabling to hard drives with thin and long cables while your application need more large storage capacity.

2.13 COM port connector (CN16 & CN17)

The board provides three serial ports: two serial RS-232 ports in one 20 pin connector (CN16:COM1/2), and one serial port RS422/485 in 4 pin connector(CN17: COM3).

It provides connections for serial devices or a communication network. You can find the pin assignments for the COM port connector in Appendix.

2.13.1 Serial Port RS-422/485 (CN17)

COM3 (CN17) can be configured to operate in RS-422 or RS-485 mode by JP3.

2.14 Giga LAN Connector (CN18)

PCM-3362 uses the Intel? 82567V Gigabit LAN chips are linked to dedicated PCIe x1 lanes. PCM-3362 provide high throughputs for heavy loading networking environment. LAN connections are made via two internal 10-pin box header.

2.14.1 LAN LED Connector (CN19)

PCM-3362 provides an external LAN LED Pin header for connecting to the front side of the chassis. With this convenient design users may know whether the LAN port is acting or not easily. Refer to Appendix for detailed information on the pin assignments.

2.15 Keyboard and PS/2 mouse connector (CN20)

The 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 3362'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.

2.16 GPIO Connector (CN21)

The board supports 8-bit GPIO through GPIO connector. The 8 digital inputs and outputs can be programmed to read or control devices, with each input or output defined.

2.17 ATX Power in connector (CN23)

The PCM-3362 can support an advanced soft power switch function, if an ATX power supply is used. please follow below instruction to enable ATX functions.

- Plug ATX power cable (1700002332) into CN24. 1.
- 2. Connect the 3-pin plug of this power cable to CN23 (ATX Power in connector).
- Connect the power on/off button cable of the chassis to CN12 (front panel con-3. nector) pin1-2.



Caution! Important Make sure that the ATX power supply can take at least a 10mA load on the 5 V standby lead (5VSB). If not, you may have difficulty powering on your system.

2.18 Power Connectors (CN24)

Supplies main power +5 V to the PCM-3362, and to devices that require +12 V.

2.19 I2C Bus connector (CN25)

PCM-3362 provides I2C Bus connector for customer connection to I2C protocol embedded device.

Also provided is an I2C API allowing a developer to interface with an embedded system environment and transfer serial messages using the I2C protocols, allowing multiple simultaneous device control.

2.20 -12 V & -5 V power connector (CN26)

The PCM-3362 is equipped with a Negative Power Input connector providing -12 V & -5 V power if your applications happen to need it.

2.21 Watchdog timer configuration

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

PCM-3362 User Manual



AMI BIOS Setup

AMIBIOS has been integrated into many motherboards for over a decade. With the AMIBIOS Setup program, you can modify BIOS settings and control the various system features. This chapter describes the basic navigation of the PCM-3362 BIOS setup screens.

Main	Advanced	PCIPnP	BIOS SE Boot	TUP UTILITY Security	Chi	ipset Exit
System AMIBIO Versio Build ID	Overview S n :08.00.1! Date:10/28/0' :3362X01	5 3 L				Use [ENTER], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Time.
Process Genuine Speed Count	sor e Intel(R) C) :1666MHz :1	PU	@ 1.66GH	Z		
System Size System System	Memory :1022MB Time Date		[21:3 [Wed	1:06] 11/04/2009]		 ← Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
	v02.61 (C) Copyr igh	t 1985-2	006, America	n Meg	atrends, Inc.

Figure 3.1 Setup program initial screen

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

3.1 Entering Setup

Turn on the computer and check for the "patch" code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, please contact an application engineer to obtain an up-to-date patch code file. This will ensure that your CPU's system status is valid. After ensuring that you have a number assigned to the patch code, press and you will immediately be allowed to enter Setup.

3.2 Main Setup

When you first enter the BIOS Setup Utility, you will encounter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
System AMIBIO Versio Build ID	Overview S n :08.00.1 Date:10/28/0 :3362X01	5 9 1			Use or I sele Use conf	IENTER], [TAB] SHIFT-TAB] to ct a field. [+] or [-] to igure system Time
Proces Genuin Speed Count	sor e Intel(R) C :1666MHz :1	PU	@ 1.66GH	Z		
System Size System System	Memory :1022MB Time Date		[21:3 [Wed	1:06] 11/04/2009]	<pre></pre>	Select Screen Select Item Change Field Select Field General Help Save and Exit Exit

Figure 3.2 Main setup screen

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

3.2.1 System time / System date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

3.3 Advanced BIOS Features Setup

Select the Advanced tab from the PCM-3362 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as CPU Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens is shown below. The sub menus are described on the following pages.

BIOS SETUP UTILITY							
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit	
Advanced Settings						Configure CPU.	
VARNIN	WG: Setting w	rong value	s in bel	ow sections			
	may cause	system tu	i maiiune				
► CPU	Configuratio						
► IDE	Configuratio	n tion					
	ppy configura	tion ation					
 Hard 	luare Health	Configurat	im				
► ACPI	Configurati	on igurad	.1011		54 - VA		
► AHCI	Configurati	on					
► APM	Configuratio	n			+	Select Screen	
► Ever	nt Log Config	uration			T	Select Item	
► MPS	Configuratio	n			Ente	er Go to Sub Screen	
▶ Smbi	ios Configura	tion			F1	General Help	
► USB	Configuratio	n			F10	Save and Exit	
					ESC	Exit	
	u02_61_(() Comuniat	+ 1985_2	006 Amorica	n Moratron	de Inc	
	002.01 (cr copyr ryr	IC 1003-2		n negatiel		

Figure 3.3 Advanced BIOS features setup screen

3.3.1 CPU Configuration

Configure advanced CPU settings Module Version:3F.14	Disabled for WindowsXP
Manufacturer:Intel Genuine Intel(R) CPU @ 1.666Hz Frequency :1.666Hz FSB Speed :668HHz Cache L1 :24 KB Cache L2 :512 KB Ratio Actual Value:10	
Nax CPHID Value LimitDisabledExecute-Disable Bit Capability[Enabled]Hyper Threading Technology[Enabled]Intel(R) SpeedStep(tm) tech[Enabled]Intel(R) C-STATE tech[Enabled]Enhanced C-States[Enabled]	 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit

Figure 3.4 CPU Configuration Setting

Max CPUID Value Limit

This item allows you to limit CPUID maximum value.

Execute-Disable Bit Capability

This item allows you to enable or disable the No-Execution page protection technology.

Hyper Threading Technology

This item allows you to enable or disable Intel® Hyper Threading technology.

Intel® SpeedStepTM tech

When set to disabled, the CPU runs at its default speed, when set to enabled, the CPU speed is controlled by the operating system.

Intel® C-STATE tech

This item allows the CPU to save more power under idle mode.

Enhanced C-States

CPU idle set to enhanced C-States, disabled by Intel® C-STATE tech item.

3.3.2 IDE Configuration

Advanced		
IDE Configuration		Options
ATA/IDE Configuration Legacy IDE Channels > Primary IDE Master > Secondary IDE Master > Third IDE Master Hard Disk Write Protect	Compatible ISATA Pri, PATA Sec] : [Not Detected] : [2GB NANDrive] : [Not Detected] [Disabled]	Disabled Compatible Enhanced
IDE Detect Time Out (Sec)	[35]	 Select Screen Select Item Change Option General Help Save and Exit ESC Exit
v02.61 (C) Copyrigh	nt 1985-2006, American Me	gatrends, Inc.

Figure 3.5 IDE Configuration

ATA/IDE Configuration

This item allows you to select Disabled / Compatible / Enhanced.

Legacy IDE Channels

When set to Enhanced mode you can select IDE or AHCI mode. When select Compatible mode you can select SATA only / SATA pri, PATA sec or PATA only.

Primary/Secondary/Third IDE Master

BIOS auto detects the presence of IDE device, and displays the status of auto detection of IDE device.

- **Type:** Select the type of SATA driver.[Not Installed][Auto][CD/DVD][ARMD]
- **LBA/Large Mode:** Enables or Disables the LBA mode.
- Block (Multi-Sector Transfer): Enables or disables data multi-sectors transfers.
- PIO Mode: Select the PIO mode.
- **DMA Mode:** Select the DMA mode.
- **S.M.A.R.T.:** Select the smart monitoring, analysis, and reporting technology.
- **32Bit Data Transfer:** Enables or disables 32-bit data transfer.

