

PCM-5312

Onboard AMD Geode™ GX
466/500/533 Series Processor
SubCompact Board
With 18/24-bit TTL TFT LCD
AC-97 2.1 Audio & Mini PCI

Copyright Notice

This document is copyrighted, 2006. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, we assume no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

We reserve the right to make changes in the product design without notice to its users.

Acknowledgments

All other products' name or trademarks are properties of their respective owners.

- Award is a trademark of Award Software International, Inc.
- CompactFlash™ is a trademark of the Compact Flash Association.
- VIA is a trademark of VIA Technologies, Inc.
- Microsoft Windows® is a registered trademark of Microsoft Corp.
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.
- SoundBlaster is a trademark of Creative Labs, Inc.

Please be notified that all other products' name or trademarks not be mentioned above are properties of their respective owners.

Packing List

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

- 9657666600 Jumper Cap.
- 9681531200 Cable Kits
- 1 PCM-5312 CPU Board
- 1 CD-ROM for manual and drivers (Upon Request)

Note:

9681531200 Cable Kit included the following items:

1. *1700140510 Audio Cable:* CD-in, Line-in/out, MIC-in
2. *1700060192 Keyboard & Mouse Cable:* Cable, 6P-6P-6P, 19cm, IVORY PS2/KB&Mouse
3. *1709100201 USB Cable:* 10Pin, 2.00mm, Female
4. *1701100207 Serial Port Cable:* Male, 10P 2.00mm Pitch Housing, 20cm
5. *1701260201 Parallel Port Cable:* Female, 26P 2.00mm Pitch Housing, 20cm
6. *1701440500 IDE Cabel 3.5":* 44pin, 2.00mm, Female
7. *1701340600 Dual Floppy Cable:* 34-pin, P2.00mm
8. *1702200205 Power Cable:* Female 4-pin, P5.08mm, +6 in, P2.00mm, housing, AT to ATX

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

Contents

Chapter 1 General Information

1.1 Introduction	1-2
1.2 Features	1-3
1.3 Specifications	1-4

Chapter 2 Quick Installation Guide

2.1 Safety Precautions	2-2
2.2 Location of Connectors and Jumpers	2-3
2.3 Mechanical Drawing	2-5
2.4 List of Jumpers	2-7
2.5 List of Connectors	2-8
2.6 Setting Jumpers	2-10
2.7 AT/ATX Power Type Selection (JP1)	2-11
2.8 CFD Master/Slave Selection (JP2)	2-11
2.9 Clear CMOS (JP3)	2-11
2.10 LCD Clock and LVDS Supply Voltage Selection (JP4)	2-11
2.11 COM Ports RI/+5V/+12V Selection (JP5)	2-12
2.12 CRT/TFT LCD Mode Selection (JP6)	2-12
2.13 IDE Hard Drive (CN1)	2-13
2.14 Floppy (CN2)	2-14
2.15 Parallel Port (CN3)	2-14
2.16 Front Panel (CN4)	2-15

2.17 USB Port #1 and Port #2 (CN5).....	2-15
2.18 Digital I/O Connector (CN6)	2-16
2.19 Audio Input/Output/CD-in/MIC Connector (CN7).....	2-17
2.20 External 5VSB/PWRGD Connector (CN8).....	2-17
2.21 4P Power Socket (CN9).....	2-17
2.22 LVDS Connector (CN10).....	2-18
2.23 PC-104 ISA Interface (CN11)	2-18
2.24 TFT LCD Connector (CN12)	2-21
2.25 Serial Port #2 (CN13).....	2-22
2.26 FAN Connector (CN14).....	2-23
2.27 Ethernet 10/100Base-TX RJ-45 Phone Jack #1 (CN15)	2-23
2.28 Ethernet 10/100Base-TX RJ-45 Phone Jack #2 (CN16)	2-23
2.29 IrDA Connector (CN17).....	2-24
2.30 Mini-DIN PS/2 Connector (CN18)	2-24
2.31 Serial Port #1 (CN19).....	2-24
2.32 CRT Display Connector (CN20).....	2-25
2.33 Mini PCI Slot (MPCI1)	2-25
2.34 CompactFlash Disk Slot (CFD1).....	2-25
2.35 External Battery (BAT1)	2-26

Chapter 3 Award BIOS Setup

3.1 System Test and Initialization.	3-2
3.2 Award BIOS Setup.....	3-3

Chapter 4 Driver Installation

4.1 Software Drivers.....	4-2
4.2 Necessary To Know	4-3
4.3 Installing VGA Driver	4-4
4.4 Installing PCI to ISA Bridge Driver	4-5
4.5 Installing Audio Driver	4-6
4.6 Installing Ethernet Driver.....	4-7
4.7 Ethernet Software Configuration.....	4-8

Appendix A Programming The Watchdog Timer

A.1 Programming	A-2
A.2 ITE 8712 Watchdog Timer Initial Program	A-6

Appendix B I/O Information

B.1 I/O Address Map.....	B-2
B.2 1 st MB Memory Address Map	B-2
B.3 IRQ Mapping Chart.....	B-3
B.4 DMA Channel Assignments.....	B-3

Chapter

1

**General
Information**

1.1 Introduction

The PCM-5312 is based on AMD GX466/500 (optional)/533 and is designed to provide the ideal combination of low power, great performance, widely expanded interfaces and small size for applications that require a small form factor and minimal processor support.

