PCM-5864/E/L

All-in-one multimedia Pentium® processor-based single board computer with audio, SVGA, Ethernet and PCI expansion slot.

User's Manual

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This manual is for the PCM-5864, PCM-5864E, and PCM-5864L.

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Acknowledgments

Packing list

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

- 1 PCM-5864/E/L all-in-one single board computer

- 1 CD disk for utility and drivers

- 1 startup manual

- 1 CPU cooling fan

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

Please refer to Appendix E, Section E.1 for the optional interface
wiring kit.

The PCM-5864 Series Model Comparison Table

	Video-in	TV-out	LVDS	Audio
PCM5864	X	X	X	X
PCM5864E				X
PCM5864L				

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CHAPTER **1**

General Information

This chapter gives background information on the PCM-5864/E/L.

Sections include:

• Introduction

• Features

• Specifications

• Board layout and dimensions

1.1 Introduction

The PCM-5864/E/L is an all-in-one multi-media Pentium®
processor-based single board computer (SBC) with a 16-bit audio
controller, a video in/out controller, a PCI SVGA controller, a PCI
100/10 base-T Ethernet interface, and one PCI expansion slot.
When using an Intel® Pentium® MMX processor, the PCM-5864/
E/L achieves outstanding performance that surpasses any other
SBC in its class. This compact (only 5.75" x 8") unit offers all the
functions of a single board industrial computer, but still fits in the
space of a 5.25" floppy drive.

On-board features include 512 KB 2nd level cache, four serial
ports (three RS-232, one RS-232/422/485), one multi-mode
parallel (ECP/EPP/SPP) port, two USB (Universal Serial Bus)
ports, a floppy drive controller, and a 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, and tape
backup drives.

The PCM-5864/E/L features power management to minimize
power consumption. It complies with the "Green Function"
standard and supports Doze, Standby and Suspend modes. In
addition, the board's watchdog timer can automatically reset the
system or generate an interrupt if the system stops due to a
program bug or EMI.

Highly integrated multimedia SBC

The PCM-5864/E/L is a highly integrated multimedia SBC that
combines audio, video, and network functions on a single
computer board the size of a 5.25" floppy drive. It provides 16-bit
half-duplex, 8-bit full-duplex, integrated 3D audio, and up to
1024 x 768 resolution @ 64 K colors with 2 MB display memory.
Major on-board devices adopt PCI technology, to achieve
outstanding computing performance when used with Intel®
Pentium® processors. This makes the PCM-5864/E/L the world's
smallest and most powerful all-in-one multimedia board.

1.2　Features

- Accepts Intel® Pentium®, Pentium® MMX; AMD K5, K6, K6-2

- 32-bit PCI-bus SVGA/LCD controller supports 36-bit XGA TFT LCD panels, with up to 1024 x 768 resolution

- 18-bit LVDS interface (PCM-5864)

- 100/10Base-T Ethernet interface, IEEE 802.3U compatible

- AC97/PCI audio interface, Sound Blaster Pro compatible (PCM-5864/E)

- Video capture supports NTSC and PAL formats

    (PCM-5864)

- 4 serial ports (three RS-232 and one RS-232/422/485)

- USB interface complies with USB Rev. 1.10

- Supports fast infrared

- Supports PC/104

- Watchdog timer with jumperless selection (62 levels)

- Switching power for full range of Pentium® MMX level processors

- Features system overheat temperature control

1.3 Specifications

1.3.1 Standard SBC functions

- **CPU:** Intel® Pentium® MMX up to 233 MHz
  AMD K5, K6, K6-2 up to 333 MHz

- **BIOS:** AWARD 256KB Flash BIOS, supports Plug & Play, APM, Ethernet boot ROM, boot from CD-ROM, LS-120

- **Chipset:** SiS 5582

- **Green function:** APM 1.1 compliant

- **2nd level cache:** On-board 512 KB Pipeline Burst SRAM

- **RAM:** One 168-pin DIMM socket accepts 8 ~ 128 MB EDO/synchronous DRAM

- **Enhanced IDE interface:** Supports 2 enhanced IDE devices

- **FDD interface:** Supports up to two FDDs (360 KB / 720 KB / 1.2 MB / 1.44 MB / 2.88 MB)

- **On-board security:** Alarms for CPU, overheating and fan failure. Detection of system power voltage, with pop-up monitoring

- **Infrared:** One 4 Mbps fast infrared (FIR) port, IrDA compliant

- **PCI expansion bus:** 1 PCI slot for an optional PCI riser card

- **LVDS:** 20-pin header supports18-bit LVDS LCD panel (5 meter data transmission) (PCM-5864)

- **SSD:** Supports CompactFlash cards

- **Parallel port:** One parallel port, supports SPP/EPP/ECP parallel mode

- **Serial port:** Four serial ports with three RS-232 (COM1, 3, 4) and one RS-232/422/485 (COM2). All ports with 16C550 compatible UARTs

- **Watchdog timer:** 62-level interval from 1 to 62 seconds. Generates system reset or IRQ11. Jumperless selection and software enabled/disabled

- **Keyboard/mouse connector:** 8-pin header connector for keyboard and PS/2 mouse

- **USB interface:** Two USB connectors with fuse protection. Compliant with USB Spec. Rev. 1.10

- **PC/104 expansion:** 104-pin 16-bit PC/104 module connector

- **Switch voltage regulator:** Supports a full range of processor voltage requirements. A good solution for processor overheating.

1.3.2 PCI SVGA/flat panel interface

- **Chipset:** C&T 69000/69030

- **Display memory:** 2 MB on-board SDRAM memory, supports up to 4 MB (optional)

- **Display type:** Simultaneously supports CRT and flat panel displays. Also supports 36-bit TFT LCD panels, 64-bit graphics acceleration

- **Display resolution:** Flat panel display up to 800 x 600 @ 24 bpp, 1024 x 768 @ 16 bpp. CRT monitors up to 800 x 600 @ 24 bpp, with 2 MB VGA memory. Also supports CRT monitors up to 1024 x 768 @ 24 bpp, with 4 MB VGA memory

- **Dual display:** The LCD controller 69030 chip can support this function and supports CRT/LCD dual display under Windows 98 and Windows 2000

1.3.3 LVDS interface (PCM-5864 only)

- **Chipset:** NS DS90CF363A
- **Interface:** 18 low-voltage TTL data channel meets ANSI EIA/TIA-644