Hard Disk Write Protect

Disable/Enable device write protection. This will be effective only if device is accessed through BIOS.

IDE Detect Time Out (Sec)

This item allows you to select the time out value for detecting ATA/ATAPI device(s).

3.3.3 Super I/O Configuration

BIOS SETUP UTILITY Advanced				
Configure SCH3114 Super IO ChipsetSerial Port1 Address[3F8]Serial Port1 IRQ[4]Serial Port2 Address[2F8]Serial Port2 IRQ[3]Serial Port3 Address[3E8]Serial Port3 IRQ[11]Auto Direction Control Sel[Flow Control ON]		Allows BIOS to Select Serial Port1 Base Addresses.		
		 Select Screen Select Item Change Option General Help F10 Save and Exit ESC Exit 		

Figure 3.6 Super I/O Configuration

Serial Port1 / Port2 / Port3 address

This item allows you to select serial port1 ~ port3 of base addresses. Serial Port1 / Port2 / Port3 IRQ

This item allows you to select serial port1 ~ port3 of IRQ.

Auto Direction Control Sel

This item allows you to enable or disable auto flow control function.

3.3.4 Hardware Health Configuration

BIOS SETUP UTILITY				
Hardware Health Configuration				
H/W Health Function [Enabled]				
5°C/149°F 1°C/93°F				
:2.994 U :1.048 U :3.317 U : 4.843 U : 12.375 U	 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit 			
	105 SETUP UTILIT ration Enabled 5°C/149°F 1°C/93°F :2.994 U :1.048 U :3.317 U : 4.843 U : 12.375 U			

Figure 3.7 Hardware health configuration

H/W Health Function

This item allows you to control H/W monitor of showing.

Temperature & Voltage show

CPU/System Temperature Vcore / +3.3Vin / +5Vin / +12Vin / VBAT

3.3.5 ACPI Settings

BIOS SETUP UTILITY Advanced	
ACPI Settings	General ACPI
 General ACPI Configuration Advanced ACPI Configuration Chipset ACPI Configuration 	Configuration Settings
	 Salact Screen
	t4 Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit
v02.61 (C)Copyright 1985-2006, American Me	est Exit

Figure 3.8 ACPI Settings

3.3.5.1 General ACPI Configuration

BIOS SETUP UTILITY Advanced	
General ACPI Configuration Suspend mode IAntol Repost Video on S3 Resume INol	Select the ACPI state used for System Suspend.
	 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit
v02.61 (C)Copyright 1985-2006, America	n Megatrends, Inc.

Figure 3.9 General ACPI Configuration

Suspend mode

Select the ACPI state used for system suspend.

Report Video on S3 Resume

This item allows you to invoke VA BIOS POST on S3/STR resume.

3.3.5.2 Advanced ACPI Configuration

Advanced ACPI Configuration	Enable RSDP pointers to 64-bit Fixed System
	U 04-DIL FIXED SUSLEM
ACPI Version Features IACPI ACPI APIC support IEnab AMI OEMB table IEnab Headless mode IDisa	u3.01 Description Tables. Di ledl ACPI version has some ledl bledl
	 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit

Figure 3.10 Advanced ACPI Configuration

ACPI Version Features

This item allows you to enable RSDP pointers to 64-bit fixed system description tables.

ACPI APIC support

Include APIC table pointer to RSDT pointer list.

AMI OEMB table

Include OEMB table pointer to R(x)SDT pointer lists.

Headless mode

Enable / Disable Headless operation mode through ACPI.

3.3.5.3 Chipset ACPI Configuration

South Bridge ACPI Configuration	Options	
Energy Lake Feature APIC ACPI SCI IRQ USB Device Wakeup From S3/S4 High Performance Event Timer	Disabled] Disabled] Disabled] Disabled]	Enabled Disabled
		 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit

Figure 3.11 Chipset ACPI Configuration

Energy Lake Feature

Allows you to configure Intel's Energy Lake power management technology.

APIC ACPI SCI IRQ

Enable/Disable APIC ACPI SCI IRQ.

USB Device Wakeup From S3/S4

Enable/Disable USB Device Wakeup from S3/S4.

High Performance Event Timer

Enable/Disable High performance Event timer.

3.3.6 AHCI Configuration

BIOS SETUP UTILITY Advanced	
AHCI Settings	While entering setup,
▶ AHCI Port0 [Not Detected]	presence of IDE devices. This displays the status of auto detection of IDE devices.
	 Select Screen Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
u02.61 (C)Comminst 1985-2006. American	Menatrends, Inc.

Figure 3.12 Advanced ACPI Configuration

AHCI Ports0

While entering setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detection of IDE device.

3.3.7 APM Configuration

APM Configuration	Enable or disable	
Power Nanagement/APM	(Enabled)	
Power Button Mode	[On/Off]	
Restore on AC Power Loss	[Power Off]	
Video Power Down Mode	[Suspend]	
Hard Disk Power Down Mode	[Suspend]	
Standby Time Out	[Disabled]	
Suspend Time Out	[Disabled]	
Resume On Ring	[Disabled]	
Resume On PME#	[Disabled]	← Select Screen
Resume On RTC Alarm	[Disabled]	14 Select Item
		+- Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit

Figure 3.13 APM Configuration

Power Management/APM

Enable or disable APM.

Power Button Mode

Power on, off, or enter suspend mode when the power button is pressed. The following options are also available.

Restore on AC power Loss

Use this to set up the system response after a power failure. The "Off" setting keeps the system powered off after power failure, the "On" setting boots up the system after failure, and the "Last State" returns the system to the status just before power failure.

Video Power Down Mode

Power down video in suspend or standby mode.

Hard Disk Power Down Mode

Power down Hard Disk in suspend or standby mode.

Standby Time Out

Go into standby in the specified time.

Suspend Time Out

Go into Suspend in the specified time.

Resume On Ring

Enable / Disable RI to generate a wake event.

Resume On PME#

Enable / Disable PME to generate a wake event.

Resume On RTC Alarm

Enable / Disable RTC to generate a wake event.

3.3.8 Event Log Configuration



Figure 3.14 South Bridge ACPI Configuration

View Event Log

View all unread events on the event Log.

Mark all events as read

Mark all unread events as read.

Clear Event Log

Discard all events in the event Log.

3.3.9 MPS Configuration

MPS Configuration		Select MPS
PS Revision	[1.4]	NEV 15 1011 -
		57
		 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit

Figure 3.15 South Bridge ACPI Configuration

MPS Revision

This item allows you to select MPS reversion.

3.3.10 Smbios Configuration

Advanced	Smbios Configuration Screen	
mbios Configuration		SMBIOS SMI Wrapper support for PnP Func
mbios Smi Support	Enabled1	50h-54h
		Select Screen
		+- Change Option
		F1 General Help F10 Save and Exit
		ESC Exit

Figure 3.16 South Bridge ACPI Configuration

Smbios Smi Support

SMBIOS SMI wrapper support for PnP function 50h-54h.

3.3.11 USB Configuration

Advanced	BIOS SETUP UTILITY		
USB Configuration		Enables support for	
Module Version - 2.24.3-13.4		 regard oss. Horo option disables legacy support if no USB devices are connected. 	
USB Devices Enabled : None			
Legacy USB Support USB 2.0 Controller Mode BIOS EHCI Hand-Off Hotplug USB FDD Support	[Enabled] [HiSpeed] [Enabled] [Auto]		
▶ USB Mass Storage Device Configuration		 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit 	
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.			

Figure 3.17 South Bridge ACPI Configuration

Legacy USB Support

Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected.

USB 2.0 Controller Mode

This item allows you to select HiSpeed(480Mbps) or FullSpeed (12Mpbs).
BIOS EHCI Hand-Off

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.

Hotplug USB FDD Support

A dummy FDD device is created that will be associated with the hotplugged FDD later. Auto option creates this dummy device only if there is no USB FDD present.

3.3.11.1 USB Mass Storage Device Configuration

SB Mass Storage Device Configuration	Number of seconds
SB Mass Storage Reset Delay - 120 Seci	USB mass storage
Device #1 USB Hotplug FDD Emulation Type [Auto]	device after start unit command.
	5
	← Select Screen
	14 Select Item
	F1 General Help
	F10 Save and Exit

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Figure 3.18 USB Mass storage Device Configuration

USB Mass Storage Reset Delay

Number of sends POST wait for the USB mass storage device after start unit command.

