

**Compact Board**

**PCM-5893/5893L**

**PCM-5893/5893L**

All-in-one AMD Geode GX  
466/500/533 Processor  
Compact Board  
With LCD, Ethernet,  
Audio & 4 COMs

PCM-5893/5893L Rev. A Manual 1st Ed.  
Jun. 2006

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## Packing List

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

- 1 Jumper Cap - 9657666600
- 1 Quick Installation Guide
- 1 PCM-5893 / PCM-5893L CPU Board
- 1 Utility CD

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

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Chapter

1

**General  
Information**



## **1.1 Introduction**

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The PCM-5893 / PCM-5893L is based on AMD GX466/500 (optional)/533 and is designed to provide the ideal combination of low power, higher performance, widely expanded interfaces and small size for applications that require a small form factor and minimal processor support.

The PCM-5893 / PCM-5893L features CAN Bus, DDR SDRAM supporting up to 512MB and LCD supporting up to 1280x1024@24bpp with UMA 16MB display memory that makes the PCM-5893 / PCM-5893L powerful for higher performance.

The PCM-5893 / PCM-5893L also features PC/104 and Mini PCI sockets that work with the entire suite of our' PC/104 peripheral module and Mini PCI module series. It makes PCM-5893 / PCM-5893L so flexible to adapt to legacy devices or middle-high level devices, to be robust in electromagnetically noisy environments and to expand more peripheral interfaces.

The PCM-5893 / PCM-5893L is an ideal board for application of data acquisition, industrial control, thin client applications and other applications that leverage low-power consumption with optimized processor performance.

## 1.2 Features

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- Onboard AMD Geode™ GX 466/500(Optional) /533 Series Processor
- 18/24-bit TTL TFT LCD / 24-bit DSTN LCD (PCM-5893 only)
- Supports Type II CompactFlash™ and DiskOnChip
- Supports Type III Mini PCI, PC/104 and PCI slots
- 4 COM / 4 USB / Digital I/O
- Supports CAN Bus (Optional)
- Supports DDR Memory
- +5V only operation

## 1.3 Specifications

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### System

- CPU: Onboard AMD Geode™ GX  
466/500(optional) /533  
(333/366/400MHz) CPU
- Memory: 184-pin DDR SDRAM x 1, Max.  
512MB (DDR266MHz)
- Chipset: AMD Geode + CS5535
- I/O Chipset: CS5535 + ITE IT8712F
- Ethernet: Realtek RTL8100BL,  
10/100Base-T RJ-45  
connector x 2
- PCI to ISA solution: ITE IT8888G
- BIOS: AWARD256KB FLASH ROM
- Watchdog Timer: Generate a Time-out System  
Reset
- H/W Status Monitoring: Supports Power Supply  
Voltages and Temperatures  
Monitoring
- SSD: Type II CompactFlash™ slot x 1,  
one DOC socket
- Expansion Interface: PC/104 slot x 1, Type III Mini  
PCI slot x 1 and PCI slot x 1
- Battery: Lithium battery

- Power Supply Voltage: +5V. AT/ATX
- Board Size: 8"(L) x 5.75"(W) (203mm x 146mm)
- Gross Weight: 1.2lb (0.5kg)
- Operating Temperature: 32°F~140°F (0°C~60°C)

### **Display**

- Chip: AMD Geode™ GX (PCM-5893L)  
SMI SM712 (PCM-5893)
- Memory: Built-in 4MB SDRAM (PCM-5893)  
Shared System Memory up to 16MB (PCM-5893L)
- Resolutions: Up to 1280 x 1024 @ 24bpp Colors for CRT; Up to 1280 x 1024 @ 24bpp Colors for TTL LCD; 800 x 600 @24-bit for DSTN LCD (for PCM-5893 only)

### **Note:**

Please change BIOS setup as below when you want to use simultaneous display or dual view display.

