

PCM-5894
PCM-5894C

All-in-One Single Board Pentium
Computer with SVGA, Ethernet
and 4 serial ports

FCC STATEMENT

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE. (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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Packing list

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

- 1 PCM-5894/PCM-5894C All-in-One Single Board Computer
- 1 User's Manual (This book)
- 1 utility disk with Ethernet drivers
- 4 utility disks with PCI SVGA utility programs and drivers for Windows 3.1, Windows 95, Windows NT 3.51, Windows NT 4.0 and OS/2

The mainboard require several cables for normal operation. You can make them yourself or purchase an optional cable kit PCM-10489-1.

If you need revised version manual, Driver and Utility, you may visit our Internet home page (www.emacinc.com) and download it.

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

Contents

Chapter 1: General Information	1
Introduction	2
Features	3
Specifications	4
Board dimensions	7
Chapter 2: Installation	9
Jumpers and connectors	10
Locating jumpers	12
Locating connectors	13
Setting jumpers	14
CPU installing and upgrading	15
System clock setting (J2)	16
CPU frequency ratio (J8)	17
CPU type select (J10)	17
CPU voltage setting (J12)	18
Installing DRAM (SIMMs)	19
DiskOnChip socket (U16)	20
Memory address selection (J13)	21
IDE hard drive connector (CN11)	22
IDE hard drive connector (CN11)	23
Floppy drive connector (CN16)	24
Floppy drive connector (CN16)	25
Parallel port connector (CN13)	26
Keyboard and mouse connector (CN9)	27
Front panel connector (CN6)	28
LCD Connector driving voltage select (J3 and J11)	29
Flat panel display connector (CN3)	29
Flat panel display connector (CN3)	30
Power connectors (CN8, CN12, CN2 and CN17)	31
Fan power connector (CN2 and CN17)	31

Serial ports (CN15)	32
Serial port RS-232/422/485 selection	33
CMOS setup (J7)	34
COM3/COM4 RI pin setting (J20, J21)	34
CMOS setup (J7)	34
VGA interface connections	35
CRT display connector (CN1)	35
Ethernet configuration	36
LAN LED connector (J14, J15, J16)	36
Ethernet 100/10BASE connector (CN14)	36
Network boot	37
IrDA connector (CN10)	38
USB connector (CN5)	38
Chapter 3: AMIBIOS Setup	39
General information	40
Standard CMOS Setup	41
Advanced CMOS Setup	43
Advanced Chipset Setup	48
Power Management Setup	50
PCI/Plug and Play Setup	53
Peripheral Setup	58
Auto-detect hard disk	61
Change Supervisor Password	61
Auto Configuration with Optimal Settings	62
Auto Configuration with Fail Safe Settings	62
Save Settings and Exit	62
Exit Without Saving	62
Chapter 4: Flat Panel/CRT Controller Display Drivers and Utilities	63
Software Drives	64
Hardware configuration	64
Necessary prerequisites	65
Before you begin	65
Windows 95	66

Driver installation	66
Windows 3.1	67
Driver installation	67
OS/2	68
Windows NT3.51	70
Windows NT 4.0	71
Chapter 5: SiS 5598 VGA Drivers	73
System Requirements	74
DOS Utility	74
NT3.5x	77
NT 4.0	78
Selecting resolution and color depth	79
Windows 95	80
Windows 3.x	82
OS/2 Ver. 2.1	84
OS.2 Warp 3.0 (Double Byte Character)	84
OS.2 Warp 3.0 (Single Byte Character)	86
Chapter 6: Ethernet Software configuration ...	87
Ethernet software configuration	88
Appendix A: Programming the Watchdog Timer .	89
.....	
Programming the watchdog timer	90
Appendix B: Installing PC/104 Modules	93
Installing PC/104 modules	94
Appendix C: Optional Extras	97
PCM-10489-1 Cable kit for PCM-5894	98
PCM-10589-1 PCI interface riser card	98

General Information

This chapter gives background information on the mainboard.

Sections include:

- Card specifications
- Card layout and dimensions

Introduction

The PCM-5894 is a Pentium single board computer with one on-board PCI SVGA controller, one PCI Ethernet interface and one PCI expansion slot. Equipped with 64 bits local bus architecture, the PCM-5894 releases Pentium's full potential and provides unprecedented performance compared to current 32-bit processor boards. The PCM-5894 offers all the functions of industrial computer on a single board, but fits in the space of a 5¼" floppy drive (only 5.75" x 8"). For maximum performance, the PCM-5894 also supports 2nd level cache 512 KB on board. SSD interface supports one 32-pin DIP socket for M-system DiskOn-Chip 2000 series, memory capacity from 2 MB to 72MB.

On-board features include four serial ports (three RS-232 and one RS-232/422/485), one multi-mode parallel (ECP/EPP/SPP) port, one floppy drive controller and one keyboard/PS/2 mouse interface. The built-in high speed PCI IDE controller supports both PIO and bus master modes. Up to two IDE devices can be connected, including large hard disks, CD-ROM drives, tape backup drives and other IDE devices.

The PCM-5894 also features power management to minimize power consumption. It complies with the "Green Function" standard and supports three types of power saving features: Doze mode, Standby mode and Suspend mode. In addition, the board's watchdog timer can automatically reset the system or generate an interrupt in case the system stops due to a program bug or EMI.

On-board peripherals with true PCI performance

The PCM-5894 is a highly integrated, all-in-one single board computer. All on-board peripherals (including PCI flat panel/VGA interface, PCI Ethernet and PCI IDE) adopt PCI technology and operate through internal PCI bus. Integrating a Pentium board with PCI architecture has unleashed a revolutionary level of performance. *The PCM-5894 is the smallest and most powerful all-in-one Pentium board available.*

Features

- Little Board form factor (203mm x 146mm)
- Supports Intel P54C/P55C, AMD K5/K6 and Cyrix M1/M2 CPUs
- DiskOnChip (SSD) up to 72MB
- Display both CRT and LCD (TFT, DSTN, Mono, EL) simultaneously
- 100-Base Ethernet, supports boot function
- Bus Master IDE and Ultra DMA/33 supported
- Three RS-232 and one RS-232/422/485 serial ports
- Customized BIOS is provided for special applications

Specifications

Standard SBC functions

- **CPU:** Intel Pentium 75~200 MHz ,P55C (MMX), Cyrix / IBM / SGS 6X86 PR100+~200+, AMD K5 PR75~166, K6 PR2 166~233
- **BIOS:** AMI FLASH BIOS
- **Chipset:** SiS5582/ 5598 (for PCM-5894C)
- **2nd Level Cache:** On board 512KB pipeline burst 2nd level cache.
- **RAM memory:** 8MB to 128MB. Two 72-pin SIMM socket on board
- **Enhanced IDE hard disk drive interface:** Support up to two hard disk drives. BIOS auto-detect. Supports PIO mode 4 and Bus Master. Also supports Multi-word DMA and Ultra DMA/33
- **Floppy disk drive interface:** Supports up to two floppy disk drives, 5.25" (360KB and 1.2MB) and /or 3.5" (720KB, 1.44MB and 2.88MB)
- **Multi-mode parallel port:** Configured to LPT1, LPT2, LPT3 or disabled. Supports SPP, ECP and EPP
- **Serial ports:** Three RS-232 and one RS-232/422/485 serial ports. Ports can be configured as COM1, COM2, COM3, COM4 or disabled individually. Four 16C550 serial UARTs. IR connector reserved for future use
- **Keyboard/mouse connector:** 8 pin connector supports standard PC/ AT keyboard and PS/2 mouse
- **USB connectors:** Dual USB connectors on board
- **Watchdog Timer:** Can generate a system reset, IRQ15 or NMI. Support software selectable timeout interval. (2 sec. ~ 128 min., 1 sec./step)
- **DMA channels:** 7
- **Interrupt levels:** 15

- **Power management:** I/O peripheral devices support power saving and doze/standby/suspend modes. APM 1.2 compliant

VGA interface

- **VGA Controller:** C&T 65554/ SiS 5598 (for PCM-5894C)
- **Display memory:** 2MB on board/UMA structure for PCM-5894C
- **Display type:** Supports CRT and flat panel (TFT, DSTN, Mono and EL) display. Can display both CRT and flat panel simultaneously (PCM-5894C supports CRT display type only)
- **Resolution:** Up to 1024x768@64K colors/ PCM-5894C support up to 1024x768@16.7M colors
- **Panel link:** One set of daughter boards support Panel Link function (Optional)

SSD interface

- One 32-pin DIP socket supports M-system DiskOnChip 2000 series, memory capacity from 2 MB to 72 MB.

Ethernet interface

- **Chipset:** Realtek8139 100-Base Ethernet controller
- **Ethernet interface:** 10-Pin header supports RJ-45 jack. Software drivers available with remote boot function

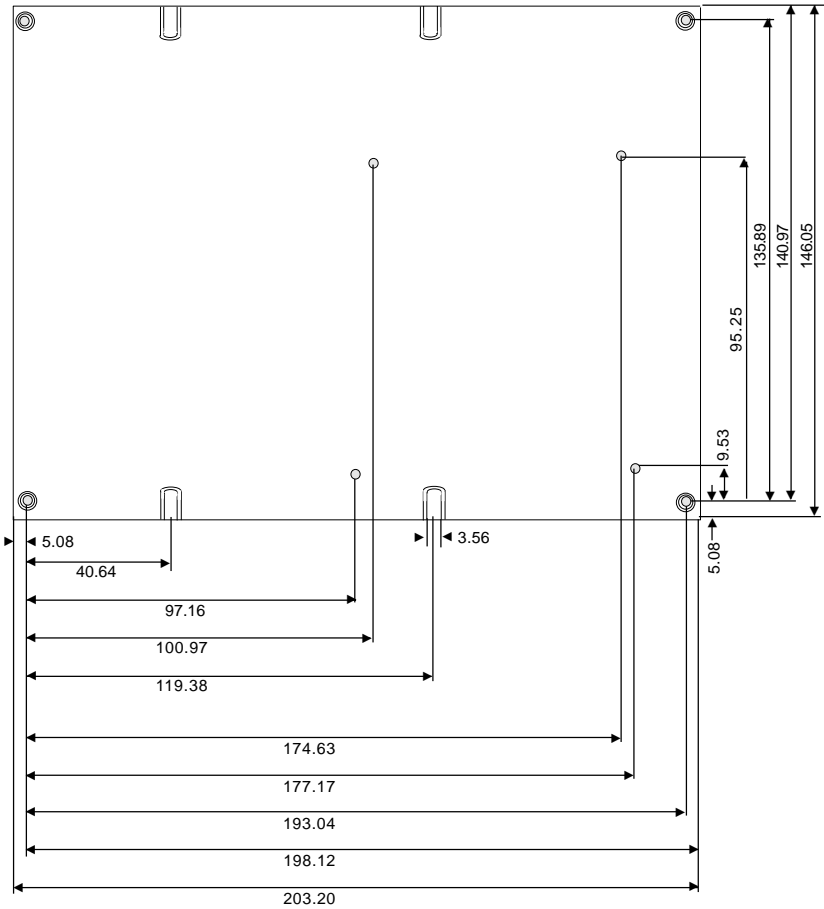
Expansion Slots

- **PC/104 connector:** 104-pin connector for a 16-bit bus expansion
- **PCI slot:** One PCI slot on board for expansion. PCI riser card optional.