Emulation Type

If Auto, USB devices less than 530MB will be emulated as Floppy and remaining as hard drive. Force FDD option can be used to force a FDD formatted drive to boot as FDD (Ex. ZIP drive).

3.4 Advanced PCI/PnP Settings

Select the PCI/PnP tab from the PCM-3362 setup screen to enter the Plug and Play BIOS Setup screen. You can display a Plug and Play BIOS Setup option by highlighting it using the <Arrow> keys. All Plug and Play BIOS Setup options are described in this section. The Plug and Play BIOS Setup screen is shown below.

	BIOS SE	TUP UTILITY		
Main Advanced PCIPnP	Boot	Security	Chi	ipset Exit
Advanced PCI/PnP Settings			4	Clear NVRAM during Sustem Boot
WARNING: Setting wrong value may cause system to	es in bel n malfunc	ow sections tion.		agatem boot.
Clear NURAM	Nol			
Plug & Play O/S	[No]			
PCI Latency Timer	[64]			
Allocate IRQ to PCI UGA	[Yes]			
Palette Snooping	Disa	bledl		
PCI IDE BusMaster	Enab	led]		
OffBoard PCI/ISA IDE Card	[Auto]	1		
				+ Select Screen
IRQ3	[Ava i	lablel		↑↓ Select Item
IRQ4	[Ava i	lablel		+- Change Option
IRQ5	[Ava i	lablel		F1 General Help
IRQ7	[Ava i	lablel		F10 Save and Exit
IRQ9	[Ava i	lablel		ESC Exit
IRQ10	[Ava i	lablel		
IRQ11	[Ava i	lablel		

il (C) Copyright 1985-2006, American Megatrends, Figure 3.19 PCI/PNP Setup (top)

Clear NVRAM

Set this value to force the BIOS to clear the Non-Volatile Random Access Memory

(NVRAM). The Optimal and Fail-Safe default setting is No.

Plug & Play O/S

When set to No, BIOS configures all the device in the system. When set to Yes and if you install a Plug and Play operating system, the operating system configures the Plug and Play device not required for boot.

PCI Latency Timer

Value in units of PCI clocks for PCI device latency timer register.

Allocate IRQ to PCI VGA

When set to Yes will assigns IRQ to PCI VGA card if card requests IRQ. When set to No will not assign IRQ to PCI VGA card even if card requests an IRQ.

Palette Snooping

This item is designed to solve problems caused by some non-standard VGA card.

PCI IDE BusMaster

When set to enabled BIOS uses PCI busmastering for reading/writing to IDE drives.

OffBoard PCI/ISA IDE Card

Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card. When set to Auto will works for most PCI IDE cards.

IRQ3 / 4 / 5 / 7 / 9 / 10 /11

This item allows you respectively assign an interruptive type for IRQ-3, 4, 5, 7, 9, 10, 11.

DMA Channel0 / 1 / 3 / 5 / 6 / 7

When set to Available will specified DMA is available to be used by PCI/PnP devices. When set to Reserved will specified DMA will Reserved for use by legacy ISA devices.

Reserved Memory Size

This item allows you to reserved size of memory block for legacy ISA device.

3.5 Boot Settings

Main	Advanced	PCIPnP	BIOS SE Boot	TUP UTILITY Security	Chi	ipset Exit
Boot S	ettings Settings	figuratio				Specifies the Boot Device
 ▶ Boot ▶ Boot ▶ Hard ▶ Remo 	Device Prio Disk Drives vable Drives	ni iguratic				from available Hard Drives.
						 ← Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
	v02.61 (C) Copyrigh	t 1985-20	006, American	n Mec	atrends, Inc.

Figure 3.20 Boot Setup Utility

3.5.1 Boot settings Configuration

Boot Settings Configuration	Boot Settings Configuration		
Quiet Boot Quiet Boot AddOn ROM Display Mode Bootup Num-Lock PS/2 Mouse Support Wait For 'F1' If Error Hit 'DEL' Message Display Interrupt 19 Capture Bootsafe function	Enabled Disabled Force BLOS On Auto Enabled Enabled Disabled Disabled	booting. This will decrease the time needed to boot the system.	
		 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit 	

Figure 3.21 Boot Setting Configuration

Quick Boot

This item allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

Quiet Boot

If this option is set to Disabled, the BIOS displays normal POST messages. If Enabled, an OEM Logo is shown instead of POST messages.

AddOn ROM Display Mode

Set display mode for option ROM.

Bootup Num-Lock Select the Power-on state for Numlock. PS/2 Mouse Support Select support for PS/2 Mouse. Wait For 'F1' If Error Wait for the F1 key to be pressed if an error occurs. Hit 'DEL' Message Display Displays "Press DEL to run Setup" in POST. Interrupt 19 Capture This item allows option ROMs to trap interrupt 19. Bootsafe function This item allows you to enables or disables bootsafe function.

3.6 Security Setup

			BIOS SE	TUP UTILITY			
Main	Advanced	PCIPnP	Boot	Security	Ch	ipset	Exit
Secur i	ty Settings					Insta	111 or Change the
Superv User F Change Change Boot S	isor Passwor 'assword : Supervisor : User Passwo Nector Virus	d :Not Ins :Not Ins Password rd Protection	italled italled i Disa	bledl		pass	
						¢ †↓ Enter F1 F10 ESC	Select Screen Select Item Change General Help Save and Exit Exit
	v02.61 (C) Copurigh	t 1985-2	1006, America	n Mer	ratrend	s, Inc.

Figure 3.22 Password Configuration

Select Security Setup from the PCM-3362 Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

Change Supervisor / User Password

Boot sector Virus protection: The boot sector virus protection will warn if any program tries to write to the boot sector.

3.7 Advanced Chipset Settings

Main	Advanced	PCIPnP	BIOS SE Boot	TUP UTILITY Security	Chip	set Exit
Advan	ed Chipset S	ettings				Configure North Bridge
WARNIN	lG: Setting w may cause	rong values system to	; in belo malfunc ⁺	ow sections tion.		reatures.
► Nort ► Sout	th Bridge Con th Bridge Con	figuration figuration				
					10	← Select Screen 1↓ Select Item Enter Go to Sub Screen F1 General Help
						F10 Save and Exit ESC Exit
	v02.61 (C) Copyright	1985-20	006, America	an Mega	trends, Inc.

Figure 3.23 Advanced Chipset Settings

3.7.1 North Bridge Chipset Configuration

BIOS SETUP UTILITY Chipset					
North Bridge Chipset Configuration	Options				
PCI MMID Allocation: 46B To 3072MB DRAM Frequency IAutol Configure DRAM Timing by SPD [Enabled] Memory Hole Disabled] Internal Graphics Mode Select [Enabled, 1MB] PEG Port Configuration	Auto 667 MHz 800 MHz				
► Video Function Configuration	 Select Screen Select Item Change Option General Help Save and Exit ESC Exit 				

Figure 3.24 North Bridge Configuration

DRAM Frequency

This item allows you to manually changed DRAM frequency.

Configure DRAM Timing by SPD

This item allows you to enables or disables detect by DRAM SPD.

Memory Hole

This item allows you to free 15MB-16MB of memory size for some ISA devices.

Internal Graphics Mode Select: Select the amount of system memory used by the Internal graphics device.

	BIOS SETUP UTILITY	Chipset
Video Function Configurati	on	Options
DUMT Hode Select DUMT/FIXED Memory Boot Display Device Flat Panel Type Spread Spectrum Clock	IDUNT Model [256MB] [VBIOS-Default] [1024x768(18bit)] [Disabled]	- Fixed Mode DVMT Mode
		 Select Screen Select Item Change Option General Help Save and Exit ESC Exit

Figure 3.25 Video function configuration

DVMT Mode Select

Displays the active system memory mode.

DVMT/FIXED Memory

Specify the amount of DVMT / FIXED system memory to allocate for video memory.

Boot Display Device

Select boot display device at post stage.

Flat Panel Type

This item allows you to select which panel resolution you wants.

Spread Spectrum Clock

This item allows you to enables or disables spread spectrum clock.