1.3.4 Audio function (PCM-5864, PCM-5864E only)

- **Chipset:** Creative ES 1371
- **Audio controller:** 16-bit codec, Sound Blaster Pro compatible
- **Stereo sound:** 8-bit full-duplex, 16-bit half-duplex integrated ISA bus AC97/PCI 3D surround stereo sound
- **Audio interface:** Microphone in, Line in, CD audio in; Line out, Speaker L, Speaker R
- **Power:** Accepts +12 V source for improved audio quality

1.3.5 Video in and TV out function (PCM-5864 only)

- **Chipset:** Philips SDA 7111A for Video in; analog device AD725AR for TV (Video) out
- **Connectors:** Pin header via optional cable connects to RCA (AV) connector or S-video connector
- **Format:** NTSC or PAL, YUV 422 quality with RGB 16 format. Supports live video capture up to 10 ~ 15 fps at 320 x 240 resolution

1.3.6 PCI bus Ethernet interface

- **Chipset:** REALTEK RTL8139 PCI local bus Ethernet controller
- **Ethernet interface:** IEEE 802.3U compatible 100/10Base-T interface. Includes software drivers and boot ROM

1.3.7 Mechanical and environmental

- **Max. power requirements:** 7 A @ 5 V (4.75 V ~ 5.25 V)

  Standard consumption 4.3 A @ 5 V with Intel Pentium®
  MMX-233 processor, 64 MB DIMM

- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F)

- **Size (L x W):** 203 mm x 146 mm (8" x 5.75")

- **Weight:** 0.32 kg (0.7 lb) (w/o package)

1.4   Board layout and dimensions
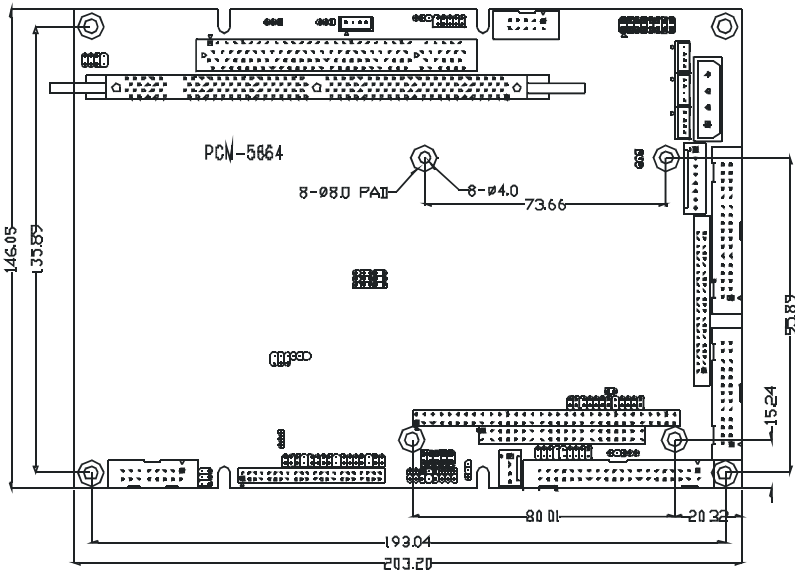
Figure 1-1: PCM-5864/E/L dimensions

Installation

This chapter tells how to set up the PCM-5864/L hardware. It includes instructions on setting jumpers, and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

2.1 Jumpers

The PCM-5864/E/L 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.

TABLE 2-1: JUMPERS

Label	Function
J3	CPU voltage setting
J5	CPU frequency ratio setting
J6	Reserved
J7	Clear CMOS
J8	Backlight signal select
J9	System/PCI clock setting
J10	PCI clock setting
J11	COM4 RI pin setting
J12	COM3 RI pin setting
J13	CompactFlash enable/disable
J14	COM1 RI pin setting
J15	COM2 RI pin setting
J16	LCD power select
J17	Reserved
J18	Buzzer enable setting
J19	COM2 RS-232/422/485 setting
J20	COM2 RS-232/422/485 setting
J21	COM2 RS-232/422/485 setting
J22	Shift clock setting
J23	Audio power source setting (PCM-5864/E)
J25	TV out format (PCM-5864)
JP1	ATX power switch (soft power connector)
JP2	Watchdog timer action

2.2 Connectors

On-board connectors link the PCM-5864/E/L to external devices
such as hard disk drives, a keyboard, or floppy drives. The table
below lists the function of each of the board's connectors.

TABLE   2-2:   CONNECTORS

Label	Function
CN1	CPU fan connector
CN2	Motherboard fan connector
CN3	Ethernet connector
CN4	Audio connector (PCM-5864/E)
CN5	PCI connector
CN6	CD audio input connector (PCM-5864/E)
CN7	AUX Line-in connector (PCM-5864/E)
CN8	Main power connector
CN9	Keyboard & PS/2 mouse connector
CN10	Floppy drive connector
CN11	PC/104 ISA-bus expansion
CN12	IDE hard drive connector
CN13	Reserved connector
CN14	Parallel port connector
CN15	Front panel connector
CN16	USB connector (channel 1 & 2)
CN17	IR connector
CN18	CRT display connector
CN19	Video-out connector (PCM-5864)
CN20	Flat panel connector
CN21	Ext. flat panel connector
CN22	Peripheral power connector
CN23	COM port connector
CN30	Video-in (capture) (PCM-5864)
CN501	CompactFlash connector
CN502	Speaker-out connector (for video playback)(PCM-5864/E)
DIM1	DIMM socket
J1	ATX power feature connector
JP3	LVDS connector (PCM-5864)