Mechanical and environmental

- **Power supply voltage:** +5V (4.75V to 5.25V) and +12V (11.4V to 12.6V)
- **Power Requirements:**
 - Bare Board: +5V @ 1.5A
 - Pentium MMX onboard: +5V@6A
 - AMD K6-233 onboard: +5V@10A
- **Operating temperature:** 32 to 140° F (0 to 60° C)
- **Board Size:** 8”(L) x 5.75”(W) (203mm x 146mm)
- **Weight:** 0.66 lb. (0.3 Kg)

Board dimensions



Dimensions in mm

PCM-5894 dimensions

CHAPTER 2

Installation

This chapter describes how to set up the main-board hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

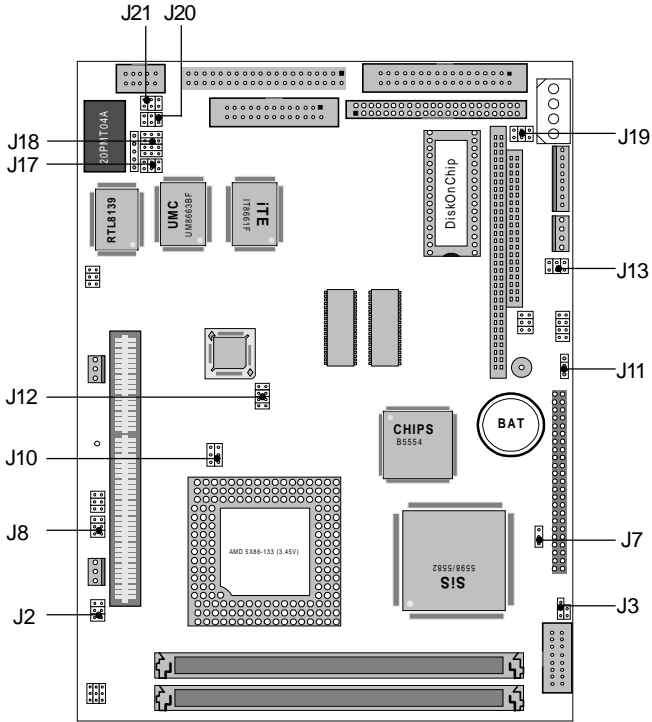
The table below lists the function of each of the board's jumpers and connectors.

Jumpers	
Label	Function
J2	System clock setting
J3	LCD connector driving voltage select
J7	CMOS setup
J8	CPU frequency ratio
J10	CPU type select
J11	LCD connector driving voltage select
J12	CPU voltage setting
J13	Memory address selection (D.O.C.)
J17	COM2 selection
J18	COM2 selection
J19	IRQ selection (COM3, COM4)
J20	COM3 RI Pin setting
J21	COM4 RI Pin setting

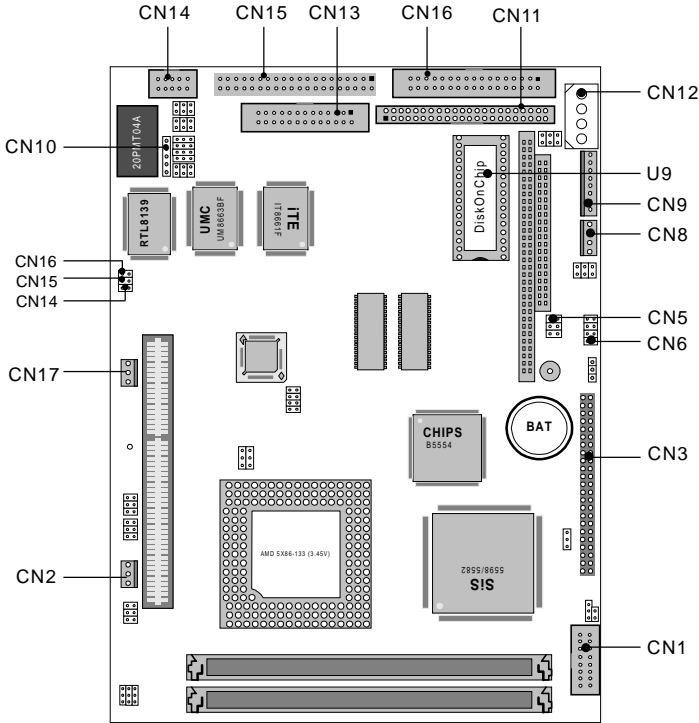
Connectors

Label	Function
CN1	CRT display connector
CN2	Fan Power connector
CN3	Flat panel display connector
CN5	USB connector
CN6	Front panel connector
CN8	Peripheral power connector (-5V, -12V)
CN9	Keyboard and mouse connector
CN10	IrDA connector
CN11	IDE hard drive connector
CN12	Main power connector (+5V, +12V)
CN13	Parallel port connector
CN14	Ethernet 100/10BASE-T connector
CN15	Serial port (RS-232/422/485)
CN16	Floppy drive connector
CN17	Fan Power connector
J14	LED-Tx connector
J15	LED-Rx connector
J16	LED-LINK connector
U16	DiskOnChip socket

Locating jumpers

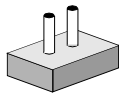


Locating connectors

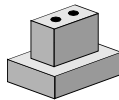


Setting jumpers

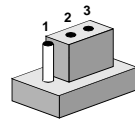
You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the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



Open



Closed



Closed 2-3

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



Open



Closed



Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

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

CPU installing and upgrading

You can upgrade to a higher power Pentium CPU at any time. Simply remove the old CPU, install the new one, and set the jumpers for the new CPU type and speed.

Warning! *Always disconnect the power cord from your chassis when you are working on it. Do not make connections while the power is on as sensitive electronic components can be damaged by the sudden rush of power. Only experienced electronics personnel should open the PC chassis.*









Caution! *Always ground yourself to remove any static charge before touching the PC 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.*



When you install a new CPU, be sure to adjust the board settings, such as CPU type and CPU clock. **Improper settings may damage the CPU.**









System clock setting (J2)

J2 is used to synchronize the system clock with the CPU clock and PCI clock. You may need to adjust the CPU clock according to the base CPU speed.

CPU clock setting		
J2	CPU	PCI
	55MHz	27.5MHz
	75MHz	32MHz
	50MHz	33.3MHz
	50MHz	25MHZ
	60MHz	30MHz
	66MHz	33.3MHz

*default setting





CPU frequency ratio (J8)

CPU frequency ratio				
J8	P54C	P55C	AMD-K6	
	1.5	3.5	3.5	
	2.0	2.0	2.0	
	2.5	2.5	2.5	
	3.0	3.0	3.0	
			4.0	
			4.5	
			5.0	
			5.5	

* default setting

CPU type select (J10)

J10 must be set to match the CPU type between Dual-Voltage (e.g.P55C) and Single-Voltage(e.g.P54C)type CPU. The chart below shows the proper jumper setting for their respective CPU type.

CPU type select		
	Dual-Voltage*	Single-Voltage
J10	2  6	2  6
	1  5	1  5

* default setting

CPU voltage setting (J12)

J12 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective V_{cc} .

CPU voltage setting		
3.6v	3.5v	3.4v
3.3v	3.2v	3.1v
3.0v	2.9v	2.8v*
2.7v	2.6v	2.5v
2.4v	2.3v	2.2V
2.1v		

*default setting

Installing DRAM (SIMMs)

The mainboard provides two 72-pin SIMM (Single In-line Memory Module) sockets and supports either Fast Page Mode (FPM) or Extended Data Output (EDO) DRAM with a speed of at least 70 ns. Unlike most other CPU cards, the mainboard supports both single and dual insertion into the memory bank. Depending on the combination of modules you use, you can install from 1 MB to 128 MB of RAM.

Installing SIMMs

NOTE: The modules can only fit into a socket one way. Their chips must face the CPU, and their gold pins must point down into the SIMM socket.

1. Ensure that all power sources are disconnected.
2. Slip the memory module into the socket at a 45 degree angle.
3. Push the module toward the vertical posts at both ends of the socket until the module is upright, and the retaining clips at both ends of the module click into place. When positioned correctly, the pins on top of the vertical posts should correspond to the circular holes on the ends of the module.
4. Repeat steps 2 and 3 for each module you install.

the cable. If you install two drives, you will need to set one as the

DiskOnChip socket (U16)

The DiskOnChip 2000 family of products provides a single chip solid-state flash disk in a standard 32-pin DIP package. The DiskOnChip 2000 is a solid-state disk with no moving parts, resulting in a significant reduction in power consumption and an increase in reliability. The DiskOnChip is small, plug and play Flash disk. It is easy to use and save integration overhead.

The DiskOnChip 2000 family of products is available in capacities ranging from 2MB up to 72 MB, unformatted. This way, the same socket on the target platform will not have to be changed. In order to manage the disk, the DiskOnChip 2000 includes the TrueFFS, M-Systems' Flash File System proprietary software. The DiskOnChip 2000 package is pin-to-pin compatible with standard 32-pin EPROM device.