3.7.2 South Bridge Chipset Configuration

BIOS SETUP UTILITY Chipset					
South Bridge Chipset Configura	ation	Options			
USB Functions USB 2.0 Controller GbE Controller GbE LAN Boot GbE Wake Up From S5 HDA Controller SMBUS Controller SLP S4# Min. Assertion Width	[4 USB Ports] [Enabled] [Enabled] [Disabled] [Disabled] [Enabled] [Enabled] [1 to 2 seconds]	Disabled 2 USB Ports 4 USB Ports			
		 ← Select Screen ↑↓ Select Item ← Change Option F1 General Help F10 Save and Exit ESC Exit 			

Figure 3.26 South Bridge Configuration

USB Functions

Disabled, 2 USB Ports, or 4 USB Ports.

USB 2.0 Controller

Enables or disables the USB 2.0 controller.

GbE controller

Enables or disables the GbE controller.

GbE LAN Boot

Enables or disables GbE LAN boot.

GbE Wake Up From S5

Enables or disables GbE LAN wake up from S5 function.

HDA Controller

Enables or disables the HDA controller.

SMBUS Controller

Enables or disables the SMBUS controller.

SLP_S4# Min. Assertion Width

This item allows you to set a delay of sorts.

3.8 Exit Option

			BIOS SE	TUP UTILITY		and the second sec
Main	Advanced	PCIPnP	Boot	Security	Chi	pset Exit
Exit (lptions					Exit system setup
Save (Discar Discar Load (Load F	Changes and B rd Changes an rd Changes Dptimal Defau railsafe Defa	kit d Exit ilts ults		5 - 7		 changes. F10 key can be used for this operation. Select Screen t1 Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
	u02_61_(() Comurcial	t 1985-2	AAAA America	n Merr	atrends. Inc

Figure 3.27 Exit Option

3.8.1 Save Changes and Exit

When you have completed system configuration, select this option to save your changes, exit BIOS setup and reboot the computer so the new system configuration parameters can take effect.

1. Select Exit Saving Changes from the Exit menu and press <Enter>.

The following message appears: Save Configuration Changes and Exit Now? [Ok] [Cancel]

2. Select Ok or cancel.

3.8.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

- 1. Select Exit Discarding Changes from the Exit menu and press <Enter>. The following message appears: Discard Changes and Exit Setup Now? [Ok] [Cancel]
- 2. Select Ok to discard changes and exit. Discard Changes
- 3. Select Discard Changes from the Exit menu and press < Enter>.

3.8.3 Load Optimal Defaults

The PCM-3362 automatically configures all setup items to optimal settings when you select this option. Optimal Defaults are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal Defaults if your computer is experiencing system configuration problems. Select Load Optimal Defaults from the Exit menu and press <Enter>.

3.8.4 Load Fail-Safe Defaults

The PCM-3362 automatically configures all setup options to fail-safe settings when you select this option. Fail-Safe Defaults are designed for maximum system stability, but not maximum performance. Select Fail-Safe Defaults if your computer is experiencing system configuration problems.

- 1. Select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The following message appears: Load Fail-Safe Defaults? [OK] [Cancel]
- 2. Select OK to load Fail-Safe defaults.



Software Introduction & Installation

4.1 S/W Introduction

The mission of Embedded Software Services is to "Enhance quality of life with our platforms and Microsoft Windows® embedded technology." We enable Windows® Embedded software products on our platforms to more effectively support the embedded computing community. Customers are freed from the hassle of dealing with multiple vendors (Hardware suppliers, System integrators, Embedded OS distributor) for projects. Our goal is to make Windows® Embedded Software solutions easily and widely available to the embedded computing community.

4.2 **Driver Installation**

4.2.1 Windows XP professional

To install the drivers for Windows XP Professional, insert the CD into the CD-Rom, it will auto-detect the hardware platform and then pop up with the "Embedded Computing Install Wizard" box; just select the drivers that you want to install then click "Install All Selected Drivers". Follow the Driver Setup Wizard instructions; click "Next" to complete the installation.

4.2.2 Other OS

To install the drivers for Other Windows OS or Linux, please browse the CD to run the setup file under each chipset folder on the CD-ROM.

4.3 Value-Added Software Services

4.3.1 SUSI Introduction

To make hardware easier and convenient to access for programmers, we have released a suite of API (Application Programming Interface) in the form of a program library. The program Library is called Secured and Unified Smart Interface or SUSI for short.

In modern operating systems, user space applications cannot access hardware directly. Drivers are required to access hardware. User space applications access hardware through drivers. Different operating systems usually define different interface for drivers. This means that user space applications call different functions for hardware access in different operating systems. To provide a uniform interface for accessing hardware, an abstraction layer is built on top of the drivers and SUSI is such an abstraction layer. SUSI provides a uniform API for application programmers to access the hardware functions in different Operating Systems and on different hardware platforms.

Application programmers can invoke the functions exported by SUSI instead of calling the drivers directly. The benefit of using SUSI is portability. The same set of API is defined for different hardware platforms. Also, the same set of API is implemented in different Operating Systems including Windows XP and Windows CE. This user's manual describes some sample programs and the API in SUSI. The hardware functions currently supported by SUSI can be grouped into a few categories including Watchdog, I²C, SMBus, GPIO, and VGA control. Each category of API in SUSI is briefly described below.

4.3.2 Software APIs

PCM-3362 supports software APIs including GPIO, I²C, backlight on/off, Brightness control, watchdog, Hardware Monitor, and Power Saving.

4.3.2.1 The GPIO API

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.

4.3.2.2 The I²C API

I²C is a bi-directional two-wire bus that was developed by Philips for use in their televisions in the 1980s and nowadays is used in various types of embedded systems. The strict timing requirements defined in the I²C protocol has been taken care of by SUSI. Instead of asking application programmers to figure out the strict timing requirements in the I²C protocol, the I²C API in SUSI can be used to control I²C devices by invoking other function calls. SUSI provides a consistent programming interface for different boards. That means user programs using SUSI are portable among different boards as long as the boards and SUSI provide the required functionalities. Overall product development times can be greatly reduced using SUSI.

4.3.2.3 The Display Control API

There are two kinds of VGA control APIs, backlight on/off control and brightness control. Backlight on/off control allows a developer to turn on or off the backlight, and to control brightness smoothly.

- 1. Brightness Control
 - The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.
- 2. Backlight Control
 - The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

4.3.2.4 The Watchdog API

A watchdog timer (abbreviated as WDT) is a hardware device which triggers an action, e.g. rebooting the system, if the system does not reset the timer within a specific period of time. The WDT API in SUSI provides developers with functions such as starting the timer, resetting the timer, and setting the timeout value if the hardware requires customized timeout values.

4.3.2.5 The Hardware Monitor API

The hardware monitor (abbreviated as HWM) is a system health supervision capability achieved by placing certain I/O chips along with sensors for inspecting the target of interests for certain condition indexes, such as fan speed, temperature and voltage etc.

However, due to the inaccuracy among many commercially available hardware monitoring chips, We have developed a unique scheme for hardware monitoring achieved by using a dedicated micro-processor with algorithms specifically designed for providing accurate, real-time and reliable data content; helping protect your system in a more reliable manner.

4.3.2.6 The Power Saving API

1. CPU Speed

- Make use of Intel SpeedStep technology to reduce power consumption. The system will automatically adjust the CPU Speed depending on system loading.
- 2. System Throttling
 - Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. APIs allow the user to lower the clock from 87.5% to 12.5%.

4.3.3 SUSI Utilities

PCM-3362 supports software Utility including Embedded Security ID, Monitoring utility, eSOS.

4.3.3.1 Embedded Security ID

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.

4.3.3.2 Monitoring utility

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.

4.3.3.3 eSOS

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.

Ν	ο	te	?!

eSOS Utility support on PCM-3362 is required to have BIOS modification.

4.3.4 SUSI Installation

SUSI supports many different operating systems. Each subsection below describes how to install SUSI and related software on a specific operating system. Please refer to the subsection matching your operating system.

4.3.4.1 Windows XP

In windows XP, you can install the library, drivers and demo programs onto the platform easily using the installation tool--The SUSI Library Installer. After the installer has executed, the SUSI Library and related files for Windows XP can be found in the target installation directory. The files are listed in the following table.

Directory	Contents
\Library	Susi.lib
	Library for developing the applications on Windows XP.
	Susi.dll
	Dynamic library for SUSI on Windows XP.

\Demo	SusiDemo.EXE
	Demo program on Windows XP.
	■ Susi.dll
	Dynamic library for SUSI on Windows XP.
\Demo\SRC	Source code of the demo program on Windows XP.

The following section illustrates the installation process.

Note!				