BIOS: PnP / PCI Configurations / Init Display / First / Onboard

### **I/O**

- MIO: EIDE x 1(UDMA66 x 1), FDD x 1, KB + Mouse x 1, RS-232 x 3,

- IrDA: RS-232/422/485 x 1, Parallel x 1  
One IrDA Tx/Rx Header
- Audio: MIC-in, Line-in, Line-out, CD-in  
(include Stereo Amplifier)
- USB: Two 5 x 2 Pin Headers Support  
4 USB 1.1 Ports
- Digital I/O: Supports 8 in or 8 out
- CAN Bus: Two ports (Optional)

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

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**Warning!**

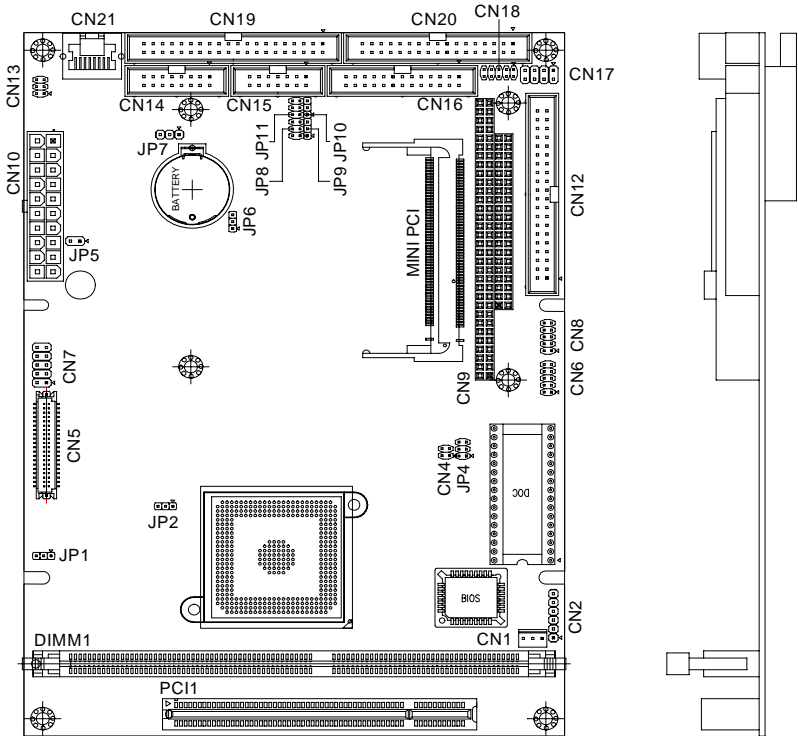
*Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.*

**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*

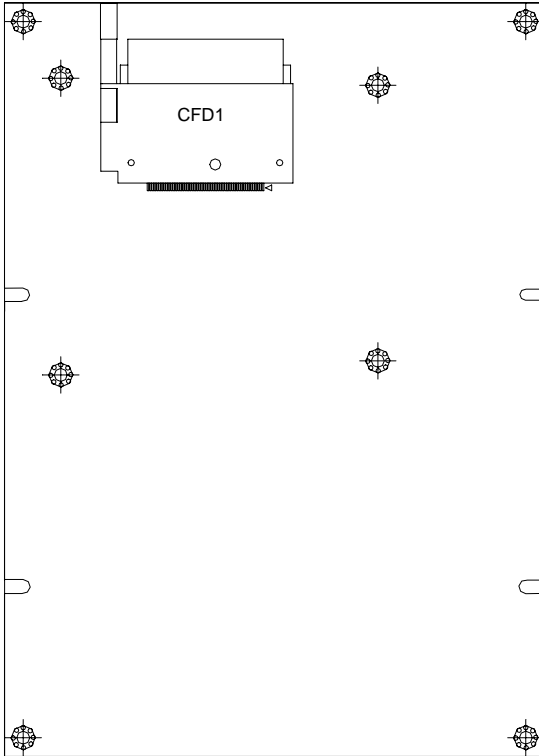
## 2.2 Location of Connectors and Jumpers