2.3 Locating jumpers
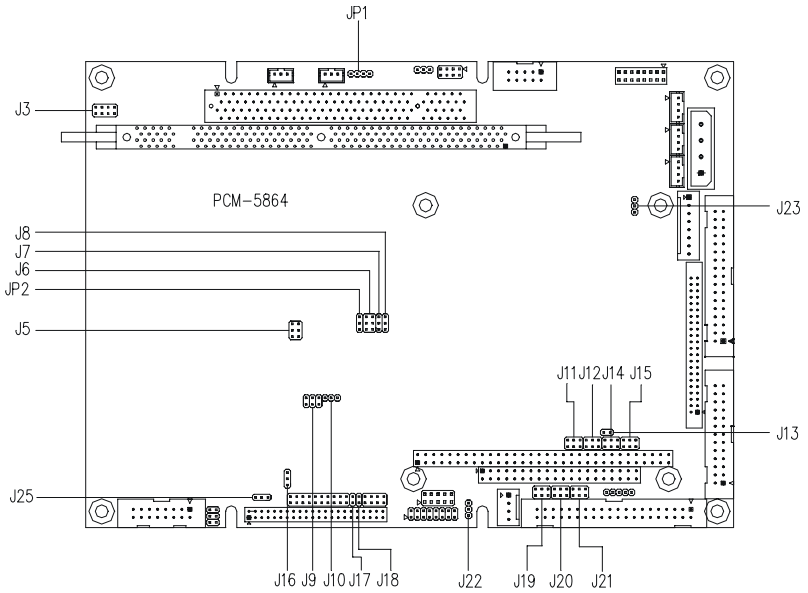
Figure 2-1: Locating jumpers

2.4 Locating connectors

2.4.1 Component side
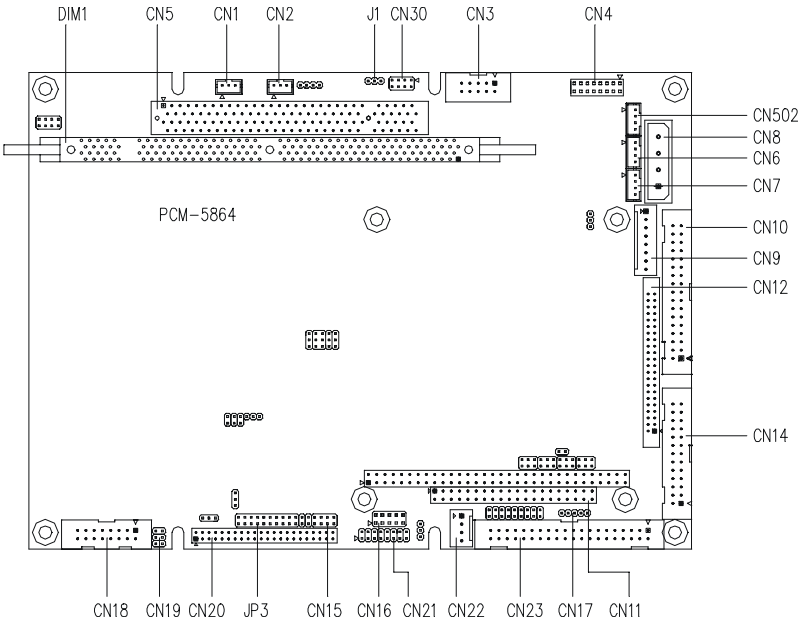
Figure 2-2: Locating connectors (component side)

2.4.2 Solder side
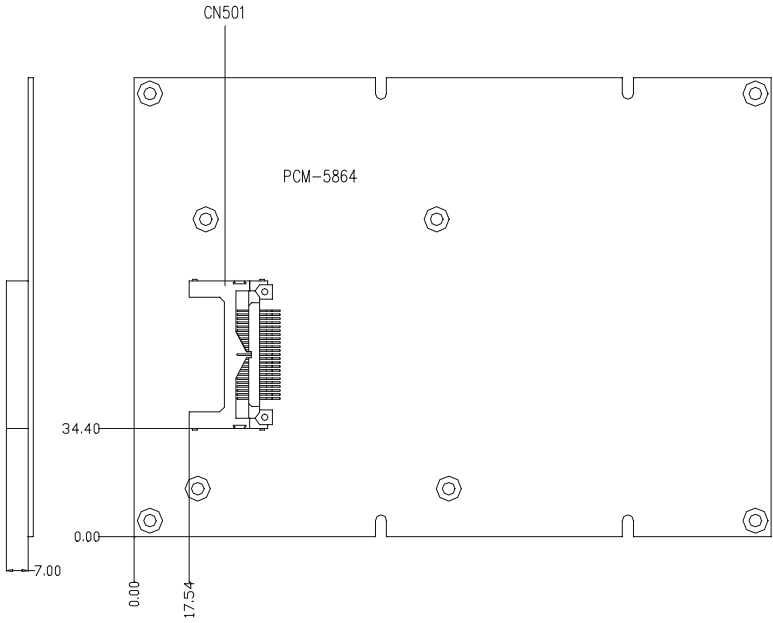
Figure 2-3: Locating connectors (solder side)

2.5   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, connect the pins with the clip. To "open" a jumper, remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either pins 1 and 2 or 2 and 3.
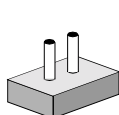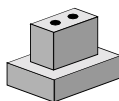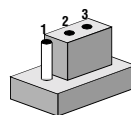
Open   *Closed*   *Closed 2-3*

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

Open   *Closed*   *Closed 2-3*

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

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

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

2.6 CPU installation and upgrading

You can upgrade to a higher power Pentium® processor 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.*

2.6.1 Installing a CPU in the PGA type socket

1. If you are upgrading the CPU, remove the old CPU from the socket. If it is difficult to remove, you may find chip lubricant (designed for pin-grid-array devices, PGAs) and a chip puller helpful. Both are available at electronics hobby supply stores.

2. Plug the new CPU into the empty socket. Follow the instructions that came with the CPU or math coprocessor. If you have no instructions, do the following: Lubricate the CPU pins with lubricant made for PGA devices. This will make the new CPU slide in much more easily, and reduce the chance of damaging it. Next, carefully align the CPU so that it is parallel to the socket and the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Gently slide the CPU in. There will probably be a gap between the CPU and the connector when it is fully seated - do not push too hard!

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.**

2.6.2 System clock setting (J5, J9, and J10)

J5, J9 and J10 are used to set the CPU and PCI bus speed to optimize the system performance. The system chipset will sense the J10 setting to get the bus frequency, then adjust its internal timing. J9 is used to set the CPU and PCI clock. J5 is the CPU clock ratio setting jumper. Refer to the CPU Speed Reference Table (below) for instructions on adjusting the internal clocks according to the base CPU speed.