The version of the SUSI Library Installer shown on each screen shot below depends on your own particular version.

- 1. Extract Susi.zip.
- 2. Double-click the "Setup.exe" file.

The installer searches for a previous installation of the SUSI Library. If it locates one, a screen shot opens asking whether you want to modify, repair or remove the software. If a previous version is located, please see the section of [Maintenance Setup]. If it is not located, the following screen shot opens. Click Next.

4.3.4.2 Windows CE

In windows CE, there are three ways to install the SUSI Library, you can install it manually or use CE-Builder to install the library or just copy the programs and the library onto a compact flash card.

Express Installation:

You can use CE-Builder to load the library into the image.

- First, you click the My Component tab.
- In this tab, you click Add New Category button to add a new category, e.g. the SUSI Library.
- Then you can add a new file in this category, and upload the SUSI.dll for this category.
- After these steps, you can select the SUSI Library category you created for every project.

Manual Installation:

You can add the SUSI Library into the image by editing any bib file.

First you open project.bib in the platform builder.

- Add this line to the MODULES section of project.bib Susi.dll \$(_FLATRELEASEDIR)\Susi.dll NK SH
- If you want to run the window-based demo, add following line: SusiTest.exe \$(_FLATRELEASEDIR)\SusiTest.exe
- If you want to run the console-based demo, add following lines: Watchdog.exe \$(_FLATRELEASEDIR)\Watchdog.exe NK S GPIO.exe \$(_FLATRELEASEDIR)\GPIO.exe NK S SMBUS.exe \$(_FLATRELEASEDIR)\SMBUS.exe NK S
- Place the three files into any files directory.
- Build your new Windows CE operating system.

4.3.5 SUSI Sample Programs

Sample Programs

The sample programs demonstrate how to incorporate SUSI into your program. There are sample programs for two categories of operating system, i.e. Windows XP and Windows CE. The sample programs run in graphics mode in Windows XP and Windows CE. The sample programs are described in the subsections below.

Windows Graphics Mode

There are sample programs of Windows in graphics mode for two categories of operating system, i.e. Windows CE and Windows XP. Each demo application contains an executable file SusiDemo.exe, a shared library Susi.dll and source code within the release package. The files of Windows CE and Windows XP are not compatible with each other.

SusiDemo.exe is an executable file and it requires the shared library, Susi.dll, to demonstrate the SUSI functions. The source code of SusiDemo.exe also has two versions, i.e. Windows CE and Windows XP, and must be compiled under Microsoft Visual C++ 6.0 on Windows XP or under Microsoft Embedded Visual C++ 4.0 on Windows CE. Developers must add the header file Susi.h and library Susi.lib to their own projects when they want to develop something with SUSI.

SusiDemo.exe

The SusiDemo.exe test application is an application which uses all functions of the SUSI Library. It has five major function blocks: Watchdog, GPIO, SMBus, I²C and VGA control. The following screen shot appears when you execute SusiDemo.exe. You can click function tabs to select test functions respectively. Some function tabs will not show on the test application if your platform does not support such functions. For a complete support list, please refer to Appendix A. We describe the steps to test all functions of this application.

🖉 Platform Name:PCM9581/9586 BIOS Ver:V1.12 (03/03/ 🔀
WATCHDOG GPIO SMBus IIC VGA CONTROL ABOUT
1000 ms 255000 ms 1000 ms
TIMEOUT SETTING
Set Delay 0 ms
Set Timeout
WATCHDOG CONTROL
Timeout Countdown
START REFRESH STOP
OK Cancel Apply Help

GPIO

The number of Input	t Pins : 4	
The number of Outp	ut Pins : 4	
PIO CONTROL		
Single - Pin :	3	(Pin Number)
C Multiple-Pins :	080	(HEX)
(R/W) Result	1	

When the application is executed, it will display GPIO information in the GPIO INFORMATION group box. It displays the number of input pins and output pins. You can click the radio button to choose to test either the single pin function or multiple pin functions. The GPIO pin assignments of the supported platforms are located in Appendix B.

- Test Read Single Input Pin
 - Click the radio button- Single-Pin.
 - Key in the pin number to read the value of the input pin. The Pin number starts from '0'.
 - Click the READ GPIO DATA button and the status of the GPIO pin will be displayed in (R/W) Result field.
- Test Read Multiple Input Pin
 - Click the radio button- Multiple-Pins.
 - Key in the pin number from '0x01' to '0x0F' to read the value of the input pin. The pin numbers are ordered bitwise, i.e. bit 0 stands for GPIO 0, bit 1 stands for GPIO 1, etc. For example, if you want to read pin 0, 1, and 3, the pin numbers should be '0x0B'.
 - Click READ GPIO DATA button and the statuses of the GPIO pins will be displayed in (R/W) Result field.
- Test Write Single Output Pin
 - Click the radio button- Single-Pin.
 - Key in the pin numbers you want to write. Pin numbers start from '0'.
 - Key in the value either '0' or '1' in (R/W) Result field to write the output pin you chose above step.
 - Click the WRITE GPIO DATA button to write the GPIO output pin.
- Test Write Multiple Output Pins
 - Click the radio button- Multiple-Pins.
 - Key in the pin number from '0x01' to '0x0F' to choose the multiple pin numbers to write the value of the output pin. The pin numbers are ordered bitwise, i.e. bit 0 stands for GPIO 0, bit 1 stands for GPIO 1, etc. For example, if you want to write pin 0, 1, and 3, the pin numbers should be '0x0B'.
 - Key in the value in (R/W) Result field from '0x01' to '0x0F' to write the value of the output pin. The pin numbers are ordered bitwise, i.e. bit 0 stands for GPIO 0, bit 1 stands for GPIO 1, etc. For example, if you want to set pin 0

and 1 high, 3 to low, the pin number should be '0x0B/, and then you should key in the value '0x0A' to write.

- Click the WRITE GPIO DATA button to write the GPIO output pins.

I²C

lave a	ddress	Registe	r Offset	Result	
)x0	(Hex)	0x0	(Hex)	0x0	(Hex)
				1	
E		······		1	

When the application is executed, you can read or write a byte of data through I2C devices. All data must be read or written in hexadecimal system.

- Read a byte
 - Key in the slave device address in Slave address field.
 - Key in the register offset in Register Offset field.
 - Click the READ A BYTE button and then a byte of data from the device will be shown on the Result field.
- Write a byte
 - Key in the slave device address in Slave address field.
 - Key in the register offset in Register Offset field.
 - Key in the desirous of data in Result field to write to the device.
 - Click the WRITE A BYTE button and then the data will be written to the device through I²C.

SMBus

SMBus
ACCESS MODE
C Access a byte
Access multiple bytes : 3 (bytes)
C Access a word
Siave address Register Offset Slave address Register Offset [0xA0 (Hex) Result (Hex)
0x4f,0x3d,0x0
READ SMBus DATA WRITE SMBus DATA

When the application has executed, you can click the radio button to choose to test each access mode, i.e. Access a byte, Access multiple bytes and Access a word. All data must be read or written in hexadecimal except the numbers for radio button: Access multiple bytes mode must be written in decimal. You can test the functionalities of the watchdog as follows:

Read a byte

- Click the radio button- Access a byte.
- Key in the slave device address in the Slave address field.
- Key in the register offset in the Register Offset field.
- Click the READ SMBus DATA button and a byte of data from the device will be shown on the Result field.
- Write a byte
 - Click the radio button- Access a byte.
 - Key in the slave device address in Slave address field.
 - Key in the register offset in Register Offset field.
 - Key the desired data in the Result field to write to the device.
 - Click the WRITE SMBus DATA button and then the data will be written to the device through SMBus.
- Read a word
 - Click the radio button- Access a word.
 - Key in the slave device address in the Slave address field.
 - Key in the register offset in the Register Offset field.
 - Click the READ SMBus DATA button and then a word of data from the device will be shown on the Result field.
- Write a word
 - Click the radio button- Access a word.
 - Key in the slave device address in the Slave address field.
 - Key in the register offset in the Register Offset field.
 - Key in the desired data, such as 0x1234, in the Result field to write to the device.
 - Click the WRITE SMBus DATA button and the data will be written to the device through the SMBus.
- Read Multiple bytes
 - Click the radio button- Access multiple bytes.
 - Key in the slave device address in the Slave address field.
 - Key in the register offset in the Register Offset field.
 - Key in the desired number of bytes, such as 3, in the right side field of radio button- Access multiple bytes. The number must be written in decimal.
 - Click the READ SMBus DATA button and then all data from the device will be divided from each other by commas and be shown in the Result field.
- Write Multiple bytes
 - Click the radio button- Access multiple bytes.
 - Key in the slave device address in the Slave address field.
 - Key in the register offset in the Register Offset field.
 - Key in the desired number of bytes, such as 3, in the right side field of the radio button- Access multiple bytes. The number must be written in decimal.
 - Key in all the desired data in the Result field in hexadecimal format, divided by commas, for example, 0x50,0x60,0x7A.
 - Click the WRITE SMBus DATA button and all of the data will be written to the device through the SMBus.