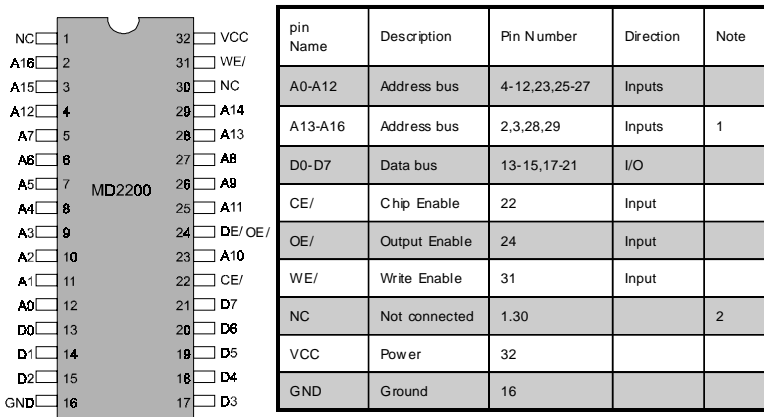


Figure1-MD2200 Pin-out Note 1: Pins A13 through A16 are not used by the MD2200. They are kept for socket backward compatibility with ED 1100 (DiskOnChip 1000)

Note 2: Pins 1 and 30 are not used by MD2200

Memory address selection (J13)

The DiskOnChip 2000 occupies a 8 Kbyte window in the upper memory address range of C800 to E000. You should ensure this dose not conflict with any other device's memory address. J13 control the memory address of Flash disk.

DiskOnChip 2000 memory address	
Memory address (HEX)	J13
DISABLE	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
DC00*	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
D800	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
D400	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
D000	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
CC00	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

* default setting

These addresses might conflict with the ROM BIOS of other peripheral boards. Please select appropriate memory address to avoid memory conflict.

IDE hard drive connector (CN11)

You can attach one or two Enhanced Integrated Device Electronics hard disk drives to the mainboard's internal controller. The mainboard's IDE controller uses a PCI local-bus interface. This advanced interface supports faster data transfer and allows the IDE hard drive to exceed 528 MB.

Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, depending on the drive size. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives use a 1 x 44-pin to 2 x 40-pin connect.

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

1. Connect one end of the cable to CN11. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector).

Connect a second drive as described above.

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

IDE hard drive connector (CN11)

IDE hard drive connector

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	N/C	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHANNEL READY	28	ALE
29	N/C	30	GND
31	IRQ14	32	IOCS16
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE	40	MGND
41	VCC	42	MVCC
43	GND	44	N/C

Floppy drive connector (CN16)

You can attach up to two floppy disks to the mainboard controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives).

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN16. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector on the either end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number one. Look for a number printed on the circuit board indicating pin number one. Also, the connector on the floppy drive connector may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

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

Floppy drive connector (CN16)

Floppy drive connector

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT
3	GND	4	N/C
5	GND	6	DRIVE TYPE
7	GND	8	INDEX
9	GND	10	MOTOR 0
11	GND	12	DRIVE SELECT 1
13	GND	14	DRIVE SELECT 2
15	GND	16	MOTOR 1
17	GND	18	DIRECTION
19	GND	20	STEP
21	GND	22	WRITE DATA
23	GND	24	WRITE GATE
25	GND	26	TRACK 0
27	GND	28	WRITE PROTECT
29	GND	30	READ DATA
31	GND	32	HEAD DELECT
33	GND	34	DISK CHANGE

Parallel port connector (CN13)

Normally, the parallel port is used to connect the card to a printer. The mainboard includes an on-board parallel port, accessed through CN13, a 26-pin flat-cable connector. You need an adapter cable if you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other.

Parallel port IRQ

The mainboard supports one parallel port. The port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

Parallel port connector (CN13)

Parallel port connector

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

Keyboard and mouse connector (CN9)

The mainboard provides a keyboard connector which supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on self test (POST) after a reset if the keyboard is not present. The mainboard BIOS Advanced setup menu allows you to select "System Keyboard" under the "Present" or "Absent" selection. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test).

Keyboard and mouse connector (CN9)

Keyboard and mouse connector

Pin	Signal
1	GND
2	MS V _{cc}
3	MS DATA
4	MS CLOCK
5	GND
6	KB V _{cc}
7	KB DATA
8	KB CLOCK

Front panel connector (CN6)

Next you may want to install external switches to monitor and control the mainboard. These features are completely optional—install them only if you need them. The front panel connector (CN6) is an 8-pin male, dual in-line header and provides connections for a speaker, hard disk access indicator and an input switch for resetting the card.

Front panel connector (CN6)

Front panel connector

Pin	Signal
1	HDD LED- (HARD DISK ACTIVE)
2	HDD LED+ (V_{CC})
3	SPEAKER+
4	SPEAKER- (GND)
5	GND
6	NC
7	RESET SWITCH- (GND)
8	RESET SWITCH+

Speaker





The mainboard can drive an 8W speaker at 0.5 watts. Ensure that alternatives to this specification do not overload the card.

LED interface

The front panel LED indicator for hard disk access is an active low signal (24 mA sink rate).

LCD Connector driving voltage select (J3 and J11)

You can select the LCD connector CN3 (Pin5 and Pin6) driving voltage by setting J3 and J11. The configuration as follows:

LCD connector driving voltage select		
	5V*	3.3V
J3		
J11		

*default

Flat panel display connector (CN3)

CN3 consists of a 50-pin, dual-in-line header. Power supplies (+12 V, -12 V) present on CN3 depend on the supply connected to the board. Ensure that both CN8 and CN12 are connected for ± 12 V power supply.

The mainboard provides a bias control signal on CN3 which can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V) and panel video signals are stable. Under normal operation the control signal (ENAVEE) is active high. When the PCM-5894's power is applied, the control signal is low until just after the relevant flat panel signals are present.

Flat panel display connector (CN3)

Flat panel display connector

Pin	Function	Pin	Function
1	+12 V	2	+12 V
3	GND	4	GND
5	+5V (or 3V)	6	+5V (or 3V)
7	ENAVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	P24	34	P25
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35

* Pin5 and Pin6 : 5V or 3V selected by J3 and J11.

Power connectors (CN8, CN12, CN2 and CN17)

Peripheral power connector, -5V, -12V (CN8)

CN8 supplies secondary power to devices which require -5 V and -12 V power.

Pin	Function
1	GND
2	-5 V
3	GND
4	-12 V

Main power connector, + 5V, + 12V (CN12)

CN12 supplies main power to the mainboard (+5 V) and devices that require +12 V power.

Pin	Signal
1	+12 V
2	GND
3	GND
4	+5V

Fan power connector (CN2 and CN17)

Provides power supply to optional CPU cooling fan. Only present when +5 V and +12 V power is supplied to the board.

Pin	Signal
1	+5 V
2	GND
3	+12 V

Serial ports (CN15)

The mainboard offers four serial ports: three RS-232 and one RS-232/422/485. These ports allow you to connect them to serial devices (mouse, printers, etc.).

COM 1-4 RS-232/422/485 serial ports (CN15)

COM1, COM2, COM3, COM4 RS-232/422/485 serial port

	PIN	SIGNAL	PIN	SIGNAL
COM1	1	DCDA	2	DSRA
	3	RXDA	4	RTSA
	5	TXDA	6	CTSA
	7	DTRA	8	RIA
	9	GND	10	N.C.
COM2	11	DCDB (422TXD-/485DATA-)	12	DSRB(422RXD+)
	13	RXDB (422TXD+/485DATA+)	14	RTSB(422RXD-)
	15	TXDB	16	CTSB
	17	DTRB	18	RIB
	19	GND	20	N.C.
COM3	21	DCDC	22	DSRC
	23	RXDC	24	RTSC
	25	TXDC	26	CTSC
	27	DTRC	28	RIC/+5V/+12V
	29	GND	30	N.C.
COM4	31	DCDD	32	RSRD
	33	RXDD	34	RTSD
	35	TXDD	36	CTSD
	37	DTRD	38	RID/+5V/+12V
	39	GND	40	N.C.

Serial port RS-232/422/485 selection

The serial port connectors are mounted on the right hand edge of the card. The 40-pin, dual-in-line, male header to the right of the card is for the RS-232 and RS-232/422/485 ports.

IRQ Selection (J19)

*COM3:IRQ5 and COM4:IRQ10	COM3:IRQ10 and COM4:IRQ5

COM2 Selection (J17, J18)

	*RS-232	RS-422	RS-485
J17	5 ○ ○ 6	5 ○ ○ 6	5 6
	3 ○ ○ 4	3 4	3 ○ ○ 4
	1 2	1 ○ ○ 2	1 ○ ○ 2
J18	3 ○ ○ ○ ○	3 4	3 4
	2 3	2 3	2 3
	1 2	1 ○ ○ ○ ○	1 ○ ○ ○ ○

*default

The IRQ and address range for those ports are fixed. However if you wish to disable the port or change these parameters later you can do this in the system BIOS setup. The table below shows the settings for the mainboard's ports.




Serial port settings (Default)

Port	Address Range	Interrupt	Default
COM1	2E8~3F8	IRQ4	3F8
COM2	2E8~3F8	IRQ3	2F8
COM3	2E8~3F8	IRQ5/IRQ10	3E8
COM4	2E8~3F8	IRQ10/IRQ5	3E8




COM3/COM4 RI pin setting (J20, J21)

The COM3 and COM4 can supply +5V or +12V power to the serial devices via RI pin of the COM port connector. The outputs of COM3, COM4 RI pins are selected by setting J20, J21.

COM3 RI pin setting



	RI*	+5V	+12V
J20	5  6	5 ○ ○ 6	5 ○ ○ 6
	3 ○ ○ 4	3  4	3 ○ ○ 4
	1 ○ ○ 2	1 ○ ○ 2	1  2

COM4 RI pin setting

	RI*	+5V	+12V
J21	5  6	5 ○ ○ 6	5 ○ ○ 6
	3 ○ ○ 4	3  4	3 ○ ○ 4
	1 ○ ○ 2	1 ○ ○ 2	1  2

CMOS setup (J7)

CMOS setup

	Protect*	Clear CMOS
J7	 ○	○ 

* default setting

VGA interface connections

The mainboard's PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays. The card has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

CRT display connector (CN1)

CN1 is a 16-pin, dual-in-line header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN1 to a standard 15-pin D-SUB connector commonly used for VGA.

CRT display connector

Pin	Signal	Pin	Signal
1	RED	9	SIGNAL GND
2	N/C	10	H-SYNC
3	GREEN	11	CHASSIS GND
4	SIGNAL GND	12	V-SYNC
5	BLUE	13	CHASSIS GND
6	N/C	14	N/C
7	N/C	15	CHASSIS GND
8	N/C	16	N/C

When the mainboard's power is applied, the control signal is low until just after the relevant flat panel signals are present.