TABLE 2-3: CPU SPEED REFERENCES

CPU Speed (MHz)	75	100	*133	150	166	200	233	266	300	333
Clock setting		50	66	66	60	66	66	66	66	66	66
Frequency ratio		1.5	1.5	2	2.5	2.5	3	3.5	4	4.5	5

* default setting

TABLE 2-4: SYSTEM/PCI CLOCK SETTING (J9)

System	50 MHz	60 MHZ	*66 MHz	75 MHz
PCI	25 MHz	30 MHz	*33.3 MHz	37.5 MHz

* default setting

Table 2-5: CPU Frequency Ratio (J5)

1.5 /3.5	2*	2.5	3	4

4.5	5	5.5 (reserved)

* default setting

Table 2-6: PCI/Clock Setting (J10)

	*33 MHz	CPU CLK/2
J10		

* default setting

2.6.3 CPU voltage setting (J3)

JP1 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective Vcc (core).
(The Vcc (I/O) for CPU is fixed to be 3.3V)

TABLE 2-7: CPU VOLTAGE SETTING (J3)
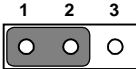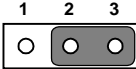
VCC (CORE)	1-2	3-4	5-6	7-8
NONE	open	open	open	open
2.10 V	closed	open	open	open
2.20 V	open	closed	open	open
2.30 V	closed	closed	open	open
2.40 V	open	open	closed	open
2.50 V	closed	open	closed	open
2.60 V	open	closed	closed	open
2.70 V	closed	closed	closed	open
2.80 V	open	open	open	closed
2.90 V	closed	open	open	closed
3.00 V	open	closed	open	closed
3.10 V	closed	closed	open	closed
3.20 V	open	open	closed	closed
3.30 V*	closed	open	closed	closed
3.40 V	open	closed	closed	closed
3.50 V	closed	closed	closed	closed

* default setting

2.6.4 CMOS clear (J7)

Warning: To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS." Before turning on the power supply, set the jumper back to "3.0 V Battery On."

TABLE 2-8: CMOS CLEAR (J7)

	*3.0 V Battery on	Clear CMOS
J7		

* default setting

2.6.5 Buzzer enable/disable (J18)

TABLE 2-9: BUZZER ENABLE/DISABLE (J18)

	*Enabled	Disabled
J18		

* default setting

2.7 Installing system memory (DIMMs)

You are able to install memory ranging from 8 to 128 MB of DIMM onto your PCM-5864/5L card. The card provides one 168-pin DIMM socket, which accepts 8, 16, 32, 64 or 128 MB 3.3 V power level EDO/synchronous DIMMs.

2.7.1 Installing DIMMs

The procedure for installing DIMMs is described below. Please follow these steps carefully. The number of pins are different on either side of the breaks, so the module can only fit in one way. DIMM modiles have different pin contacts on each side, and therefore have a higher pin density.

1. Make sure that the two handles of the DIMM socket are in the "open" position. i.e. The handles remain leaning outward.

2. Slowly slide the DIMM module along the plastic guides on both ends of the socket.

3. Press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the socket.

To remove the memory module, just push both handles outward, and the module will be ejected from the socket.

2.8 IDE hard drive connector (CN12)

You can attach one or two Enhanced Integrated Device Electronics hard disk drives to the PCM-5864/E/L's internal controller. The PCM-5864/E/L's IDE controller uses a PCI local-bus interface. This advanced IDE controller supports faster data transfer, PID mode 3, and mode 4.

2.8.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion. It requires one of two cables (not included in this package), 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 connector.

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

1. Connect one end of the cable to CN12. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).

2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Connect a second drive as described above.

Unlike floppy 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.

2.8.2 CompactFlash (CN501)

The CompactFlash card shares an IDE channel which can be enabled/disabled via J13.

TABLE 2-10: COMPACTFLASH ENABLE/DISABLE (J13)

	Enabled	Disabled
J13	⊡⊡	○ ○

2.9   Floppy drive connector (CN10)

You can attach up to two floppy drives to the PCM-5864/E/L's on-board controller. You can use any combination of 5.25" (360 KB and 1.2 MB) and/or 3.5" (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 3.5" drives) and a printed-circuit board connector (usually used for 5.25" drives).

2.9.1 Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN10. Make sure that the red wire corresponds to pin one on the connector.

2. Attach the appropriate connector on the other 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 5.25" 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 3.5" floppy drive, you may have trouble determining which pin is number one. Look for a number printed on the circuit board indicating pin number one. In addition, the connector on the floppy drive may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

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

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

2.10 Parallel port connector (CN14)

Normally, the parallel port is used to connect the card to a printer. The PCM-5864/E/L includes a multi-mode (ECP/EPP/SPP) parallel port accessed via CN14, a 26-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 26-pin connector on one end, and a DB-25 connector on the other.

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

The parallel port interrupt channel is designated to be IRQ7.

You can select ECP/EPP DMA channel via BIOS setup.

2.11 Keyboard and PS/2 mouse connector (CN9)

The PCM-5864/E/L board provides a keyboard connector that supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. If the keyboard is not present, the standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset. The PCM-5864/E/L's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications, without the system halting under POST.

2.12 Front panel connector (CN15)

Next, you may want to install external switches to monitor and control the PCM-5864/E/L. These features are optional: install them only if you need them. The front panel connector (CN15) is an 8-pin male, dual in-line header. It provides connections for a speaker, hard disk access indicator, watchdog output, and an input switch for resetting the card.

2.12.1 Speaker

The PCM-5864/E/L can drive an 8 W speaker at 0.5 watts. Make sure that alternatives to this specification do not overload the card.

2.12.2 LED interface

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

2.12.3 Watchdog output

When the PCM-5864/E/L's watchdog timer times out, the front panel pin 6 will output an active low pulse signal (25mA sink rate for 1 second).

2.12.4 Reset switch

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

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

2.13 Power connectors (CN1, CN2, CN8, CN22)

2.13.1 Peripheral power connector, -5 V, -12 V (CN22)

Supplies secondary power to devices that require -5 V and -12 V.

2.13.2 Main power connector, +5 V, +12 V (CN8)

Supplies main power to the PCM-5864/E/L (+5 V), and to devices that require +12 V.

2.13.3 CPU Fan power supply connector (CN1)

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

2.13.4 Motherboard fan power supply connector (CN2)

This connector (CN2) is reserved for the integrated system cooling fan.