### Component Side



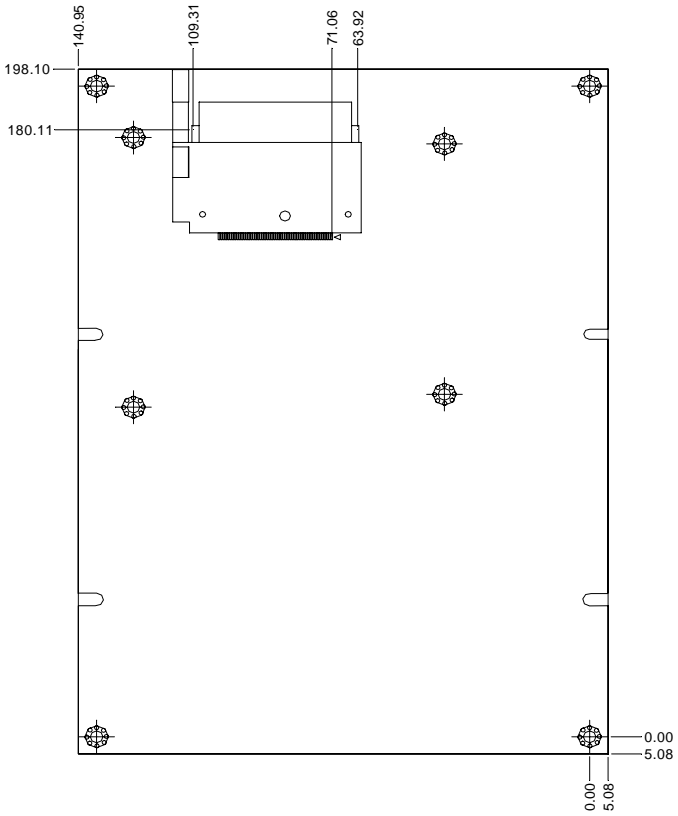


Solder Side





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	LCD Clock Operating Mode
JP2	CRT/TFT LCD mode Selection (Optional)
JP3	CPLD Programming Interface (For Debug Only)
JP4	DOC Address Selection
JP5	AT/ATX Power Type Selection
JP6	CFD Master/Slave Selection
JP7	Clear CMOS
JP8, JP10	COM Ports RI/+5V/+12V Selection
JP9, JP11	COM Ports +5V/+12V 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

<b>Label</b>	<b>Function</b>
CN1	System FAN
CN2	IrDA
CN4	CAN BUS (Optional)
CN5	TFT LCD
CN6	USB Port #1 and Port #2
CN7	Front Panel
CN8	USB Port #3 and Port #4
CN9	PC/104 ISA Interface
CN10	ATX Power Socket
CN11	AT Power Socket
CN12	IDE Hard Drive
CN14	CRT Display
CN15	Audio Input/Output/CD-in/MIC
CN16	Parallel Port
CN17	KB/MS CONNECTOR
CN18	Digital I/O
CN19	Serial Port

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CN20	Floppy
CN21	Ethernet 10/100 Base-TX RJ-45 Phone Jack
MPCI1	Mini PCI
CFD1	Compact Flash Disk
PCI1	PCI Slot
CN13	LAN LED
U11	DOC

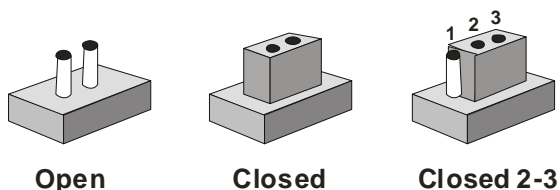
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## 2.6 Setting Jumpers

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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 LCD Clock Operating Mode (JP1)

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JP1	Function
1-2	Normal
2-3	Shift Clock (default)

## 2.8 CRT/TFT LCD mode Selection (JP2) (Optional function)

---

JP2	Function
1-2	TFT LCD
2-3	CRT (default)