The PCM-5312 features DDR SDRAM support up to 512MB, up to 1280x1024@24bpp resolution with UMA 16MB display memory that make the PCM-5312 powerful for great performance. PCM-5312 also features PC/104 and Mini PCI that works with the entire suite of our PC/104 peripheral module and Mini PCI module series. It makes PCM-5312 so flexible to adapt to legacy devices or middle-high level devices and to expand more peripheral interfaces.

The PCM-5312 is an ideal board for application of data acquisition, industrial control, thin client applications and other uses that leverage low-power consumption with optimized processor performance.

1.2 Features

- Onboard AMD Geode™ GX 466/500(Optional) /533 Series Processor
- 18/24-bit TFT LCD, 18-bit or 24-bit LVDS (Manufacture optional)
- DDR266 SODIMM, Max 512MB
- Supports Type II CompactFlash™ Memory
- Supports Type III Mini PCI and PC/104

1.3 Specifications

System

- CPU: Onboard AMD Geode™ GX
466/500(optional) /533
(333/366/400MHz) CPU
- Memory: 200-pin DDR SDRAM SODIMM
x 1, Max. 512MB (DDR266MHz)
- Chipset: CS5535
- I/O Chipset: CS5535 + ITE IT8712F
- Ethernet: Realtek RTL8100BL,
10/100Base-TX RJ-45
connector x 2
- PCI to ISA solution: ITE IT8888G
- BIOS: AWARD256KB FLASH ROM
- Watchdog Timer: Generates a Time-out System
Reset
- H/W Status Monitoring: Supports Power Supply
Voltages and Temperatures
Monitoring
- SSD: Type II CompactFlash™ slot x 1
- Expansion Interface: PC/104 socket x 1, Type III Mini
PCI socket x 1
- Battery: Lithium battery
- Power Supply Voltage: +5V. AT/ATX

- Board Size: 5.75"(L) x 8"(W) (146mm x 203mm)
- Gross Weight: 1.2lb (0.5kg)
- Operating Temperature: 32°F~140°F (0°C~60°C)

Display

- Chip: AMD Geode™ GX 466/500/533
- Memory: Shared System Memory up to 16MB
- Resolutions: Up to 1280 x 1024 @ 24bpp Colors for CRT; Up to 1024 x 768 @ 24bpp Colors for LCD
- LCD Interface: 18/24-bit TFT LCD, 18-bit or 24-bit LVDS (Manufacture optional)

I/O

- MIO: EIDE x 1(UDMA33 x 1), FDD x 1, KB + Mouse x 1, RS-232 x 1, RS-232/422/485 x 1, Parallel x 1
- IrDA: One IrDA Tx/Rx Header
- Audio: MIC-in, Line-in, Line-out, CD-in
- USB: Two 5 x 2 Pin Headers Support 2 USB 1.1 Ports
- Digital I/O: Supports 8 in or 8 out

Chapter

2

Quick Installation Guide



Notice:

The Quick Installation Guide is derived from Chapter 2 of user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.

2.1 Safety Precautions

Warning!

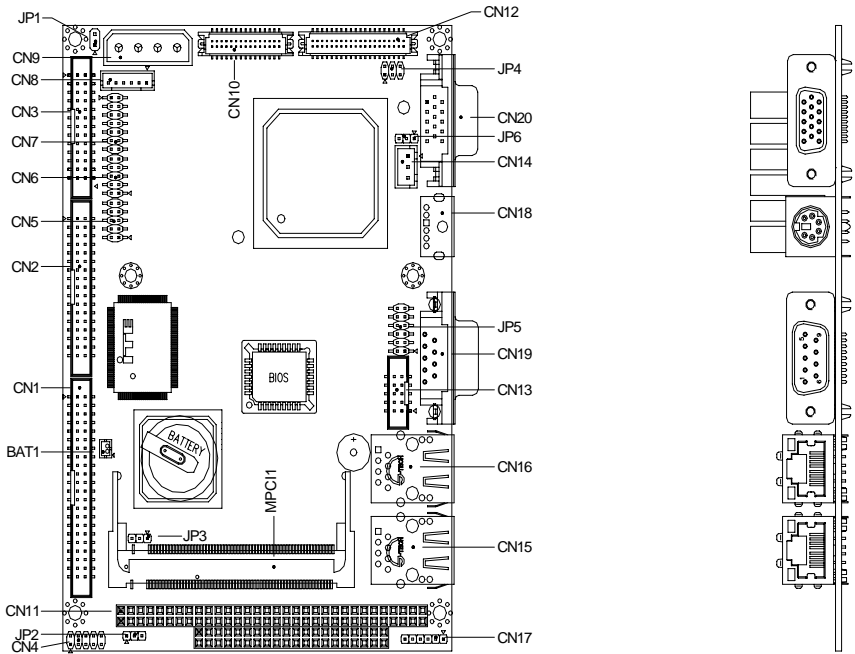
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