Display Control

VGA CONTROL	
SCREEN ON/	OFF CONTROL
	@ ON (F11)
	C OFF (F12)
BRIGHTNESS	
	255
	DOWN

When the application is executed, it will display two blocks of VGA control functions. The application can turn on or turn off the screen shot freely, and it also can tune the brightness of the panels if your platform is being supported. You can test the functionalities of VGA control as follows:

- Screen on/off control
 - Click the radio button ON or push the key F11 to turn on the panel screen.
 - Click the radio button OFF or push the key F12 to turn off the panel screen.
 - The display chip of your platform must be in the support list in Appendix A, or this function cannot work.
- Brightness control
 - Move the slider in increments, using either the mouse or the direction keys, or click the UP button to increase the brightness.
 - Move the slider in decrements, using either the mouse or the direction keys, or click the DOWN button to decrease the brightness.

Watchdog

WATCHD	OG INFOR	MATION				
Min Tim 1000	eout ms	Max Tim 255000	eout ms	100	eout Setj 30	ms
WATCHD	OG SETTI	NG				
	9	iet Delay	2000	ms		
	Se	t Timeout	3000	ms		
WATCHD	OG CONTR	ROL				
	L	eout Counto O	lown			
	START	RE	EFRESH	11	STOP	

When the application is executed, it will display watchdog information in the WATCH-DOG INFORMATION group box. It displays max timeout, min timeout, and timeout steps in milliseconds. For example, a 1~255 seconds watchdog will has 255000 max timeout, 1000 min timeout, and 1000 timeout steps. You can test the functionality of the watchdog as follows:

- Set the timeout value 3000 (3 sec.) in the SET TIMEOUT field and set the delay value 2000 (2 sec.) in the SET DELAY field, then click the START button. The Timeout Countdown field will countdown the watchdog timer and display 5000 (5 sec.).
- Before the timer counts down to zero, you can reset the timer by clicking the REFRESH button. After you click this button, the Timeout Countdown field will display the value of the SET TIMEOUT field.
- If you want to stop the watchdog timer, you just click the STOP button.

Hardware Monitor



CL

When the Monitor application is executed by clicking the button, hardware monitoring data values will be displayed. If certain data values are not supported by the platform, the correspondent data field will be grayed-out with a value of 0.

For More detail PCM-3362 software API user manual, please contact your dealer. We also include these manuals in this CD.



Chipset Software Installation Utility

5.1 Before You Begin

To facilitate the installation of the enhanced display drivers and utility software, read the instructions in this chapter carefully. The drivers for the PCM-3362 are located on the software installation CD. The driver in the folder of the driver CD will guide and link you to the utilities and drivers under a Windows system. Updates are provided via Service Packs from Microsoft*.



A

The files on the software installation CD 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.

Before you begin, it is important to note that most display drivers need to have the relevant software application already installed in the system prior to installing the enhanced display drivers. In addition, many of the installation procedures assume that you are familiar with both the relevant software applications and operating system commands. Review the relevant operating system commands and the pertinent sections of your application software's user manual before performing the installation.

5.2 Introduction

The Intel® Chipset Software Installation (CSI) utility installs the Windows INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI PnP services
- Serial ATA interface support
- USB 1.1/2.0 support (USB 2.0 driver needs to be installed separately for Win98)
- Identification of Intel® chipset components in the Device Manager
- Integrates superior video features. These include filtered sealing of 720 pixel DVD content, and MPEG-2 motion compensation for software DVD

5.3 Windows XP/Vista/Win7 Driver Setup

Insert the driver CD into your system's CD-ROM drive. You can see the driver folder items. Navigate to the "PCM-3362\01_chipset folder, and find folders including Win XP, Vista, and Win 7 and choose which of OS you would like to install, and click "infinst_autol.exe" to complete the installation of the driver.

Note! Wrong driver installation may cause unexpected system instability.







Integrated Graphic Device Setup

6.1 Introduction

To benefit from the Intel® Atom N450 integrated graphics controller, you need to install the graphic driver.

6.2 Windows XP/ Vista /Win7 Driver Setup

Note!



Before installing this driver, make sure the chipset driver has been installed in your system. See Chapter 5 for information on installing the chipset driver.

- 1. Insert the driver CD into your system's CD-ROM drive. You can see the driver folder items. Navigate to the "PCM-3362\02_ Graphic folder, and find folders including Win XP, Vista, and Win 7 and choose which of OS you would like to install.
- 2. Locate and highlight the "igxp32.INF" (if 32-bit) or "igxp64.INF" (if 64-bit).Click on the "Open" button.
- 3. Click on the "OK" button. A window listing all of the available display types should open. Select the display adapter that your system contains and then click on the "Next" button.
- 4. Click on the "Next" button. The operating system will install the driver. Click on the "Finish" button when done.
- 5. Click on the "Close" button and then click on the "Yes" button to reboot. The driver should now be loaded.



LAN Configuration

7.1 Introduction

The PCM-3362 has Gigabit Ethernet LAN via dedicated PCI Express x 1 lanes (Intel 82567V), that offer bandwidth of up to 500 MB/sec, eliminating the bottleneck of network data flow and incorporating Gigabit Ethernet to operate at 1000Mbps.

7.2 Installation

Ν	lote!

Before installing this driver, make sure the chipset driver has been installed in your system. See Chapter 5 for information on installing the chipset driver.

The PCM-3362s Intel 82567V Gigabit controller supports all major network operating systems. However, the installation procedure varies with different operating systems. Please find and use the section that provides the driver setup procedure for the operating system you are using.

7.3 Windows XP/ Vista /Win7 Driver Setup

Insert the driver CD into your system's CD-ROM drive. You can see the driver folder items. Navigate to the "PCM-3362\03 LAN" folder and click autorun program to complete the installation of the driver.



Pin Assignments

This appendix contains information of a detailed or specialized nature. Sections include: ■ Jumper and Connector Tables

A.1 Jumper and Connector Tables







LVDS PANEL POWER Select
1653003101
JH3X1V-2M
PIN HEADER 3*1P 180D(M) 2.0mm DIP SQUARE W/O Pb
Function
5V for +VLVDS_PANEL POWER Select
3.3V for +VLVDS_PANEL POWER Select (Default)





JP3	COM3 RS422/RS485 Select
Part Number	1653003101
Footprint	JH3X1V-2M
Description	PIN HEADER 3*1P 180D(M) 2.0mm DIP SQUARE W/O Pb
Setting	Function
(1-2)	RS485 (default)
(2-3)	RS422



Part Number	1653002101
Footprint	JH2X1V-2M
Description	PIN HEADER 2*1P 180D(M)SQUARE 2.0mm DIP W/O Pb
Setting	Function
(1-2)	5V for PCI I/O Voltage Select (default)
(2-3)	3.3V for PCI I/O Voltage Select

000000 1 8

CN1	HD Audio Connector			
Part Number	1653008101			
Footprint	JH8X1V-2M			
Description	PIN HEADER 8*1P 180	D(M) 2.0mm DIP 209	9-1*8GS	
Pin	Pin Name	Signal Type	Signal Level	
1	+V5	PWR	+5 V	
2	GND			
3	AZ_BITCLK	CLK		
4	AZ_SYNC	I/O		
5	AZ_RST#	I/O		
6	AZ_SDIN0	IN		
7	AZ_SDOUT	OUT		
8	+V12	PWR	+12 V	
CN4	DDR2 SO-DIMM			
Part Number	1651000087			
Footprint	DDR-SODIMM-STD65			
Description	SKT DIMM 200P	DDR2 H=6.5mm STE	SMD WO/Pb	