**Note:** The display mode could be selected by BIOS

## 2.9 DOC Address Selection (JP4)

---

D400	Function
1-2	Open
3-4	Open
5-6	Open

D800	Function
1-2	Open
3-4	Open
5-6	Short

DC00	Function
1-2	Open
3-4	Short
5-6	Open



---

Disable (Default)	Function
1-2	Open
3-4	Short
5-6	Short

---

## 2.10 AT/ATX Power Type Selection (JP5)

---

JP5	Function
1-2(short)	ATX Power Supply (default)
1-2(open)	AT Power Supply

---

## 2.11 CFD Master/ Slave Selection (JP6)

---

J6	Function
1-2	Slave (default)
2-3	Master

---

## 2.12 Clear CMOS (JP7)

---

JP7	Function
1-2	Normal (default)
2-3	Clear CMOS

---

**Note:** Due to the limitation of CS5535 (AMD's Southbridge), you need to turn off the power before clearing CMOS.

## 2.13 COM Ports RI/+5V/+12V Selection

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### COM1 (JP8)

JP8	Function
1-2	+12V
3-4	+5V
5-6	RI (default)

### COM2 (JP10)

JP10	Function
7-8	+12V
9-10	+5V
11-12	RI (default)

### COM3 (JP9)

JP11	Function
1-2	+12V
2-3	+5V (default)

### COM4 (JP11)

JP11	Function
1-2	+12V
2-3	+5V (default)

## 2.14 Fan Connector (CN1)

---

Pin	Signal
1	GND

---

2	+12V
3	FAN Sense

## 2.15 IrDA (CN2)

Pin	Signal
1	+5V
2	CIR_TX (Optional)
3	RX
4	GND
5	TX
6	CIR_RX (Optional)

## 2.16 CAN BUS (CN4) (Optional function)

Pin	Signal	Pin	Signal
1	CANH	2	CANL
3	GND	4	N/C

## 2.17 TFT LCD (CN5)

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	GND	4	GND
5	+3.3V	6	+3.3V
7	Back-Light Enable	8	GND
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	GND	34	GND
35	Clock	36	VSYNC
37	DE	38	HSYNC
39	N/C	40	VEE Enable

**Note:** Please change BIOS setup as below when you want to use simultaneous display or dual view display. (For PCM-5893 only.)

BIOS: PnP / PCI Configurations / Init Display / First / Onboard

## 2.18 USB Port #1 and Port #2 (CN6)

Pin	Signal	Pin	Signal
1	VDD0	2	GND
3	D0-	4	GND
5	D0+	6	D1+
7	GND	8	D1-
9	GND	10	VDD1

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

## 2.19 Front Panel (CN7)

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

## 2.20 USB Port #3 and Port #4 (CN8)

Pin	Signal	Pin	Signal
1	VDD3	2	GND
3	D3-	4	GND
5	D3+	6	D4+
7	GND	8	D4-
9	GND	10	VDD4

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

## 2.21 PC/104 ISA Interface (CN9)

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

PCM-5893/5893L does not support PC/104 way legacy ISA-DMA mode cause by AMD architecture.

I/O Resource Allocation Method of PC/104 card is for the PCM-5893/5893L.

PC/104 connector at the PCM-5893/5893L cannot automatically get related I/O resource when a new PC/104 card is added because of AMD Geode's architecture limitation. The following steps are for setting up the I/O resources manually for your reference.

1. Retrieve the resource of the PC/104 card. The information is typically contained in the manual of the PC/104 card.
2. Push a function key "Delete" to get into the BIOS
3. Enable the resource of the device in BIOS setup
4. Disable the resource of the device for which conflicts the resource of the device mentioned above in BIOS setup
5. Save above BIOS setup and restart the system
6. Install the driver in the operating system
7. Open your Control Panel (click Start, then pick Setting and Control Panel) Double click on the System icon and choose the Device Manager tab. Find the device of which you want to enable. Click the plus sign (+) next to the various categories click on the device you want to update, and then click on "Resource" and choose the resource that is the same as the hardware setup.