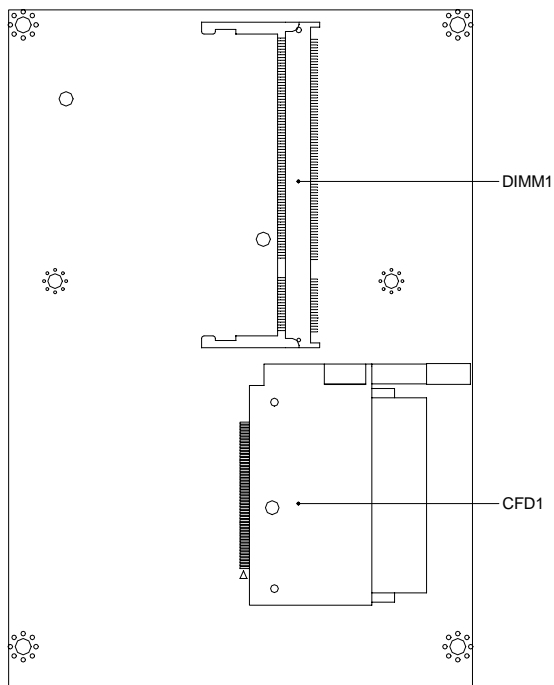
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors and Jumpers