Configuration of the VGA interface is done completely via the software utility. You don't have to set any jumpers.

Ethernet configuration

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

Configuration is very simple and is done via the BIOS setup. The medium type can be configured via the program included on the utility disk.

LAN LED connector (J14, J15, J16)

You can connect three LED to show the status of the communication link and traffic.

LAN LED connector

Connector	Function
J14	LED-Tx connector
J15	LED-Rx connector
J16	LED-LINK connector

Ethernet 100/10BASE-T connector (CN14)

100/10BASE-T connects to the mainboard via an adapter cable to a 10-pin polarized header (CN14). For 100/10BASE-T RJ-45 operation, an adapter cable converting CN14 into a standard RJ-45 jack is required.

Ethernet 100/10BASE-T connector

Pin	Signal
1	LANGND
2	NC
3	FRX+
4	FRX-
5	CTN1
6	CTN1
7	CTN2
8	CTN2
9	FTX+
10	FTX-

Network boot

The Network Boot feature can be utilized by incorporating the Boot ROM image files for the appropriate network operating system. The Boot ROM BIOS files are on the included utility disk.

IrDA connector (CN10)

The IrDA connector can be configured to support wireless infrared modul, with this module and application software such as Laplink, user can transfer file to or from laptops, note books, PDA and printers. The pin assignment as follows:

IrDA Connector	
Pin	Function
1	Vcc
2	FIR RX
3	IR Rx
4	GND
5	IR Tx

USB Connector (CN5)

You can connect your USB (Universal Serial Bus) devices to USB connector. With USB, there is no need to have separate connectors for keyboards, modems, and mice. USB provides a common interface for all your peripherals.

USB connector			
Pin	Function	Pin	Function
1	Vcc	5	Vcc
2	UV1 ⁻	6	UV0 ⁻
3	UV1 ⁺	7	UV0 ⁺
4	GND	8	GND

General information

AMIBIOS Setup configures system information that is stored in CMOS RAM.

Starting AMIBIOS setup

As POST executes, the following appears:

Hit if you want to run SETUP

Press to run AMIBIOS setup.

AMIBIOS main menu

The AMIBIOS setup screen appears as follows:

AMIBIOS HIFLEX SETUP UTILITY — VERSION 1.16 (C) 1996 American Megatrends, Inc. All Rights Reserved
Standard CMOS Setup Advanced CMOS Setup Advanced Chipset Setup Power Management Setup PCI/ Plug and Play Setup Peripheral Setup Auto-Detect Hard Disks Change User Password Change Supervisor Password Change Language Setting Auto-configuration with Optimal Settings Auto Configuration with Fail Safe Settings Save Settings and Exit Exit Without Saving
Standard CMOS setup for changing time, date, hard disk type, etc.

Standard CMOS Setup

The AMIBIOS Setup options described in this section are selected by choosing the Standard CMOS Setup from the AMIBIOS Setup main menu selection screen, as shown below.

The Standard CMOS Setup screen appears:

AMIBIOS SETUP — STANDARD CMOS SETUP									
(C) 1996 American Megatrends, Inc. All Rights Reserved									
Date (mm/dd/yyyy):	Wed Aug 21, 1996			Base Memory : 640KB					
Time (hh/mm/ss):	12: 19: 46			Extd Memory : 31 MB					
Floppy Drive A:	1.44 MB 3½								
Floppy Drive B:	Not Installed								
	Type	Size	Cyln	Head	WPcom	Sec	LBA Mode	Blk Mode	PIO 32Bit Mode
Pri Master:	Auto								on
Pri Slave	Auto								on
Boot Sector Virus Protection				Disabled					
Month:	Jan - Dec			Esc: Exit :Sel					
Day:	01-31			PgUp/PgDn: Modify					
Year:	1901 -2099			F2/F3: Color					

Date, Day and Time Configuration

The current values for each category are displayed. Enter new values through the keyboard.

Floppy A, Floppy B

Select the appropriate specifications to configure the type of floppy drive that is attached to the system: 360 KB 5¼", 1.2 MB 5¼", 720 KB 3½", 1.44 MB 3½", and/or 2.88 MB 3½". The settings have not been pre-installed.

Master Disk, Slave Disk

Select the appropriate values to configure the hard disk type you are using for the master and the slave. The settings have not been pre-installed. Available types are 1~46, User, Auto, Not Installed and CDROM.

Boot Sector Virus Protection

Enabling this option allows the system to issue a warning when any program (or virus) issues a disk format command or attempts to write to the boot sector of the hard disk drive. Further confirmation is required before accessing this particular section of the hard disk drive.

Advanced CMOS Setup

Select the Advanced CMOS Setup from the AMIBIOS Setup main menu to enter Advanced setup.

The Advanced Setup options described in this section are the standard options as shown on the following screen. The following configurations are based on Optional settings.

AMIBIOS SETUP — ADVANCED CMOS SETUP (C) 1996 American Megatrends, Inc. All Rights Reserved		
1st Boot Device	IDE-0	Available Options: Disabled Enabled
2nd Boot Device	FLOPPY	
3rd Boot Device	CDROM	
4th Boot Device	Disabled	
Try Other Boot Devices	Yes	
S.M.A.R.T. for Hard Disks	Disabled	
Quick Boot	Disabled	
BootUp Num-Lock	On	
Turbo Switch	Disabled	
Floppy Drive Swap	Disabled	
Floppy Drive Seek	Disabled	
Floppy Access Control	Normal	
HDD Access control	Normal	
PS/2 Mouse Support	Enabled	
System Keyboard	Present	
Primary Display	VGA/EGA	
Display Device	Both	
LCD Type	640TFT	
Password Check	Setup	
Boot To OS/2	No	
Wait For 'F1' If Error	Enabled	
Hit 'DEL' Message Display	Enabled	
Internal Cache	WriteBack	
External Cache	WriteBack	
System BIOS Cacheable	Enabled	
C000, 32k Shadow	Enabled	
C800, 32K Shadow	Disabled	ESC: Exit --: Sel PgUp/PgDn: Modify F2/F3: Color
D000, 32K Shadow	Disabled	
D800, 32K Shadow	Disabled	
	Disabled	

1st, 2nd, 3rd, 4th, and Try Other Boot Devices

This option sets the sequence of boot drives (floppy drive A:, hard disk drive C:, or CD-ROM drive) that the AMIBIOS attempts to boot from after AMIBIOS POST completes.

Quick Boot

Set this option to Enabled to instruct AMIBIOS to boot quickly when the computer is powered on. This option replaces the old Above 1 MB Memory Test Advanced Setup option.

Setting	Description
<i>Disabled</i>	AMIBIOS test all system memory. AMIBIOS waits up to 40 seconds for a READY signal from the IDE hard disk drive. AMIBIOS waits for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. AMIBIOS checks for a key press and runs AMIBIOS Setup if the key has been pressed.
<i>Enabled</i>	AMIBIOS does not test system memory above 1 MB. AMIBIOS does not wait up to 40 seconds for a READY signal from the IDE hard disk drive. If a READY signal is not received immediately from the IDE drive, AMIBIOS does not configure that drive. AMIBIOS does not wait for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. You cannot run AMIBIOS Setup at system boot, because there is no delay for the <i>Hit to run Setup</i> message.

Boot Up Num Lock

Set this option to *Off* to turn the Num Lock key off when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are *On* or *Off*.

Turbo Switch

Set this option to Enabled to permit BIOS to control the hardware turbo (Speed setting) switch.

Floppy Drive Swap

Set this option to Enabled to permit drives A: or B: to be swapped. The settings are *Enabled* or *Disabled*.

Floppy Drive Seek

Set this option to *Enabled* to specify that floppy drive A: will perform a Seek operation at system boot. The settings are *Enabled* or *Disabled*.

PS/2 Mouse Support

When this option is set to Enabled, AMIBIOS supports a PS/2-type mouse. The settings are *Enabled* or *Disabled*.

System Keyboard

This option specifies that a keyboard is attached to the computer. The settings are *Present* or *Absent*.

Primary Display

This option specifies the type of display monitor and adapter in the computer. The settings are *Mono*, *CGA40x25*, *CGA80x25*, *VGA/EGA*, or *Absent*.

LCD Type

This selection item allows you to select LCD BIOS to match the LCD types. There are eight LCD types available for users to select as their LCD display modes.

1024STN :	1024 x 768 STN
1028TFT :	1280 x1024 TFT
640STN :	640 x 480 STN
800STN :	800 x 600 STN
640TFT :	640 x 480 12/14/16 Bit TFT
640 18B TFT :	640 x 480 18 Bit TFT
1024TFT :	1024 x 768 TFT
800TFT :	800 x 600 TFT

Password Check

This option enables password checking every time the computer is powered on or every time AMIBIOS Setup is executed. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears as AMIBIOS is executed.

Boot To OS/2

Set this option to *Enabled* to permit AMIBIOS to run with IBM OS/2. The settings are *Yes* or *No*.

Wait for 'F1' if Error

AMIBIOS POST error messages are followed by:

Press <F1> to continue

If this option is set to *Disabled*, AMIBIOS does not wait for you to press the <F1> key after an error message. The settings are *Enabled* or *Disabled*.

Hit 'DEL' Message Display

Set this option to *Disabled* to prevent :

Hit if you want to run Setup

from appearing on the first AMIBIOS screen when the computer boots. The settings are *Enabled* or *Disabled*.

Internal Cache

This option specifies the caching algorithm used for L1 internal cache memory. The setting are:

Setting	Description
<i>Disabled</i>	Neither L1 internal cache memory on the CPU nor L2 secondary cache memory is disable.
<i>WriteBack</i>	Use the write-back caching algorithm.

External Cache

Set this option to *Enabled* the L2 secondary cache.

System BIOS Cacheable

When this option is set to *Enabled*, the contents of the F0000h system memory segment can be read from or written to L2 secondary cache memory. The contents of the F0000h memory segment are always copied from the BIOS ROM to system RAM for faster execution.

The settings are *Enabled* or *Disabled*.