## 2.22 ATX Power Socket (CN10)

Pin	Signal	Pin	Signal
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS-ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND



8	N.C	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

### 2.23 AT Power Socket (CN11)

Pin	Signal
1	N/C
2	+5V
3	+12V
4	-12V
5	GND
6	GND
7	GND
8	GND
9	-5V
10	+5V
11	+5V
12	+5V

### 2.24 IDE Hard Drive (CN12)

Pin	Signal	Pin	Signal
1	RESET#	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13

15	D1	16	D14
17	D0	18	D15
19	GND	20	N/C
21	DREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IRDY	28	GND
29	DACK#	30	GND
31	IRQ14	32	N/C
33	DA1	34	PDIAG#
35	DA0	36	DA2
37	CS#1	38	CS#3
39	Active LED#	40	GND

## 2.25 CRT Display (CN14)

<b>Pin</b>	<b>Signal</b>	<b>Pin</b>	<b>Signal</b>
1	RED	2	+5V
3	GREEN	4	GND
5	BLUE	6	N/C
7	N/C	8	DDCSDA
9	GND	10	HSYNC
11	GND	12	VSYNC
13	GND	14	DDCSCL
15	GND	16	GND

## 2.26 Audio Input/ Output/ CD-in/ MIC (CN15)

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

## 2.27 Parallel Port (CN16)

Pin	Signal	Pin	Signal
1	STB#	2	AFD#
3	PTD0	4	ERR#
5	PTD1	6	PINIT#
7	PTD2	8	SLIN#
9	PTD3	10	GND
11	PTD4	12	GND
13	PTD5	14	GND
15	PTD6	16	GND
17	PTD7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	N/C

## 2.28 KB/MS Connector (CN17)

Pin	Signal	Pin	Signal
1	Keyboard Data	2	Keyboard Clock
3	GND	4	+5V
5	Mouse Data	6	Mouse Clock
7	N/C		

## 2.29 Digital I/O (CN18)

Pin	Signal	Pin	Signal
1	Port 1	2	Port 2
3	Port 3	4	Port 4
5	Port 5	6	Port 6
7	Port 7	8	Port 8
9	+5V	10	Ground

### DIO Address is 801H:

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
Port 1	CN18. pin 1	Bit 7	U40. pin 20 (GPIO27)
Port 2	CN18. pin 2	Bit 6	U40. pin 21 (GPIO26)
Port 3	CN18. pin 3	Bit 5	U40. pin 22 (GPIO25)
Port 4	CN18. pin 4	Bit 4	U40. pin 23 (GPIO24)
Port 5	CN18. pin 5	Bit 3	U40. pin 24 (GPIO23)
Port 6	CN18. pin 6	Bit 2	U40. pin 25 (GPIO22)
Port 7	CN18. pin 7	Bit 1	U40. pin 26 (GPIO21)
Port 8	CN18. pin 8	Bit 0	U40. pin 27 (GPIO20)

### 2.30 Serial Port (CN19)

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**Note:** COM 1 & COM 2 support full modem control signals and COM 3 & COM 4 support TX & RX only.

COM / RS232 mode			
Pin	Signal	Pin	Signal
1	DCD1	2	DSR1
3	RXD1	4	RTS1
5	TXD1	6	CTS1
7	DTR1	8	RI1/+5V/+12V
9	GND	10	N/C
11	DCD2	12	DSR2
13	RXD2	14	RTS2
15	TXD2	16	CTS2
17	DTR2	18	RI2/+5V/+12V
19	GND	20	N/C
21	N/C	22	N/C
23	RXD3	24	N/C
25	TXD3	26	N/C
27	N/C	28	+5V/+12V
29	GND	30	N/C
31	N/C	32	N/C
33	RXD4	34	N/C
35	TXD4	36	N/C
37	N/C	38	+5V/+12V
39	GND	40	N/C

**COM / RS-422 mode**

Pin	Signal	Pin	Signal
11	TXD-	12	N/C
13	RXD+	14	N/C
15	TXD+	16	N/C
17	RXD-	18	N/C
19	GND	20	N/C