Component Side

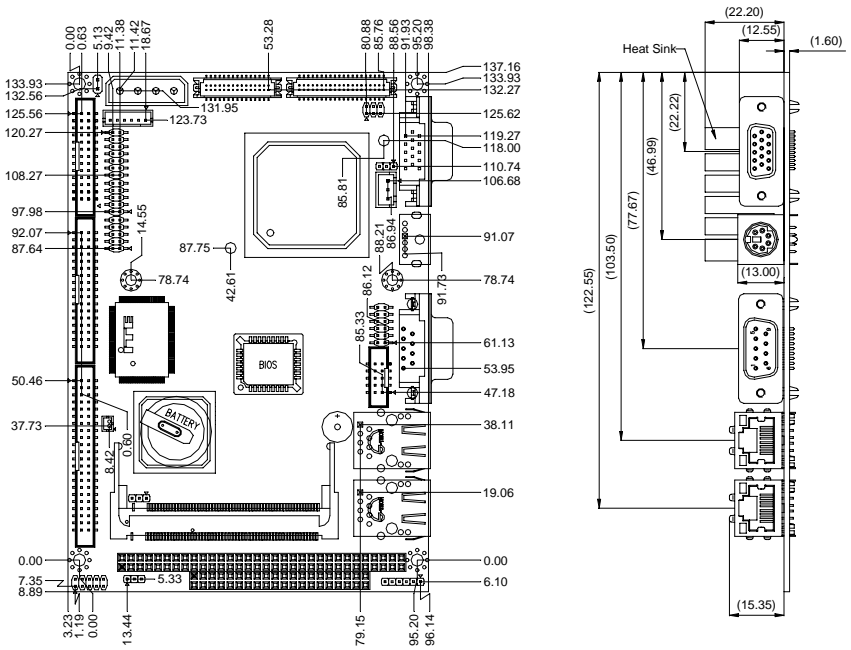


Solder Side

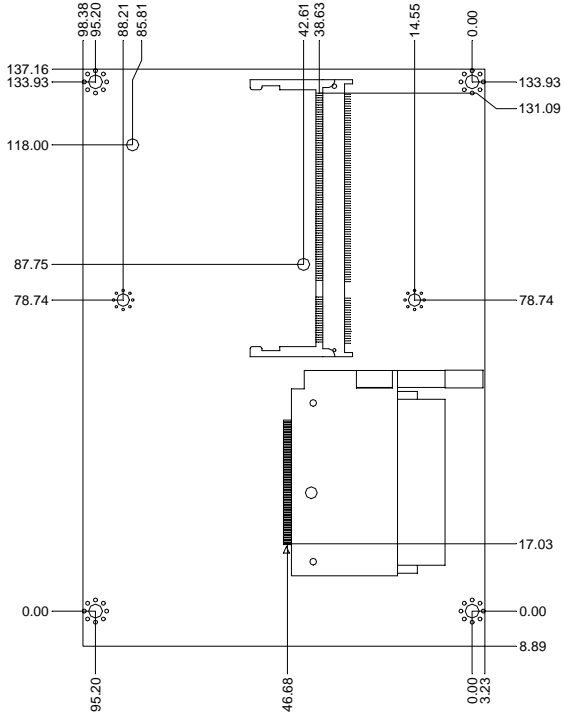


2.3 Mechanical Drawing

Component Side



Solder Side



2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Jumpers

Label	Function
JP1	AT/ATX Power Type Selection
JP2	CFD Master/Slave Selection
JP3	Clear CMOS
JP4	LCD Clock and LVDS Supply Voltage Selection
JP5	COM Ports RI/+5V/+12V Selection
JP6	CRT/TFT LCD Mode Selection

2.5 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Connectors

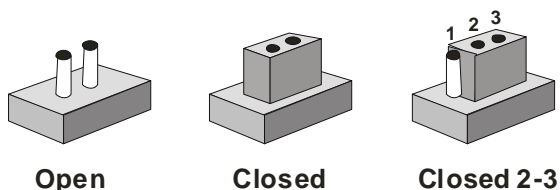
Label	Function
CN1	IDE Hard Drive
CN2	Floppy
CN3	Parallel Port
CN4	Front Panel
CN5	USB Port #1 and Port #2
CN6	Digital I/O
CN7	Audio Input/Output/CD-in/MIC
CN8	External 5VSB/PWRGD
CN9	4P Power Socket
CN10	LVDS
CN11	PC-104/ISA Interface
CN12	TFT LCD
CN13	Serial Port #2
CN14	System FAN
CN15	Ethernet 10/100 Base-TX RJ-45 Phone Jack #1
CN16	Ethernet 10/100 Base-TX RJ-45 Phone Jack #2
CN17	IrDA

CN18	Mini-DIN PS/2
CN19	Serial Port #1
CN20	CRT Display
MPC11	Mini PCI
CFD1	CompactFlash™ Disk
BAT1	External Battery (Optional)

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



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 change.

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

2.7 AT/ATX Power Type Selection (JP1)

JP1	Function
1-2(short)	ATX Power Supply (Default)
1-2(open)	AT Power Supply

2.8 CFD Master/Slave Selection (JP2)

JP2	Function
1-2	Slave (Default)
2-3	Master

2.9 Clear CMOS (JP3)

JP3	Function
1-2	Normal (Default)
2-3	Clear CMOS

Note: Since the limitation of CS5535 (AMD's Southbridge), please turn off the power before clearing CMOS.

2.10 LCD Clock and LVDS Supply Voltage Selection (JP4)

Clock

JP4	Function
1-3	Normal
3-5	Shift Clock (Default)

LVDS Operating Voltage Selection

JP4	Function
2-4	+5V (Default)
4-6	+3.3V

2.11 COM Ports RI/+5V/+12V Selection (JP5)

COM1

JP5	Function
1-2	+12V
3-4	+5V
5-6	RI (Default)

COM2

JP5	Function
7-8	+12V
9-10	+5V
11-12	RI (Default)

2.12 CRT/TFT LCD Mode Selection (JP6)

JP6	Function
1-2	TFT LCD
2-3	CRT (Default)

Note: There are two ways for selecting CRT/TFT LCD Mode what are BIOS and jumper. The default setting is CRT selects from BIOS and still has a jumper in the jumper cap.

2.13 IDE Hard Drive (CN1)

Pin	Signal	Pin	Signal
1	RESET#	2	Ground
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	Ground	20	N/C
21	DREQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IRDY	28	Ground
29	DACK#	30	Ground
31	IRQ14	32	N/C
33	DA1	34	PDIAG#
35	DA0	36	DA2
37	CS#1	38	CS#3
39	Active LED#	40	Ground
41	+5Volt.	42	+5Volt.
43	Ground	44	N/C

2.14 Floppy (CN2)

Pin	Signal	Pin	Signal
1	Ground	2	DENSEL#
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	INDEX#
9	Ground	10	MTRA#
11	Ground	12	DRVB#
13	Ground	14	DRVA#
15	Ground	16	MTRB#
17	Ground	18	DIR#
19	Ground	20	STEP#
21	Ground	22	WDATA#
23	Ground	24	WGATE#
25	Ground	26	TRK0#
27	Ground	28	WPT#
29	N/C	30	RDATA#
31	Ground	32	HDSEL#
33	N/C	34	DSKCHG#