C000,32k Shadow

D000,32k Shadow

C800,32k Shadow

D800,32k Shadow

These options control the location of the contents of the 32KB of ROM beginning at the specified memory location. If no adapter ROM is using the named ROM area, this area is made available to the local bus. The settings are:

Setting	Description
<i>Enabled</i>	The contents of C0000h - C7FFFh are written to the same address in system memory (RAM) for faster execution.
<i>Cached</i>	The contents of the named ROM area are written to the same address in system memory (RAM) for faster execution, if an adapter ROM will be using the named ROM area. Also, the contents of the RAM area can be read from and written to cache memory.
<i>Disabled</i>	The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

Advanced Chipset Setup

Select the Advanced Chipset Setup from the AMIBIOS Setup main menu to enter the Chipset Setup. The following configurations are based on Optimal settings.

AMIBIOS SETUP — ADVANCED CHIPSET SETUP (C) 1996 American Megatrends, Inc. All Rights Reserved		
DRAM Automatic Configuration	Enabled	Available Options: Enabled Disabled ESC: Exit -- .Sel PgUp/PgDn: Modify F2/F3: Color
SDRAM Access Time	None Used	
EDO DRAM Access Time	None Used	
FP DRAM Access Time	60 ns	
Write Merge Enable	Disabled	
Refresh Cycle Time	12	
RAS Pulse width When Refresh	6T	
DRAM Read Leadoff Time	1T	
NA# Enable	Enabled	
PCI Prefetch of Memory Read	Disabled	
CPU to PCI Post Write	3T	
CPU to PCI Burst Write	Disabled	
Memory Hole at 15M-16M	Disabled	
USB Function	Disabled	
USB KB/Mouse Legacy Support	Disabled	

DRAM Automatic Configuration

Set this option to *Enable* to make the BIOS auto detect the DRAM timing setting.

NA# Enable

This item allows you to select between two methods of chipset NA# asserted during CPU write cycles/CPU line fills, Enabled and Disabled.

PCI Prefetch

During read prefetching, the PCI bridge will read data from the target faster than necessary and stores it in a prefetch buffer; it then pass the data onto the CPU later. This item can be enabled to increase PCI performance.

CPU to PCI Post Write

Set this option to Enabled to give priority to posted messages from the CPU to PCI bus.

CPU to PCI Bust Write

Set this option to *Enabled* to allow write instructions to be combined in PCI Burst mode. The settings are *Enabled* or *Disabled*.

Memory Hole at 15M-16M

This option allows the end user to specify the location of a memory hole.

USB Funtion

Set this option *Enabled* to enable the system BIOS USB (Universal Serial Bus) functions. The settings are *Enabled* or *Disabled*.

USB KB/Mouse Legacy Support

Set this option to *Enabled* to enable keyboard support on the universal serial bus.

Power Management Setup

The POWER MANAGEMENT SETUP allows you to configure your system for the most effective use of energy while operating in a manner consistent with your own style of computer use. The following configurations are based on Optimal settings.

AMIBIOS SETUP — POWER MANAGEMENT SETUP (C) 1996 American Megatrends, Inc. All Rights Reserved		
Power Management/APM	Disabled	Available Options: Disabled Enabled
Green PC Monitor Power State	Off	
Video Power Down Mode	Suspend	
Hard Disk Power Down Mode	Suspend	
Standby Time Out (Minute)	Disabled	
Suspend Time Out (Minute)	Disabled	
Slow Clock Ratio	1:8	
IRQ3 (COM2/COM4)	Monitor	
IRQ4 (COM1/COM3)	Monitor	
IRQ5 (LPT2)	Ignore	
IRQ7 (LPT1)	Ignore	
IRQ9	Ignore	
IRQ10	Ignore	
IRQ11	Ignore	
IRQ12 (PS2/Mouse)	Monitor	
IRQ13 (Math coprocessor)	Ignore	
IRQ14	Monitor	ESC: Exit :Sel Pg Up/Pg Dn: Modify F2/F3: Color
IRQ15	Monitor	

Power Management/APM

Set this option to *Enabled* to enable the power management and APM (Advanced Power Management) features. The settings are *Inst-ON*, *Enabled* or *Disabled*.

Green PC Monitor Power State

This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power savings state after the specified period of display inactivity has expired. The settings are *Off*, *Standby*, or *Suspend*.

Video Power Down Mode

This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend*.

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend*.

Standby Timeout (Minute)

This option specifies the length of a period of system inactivity while in full power on state. When this length of time expires, the computer enters Standby power state. The settings are *Disabled*, *1 (min)*, *2 (min)*, *3 (min)*, *4 (min)*, *5 (min)*, *6 (min)*, *7 (min)*, *8 (min)*, *9 (min)*, *10 (min)*, *11 (min)*, *12 (min)*, *13 (min)*, or *14 (min)*.

Suspend timeout (Minute)

This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. The settings are *Disabled*, *1 (min)*, *2 (min)*, *3 (min)*, *4 (min)*, *5 (min)*, *6 (min)*, *7 (min)*, *8 (min)*, *9 (min)*, *10 (min)*, *11 (min)*, *12 (min)*, *13 (min)*, or *14 (min)*.

Slow Clock Ratio

This option specifies the speed at which the system clock runs in power saving states. The settings are expressed as a ratio between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state. The settings are *1:1*, *1:2*, *1:4*, *1:8*, *1:16*, *1:32*, *1:64*, or *1:128*.

IRQ3 (COM2/COM4)
IRQ4 (COM1/COM3)
IRQ5 (LPT2)
IRQ7 (LPT1)
IRQ9
IRQ10
IRQ11
IRQ12 (PS2 Mouse)
IRQ13 (Math Coprocessor)
IRQ14
IRQ15

This option specifies if AMIBIOS is to monitor display activity for power conservation purposes. When this option is set to *Monitor* and there is no display activity for the length of time specified in the **Standby Timeout (Minute)** option, the computer enters a power savings state. The settings are *disabled* or *Enabled*.

When set to *Monitor*, these options enable event monitoring on the specified hardware interrupt request line. If set to *Monitor* and the computer is in a power saving state, AMIBIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

AMIBIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

The settings for each of these options are *Monitor* or *Ignore*.

PCI/Plug and Play Setup

This section describes configuring the PCI bus system and covers some very technical items. It is **STRONGLY RECOMMENDED** that only experienced users should make any changes to the default settings.

.AMIBIOS SETUP — PCI / PLUG AND PLAY SETUP (C) 1996 American Megatrends, Inc. All Rights Reserved		
Plug and Play Aware O/S	No	Available Options: Disabled
Clear NVRAM	No	
PCI Latency Timer (PCI Clocks)	64	32K
PCI VGA Palette Snoap	Disabled	64K
PCI IDE BusMaster	Disabled	
OffBoard PCI IDE Card	Auto	
OffBoard PCI IDE Primary IRQ	Disabled	
OffBoard PCI IDE Secondary IRQ	Disabled	
Assign IRQ to PCI VGA Card	Yes	
PCI Slot1 IRQ Priority	Auto	
PCI Slot2 IRQ Priority	Auto	
PCI Slot3 IRQ Priority	Auto	
PCI Slot4 IRQ Priority	Auto	
DMA Channel 0	PnP	
DMA Channel 1	PnP	
DMA Channel 3	PnP	
DMA Channel 5	PnP	
DMA Channel 6	PnP	
DMA Channel 7	PnP	
IRQ3	PCI/PnP	
IRQ4	PCI/PnP	
IRQ5	PCI/PnP	
IRQ7	PCI/PnP	
IRQ9	PCI/PnP	
IRQ10	PCI/PnP	
IRQ11	PCI/PnP	
IRQ12	PCI/PnP	
IRQ14	PCI/PnP	
IRQ15	PCI/PnP	
Reserved Memory Size	Disabled	ESC: Exit :Sel
Reserved Memory Address	C8000	Pg Up/Pg Dn: Modify F2/F3: Color

Plug and Play Aware OS

Set this option to *Yes* if the operating system installed in the computer is Plug and Play-aware. AMIBIOS only detects and enables PnP ISA adapter cards that are required for system boot. The Windows 95 operating system detects and enables all other PnP-aware adapter cards. Windows 95 is PnP-aware. Set this option to *No* if the operating system (such as DOS, OS/2, Windows 3.x) does not use PnP.

You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.

The settings are *No* or *Yes*.

Clear NVRAM

Set this option to *Yes* to reset NVRAM. The settings are *Yes* or *No*.

PCI Latency Timer (PCI Clocks)

This option sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. The settings are 32, 64, 96, 128, 160, 192, 224, or 248.

PCI VGA Palette Snoop

It determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not.

PCI IDE BusMaster

Set this option to *Enabled* to specify that the IDE controller on the PCI local bus has bus mastering capability. The settings are *Disabled* or *Enabled*.

OffBoard PCI IDE Card

This option specifies if an offboard PCI IDE controller adapter card is used in the computer. You must also specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller card is installed. If an offboard PCI IDE controller is used, the onboard IDE controller on the motherboard is automatically disabled. The settings are *Auto*, *Slot1*, *Slot2*, *Slot3*, *Slot4*, *slot5*, or *Slot6*.

If *Auto* is selected, AMIBIOS automatically determines the correct setting for this option.

OffBoard PCI IDE Primary IRQ

This option specifies the PCI interrupt used by the primary IDE channel on the offboard PCI IDE controller. The settings are *Disabled*, *INTA*, *INTB*, *INTC*, *INTD*, or *Hardwired*.

OffBoard PCI IDE Secondary IRQ

This option specifies the PCI interrupt used by the secondary IDE channel on the offboard PCI IDE controller. The settings are *Disabled*, *INTA*, *INTB*, *INTC*, *INTD*, or *Hardwired*.

Assign IRQ to PCI VGA Card

Set this option to *Yes* to assign IRQ to PCI VGA Card. The settings are *Yes* or *No*.

PCI Slot1 IRQ Priority**PCI Slot2 IRQ Priority****PCI Slot3 IRQ Priority****PCI Slot4 IRQ Priority**

These options specify the priority IRQ to be used for the PCI devices installed in PCI expansion slots 1 through 4. The settings are *Auto*, *IRQ3*, *IRQ4*, *IRQ5*, *IRQ7*, *IRQ9*, *IRQ10* or *IRQ11*.

DMA Channel 0
DMA Channel 1
DMA Channel 3
DMA Channel 5
DMA Channel 6
DMA Channel 7

This item allows you to determine the specified DMA Channel assigned to the ISA/EISA bus, or configured as Plug and Play (PnP).