**COM / RS-485 mode**

Pin	Signal	Pin	Signal
11	TXD-	12	N/C
13	N/C	14	N/C
15	TXD+	16	N/C
17	N/C	18	N/C
19	GND	20	N/C

**2.31 Floppy (CN20)**

Pin	Signal	Pin	Signal
1	GND	2	DENSEL#
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX#
9	GND	10	MTRA#
11	GND	12	DRVB#
13	GND	14	DRVA#
15	GND	16	MTRB#
17	GND	18	DIR#
19	GND	20	STEP#

21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TRK0#
27	GND	28	WPT#
29	N/C	30	RDATA#
31	GND	32	HDSEL#
33	N/C	34	DSKCHG#

### 2.32 Ethernet 10/100 Base-TX RJ-45 Phone Jack (CN21)

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

### 2.33 Mini PCI Slot (MPC11)

Standard Specification.

### 2.34 Compact Flash Disk Slot (CFD1)

Pin	Signal	Pin	Signal
1	GND	26	GND
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13

**Compact Board****PCM-5893/5893L**

5	D6	30	D14
6	D7	31	D15
7	CS#1	32	CS#3
8	GND	33	GND
9	GND	34	IOR#
10	GND	35	IOW#
11	GND	36	+5V.
12	GND	37	IRQ14
13	+5V	38	+5V
14	GND	39	CSEL#
15	GND	40	N/C
16	GND	41	RESET#
17	GND	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	IO16#	49	D10
25	GND	50	GND

### 2.35 PCI Slot (PCI1)

Standard Specification.



### 2.36 LAN LED (CN13) (EEPROM 10)

---

Pin	Signal	Pin	Signal
1	RX	2	+3.3V
3	LNK	4	+3.3V
5	TX	6	+3.3V

### 2.37 DOC (U11)

---

Standard Specification.

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-5893/5893L 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 <Del> 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 (PCM-5893) / WinXP\_Xpe (PCM-5893L) 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.
  - For PCM-5893, select **SM712** folder from CD-ROM (**Drivers/Step 1 - Graphics/SM 712**) and then click on **WINXP**. Follow the instructions that the window shows.
  - For PCM-5893L, select **GX2** folder from CD-ROM (**Drivers/Step 1 - Graphics/GX2**) and then click on **WinXP\_XPe**. Follow the instructions that the window shows.
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 "**It**" 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**

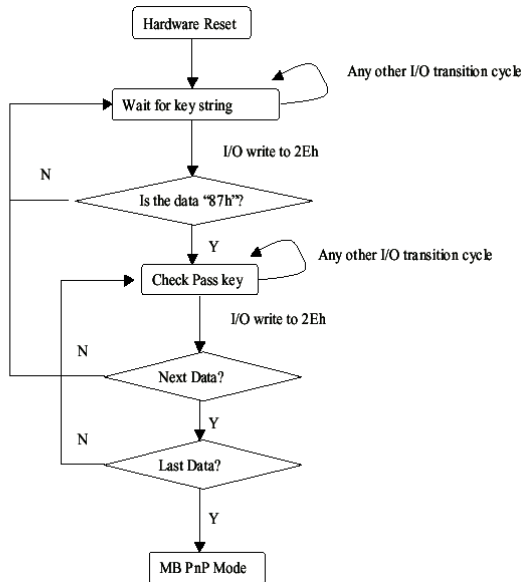
## A.1 Programming

PCM-5893/5893L 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**

<b>LDN Index R/W Reset Configuration Register or Action</b>				
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.

<b>Bit</b>	<b>Description</b>
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 <sup>Note</sup> 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
2E8-2EF	Serial Port 4	2E8-2EF
2F8-2FF	Serial Port 2	2F8-2FF
378-37F	Parallel Printer Port 1	378-37F
3B0-3DF	EGA / VGA card	3B0-3DF
3E8-3EF	Serial Port 3	3E8-3EF
3F8-3FF	Serial Port 1	3F8-3FF

## B.2 1<sup>st</sup> 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	COM3
IRQ3	COM2	IRQ11	COM4
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