2.15 Parallel Port (CN3)

Pin	Signal	Pin	Signal
1	STB#	2	AFD#
3	PTD0	4	ERR#
5	PTD1	6	PINIT#
7	PTD2	8	SLIN#

9	PTD3	10	Ground
11	PTD4	12	Ground
13	PTD5	14	Ground
15	PTD6	16	Ground
17	PTD7	18	Ground
19	ACK#	20	Ground
21	BUSY	22	Ground
23	PE	24	Ground
25	SLCT	26	N/C

2.16 Front Panel (CN4)

Pin	Signal
1-2	ATX Power-on Button
3-4	HDD Active LED
5-6	External Speaker
7-8	Power LED
9-10	System Reset Button

2.17 USB Port #1 and Port #2 (CN5)

Pin	Signal	Pin	Signal
1	VDD0	2	Ground
3	D0-	4	Ground
5	D0+	6	D1+
7	Ground	8	D1-
9	Ground	10	VDD01

Note: Since the source code of Award BIOS issue, the board shall not support boot devices from USB-CD. Also please plug-in USB storage devices after is loaded operating system.

2.18 Digital I/O Connector (CN6)

Pin	Signal	Pin	Signal
1	IN0	2	IN1
3	IN2	4	IN3
5	OUT0	6	OUT1
7	OUT2	8	OUT3
9	+5Volt.	10	Ground

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
DIO-1	CN6 Pin 1	Bit 7	U1 Pin 20 (GPIO 27)
DIO-2	CN6 Pin 2	Bit 6	U1 Pin 21 (GPIO 26)
DIO-3	CN6 Pin 3	Bit 5	U1 Pin 22 (GPIO 25)
DIO-4	CN6 Pin 4	Bit 4	U1 Pin 23 (GPIO 24)
DIO-5	CN6 Pin 5	Bit 3	U1 Pin 24 (GPIO 23)
DIO-6	CN6 Pin 6	Bit 2	U1 Pin 25 (GPIO 22)
DIO-7	CN6 Pin 7	Bit 1	U1 Pin 26 (GPIO 21)
DIO-8	CN6 Pin 8	Bit 0	U1 Pin 27 (GPIO 20)

2.19 Audio Input/Output/CDin/MIC Connector (CN7)

Pin	Signal	Pin	Signal
1	MIC	2	MIC Vcc
3	Audio Ground	4	CD_GND
5	LINE_IN L	6	CD_L
7	LINE_IN R	8	CD_GND
9	Audio Ground	10	CD_R
11	LINE_OUT L	12	LINE_OUT R
13	Audio Ground	14	Audio Ground

2.20 External 5VSB/PWRGD Connector (CN8)

Pin	Signal
1	N/C
2	Ground
3	N/C
4	Ground
5	RS_ON#
6	+5Volt. Standby

2.21 4P Power Socket (CN9)

Pin	Signal
1	+5Volt.
2	Ground
3	Ground
4	+12Volt.

2.22 LVDS Connector (CN10)

Pin	Signal	Pin	Signal
1	D1+	2	D1-
3	Ground	4	Ground
5	CLK+	6	CLK-
7	Ground	8	VDD
9	VDD	10	VDD
11	D2+	12	D2-
13	Ground	14	Ground
15	D0+	16	D0-
17	D3+	18	D3-
19	VDD Enable	20	Back-Light Enable
21	N.C.	22	N.C.
23	N.C.	24	N.C.
25	N.C.	26	N.C.
27	GND	28	GND
29	N.C.	30	N.C.

Note: Since the limitation of TI LVDS, the board shall not show full screen on BIOS setup and DOS mode.

2.23 PC-104 ISA Interface (CN11)

J2/P2

Pin	D	C
1	GND	GND
2	MEMCS16*	SBHE*
3	IOCS16*	LA23

4	IRQ10	LA22
5	IRQ11	LS21
6	IRQ12	LS20
7	IRQ15	LS19
8	IRQ14	LA18
9	DACK0*	LA17
10	DRQ0	MEMR*
11	DACK5*	MEMW*
12	DRQ5	SD8
13	DACK6*	SD9
14	DRQ6	SD10
15	DACK7*	SD11
16	DRQ7	SD12
17	+5V	SD13
18	MASTER*	SD14
19	GND	SD15
20	GND	GND/KEY

J1/P1

Pin	A	B
1	IOCHCK*	GND
2	D7	RSTDRV
3	D6	+5V
4	D5	IRQ9
5	D4	-5V
6	D3	DRQ2
7	D2	-12V
8	D1	ENDXFR*
9	D0	+12V

10	IOCHRDY	GND/KEY
11	AEN	SMEMW*
12	A19	SMEMR*
13	A18	IOW*
14	A17	IOR*
15	A16	DACK3*
16	A15	DRQ3
17	A14	DACK1*
18	A13	DRQ1
19	A12	REFRESH*
20	A11	SYSCLK
21	A10	IRQ7
22	A9	IRQ6
23	A8	IRQ5
24	A7	IRQ4
25	A6	IRQ3
26	A5	DACK2*
27	A4	TC
28	A3	BALE
29	A2	+5V
30	A1	OSC
31	A0	GND
32	GND	GND

Note: PCM-5312 does not support PC/104 way legacy ISA-DMA model caused by AMD architecture.