2.14 ATX power control connector (JP1, J1)

2.14.1 ATX feature connector (J1) and soft power switch connector (JP1)

The PCM-5864/E/L can support an advanced soft power switch function, if an ATX power supply is used. To enable the soft power switch function:

1. Get the specially designed ATX-to-PS/2 power cable (PCM-5864/E/L optional item, part nos. 1700000450 and 1700000452).

2. Connect the 3-pin plug of the cable to J1 (ATX feature connector).

3. Connect the power on/off button to JP1. (A momentary type of button should be used.)

Important: Make sure that the ATX power supply can take at least a 10 mA load on the 5 V standby lead (5VSB). If not, you may have difficulty powering on your system.
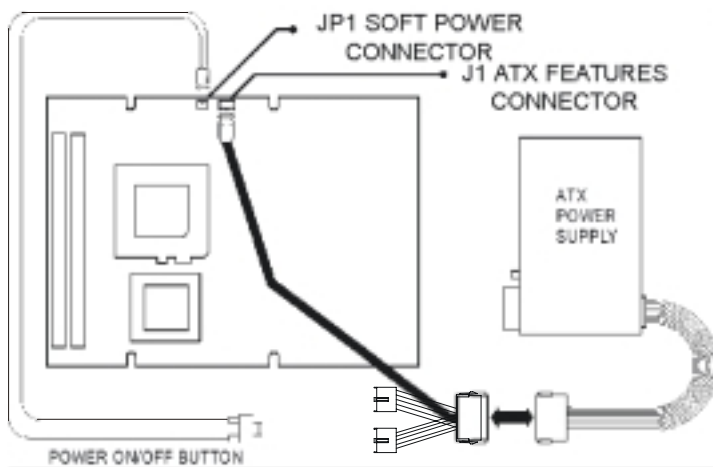
Figure 2-4: Wiring for ATX soft power switch function

2.15 IR connector (CN17)

This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through BIOS setup.

2.16 Audio interfaces (CN4, CN6, CN7, CN502) (PCM-5864/E only)

The PCM-5864 is equipped with a high-quality audio interface, which provides 16-bit CD-quality recording and playback as well as OPL3 compatible FM music. It is supported by all major operating systems, and is 100% Sound Blaster Pro compatible.

2.16.1 Audio connector (CN4)

The PCM-5864 provides all major audio signals on a 16-pin flat-cable connector, CN4. These audio signals include Microphone in (mono), Line in (stereo), Line out (stereo), and Speaker out (stereo). If you use traditional telephone jack connectors for these audio signals, you will need an adapter cable.

2.16.2 CD audio input connector (CN6)

Any CD-ROM drive can provide analog audio signal output when used as a music CD player. The CN6 on PCM-5864 is a connector to input CD audio signals into the audio controller. The audio cable of your CD-ROM drive will be used to connect to CN6.

2.16.3 Aux line-in connector (CN7)

The CN7 Line in signal is the same as CN4. It is reserved for the AV connector via a customized cable.

2.16.4 Speaker-out connector (CN502)

The CN502 Speaker out signal is the same as the CN4. It is reserved for the AV connector via a customized cable.

2.16.5 Audio power source setting (J23)

The PCM-5864/E/L is designed to work with a single +5 V power supply. The audio interface can also function normally under single +5V power supply, but most audio controllers require an independent power source generated from a +12 V power supply. The independent power source avoids the noise from the other digital circuits. The PCM-5864's audio interface can accept +12 V power to provide improved quality audio. This is done via J23.

TABLE 2-11: AUDIO POWER SOURCE SETTING		
	*+5 V	+12 V
J23	1 2 3 [●—● ○]	1 2 3 [○ ●—●]

* default setting

Configuration of the audio interface is done entirely via the software utility. You do not have to set any jumpers. Refer to Chapter 6 for audio setup details.

2.17 COM port connector (CN23)

The PCM-5864/E/L provides four serial ports (COM1, 3, 4: RS-232; COM2: RS-232/422/485) in one COM port connector. The COM port connector is a 40-pin, dual-inline, male header. It provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix C.

2.17.1 COM2 RS-232/422/485 setting (J19, J20, J21)

COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via J19 and J20.

TABLE 2-12: COM2 RS-232/422/485 SETTINGS (J19, J20, J21)

	*RS-232	RS-422	RS-485
J19	5 3 1 / 6 4 2	5 3 1 / 6 4 2	5 3 1 / 6 4 2
J20	5 3 1 / 6 4 2	5 3 1 / 6 4 2	5 3 1 / 6 4 2
J21	5 3 1 / 6 4 2	5 3 1 / 6 4 2	5 3 1 / 6 4 2

* default setting

The IRQ and the address range for COM1, 2, 3, 4 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 PCM-5864/E/L's serial ports.

TABLE 2-13: SERIAL PORT DEFAULT SETTINGS

Port	Address range	Interrupt
COM1	3F8 ~ 3FF	IRQ4
COM2	2F8 ~ 2FF	IRQ3
COM3	3E8 ~ 3EF	IRQ10
COM4	2E8 ~ 2EF	IRQ5

2.17.2 COM3/COM4 RI pin setting (J11, J12)

COM3 and COM4 can supply +5 V or +12 V power to the serial devices via the RI pin of the COM port connector. The outputs of the COM3 and COM4 RI pins are selected by setting J11 and J12 respectively.

TABLE 2-14: COM3 RI PIN SETTINGS (J12)

	+5 V	+12 V	*RI
J12	6 4 2 / 5 3 1 — jumper on 2-1	6 4 2 / 5 3 1 — jumper on 4-3	6 4 2 / 5 3 1 — jumper on 6-5

TABLE 2-15: COM4 RI PIN SETTINGS (J11)

	+5 V	+12 V	*RI
J11	6 4 2 / 5 3 1 — jumper on 2-1	6 4 2 / 5 3 1 — jumper on 4-3	6 4 2 / 5 3 1 — jumper on 6-5

2.17.3 COM1/COM2 RI pin setting (J14, J15)

COM1 and COM2 can supply +5 V or +12 V power to the serial devices via the RI pin of the COM port connector. The outputs of the COM3 and COM4 RI pins are selected by setting J14 and J15 respectively.

TABLE 2-16: COM1 RI PIN SETTINGS (J14)

	+5 V	+12 V	*RI
J14	6 4 2 / 5 3 1 — jumper on 2-1	6 4 2 / 5 3 1 — jumper on 4-3	6 4 2 / 5 3 1 — jumper on 6-5

TABLE 2-17: COM2 RI PIN SETTINGS (J15)

	+5 V	+12 V	*RI
J15	6 4 2 / 5 3 1 — jumper on 2-1	6 4 2 / 5 3 1 — jumper on 4-3	6 4 2 / 5 3 1 — jumper on 6-5

* default setting

2.18 VGA interface connections

The PCM-5864/E/L'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 board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

2.18.1 CRT display connector (CN18)

CN18 is a 16-pin, dual-inline header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN18 to a standard 15-pin D-SUB connector commonly used for VGA.

Pin assignments for CRT display connector CN18 are detailed in Appendix C.