CN6	LVDS Connector		
Part Number	1653910261		
Footprint	SPH10X2		
Description	*CONN. SMD 10*2P 180	D(M)DF13-20DP-1.25	/(91) HRS
Pin	Pin Name	Signal Type	Signal Level
1	GND		
2	GND		
3	LVDS0_z_D0+	OUT	LVDS
4	N/C		
5	LVDS0_z_D0-	OUT	LVDS
6	N/C		
7	LVDS0_z_D1+	OUT	LVDS

8	N/C		
9	LVDS0_z_D1-	OUT	LVDS
10	N/C		
11	LVDS0_z_D2+	OUT	LVDS
12	N/C		
13	LVDS0_z_D2-	OUT	LVDS
14	N/C		
15	LVDS0_z_CLK+ OUT LVDS		
16	N/C		
17	LVDS0_z_CLK- OUT LVDS		
18	N/C		
19	+V_LCD	PWR	+5 V/+3.3 V
20	+V_LCD	PWR	+5 V/+3.3 V



CN7	Internal LCD Backlight		
Part Number	1655305020		
Footprint	WHL5V-2M		
Description	WAFER BOX 2.0mm 5P 1	80D(M) W/LOCK	
Pin	Pin Name	Signal Type	Signal Level
1	+V12_INVERTER	PWR	+12V
2	GND	GND	
3	LVDS0_ENABKL	OUT	+3.3V
4	LVDS0_VBR	OUT	+3.3V
5	+V5_INVERTER	PWR	+5V

CN8	VGA Connector		
Part Number	1655912120		
Footprint	WB12P-S1.25mm		
Description	Wafer Box 1.25mm 1	2P 90D(M) SMD 85204	4-12001
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	VGA_z_R	OUT	+5 V
3	VGA_z_G	OUT	+5 V
4	VGA_z_B	OUT	+5 V
5	GND	GND	
6	+V5_CRT	PWR	+5 V
7	VGA_z_DDAT	OUT	+5 V
8	VGA_z_DCLK	OUT	+5 V
9	GND	GND	
10	VGA_z_HS	OUT	+5 V
11	VGA_z_VS	OUT	+5 V
12	GND	GND	

2	4	6	8	10
0	0	0	0	0
	0	0	0	Ο
1	3	5	7	9

CN9	USB0/1		
Part Number	1653003718		
Footprint	PH5x2P-SR2.00		
Description	PIN HEADER 5*2P 2.00mm	90D(M) NO.10 SMD	
Pin	Pin Name	Signal Type	Signal Level
1	+V5_USB0	PWR	+5 V
2	+V5_USB0	PWR	+5 V
3	USB0_z_P-	I/O	
4	USB1_z_P-	I/O	
5	USB0_z_P+	I/O	
6	USB1_z_P+	I/O	
7	GND		
8	GND		
9	GND		



CN10	USB2/3		
Part Number	1653003718		
Footprint	PH5x2P-SR2.00		
Description	PIN HEADER 5*2P 2.00mm 90D(M) NO.10 SMD		
Pin	Pin Name	Signal Type	Signal Level
1	+V5_USB0	PWR	+5 V
2	+V5_USB0	PWR	+5 V
3	USB2_z_P-	I/O	
4	USB3_z_P-	I/O	
5	USB2_z_P+	I/O	
6	USB3_z_P+	I/O	
7	GND		
8	GND		
9	GND		

CN12	Front panel Connector		
Part Number	1653008101		
Footprint	JH8X1V-2M		
Description	PIN HEADER 8*1P 180D(M) 2.0r	nm DIP 209-1*8GS	
Pin	Pin Name	Signal Type	Signal Level
1	PSIN#	IN	+3.3 V
2	GND		
3	RESET	IN	
4	GND		
5	PWR_LED	OUT	
6	GND		
7	+V3.3	PWR	+3.3 V
8	HD_LED	OUT	

CN13	Buzzer Connector		
Part Number	1653002101		
Footprint	HD_2x1P_79_D		
Description	PIN HEADER 2*1P 180D(M)SQU	ARE 2.0mm DIP W	I/O Pb
Pin	Pin Name	Signal Type	Signal Level
1	+V3.3	PWR	+3.3 V
2	SB_z_SPKR	OUT	



CN15	SATA1 connector		
Part Number	1654000128		
Footprint	SATA-LD11071S02		
Description	Serial ATA 7P 90D(M) SMD 15u l	Reverse	
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA0_TX+	I/O	Analog
3	SATA0_TX-	I/O	Analog
4	GND	GND	
5	SATA0_RX-	I/O	Analog
6	SATA0_RX+	I/O	Analog
7	GND	GND	

2	4							18	20
Ο	Ο	Ο	0	Ο	Ο	0	0	Ο	0
	0	0	0	0	Ο	0	0	0	0
1	3							17	19

CN16	COM1~COM2 Connect	or	
Part Number	1653003720		
Footprint	HD_10x2P_79_RA		
Description	PIN HEADER 10*2P 2.0	00mm 90D(M) SMD 21N2	22050-20J1
Pin	Pin Name	Signal Type	Signal Level
1	COM0_DCD#	IN	+5 V
2	COM0_DSR#	IN	+5 V
3	COM0_RXD	IN	+5 V
4	COM0_RTS#	I/O	+5 V
5	COM0_TXD	OUT	+5 V
6	COM0_CTS#	IN	+5 V
7	COM0_DTR#	I/O	+5 V
8	COM0_RI#	IN	+5 V
9	GND		
10	GND		
11	COM1_DCD#	IN	+5 V
12	COM1_DSR#	IN	+5 V
13	COM1_RXD	IN	+5 V
14	COM1_RTS#	I/O	+5 V
15	COM1_TXD	OUT	+5 V
16	COM1_CTS#	IN	+5 V
17	COM1_DTR#	I/O	+5 V
18	COM1_RI#	IN	+5 V
19	GND		
20	GND		



CN17	RS422/485 Connector			
Part Number	1655304120			
Footprint	WHL4H-2M_A			
Description	WAFER BOX 2.0mm 4P 9	WAFER BOX 2.0mm 4P 90D(M) DIP W/LOCK		
Pin	Pin Name	Signal Type	Signal Level	
1	RS422_RXD-	I/O	+5 V	
2	RS422_RXD+	I/O	+5 V	
3	RS485_422_TXD+	I/O	+5 V	
4	RS485_422_TXD-	I/O	+5 V	

2	4	6	8	10
0	Ο	0	0	0
	0	0	0	Ο
1	3	5	7	9

CN18	LAN Connector		
Part Number	1653003719		
Footprint	HD_5x2P_79_RA_21N22050		
Description	PIN HEADER 5*2P 2.00mm 90D	(M) SMD 21N22050)-10J10
Pin	Pin Name	Signal Type	Signal Level
A1	GNDT	GND	
A2	GNDT	GND	
A3	LAN1_M3+	I/O	Analog
A4	LAN1_M3-	I/O	Analog
A5	LAN1_M2+	I/O	Analog
A6	LAN1_M2-	I/O	Analog
A7	LAN1_M1+	I/O	Analog
A8	LAN1_M1-	I/O	Analog
A9	LAN1_M0+	I/O	Analog
A10	LAN1_M0-	I/O	Analog

CN19	LAN LED Connector		
Part Number	1653004101		
Footprint	HD_4x1P_79_D		
Description	PIN HEADER 4*1P 180	D(M) 2.0mm DIP WO/Pb	
Pin	Pin Name	Signal Type	Signal Level
1	+V3.3_LAN1	PWR	+3.3V
2	LAN1_ACT#	OUT	
3	LAN1_1000#	OUT	
4	LAN1_100#	OUT	

		000		
	1	6		
CN20	PS2 Keyboard/Mouse	Connector		
Part Number	1655306020			
Footprint	WHL6V-2M			
Description	WAFER BOX 2.0mm 6	WAFER BOX 2.0mm 6P 180D(M) W/LOCK		
Pin	Pin Name	Signal Type	Signal Level	
1	KB_z_CLK#	I/O	+5 V	
2	KB_z_DAT#	I/O	+5 V	
3	MS_z_CLK#	I/O	+5 V	
4	GND			
5	+V5_KB	PWR	+5 V	
6	MS_z_DAT#	I/O	+5 V	