2.24 TFT LCD Connector (CN12)

Pin	Signal	Pin	Signal
1	+5Volt.	2	+5Volt.
3	Ground	4	Ground
5	+3.3Volt.	6	+3.3Volt.
7	Back-Light Enable	8	Ground
9	B0	10	B1
11	B2	12	B3
13	B4	14	B5
15	B6	16	B7
17	G0	18	G1
19	G2	20	G3
21	G4	22	G5
23	G6	24	G7
25	R0	26	R1
27	R2	28	R3
29	R4	30	R5
31	R6	32	R7
33	Ground	34	Ground
35	Clock	36	VSYNC
37	DE	38	HSYNC
39	N/C	40	VEE Enable

2.25 Serial Port #2 (CN13)

COM2/RS232 Mode

Pin	Signal	Pin	Signal
1	DCDB	2	RXB
3	TXB	4	DTRB
5	Ground	6	DSRB
7	RTSB	8	CTSB
9	RIB	10	N/C

COM2/RS422 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	RXD+
3	TXD+	4	RXD-
5	N/C	6	N/C
7	N/C	8	N/C
9	Ground	10	N/C

COM2/RS485 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	N/C
3	TXD+	4	N/C
5	N/C	6	N/C
7	N/C	8	N/C
9	Ground	10	N/C

2.26 FAN Connector (CN14)

Pin	Signal
1	FAN Sense
2	+5Volt.
3	Ground

2.27 Ethernet 10/100 Base-TX RJ-45 Phone Jack #1 (CN15)

Pin	Signal	Pin	Signal
1	RXD-	2	RXD+
3	RCT	4	N/C
5	N/C	6	TCT
7	TXD-	8	TXD+
9	ACT_LED	10	LINK_LED
11	+3.3Volt.	12	SPD_LED
13	Ground	14	Ground

2.28 Ethernet 10/100 Base-TX RJ-45 Phone Jack #2 (CN16)

Pin	Signal	Pin	Signal
1	RXD-	2	RXD+
3	RCT	4	N/C
5	N/C	6	TCT
7	TXD-	8	TXD+
9	ACT_LED	10	LINK_LED
11	+3.3Volt.	12	SPD_LED
13	Ground	14	Ground

2.29 IrDA Connector (CN17)

Pin	Signal
1	+5Volt.
2	CIR_TX (Option)
3	RX
4	Ground
5	TX
6	CIR_RX (Option)

2.30 Mini-DIN PS/2 Connector (CN18)

Pin	Signals	Pin	Signal
1	Keyboard Data	2	Mouse Data
3	Ground	4	Shield
5	+5Volt.	6	Keyboard Clock
7	Shield	8	Mouse Clock

2.31 Serial Port#1 (CN19)

Pin	Signal	Pin	Signal
1	DCDA	2	RXA
3	TXA	4	DTRA
5	Ground	6	DSRA
7	RTSA	8	CTSA
9	RIA	10	N/C

2.32 CRT Display Connector (CN20)

Pin	Signal	Pin	Signal
1	RED	9	+5Volt.
2	GREEN	10	Ground
3	BLUE	11	N/C
4	N/C	12	DDCSDA
5	Ground	13	HSYNC
6	Ground	14	VSYNC
7	Ground	15	DDCSCL
8	Ground		

2.33 Mini PCI Slot (MPC11)

Standard Specification.

2.34 CompactFlash™ Disk Slot (CFD1)

Pin	Signal	Pin	Signal
1	Ground	26	Ground
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS#1	32	CS#3
8	Ground	33	Ground
9	Ground	34	IOR#
10	Ground	35	IOW#
11	Ground	36	+5Volt.
12	Ground	37	IRQ14

SubCompact Board**PCM - 5312**

13	+5Volt.	38	+5Volt.
14	Ground	39	CSEL#
15	Ground	40	N/C
16	Ground	41	RESET#
17	Ground	42	IORDY
18	DA2	43	DREQ
19	DA1	44	DACK#
20	DA0	45	DASP#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	IOI6#	49	D10
25	Ground	50	Ground

2.35 External Battery (BAT1)

Pin	Signal
1	VBAT (+3Volt.)
2	Ground

Chapter

3

**Award
BIOS Setup**

3.1 System Test and Initialization

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

Press <F1> to RESUME

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

System configuration verification

These routines check the current system configuration against the values stored in the 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-5312 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 Award BIOS Setup

Awards 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.