2.18.2 Flat panel display connector (CN20)

CN20 consists of a 44-pin, dual-inline header which can support a 24-bit LCD panel. Power supply (+12 V) present on CN20 depends on the supply connected to the board.
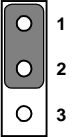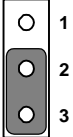
The PCM-5864/E/L provides a bias control signal on CN20 that can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V or +3.3 V) and panel video signals are stable. Under normal operation, the control signal (ENAVEE) is active high. When the PCM-5864/E/L's power is applied, the control signal is low until just after the relevant flat panel signals are present.

2.18.3 Extension flat panel connector (CN21)

The PCM-5864/E/L supports a 36-bit LCD panel which must be connected to both the CN20 (44-pin) and the CN21 (16-pin). The pin assignments for both CN20 and the CN21 can be found in Appendix C.

2.18.4 LCD power setting (J16)
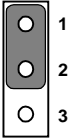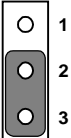
The PCM-5864/E/L's PCI SVGA interface supports 5 V and 3.3 V LCD displays. By changing the setting of J16, you can select the panel video signal level to be 5 V or 3.3 V.

TABLE 2-18: LCD POWER SETTING

	*5 V	3.3 V
J16		

* default setting

2.16.5 LCD shift clock setting (J22)

The customer can use a shift clock (SHFCLK) or an asyn. shift clock (ASHFCLK) by using the J22 setting for a different LCD panel application.

TABLE 2-19: LCD SHIFT CLOCK SETTING

	SHFCLK*	ASHFCLK
J22		

* default setting

2.18.6 LCD backlight signal setting (J8)

The backlight signal can either choose positive enable or negative enable when using the J8 setting.

TABLE 2-20: LCD BACKLIGHT SIGNAL SETTING (J8)

	Positive signal	Negative signal
J8	O 1 O 2 O 3	O 1 O 2 O 3

Configuration of the VGA interface is done completely via the software utility. You do not have to set any jumpers. Refer to Chapter 3 for software setup details.

Refer to Chapter 3 for details on connecting the five standard LCDs: Sharp LM64183P, LM64P89, Toshiba LTM10C042, Sharp 64C142, and Planar EL display.

2.19 Ethernet configuration

The PCM-5864/E/L is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

The medium type can be configured via the RSET8139.EXE program included on the utility disk. (See Chapter 3 for detailed information.)

2.19.1 100Base-T connector (CN3)

100Base-T connects to the PCM-5864/E/L via an adapter cable to a 10-pin polarized header (CN3). For 10Base-T RJ-45 operation, an adapter cable converting CN3 into a standard RJ-45 jack is required.

2.19.2 Network boot

The Network Boot feature can be utilized by incorporating the Boot ROM image files for the appropriate network operating system. The Boot ROM BIOS files are included in the system BIOS, which is on the utility CD disc.

2.20 Watchdog timer configuration

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. Setup involves one jumper and running the control software (refer to Appendix A).

2.20.1 Watchdog timer action (JP2)

When the watchdog timer activates (CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ11. This can be set via setting JP2 as shown below:

TABLE 2-21: WATCHDOG TIMER ACTION (JP2)

	*System reset	IRQ11
JP2	1 2 3	1 2 3

* default setting

2.21 USB connectors (CN16)

The PCM-5864/E/L board provides two USB (Universal Serial Bus) ports which gives complete plug and play, and hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 1.0, and are fuse protected.

The USB interface is accessed through one 5-pin flat-cable connector, CN16. You will need an adapter cable if you use a standard USB connector. The adapter cable has a 5-pin connector on one end and an USB connector on the other.

The USB interfaces can be disabled in the system BIOS setup.

2.22 Video interfaces (CN19, CN30) (PCM-5864 only)

The PCM-5864 board provides Video-in (CN19) and Video-out (TV-out) (CN30). They consist of a 6-pin and an 8-pin dual-inline header respectively. Video capture supports RCA and S-video connectors via an optional cable kit. Its Video-in and Video-out generators use both NTSC and PAL format.

To set up your video interface:

1. Set J25 according to whether you want NTSC or PAL format. See Table 2-22 below.

2. Run the appropriate installation software program, located in the utility disk.

   For NTSC format, the file is **55xntsc.exe**, located in: **Biscuit\5864\Video.100\69000\TV-out**

   For PAL format, the file is **55xpal.exe**, located in: **Biscuit\5864\Video.100\69000\TV-out**

TABLE 2-22: TV-OUT FORMAT SELECT (J25)

	NTSC*	PAL
J25	1 2 3 ○ ● ●	1 2 3 ● ● ○

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. AWARD System BIOS is covered in Chapter 4.

Sections include:

- Introduction
- Connections for four standard LCDs
- Ethernet interface configuration

3.1 Introduction

The PCM-5864/E/L system BIOS and custom drivers are located in a 256 Kbyte, 32-pin (JEDEC spec.) Flash ROM device, designated U18. A single Flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings. This method minimizes the number of chips and difficulty of configuration. To set different types of LCD panels, please choose "panel type" from the "integrated peripherals" menu in CMOS setup.

3.2 Connections for five standard LCDs

3.2.1 Connections to Sharp LM64183P, LM64P89 (640 x 480 DSTN MONO LCD)

TABLE 3-1: CONNECTIONS TO SHARP LM64183P & LM64P89

LM64183/64P89		PCM-5864/E/L CN15	
Pin	Name	Pin	Name
CN1-1	S	36	FLM
CN1-2	CP1	38	LP
CN1-3	CP2	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	External power*
CN1-8	DU0	12	P3
CN1-9	DU1	11	P2
CN1-10	DU2	10	P1
CN1-11	DU3	9	P0
CN1-12	DL0	16	P7
CN1-13	DL1	15	P6
CN1-14	DL2	14	P5
CN1-15	DL3	13	P4

* LM64183P   -17 V   LM64P89   -20 V

Note: Standard BIOS supports TFT and DSTN LCD panels.