CN21	GPIO Connector		
Part Number	1653010102		
Footprint	JH10X1V-2M		
Description	PIN HEADER 10*1P 180D(M) DIP P=2.0mm		
Pin	Pin Name	Signal Type	Signal Level
1	+V5_GPIO	PWR	+5 V
2	DIO_IO0	I/O	+5 V
3	DIO_IO1	I/O	+5 V
4	DIO_IO2	I/O	+5 V
5	DIO_IO3	I/O	+5 V
6	DIO_IO4	I/O	+5 V
7	DIO_IO5	I/O	+5 V
8	DIO_IO6	I/O	+5 V
9	DIO_IO7	I/O	+5 V
10	GND		

CN23	ATX Power In Connector		
Part Number	1655303020		
Footprint	WHL3V-2M		
Description	WAFER BOX 2.0mm 3P 180D w/LOCK		
Pin	Pin Name	Signal Type	Signal Level
1	+V5_SB	PWR	+5 V
2	GND		
3	PWR_PSON#	Control	



CN24	Power In Connector		
Part Number	1655308120		
Footprint	WHL8H-2M		
Description	Wafer Box 2.0mm 8P 90D Ma	ale W/Lock	
Pin	Pin Name	Signal Type	Signal Level
1	+V5_ATX	PWR	+5 V
2	+V5_ATX	PWR	+5 V
3	+V5_ATX	PWR	+5 V
4	GND		
5	GND		
6	GND		
7	GND		
8	+V12	PWR	+12 V

1	2	3	4
	Ο	0	0

CN25	I2C BUS connector		
Part Number	1653004101		
Footprint	HD_4x1P_79_D		
Description	PIN HEADER 4*1P 180D(M) 2.0	mm DIP WO/Pb	
Pin	Pin Name	Signal Type	Signal Level
1	GND		
2	I2 C_DAT	I/O	
3	I2 C_CLK	I/O	
4	+V5_I2C	PWR	+5V

CN26	-12V & -5V power connector		
Part Number	1653003101		
Footprint	HD_3x1P_79_D		
Description	PIN HEADER 3*1P 180D(M) 2.0mm DIP SQUARE W/O Pb		
Pin	Pin Name	Signal Type	Signal Level
1	-V5	PWR	-5 V
2	GND		
3	-V12	PWR	-12 V


System Assignments

This appendix contains information of a detailed nature.
Sections include:
■ System I/O ports
■ 1st MB memory map
■ DMA channel assignments

■ Interrupt assignments

B.1 System I/O Ports

Table B.1: System I/O ports		
Addr. range (Hex)	Device	
000-01F	DMA controller	
020-021	Interrupt controller 1, master	
040-05F	8254 timer	
060-06F	8042 (keyboard controller)	
070-071	Real-time clock, non-maskable interrupt (NMI) mask	
87-8A	DMA page register	
0A0-0A1	Interrupt controller 2	
0C0-0DF	DMA controller	
1F0-1F8	Fixed disk	
278-27F	Reserved (Parallel port 2,LTP3)	
2E8-2EF	Reserved (Series port 4)	
2F8-2FF	Serial port 2	
378-37F	Parallel printer port 1 (LPT 2)	
3B0-3BF	Monochrome display and printer adapter (LPT1)	
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)

B.2 1st MB Memory Map

Table B.2: 1st MB memory map		
Device		
System ROM		
Unused (reserved for Ethernet ROM)		
Expansion ROM (for VGA BIOS)		
CGA/EGA/VGA text		
Unused		
EGA/VGA graphics		
Base memory		

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

* E0000 - EFFFF is reserved for BIOS POST

B.3 DMA channel assignments

Table B.3: DMA channel assignments		
Channel	Function	
0	Available	

Table B.3: DMA channel assignments		
1	Available (audio)	
2	Floppy disk (8-bit transfer)	
3	Available (parallel port)	
4	Cascade for DMA controller 1	
5	Available	
6	Available	
7	Available	

* Audio DMA select 1, 3, or 5

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

B.4 Interrupt assignments

Table B.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	Reserved (COM4)
IRQ 6	FDD
IRQ 7	LPT1
IRQ 8	RTC
IRQ 9	Reserved (audio)
IRQ 10	Reserved (COM3)
IRQ 11	Reserved
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Primary IDE
IRQ 15	Reserved



Mechanical Drawings

C.1 Board Mechanical Drawings



Figure C.1 PCM-3362 Mechanical Drawing (Component Side)



Figure C.2 PCM-3362 Mechanical Drawing (Solder Side)

C.2 Heatsink Mechanical Drawings









20

C.3 Optional Heat spreader Mechanical Drawings



Figure C.5 PCM-3362 optional Heatspreader Mechanical Drawing

PCM-3362 User Manual



Watchdog Timer and GPIO sample code

D.1 Watchdog Timer sample code

:The SCH3114 Runtime base I/O address is A00h ;Setting WatchDog time value location at offset 66h ;If set value "0", it is mean disable WatchDog function. Superio_GPIO_Port = A00h mov dx,Superio_GPIO_Port + 66h mov al,00h out dx,al .model small .486p .stack 256 .data SCH3114_IO EQU A00h .code org 100h .STARTup *_____ ;90H ;enable WDT function bit [0]=01h mov dx,SCH3114_IO + 90h mov al,01h out dx,al :===== _____ ______ ;65H ;bit [1:0]=Reserved ;bit [6:2]Reserve=00000 ;bit [7] WDT time-out Value Units Select ;Minutes=0 (default) Seconds=1 mov dx,SCH3114_IO + 65h ; mov al,080h out dx,al :66H ;WDT timer time-out value ;bit[7:0]=0~255 mov dx,SCH3114_IO + 66h mov al,01h out dx.al ;bit[0] status bit R/W ;WD timeout occurred =1 :WD timer counting = 0mov dx,SCH3114_IO + 68h mov al.01h out dx,al

```
.exit
```

```
END
```

D.2 GPIO sample code

```
*______
  Get Number of GPIO group
  one group mean 8 gpio pins (one GPIO Chip)
; Input:
  ax=5E87h
  bh=00h
; output:
            ;function success, other value means function fail
  ax=5E78
  cl= n group of gpio
       mov ax,5E87h
       mov bh,00h
       INT15
       You will get cl=01 in 8 bit GPIO product, cl = 02 in 16 bit GPIO product
   Get GPIO Config
; Input:
  ax=5E87h
  bh=01h
  cl= n; n means which group of GPIO you want to get
; output:
  ax=5E78
            ;function success, other value means function fail
  bl= the n group of gpio config
   bit 0 = \text{gpio } 0, 0 = \text{output pin}; 1 = \text{input pin}
   bit 1 = \text{gpio } 1, 0 = \text{output pin}; 1 = \text{input pin}
   bit 7 = gpio 7, 0 => output pin; 1 => input pin
       mov ax,5E87h
       mov bh,01h
       mov cl,01h
       INT15
       You will get GPIO default setting from bl
      =========
  Set GPIO Config
; Input:
  ax=5E87h
  bh=02h
```

```
cl= n; n means which group of GPIO you want to set
  bl= the n group of gpio config
   bit 0 = gpio 0, 0 \Rightarrow output pin; 1 \Rightarrow input pin
   bit 1 = \text{gpio } 1, 0 => \text{output pin}; 1 => \text{input pin}
    .....
   bit 7 = gpio 7, 0 => output pin; 1 => input pin
; output:
  ax=5E78
             ;function success, other value means function fail
       mov ax,5E87h
       mov bx,02AAh
       mov cl,01
       INT15
       Set GPIO 0,2,4,6 as output, GPI 1,3,5,7 as input
    =================
                           _____
  Get GPIO status
; Input:
  ax=5E87h
  bh=03h
  cl= n; n means which group of GPIO you want to get
; output:
  ax=5E78
             ;function success, other value means function fail
  bl= the n group of gpio status
   bit 0 = \text{gpio } 0, 0 = \text{Low}; 1 = \text{High}
   bit 1 = \text{gpio } 1, 0 = \text{Low}; 1 = \text{High}
     .....
   bit 7 = gpio 7, 0 => Low; 1 => High
       mov ax,5E87h
       mov bh,03h
       mov cl,01h
       INT15
       You will get GPIO value from bl
  _____
                         ______
  Set GPIO status
: Input:
  ax=5E87h
 bh=04h
  cl= n; n means which group of GPIO you want to set
; bl= the n group of gpio status
   bit 0 = \text{gpio } 0, 0 \Rightarrow \text{Low}; 1 \Rightarrow \text{High}
```

====

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