Entering Setup

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



Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

You can refer to the "BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.

Chapter

4

**Driver
Installation**

4.1 Software Drivers

This chapter describes the operation and installation of the display drivers supplied on the Supporting CD-ROM that are shipped with your product. The onboard VGA adapter is based on the AMD GX VGA Flat Panel/CRT controller. This controller offers a large set of extended functions and higher resolutions. The purpose of the enclosed software drivers is to take advantage of the extended features of the AMD GX VGA Flat Panel/CRT controller.

Hardware Configuration

Some of the high-resolution drivers provided in this package will work only in certain system configurations. If a driver does not display correctly, try the following:

1. Change the display controller to CRT-only mode, rather than flat panel or simultaneous display mode. Some high-resolution drivers will display correctly only in CRT mode.
2. If a high-resolution mode does not support your system, try to use a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode supports most.

4.2 Necessary to Know

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver from the *Supporting CD-ROM*, you should:

- Know how to copy files from a CD-ROM to a directory on the hard disk
- Understand the MS-DOS directory structure

If you are uncertain about any of these concepts, please refer to the DOS or OS/2 user reference guides for more information before you proceed with the installation.

Before you begin

The Supporting CD-ROM contains different drivers for corresponding Windows OS, please choose the specific driver for your Windows OS.

4.3 Installing VGA Driver

Win XP / Win XPe VGA

Place the Driver CD-ROM into your CD-ROM drive and pull up the CD-ROM file on your screen.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager...**
6. Double click on **Video Controller (VGA Compatible)**.
7. Click on **Update Driver...**
8. Click on **Next**.
9. Select **Search for a suitable driver...**, then click on **Next**.
10. Select **Specify a location**, then click on **Next**.
11. Click on **Browse**.
12. Select "gx_winxp" file from CD-ROM (**Drivers/Step 1 - Graphics/WinXP_XPe**) then click on **Open**.
13. Click on **OK**.
14. Click on **Next**.
15. Click on **Yes**.
16. Click on **Finish**.

Note: The user must install this system driver before install other device drivers.

4.4 Installing PCI to ISA Bridge Driver

Win XP / Win XPe System

Place the Driver CD-ROM into your CD-ROM drive and pull up the CD-ROM file on your screen.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager...**
6. Double click on **Other PCI Bridge Device**
7. Click on **Update Driver....**
8. Click on **Next**.
9. Select **Search for a suitable driver...**, then click on **Next**.
10. Select **Specify a location**, then click on **Next**.
11. Click on **Browse**.
12. Select "**ite**" file from CD-ROM (**Drivers/Step 2 – PCI to ISA Bridge**) then click on **open**.
13. Click on **OK**.
14. Click on **Next**.
15. Click on **Finish**.

4.5 Installing Audio Driver

Win XP / Win XPe Audio

Place the Driver CD-ROM into your CD-ROM drive and pull up the CD-ROM file on your screen.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager....**
6. Double click on **Multimedia Audio Controller**.
7. Click on **Update Driver....**
8. Click on **Next**.
9. Select **Search for a suitable driver....**, then click on **Next**.
10. Select **Specify a location**, then click on **Next**.
11. Click on **Browse**.
12. Select "**Gx2WDMAu**" file from CD-ROM (**Driver/Step 3 - Audio/Windows**) then click on **Open**.
13. Click on **OK**.
14. Click on **Next**.
15. Click on **Yes**.
16. Click on **Finish**.

4.6 Installing Ethernet Driver

Win XP / Win XPe Ethernet

Place the Driver CD-ROM into your CD-ROM drive and pull up the CD-ROM file on your screen.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager...**
6. Double click on **Ethernet Controller**.
7. Click on **Update Driver...**
8. Click on **Next**.
9. Select **Search for a suitable driver...**, then click on **Next**.
10. Select **Specify a location**, then click on **Next**.
11. Click on **Browse**.
12. Select "**NetrtOEM**" file from CD-ROM (**Driver/Step 4 - Ethernet/WinXP**) then click on **Open**.
13. Click on **OK**.
14. Click on **Next**.
15. Click on **Finish**.