IRQ3
IRQ4
IRQ5
IRQ7
IRQ9
IRQ10
IRQ11
IRQ14
IRQ15

These options specify the bus that the named interrupt request lines (IRQs) are used on. These options allow you to specify IRQs for use by legacy ISA adapter cards.

These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to BIOS configurable devices. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these PCI/PnP Setup options to remove the IRQ by assigning the option to the *ISA/EISA* setting. Onboard I/O is configurable by AMIBIOS. The IRQs used by onboard I/O are configured as *PCI/PnP*.

The settings are *PCI/PnP* or *ISA/EISA*.

Reserved Memory Size

This option specifies the size of the memory area reserved for legacy ISA adapter cards.

The settings are *Disabled*, *16k*, *32k*, or *64k*.

Reserved Memory Address

This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards.

The settings are *C0000*, *C4000*, *C8000*, *CC000*, *D0000*, *D4000*, *D8000*, or *DC000*.

Peripheral Setup

To access Peripheral Setup, select the Peripheral icon in the AMIBIOS main menu. The following screen appears

AMIBIOS SETUP — PERIPHERAL SETUP		
(C) 1996 American Megatrends, Inc. All Rights Reserved		
OnBoard FDC	AUTO	Available Options
OnBoard Serial Port 1	AUTO	Auto
OnBoard Serial Port 2	AUTO	Disabled
OnBoard Ir Port	AUTO	Enabled
Ir Mode	HPSIR	
Ir Duplex	Half	
OnBoard Parallel Port	AUTO	
Parallel Port Mode	Normal	
Parallel Port IRQ	AUTO	
Parallel Port DMA Channel	N/A	
OnBoard Serial Port3	AUTO	
OnBoard Serial Port4	AUTO	
Serial Port Mode	Normal	
Ir Port	N/A	
Duplex Mode	N/A	
OnBoard PCI IDE	Both	ESC: Exit - -:Sel
Primary Master Prefetch	Enable	Pg Up/Pg Dn: Modify
Primary Slave Prefetch	Enable	F2/F3: Color

Onboard FDC

This option enables the floppy drive controller on the motherboard. The settings are *Auto*, *Enabled* or *Disabled*.

OnBoard Serial Port 1

This option enables serial port 1 on the motherboard and specifies the base I/O port address for serial port 1.

The settings are *Auto*, *Disabled*, *3F8h*, *3E8h*, *2E8h*, *2F8h*.

OnBoard Serial Port2

This option enables serial port 2 on the motherboard and specifies the base I/O port address for serial port 2. The settings are *Auto*, *Disabled*, *3F8h*, *2F8h*, *3E8h*, *2E8h*.

OnBoard Serial Port3

This options specifies the base I/O port address of series port3. The settings are *Auto*, *Disable*, *3F8h*, *2F8h*, or *3E8h*.

Onboard serial port4

This options specifies the base I/O port address of series port4. The settings are Auto, Disable, 3F8h, 2F8h, or 3E8h.

Serial Port Mode

This option specifies the serial port mode. The settings are Normal, Bi-Dir, EPP, ECP.

Onboard Ir Port

This option specifies the base I/O port address of Ir Port. The setting are Auto, Disable, 3F8h, 2F8h, or 3E8h.

Ir Mode

This option specifies the Ir Port mode. The settings are Normal, Bi-Dir, EPP, ECP.

OnBoard Parallel Port

This option enables the parallel port on the motherboard and specifies the parallel port base I/O port address. The settings are *Auto, Disabled, 378h, 278h, 3BCh*.

Parallel Port Mode

This option specifies the parallel port mode. ECP and EPP are both bidirectional data transfer schemes that adhere to the IEEE P1284 specification. The settings are:

Setting	Description
<i>Normal</i>	The normal parallel port mode is used. This is the default setting.
<i>Bi-Dir</i>	Use this setting to support bidirectional transfers on the parallel port.
<i>EPP</i>	The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bidirectional data transfer driven by the host device.
<i>ECP</i>	The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve transfer rates of approximately 2.5 Mbs. ECP provides symmetric bidirectional communications.

Parallel Port IRQ

IRQ7 is used for the Parallel Port(LPT 1). The IRQ can be changed to IRQ5.

Parallel Port DMA Channel

This option is only available if the setting for the **Parallel Port Mode** option is *ECP*.

The settings are *Auto, N/A, 0, 1, 3*.

Onboard PCI IDE

This option specifies the onboard IDE controller channels that will be used. The settings are *Primary, Secondary, Both, or Disabled*.

Auto-detect hard disk

The "IDE HDD AUTO DETECTION" utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration.

AMIBIOS SETUP — STANDARD CMOS SETUP										
(C) 1996 American Megatrends, Inc. All Rights Reserved										
Date (mm/dd/yyyy):	Wed Aug 21, 1996			Base Memory : 640KB						
Time (hh/mm/ss):	12: 19: 46			Extd Memory : 31MB						
Floppy Drive A:	1.44 MB 3½									
Floppy Drive B:	Not Installed									
	Type	Size	Cyln	Head	WPcom	Sec	LBA Mode	BLK Mode	PIO Mode	32-bit Mode
Pri Master:	Auto	41	1050	2	65535	40	OFF	ON	0	ON
Pri Slave	Auto									
Boot Sector Virus Protection				Disabled						
Month:	Jan - Dec						Esc: Exit :Sel			
Day:	01-31						PgUp/PgDn: Modify			
Year:	1901 -2099						F2/F3: Color			

Change Supervisor Password

- 1) Select this option from the main menu
- 2) Enter the Password and Press <Enter>
- 3) Retype the Password and Press <Enter>

If you forget the password, please contact your distributor for another password which you can use to enter the BIOS setup and change your own password.

Auto Configuration with Optimal Settings

You can load the optimal default settings for the AMIBOIS setup options by selecting it from the main menu. The optimal default settings are best case values that should optimize system performance.

Auto Configuration with Fail Safe Settings

You can load the Fail Safe setting for the AMIBOIS setup options by selecting it from the main menu. The Fail Safe setting provides the most stable settings, though they may not provide optimal performance. Use this option as a diagnostic aid if the system is behaving erratically.

Save Settings and Exit

If you select this option press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

Exit Without Saving

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

C&T 6555x Flat Panel /CRT Controller Display Drivers and Utilities (For PCM-5894 only)

This chapter provides information about:

- Driver types and installation

Software drivers

This chapter describes the operation and installation of the software drivers supplied on the *Display Driver Diskettes* that are shipped with your VGA adapter.

Your VGA adapter is based on the CHIPS VGA Flat Panel/CRT controller and is fully IBM VGA compatible. This controller offers a large set of extended functions and higher resolutions. If you intend to use your VGA adapter in standard VGA modes only, you do not need to install any of these drivers. Since your VGA adapter is fully compatible, it does not require any special drivers to operate in standard modes.

The purpose of the enclosed software drivers is to take advantage of the extended features of the CHIPS 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 is not supported on your system, try using a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode is supported on most.

Necessary prerequisites

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 or utility, you should:

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

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

Before you begin the driver software installation, you should make backup copies of the *Display Driver Diskettes*. Store the original disks in a safe place.

Make sure you know the version of the application for which you are installing drivers. Your *Display Driver Diskettes* contain drivers for several versions of certain applications. For your driver to operate properly, you must install the driver for your version of the application program.

Windows® 95

These drivers are designed to work with Microsoft® Windows®. You just install these drivers through the Windows® operating system.

Driver installation

1. Install Windows® 95 as you normally would for a VGA display. Click the **Start** button, go to **Settings** and click on **Control Panel**. Choose the **Display** icon and double click on the icon. In the *Display Properties* window, click on **Change Display type**. In the *Change Display Type* window, click on the **Change** button under *Adapter Type*. This will bring up the *Select Device* window.
2. Place the Windows® 95 *Display Driver Diskette* in drive A. In the *Select Device* window, click on **Have Disk**, Select **Browse**, and find the Win95 driver "chips95.inf" in the drive A:\win95, and then click OK. The name of the *Chips And Technologies Inc. Video Controller* driver will appear highlighted in the *Models* list box. Select Chips and Tech. 65554 PCI(new) and Click OK. Click OK to start the driver installation.
3. Once the installation is complete, the *Change Display Type* window will reappear. Click on Close to close the window. Then the *Display Properties* window will reappear. Click on **Apply**. Restart the system for new settings to take effect.

Windows 3.1

These drivers are designed to work with Microsoft Windows Version 3.1. You should install these drivers through Windows.

Driver installation

1. Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.
2. Place the Win31 Driver Diskette in drive A. In Windows Program Manager, choose *File* from the Options Menu. Then from the pull-down menu, choose *Run*. At the Command Line prompt, type A:\SETUP. Press the <ENTER> key or click OK to begin the installation.

At this point the setup program locates the directory where Windows is installed. **For proper operation, the drivers must be installed in the Windows subdirectory.**

3. Press <ENTER> to complete the installation. Once completed, you can find the icon Chips CPL under the Control Panel. The icon Panel allows you to select and load the installed drivers.

Another method of installing these drivers is through the File Manager. Click on *Drive A:*, and then double-click on WINSETUP.EXE to begin installation.

OS/2

These drivers are designed to function with the OS/2 Version 4.0, 3.0 and 2.11 operating systems.

To install this driver, do the following steps:

1. Open an OS/2 full screen or windowed session.
2. Place the 65554 Display Driver diskette in drive A.
3. At the OS/2 command prompt, type the following commands to copy the files to the OS/2 drive:

Type A:<ENTER> to make this default drive.

Type SETUP A: C:<ENTER>

Where A: is the floppy disk drive and

C: is hard disk partition containing \ OS2

When the Setup Program is completed, you will need to perform a shutdown and then restart the system in order for changes to take effect.

A log of the information output during the install can be found in <root>:\OS2\INSTALL\DISPLAY.LOG

4. After restarting the system, perform the following steps:
 1. Open the OS/2 System folder.
 2. Open the System Setup folder.
 3. Open the Display Driver Install Object

This step will execute the Display Driver Installation (DSPINSTL) utility program to finish installation of the new drivers.

4. When the Display Driver Install window appears, select Primary Disply and then select OK.
5. When The Primary Display Driver List window appears, select "Chips and Technologies 65554" from the list of adapter types, then select OK or install the video driver.