3.2.2 Connections to PLANAR EL (640 x 480 AD4 EL)

TABLE 3-2: CONNECTIONS TO PLANAR EL

PLANAR 640 x 480 AD4		PCM-5864/E/L CN15	
Pin	Name	Pin	Name
1	GND	3	GND
2	D0	21	P12
3	GND	3	GND
4	D1	22	P13
5	GND	3	GND
6	D2	23	P14
7	NC	—	—
8	D3	24	P15
9	NC	—	—
10	D4	17	P8
11	NC	—	—
12	D5	18	P9
13	NC	—	—
14	D6	19	P10
15	GND	4	GND
16	D7	20	P11
17	GND	4	GND
18	VCLK	42	ASHFCLK
19	GND	4	GND
20	/BLANK	—	—
21	GND	8	GND
22	HS	37	M
23	NC	—	—
24	VS	36	FLM
25	NC	—	—
26	SELFTST	39	GND
27	COLMAP	39	GND
28	ENABLE	—	—
29	RESERVED	—	—
30	/LOWPOW	—	—
31,32	NC	—	—
33	RESERVED	—	—
34	NC	—	—

3.2.3 Connections to Toshiba LTM10C042 (640 x 480 TFT color LCD)

LTM10C042		PCM-5864/E/L CN15	
Pin	Name	Pin	Name
1	GND	3	GND
2	CLK	35	SHFCLK
3	GND	4	GND
4	R0	27	P18
5	R1	28	P19
6	R2	29	P20
7	GND	8	GND
8	R3	30	P21
9	R4	31	P22
10	R5	32	P23
11	GND	33	GND
12	G0	19	P10
13	G1	20	P11
14	G2	21	P12
15	GND	33	GND
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	34	GND
20	ENAB	37	M
21	GND	34	GND
22	B0	11	P2
23	B1	12	P3
24	B2	13	P4
25	GND	39	GND
26	B3	14	P5
27	B4	15	P6
28	B5	16	P7
29	GND	39	GND
30	VDD	5	+5 V
31,32	VDD	6	+5 V

3.2.4 Connections to Sharp LM64C142 (640 x 480 DSTN color LCD)

TABLE 3-4: CONNECTIONS TO SHARP LM64C142

LM64C142 Pin	Name	PCM-5864/E/L CN15 Pin	Name
CN1-1	YD	36	FLM
CN1-2	LP	38	LP
CN1-3	XCX	35	SHFCLK
CN1-4	DISP	5	+5 V
CN1-5	VDD	6	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	—	+27*
CN1-8	DU0	20	P11
CN1-9	DU1	19	P10
CN1-10	DU2	18	P9
CN1-11	DU3	17	P8
CN1-12	DU4	12	P3
CN1-13	DU5	11	P2
CN1-14	DU6	10	P1
CN1-15	DU7	9	P0
CN2-1	VSS	4	GND
CN2-2	DL0	24	P15
CN2-3	DL1	23	P14
CN2-4	DL2	22	P13
CN2-5	DL3	21	P12
CN2-6	DL4	16	P7
CN2-7	DL5	15	P6
CN2-8	DL6	14	P5
CN2-9	DL7	13	P4
CN2-10	VSS	8	GND

3.2.5 Connections to Toshiba LTM12C275A (800 x 600 TFT color LCD)

LTM12C275A Pin	Name	PCM-5864/E/L CN15 Pin	Name
1	GND	3	GND
2	NCLK	35	SHFCLK
3	NC	-	NC
4	NC	-	NC
5	GND	4	GND
6	R0	27	P18
7	R1	28	P19
8	R2	29	P20
9	R3	30	P21
10	R4	31	P22
11	R5	32	P23
12	GND	8	GND
13	G0	19	P10
14	G1	20	P11
15	G2	21	P12
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	33	GND
20	B0	11	P2
21	B1	12	P3
22	B2	13	P4
23	B3	14	P5
24	B4	15	P6
25	B5	16	P7
26	ENAB	37	M/DE
27	GND	34	GND
28	VCC	5	+5 V
29	VCC	6	+5 V
30	GND	39	GND

3.3 Ethernet software configuration

The PCM-5864/E/L's on-board Ethernet interface supports all major network operating systems. To configure the medium type, to view the current configuration, or to run diagnostics, do the following:

1. Power the PCM-5864/E/L on. Make sure 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 are sure 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 that shows the format and result of any diagnostic tests undertaken.

Note: For Ethernet installation, please see Chapter 8.

CHAPTER

4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

4.1 System test and initialization

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

4.1.1 System configuration verification

These routines check the current system configuration against the values stored in the board's CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time

2. You have changed the hardware attached to your system

3. The CMOS memory has lost power and the configuration information has been erased.

The PCM-5864/E/L's CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service. When it finally runs down, you will need to replace the complete unit.

4.2 AWARD BIOS setup

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

4.2.1 Entering setup

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

```
                    ROM PCI/ISA BIOS (2A5IIAKG)
                       CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│   STANDARD CMOS SETUP              INTEGRATED PERIPHERALS          │
│                                                                   │
│   BIOS FEATURES SETUP              PASSWORD SETTING                │
│                                                                   │
│   CHIPSET FEATURES SETUP           IDE HDD AUTO DETECTION          │
│                                                                   │
│   POWER MANAGEMENT SETUP           SAVE & EXIT SETUP               │
│                                                                   │
│   PNP/PCI CONFIGURATION            EXIT WITHOUT SAVING             │
│                                                                   │
│   LOAD BIOS DEFAULTS                                               │
│                                                                   │
│   LOAD SETUP DEFAULTS                                             │
├─────────────────────────────────────────────────────────────────┤
│ Esc : Quit                        ↑ ↓ → ←   : Select Item         │
│ F10 : Save & Exit Setup           (Shift)F2 : Change Color        │
├─────────────────────────────────────────────────────────────────┤
│                                                                   │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

Figure 4-1: Setup program initial screen

4.2.2 Standard CMOS setup

When you choose the STANDARD CMOS SETUP option from the INITIAL SETUP SCREEN menu**,** the screen shown below is displayed. This standard Setup menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, online help information is displayed at the bottom left of the Menu screen.

```
              ROM PCI/ISA BIOS (2A5IIAKG)
                  STANDARD CMOS SETUP
                  AWARD SOFTWARE, INC.

    Date (mm:dd:yy) : Fri, Aug 27 1999
    Time (hh:mm:ss) : 11 : 59 : 29

    HARD DISKS         TYPE    SIZE    CYLS HEAD PRECOMP LANDZ SECTOR  MODE

    Primary Master   : None      0       0    0       0     0      0 ------
    Primary Slave    : None      0       0    0       0     0      0 ------
    Secondary Master : None      0       0    0       0     0      0 ------
    Secondary Slave  : None      0       0    0       0     0      0 ------

    Drive A : None
    Drive B : None                      Base Memory:      0K
                                    Extended Memory:      0K
    Video   : EGA/VGA                  Other Memory:    512K
    Halt On : All Errors
                                       Total Memory:    512K

ESC : Quit             ↑ ↓ → ←   : Select Item      PU/PD/+/- : Modify
F1  : Help            (Shift)F2 : Change Color
```

Figure 4-2: CMOS setup screen

4.2.3 BIOS features setup

By choosing the BIOS FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-5864/E/L.