4.7 Ethernet Software Configuration

The onboard Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the Insyde BIOS Setup. To configure the medium type, to view the current configuration, or to run diagnostics, please refer to the following instruction:

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

There are three very useful diagnostic functions offered in the Ethernet Setup Menu as follows:

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

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

Appendix

A

**Programming the
Watchdog Timer**

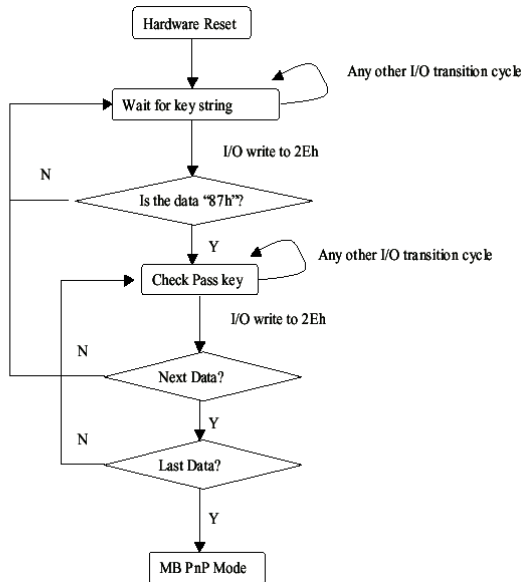
A.1 Programming

PCM-5312 utilizes ITE 8712 chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8712 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN Index R/W Reset Configuration Register or Action				
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level ^{Note} for WDT

WatchDog Timer Time-out Value Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

A.2 ITE8712 Watchdog Timer Initial Program

```
.MODEL SMALL
```

```
.CODE
```

Main:

```
CALL Enter_Configuration_mode
```

```
CALL Check_Chip
```

```
mov cl, 7
```

```
call Set_Logic_Device
```

```
;time setting
```

```
mov cl, 10 ; 10 Sec
```

```
dec al
```

Watch_Dog_Setting:

```
;Timer setting
```

```
mov al, cl
```

```
mov cl, 73h
```

```
call Superio_Set_Reg
```

```
;Clear by keyboard or mouse interrupt
```

```
mov al, 0f0h
```

```
mov cl, 71h
```

```
call Superio_Set_Reg
```

```
;unit is second.
```

```
mov al, 0C0H
```

```
mov cl, 72h
```

```
call Superio_Set_Reg
```

```
; game port enable  
mov cl, 9  
call Set_Logic_Device
```

```
Initial_OK:  
CALL Exit_Configuration_mode  
MOV AH,4Ch  
INT 21h
```

```
Enter_Configuration_Mode PROC NEAR  
MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh  
MOV CX,04h  
Init_1:  
MOV AL,BYTE PTR CS:[SI]  
OUT DX,AL  
INC SI  
LOOP Init_1  
RET  
Enter_Configuration_Mode ENDP
```

```
Exit_Configuration_Mode PROC NEAR  
MOV AX,0202h  
CALL Write_Configuration_Data
```

RET

Exit_Configuration_Mode ENDP

Check_Chip PROC NEAR

MOV AL,20h

CALL Read_Configuration_Data

CMP AL,87h

JNE Not_Initial

MOV AL,21h

CALL Read_Configuration_Data

CMP AL,12h

JNE Not_Initial

Need_Initial:

STC

RET

Not_Initial:

CLC

RET

Check_Chip ENDP

Read_Configuration_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg_Port+04h]

OUT DX,AL

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP
```

```
Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP
```

```
Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
```

```
Set_Logic_Device proc near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp
```

```
;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h
```

```
DW 02Eh,02Fh
```

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Appendix

B

I/O Information

B.1 I/O Address Map

Address	Description	User Address
000-01F	DMA Controller #1	000-000F
020-03F	Interrupt Controller #1, Master	020-021
040-05F	System Time	040-043
060-06F	8042 (Keyboard Controller)	060-064
070-07F	Real time Clock, NMI (non-maskable Interrupt) Mask	070-073
080-09F	DMA Page Register	080-08F
0A0-0BF	Interrupt Controller #2	0A0-0A1
0C0-0DF	DMA Controller #2	0C0-0DF
0F0-0FF	Math Coprocessor	0F0-0FF
1F0-1F7	Primary IDE Channel	1F0-1F7
2F8-2FF	Serial Port 2	2F8-2FF
378-37F	Parallel Printer Port 1	378-37F
3B0-3DF	EGA / VGA card	3B0-3DF
3F8-3FF	Serial Port 1	3F8-3FF

B.2 1st MB Memory Address Map

Memory Address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-CBFFF	VGA BIOS
E0000-FFFFF	System BIOS

B.3 IRQ Mapping Chart

IRQ0	System Timer	IRQ8	System CMOS / Real time clock
IRQ1	Keyboard	IRQ9	Microsoft ACPI – Compliant system
IRQ2	Cascade to IRQ Controller	IRQ10	Unused
IRQ3	COM2	IRQ11	Unused
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Unused	IRQ13	FPU
IRQ6	Floppy	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Reserved

B.4 DMA Channel Assignments

DMA Channel	Function
0	Available
1	Available
2	Floppy
3	Available