6. When the installation is complete, you will need to shutdown and then restart the system for the changes to take effect. Make sure to remove the install diskette before restarting the system.

Windows® NT 3.51

These drivers are designed to work with Microsoft® Windows®.

Driver installation

1. Install Windows® NT3.51 as you normally would for a **VGA** display. Run Windows® NT Control Panel from the Main Group. Choose the **Display** option. In the *Display Settings* dialog box, click on *Change Display Type*. Click on **Change** from the Adapter Type in the Display Type dialog box. Click on **Other** in the *Select Device* dialog box.
2. Place the Windows® NT *Display Driver Diskette* in drive A. Type A:\Winnt3.5 and press<ENTER>. Select the adapter "Chips and Tech 65554PCI" and click OK.

Click on Install to install the selected driver. Once the installation is complete, shutdown and restart the system.

Windows NT 4.0

Driver Installation

1. Install Windows NT4.0 as you normally would for a **VGA** display. First click the **Start** button, go to **Settings** and click on **Control Panel**. Choose the **Display** icon and click on the icon. In the *Display Properties* window, click on the Settings tab. Then click on Change Display Type. In the *Change Display Type* window, click on the **Change** button under *adapter Type*. This will bring up the Select Device window.
2. Place the Windows NT *NT Display Driver Diskette* in drive A. In the *Select Device* window, click on **Have Disk**, select "**Browse**" and find the NT4.0 driver in the Drive A:\Winnt4.0, and then click **OK**. The name of the *Chips and Technologies, Inc. Video Controller* driver will appear highlighted in the Modules list box. Select Chips and Tech. 65554 PCI(new) and Click **OK**. Click **OK** to start the driver installation.
3. Once the installation is complete, the *Change Display Type* window will reappear. Click on Close to close the window. Then the *Display Properties* window will reappear. Click on **Apply**. Restart the system for new settings to take effect.

CHAPTER 5

SiS 5598 VGA Drivers (For PCM-5894C only)

The content of this chapter includes SiS 5598 VGA Driver installation.

System Requirements

This section describes system requirements for the SiS 5598 VGA Driver installation and usage.

1. The hardware system must contain a SiS 5598 chipset.
2. Mouse is optional.
3. The SiS 5598 VGA BIOS must be newer than Version 1.01.

DOS Utility

1. General Description

SVGAUTL.EXE is one of the utilities of SiS 5598.

It supports three functions:

- (1) Video Mode Setting
- (2) Frame Rate Setting
- (3) Power Saving Setting

Since SiS 5598 supports many enhanced Text Mode and Graphic Mode, you can use SVGAUTL.EXE to select the desired video mode.

For 640x480, 800x600, 1024x768, and 1280x1024 resolutions, SiS 5598 SVGA supports multiple frame rates.

If your monitor could synchronize with these frame rates, you can use SVGAUTL.EXE to get advantage. SiS 5598 also supports VESA DPMS Power Saving Modes.

SVGAUTL.EXE can help you to set the capability.

2. How to Use?

To use SVGAUTL.EXE,

(1) Type "SVGAUTL" in the directory where it resides.

For example,

```
A:\>SVGAUTL    <Enter> (suppose SVGAUTL.EXE resides in
                    DOS Driver Diskette)
```

(2) The Main Menu would appear and direct you to configure SiS 5597/5598.

(3) When you complete configuration, you may save your preferences to "AUTOEXEC.BAT" file and use it as your power-on (or hardware reset) default environment.

3. What the Parameters Stand for?

The meaning of parameters used by SVGAUTL.EXE are explained below:

Syntax:

```
>SVGAUTL [/D:mode_no] [/F0:n0] [/F1:n1] [/F2:n2] [/F3:n3] [/
PA:ta] [/PB:tb] where
```

/D: Set the Video Mode to be mode_no which is a hex number.

For example : Set 1024x768 256 color graphic mode.

```
>SVGAUTL /D:38 <Enter>
```

/F0: For 640x480, set frame rate to be n0 Hz.

Three available frame rates are 60, 72, and 75 Hz.

For example : Set 640x480 graphic mode with 60Hz frame rate
>SVGAUTL /F0:60 <Enter>

/F1: For 800x600, set frame rate to be n1 Hz.

Four available frame rates are 56, 60, 72, and 75 Hz.

For example : Set 800x600 graphic mode with 72Hz frame rate.

```
>SVGAUTL /F1:72 <Enter>
```

/F2: For 1024x768, set frame rate to be n2 Hz.

Four available frame rates are 87 (Interlace), 60, 70, and 75 Hz.

For example : Set 1024x768 graphic mode with 60Hz frame rate.

>SVGAUTL /F2:60 <Enter>

/F3: For 1280x1024, set frame rate to be n3 Hz.

Two available frame rates are 87 (Interlace) and 60 Hz.

For example : Set 1280x1024 graphic mode with 60Hz frame rate.

>SVGAUTL /F3:60 <Enter>

/PA: Set Standby Timer to be ta minutes. (0 < ta < 15 min.)

For example : Set Standby Timer be 5 minutes.

>SVGAUTL /PA:5 <Enter>

/PB: Set Suspend Timer to be tb minutes. (0 < tb < 15 min.)

For example : Set Suspend Timer be 5 minutes.

>SVGAUTL /PB:5 <Enter>

Note:

- (1) Suspend Time would be "ta + tb". (i.e. standby time + suspend time)
- (2) The timers will not be very accurate and would just be around the time.

NT 3.5x

Windows NT 3.5x display drivers Installation:

1. Select Control Panel from Main group.
2. Select Display icon.
3. Select Change Display Type from Display Settings.
4. Select Change from Display Type.
5. Select Other from Select Device.
6. Place the Windows NT 3.5x Installation Disk into Floppy Drive.
7. When the "Install from Disk" dialog box appears, type the directory storing the drivers and click "OK".
The directory in WinNT3.5x is at "A:\WINNT35".
8. Select Install and click "Yes" when the "Installing Driver" dialog box appears.
9. Select New when the "Windows NT Setup" dialog box appears.
10. Click "Continue".

A message will appear stating that the drivers were successfully installed. Click "OK". You must now restart Windows NT 3.51.

Selecting resolution and color depth:

1. Select Control Panel from Main group.
2. Select Display icon.
3. Select Color Palette to change between 16 colors, 256 colors, 32768 colors, 65536 colors, and 16777216 colors.
4. To select desktop resolution size, go to the Desktop area and use the slide bar to change resolution from 640x480, 800x600, 1024x768, and 1280x1024.
5. Select Test to test the resolution.

If the display test screen was good then select "Yes" when the "Testing Mode" dialog box appears. If the display test screen was bad then select "No". Windows NT will give you an error message.

6. If the display test screen was good and you select "Yes", Windows NT 3.5x will prompt you to restart Windows NT 3.5x.

NT 4.0

Windows NT 4.0 display drivers Installation:

1. Click "Start" menu and select Control Panel from Settings group.
2. Select Display icon.
3. Select Settings of Display Properties.
4. Select Display Type.
5. Select Change from the Adapter Type area.
6. Select Have Disk of Change Display.
7. Place the Windows NT 4.0 Installation Disk into Floppy Drive.
8. When the "Install from Disk" dialog box appears, type the directory storing the drivers and click "OK".

The directory in Windows NT 4.0 Driver Diskette is at "A:\WINNT40".

9. When the "Change Display" dialog box appears, click "OK".
10. When the "Third-party Drivers" dialog box appears, click "Yes".

A message will appear stating that the drivers were successfully installed.

Click "OK". You must now restart Windows NT 4.0.

Selecting resolution and color depth

1. Click "Start" menu and select Control Panel from Settings group.
2. Select Display icon.
3. Select Settings.
4. Select Color Palette to change between 16 colors, 256 colors, 32768 colors, 65536 colors, and 16777216 colors.
5. To select desktop resolution size, go to the Desktop area and use the slide bar to change resolution from 640x480, 800x600, 1024x768 to 1280x1024.
6. Select Test to test the resolution. If the display test screen was good then select "Yes" when the "Testing Mode" dialog box appears. If the display test screen was bad then select "No". Windows NT will give you an error message.
7. Click "OK". If the display test screen was good and you select "Yes", Windows NT 4.0 will change the mode without restarting Windows NT 4.0.

Windows 95

Windows 95 (Display Driver Installation)

1. Click "Start" menu and select Control Panel from Settings group.
2. Select "Display" icon.
3. Select "Settings" index in the display properties sheet.
4. Select "Change Display Type" button.
5. Select "Change..." button in "Adapter Type" group.
6. Select "Have Disk" button.
7. Place the Windows 95 Installation Disk into Floppy Drive.
8. When the "Install from Disk" dialog box appears, type the directory storing the drivers and click "OK".
The directory in Win95 Drive is at "A:\".
9. When the "Change Display" dialog box appears, click "Close".
10. Select "Close" or "Apply" button from display properties sheet.
11. A message will appear stating you must restart the windows 95 system, select "yes" to restart.
12. After restarting, windows 95 will run on 640x480x256 color, 75NI.

Selecting resolution, color depth, and refresh rate:

1. Click "Start" menu and select Control Panel from Settings group.
2. Select Display icon.
3. Select Settings.
4. Select Color Palette to change between 16 color, 256 color, Hi color, and True color.
5. To select desktop resolution size, go to the Desktop area and use the slide bar to change resolution from 640x480, 800x600, 1024x768, and 1280x1024.
6. Select Refresh rate list box to change the screen refresh rate.
7. Click "OK" or "Apply".

Windows 95 (Utility Installation)

1. Place the Windows 95 Installation Disk into Floppy Drive.
2. Click "Start" menu and select "Run..." menu item.
3. In "Run" dialog, typing the source execution file then press "OK".
The execution file in Windows 95 Driver Diskette is at "A:\SETUP.EXE".
4. Setup procedure will create a "SiS Multimedia Vx.xx" program group, there would be contained 3 items:
 - Multimedia Manager
 - SiS MMPlayer
 - Center Screen
5. A setup successful dialog will appear when setup complete, user can choose restart system now or restart later.

Windows 3.x

Windows 3.x (Display Driver and Utility Installation)

1. Installation

(1) Click "File" menu and select "Run..." menu item.

(2) In "Run" dialog, typing the source execution file then press "OK".

The execution file in Win31 Drive Diskette is at "A:\SETUP.EXE".

The execution file in CD-Title is at "D:\MM\WIN31\SETUP.EXE".

(3) Follow the setup program's on-screen instructions.

(4) Setup procedure will create a "SiS Multimedia Vx.xx" program group, there would be contained 5 items:

- Multimedia Manager
- SiS MMPlayer
- SVGA Setup
- Center Screen
- Uninstall

(5) A setup successful dialog will appear when setup complete, user can choose restart system now or restart later.

2. Graphics Setup

(1) In "SiS Multimedia Vx.xx" program group, choose "SVGA Setup" icon to enter "SiS VGA Configuration System" screen.

(2) In "SiS VGA Configuration System" Screen, choose which options you would like to use.

(3) After completing your selections, choose "OK" to make all your selections effective.

(4) Choose "Restart Windows" to re-boot Windows using new settings. Or, choose "Continue" your current Windows processes. (But when you re-boot Windows, the new settings would take effect.)

3. Power Saving Setup in Windows

(1) In "SiS VGA Configuration System" screen, choose "power saver" item to enter "Power Saver" screen.

(2) In "Power Saver" Screen, choose which options you would like to use.

(3) After completing the selections, choose "OK" to make all your selections effective.

(4) After complete setup, the power_saver would take effect as you request when time up and you may continue your normal process.

OS/2 Ver. 2.1

OS2 V2.1 Display Driver Installation

1. Before installing SiS OS/2 V2.1 display driver, start up OS/2 system in standard VGA mode.
2. Select "Command Prompt" folder.
3. Select "OS/2 window" or "OS/2 full screen" icon.
4. Place the SiS OS/2 V2.1 display driver installation Disk into Floppy Drive.
5. Change directory to A:\OS2\SBCS.21.
6. Type SISINST then press "Enter".
7. When the "Select Screen Parameters for SiS SVGA" dialog appears, select the resolution, color depth and frame rate you would like, then click "OK"
8. The installation program will create a "SiS Setup" icon at the desktop.
9. Shutdown and re-boot OS/2 V2.1.

OS/2 Warp 3.0 (Double Byte Character)

OS2 Warp Display Driver Installation (For DBCS version)

1. Before installing SiS OS/2 Warp display driver, start up OS/2 system in standard VGA mode.
2. Select "Command Prompt" folder.
3. Select "OS/2 window" or "OS/2 full screen" icon.
4. Place the SiS OS/2 Warp display driver installation Disk into Floppy Drive
5. Change directory to A:\OS2\DBCS.30.
6. Type SETUP then press "Enter".

7. Setup procedure will create a "SiS Install" icon on the desktop.
8. Shutdown and reboot the OS/2 Warp system.
9. When system reboot, double click the "SiS Install" icon. It will perform the further installation.
10. When the "Select Screen Parameters for SiS SVGA" dialog appears, select the resolution, color depth and frame rate you would like, then click "OK"
11. The installation program will create a "SiS Setup" icon at the desktop.
12. Shutdown and re-boot OS/2 Warp.

OS/2 Warp 3.0 (Single Byte Character)

OS2 Warp Display Driver Installation (For SBCS version)

1. Before installing SiS OS/2 Warp display driver, start up OS/2 system in standard VGA mode.
2. Select "Command Prompts" folder.
3. Select "OS/2 window" or "OS/2 full screen" icon.
4. Place the SiS OS/2 Warp display driver installation Disk into Floppy Drive.
5. Change directory to A:\OS2\SBCS.30.
6. Type SISINST then press "Enter".
7. When the "Select Screen Parameters for SiS SVGA" dialog appears, select the resolution, color depth and frame rate you would like, then click "OK".
8. The installation program will create a "SiS Setup" icon at the desktop.
9. Shutdown and re-boot OS/2 Warp.

Ethernet Software configuration

This chapter details the Ethernet software configuration information. It shows you how to configure the card to match your application requirements.

Ethernet software configuration

The mainboard on-board Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the BIOS Setup. To configure the medium type, to view the current configuration, or to run diagnostics, do the following:

1. Power the mainboard 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 you are sure that this is the configuration you want, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

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.

Programming the Watchdog Timer

The mainboard is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial stand-alone and unmanned environments.

Programming the watchdog timer

An on-board 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. When the watchdog timer activates(CPU processing has come to a halt), it can reset the system, or generate an interrupt on IRQ10, IRQ11, IRQ15, NMI. This can be set via I/O Port 444, the functions as following:

0 :	RESET
1 :	IRQ10
2 :	IRQ15
3 :	IRQ11
4 :	NMI

If you decide to program the watchdog timer, you must write data to I/O port 443 (hex). The output data is a value timer. You can write from 80 (hex) to FF (hex) for input minute data plus from 00 (hex) to 7F (hex) for input second data, and the related timer is 2 second to 127 minutes plus 127 seconds sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should write I/O port 80 (hex) a Hex value.

The following procedure is a sample program for the watchdog timer:

- Type C:\DOS\Debug <ENTER>
- To start watchdog timer and set function "Reset" type;
o 444 0 <Enter>; out 444h data 0
- To input watchdog timers time-out interval of 3 minutes type;
o 443 83 <Enter>; o 443 0 <ENTER>; out 443h data 83
- To input Watchdog timers time-out interval of 5 seconds type;
o 443 05 <Enter>; out 443h data 05
- To disable the watchdog timer type;
o 80 x <Enter>; out 080h data x (x can be any Hex value)

The time interval data of the watchdog timer is shown in binary code (8 bits).

8	7	6	5	4	3	2	1
x							

If bit 8 is "1" = To input "minute"

If bit 8 is "0" = To input "second"

Sample 1: 3 minutes

1	0	0	0	0	0	1	1
---	---	---	---	---	---	---	---

Sample 2: 5 seconds

0	0	0	0	0	1	0	1
---	---	---	---	---	---	---	---

APPENDIX

B

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

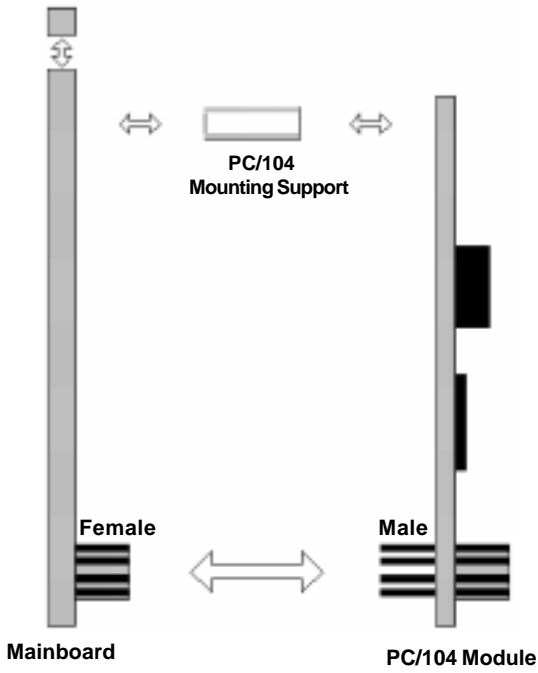
Installing PC/104 modules

The mainboard's PC/104 connectors give you the flexibility to attach PC/104 expansion modules. These modules perform the functions of traditional plug-in expansion cards, but save space and valuable slots. Modules include:

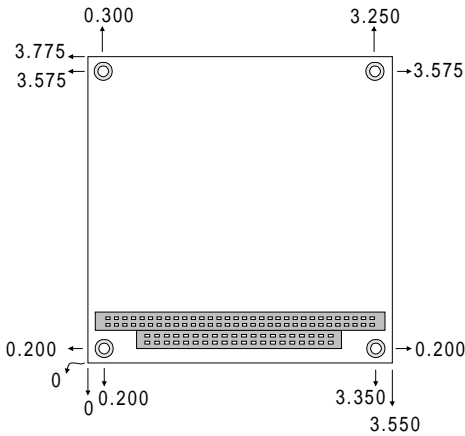
- **PCM-3335** 386 CPU Module w/Flat Panel/CRT Interface
- **PCM-3600** FAX/Modem Module
- **PCM-3420** Fast SCSI-2 Module
- **PCM-3200** Sound Module
- **PCM-3810** Solid State Disk Module
- **PCM-3820** High density Flash Disk Module
- **PCM-3115** PCMCIA Module (two slots)
- **PCM-3610** Isolated RS-232 and RS-422/485 Module
- **PCM-3660** Ethernet Module
- **PCM-3718** 30 KHz A/D Module
- **PCM-3724** 48-Channel DIO Module
- **PCM-3910** Breadboard Module

Installing these modules on the mainboard is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the mainboard from your system paying particular attention to the safety instructions already mentioned.
2. Make any jumper or link changes required to the mainboard now. Once the PC/104 module is mounted you may have difficulty in accessing these.
3. Normal PC/104 modules have male connectors and mount directly onto the main card. However, to ensure better bus matching, the connectors on the mainboard and the PC/104 module are both female. For this reason, you may need to use the "male-male" adapter included with the mainboard in order to properly connect your PC/104 module. (Refer to the diagram on the following page.)
4. Mount the PC/104 module onto the mainboard by pressing the module firmly but carefully onto the mounting connectors.
5. Secure the PC/104 module onto the mainboard using the four mounting spacers and screws.



PC/104 Module Mounting Diagram



PC/104 module dimensions (inches $\pm 5\%$)

APPENDIX

C

Optional Extras

PCM-10489-1 Cable kit for PCM-5894

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

Part No.	Cable description	Termination connector
1701440350	2.5" and 1.8" IDE	44-pin, 2 mm, female IDC (350 mm)
1701440500	3.5" IDE (40P)	40-pin, 2.54 mm, female IDC (500 mm)
1701340700	Dual floppy, 3.5" and 5.25" (34P)	34-pin dual floppy
1701260301	Parallel port	25-pin female DSUB
1701100201	Network 10/100BASE-T	RJ-45 8-pin modular jack
1701150150	VGA CRT	15-pin DSUB
1700060200	Keyboard and PS/2 mouse	5-pin circular DIN 6-pin circular DIN
1701080300	Front panel	8-conductor pigtail
1701400220	RS-232 Serial Port, 4 COM Port	40 pin, 2.54 mm

PCM-10589-1 PCI interface riser card

The PCI interface riser card is available. You can add many accessories and components to the mainboard.

For further information, please contact our sales department