```
                    ROM PCI/ISA BIOS (2A5IIAKG)
                       BIOS FEATURES SETUP
                       AWARD SOFTWARE, INC.

Virus Warning            : Enabled    Video  BIOS Shadow  : Disabled
CPU Internal Cache       : Disabled   C8000-CBFFF Shadow  : Disabled
External Cache           : Disabled   CC000-CFFFF Shadow  : Disabled
Quick Power On Self Test : Disabled   D0000-D3FFF Shadow  : Disabled
Boot Sequence            : A,C,SCSI   D4000-D7FFF Shadow  : Disabled
Swap Floppy Drive        : Disabled   D8000-DBFFF Shadow  : Disabled
Boot Up Floppy Seek      : Disabled   DC000-DFFFF Shadow  : Disabled
Boot Up NumLock Status   : Off
Gate A20 Option          : Normal
Typematic Rate Setting   : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec)   : 250
Security Option          : Setup
PCI/VGA Palette Snoop    : Disabled
OS Select For DRAM > 64MB : Non-OS2
Report No FDD For WIN 95 : No         ESC : Quit        ↑↓→← : Select Item
                                      F1  : Help        PU/PD/+/- : Modify
                                      F5  : Old Values  (Shift)F2 : Color
                                      F6  : Load BIOS  Defaults
                                      F7  : Load Setup Defaults
```

Figure 4-3: BIOS features setup

4.2.4 Chipset features setup

By choosing the CHIPSET FEATURES SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-5864/E/L.

```
              ROM PCI/ISA BIOS (2A5IIAKG)
                 CHIPSET FEATURES SETUP
                   AWARD SOFTWARE, INC.

Auto Configuration     : Disabled   Memory Hole at 15M-16M  : Disabled
                                    Linear Mode SRAM Support: Disabled
L2 (WB) Tag Bit Length  : 7bits     Mainbord FAN Turn On       : Enabled
SRAM Back-to-Back       : Enabled   CPU Warning Temperature  : Disabled
NA# Enable              : Disabled  Current Main Chip Temp.  :
Starting Point of Paging: 1T        Current CPU Temperature  :
Refresh Cycle Time (us) : 15.6      Current VGA Chip Temp.   :
RAS Pulse Width Refresh : 4T        Current CPUFAN1 Speed    :
RAS Precharge Time      : 2T        Current CPUFAN2 Speed    :
RAS to CAS Delay        : 2T        CPUcore:          CPUi/o :
RAMW# Assertion Timing  : 3T        +3.4V :           + 5 V  :
SDRAM WR Retire Rate    : X-2-2-2   +12 V  :
SDRAM Wait State Control: 1WS
Enhanced Memory Write   : Disabled
Read Prefetch Memory RD : Enabled
CPU to PCI Post Write   : 4T        ESC : Quit         ↑↓→← : Select Item
CPU to PCI Burst Mem. WR: Disabled  F1  : Help       PU/PD/+/- : Modify
ISA Bus Clock Frequency : 7.159MHz  F5  : Old Values  (Shift)F2 : Color
System BIOS Cacheable   : Disabled  F6  : Load BIOS  Defaults
Video  BIOS Cacheable   : Disabled  F7  : Load Setup Defaults
```

Figure 4-4: Chipset features setup

4.2.5 Power management setup

By choosing the POWER MANAGEMENT SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-5864/E/L.

```
                    ROM PCI/ISA BIOS (2A5IIAKG)
                       POWER MANAGEMENT SETUP
                        AWARD SOFTWARE, INC.

 Power Management   : User Define    VGA Activity        : Disabled
 PM Control by APM  : No             IRQ3  (COM 2)       : Enabled
 Video Off Option   : Always On      IRQ4  (COM 1)       : Enabled
 Video Off Method   : Blank Screen   IRQ5  (LPT 2)       : Enabled
                                     IRQ6  (Floppy Disk): Enabled
 Doze Speed (div by): 1              IRQ7  (LPT 1)       : Enabled
 Stdby Speed(div by): 1              IRQ8  (RTC Alarm)   : Enabled
 MODEM Use IRQ      : NA             IRQ9  (IRQ2 Redir)  : Enabled
 Hot Key Suspend    : Disabled       IRQ10 (Reserved)    : Enabled
                                     IRQ11 (Reserved)    : Enabled
       ** PM Timers **               IRQ12 (PS/2 Mouse)  : Enabled
 HDD Off After      : Disable        IRQ13 (Coprocessor): Enabled
 Doze Mode          : Disable        IRQ14 (Hard Disk)   : Enabled
 Standby Mode       : Disable        IRQ15 (Reserved)    : Enabled
 Suspend Mode       : Disable
                                     ESC : Quit      ↑↓→← : Select Item
       ** PM Events **               F1  : Help       PU/PD/+/- : Modify
 COM Ports Activity : Disabled       F5  : Old Values  (Shift)F2 : Color
 LPT Ports Activity : Disabled       F6  : Load BIOS  Defaults
 HDD Ports Activity : Disabled       F7  : Load Setup Defaults
```

Figure 4-5: Power management setup

4.2.6 PnP/PCI configuration

By choosing the PnP/PCI CONFIGURATION option from the
Initial Setup Screen menu, the screen below is displayed. This
sample screen contains the manufacturer's default values for the
PCM-5864/E/L.

```
                  ROM PCI/ISA BIOS (2A5IIAKG)
                   PNP/PCI CONFIGURATION
                    AWARD SOFTWARE, INC.

Resources Controlled By  : Manual     PCI IRQ Actived By      : Level
Reset Configuration Data : Disabled   PCI IDE 2nd Channel     : Enabled
                                      PCI IDE IRQ Map To      : PCI-AUTO
IRQ-3  assigned to : Legacy ISA        Primary   IDE INT#     : A
IRQ-4  assigned to : Legacy ISA        Secondary IDE INT#     : B
IRQ-5  assigned to : PCI/ISA PnP
IRQ-7  assigned to : Legacy ISA
IRQ-9  assigned to : PCI/ISA PnP
IRQ-10 assigned to : PCI/ISA PnP
IRQ-11 assigned to : PCI/ISA PnP
IRQ-12 assigned to : PCI/ISA PnP
IRQ-14 assigned to : Legacy ISA
IRQ-15 assigned to : Legacy ISA
DMA-0  assigned to : PCI/ISA PnP
DMA-1  assigned to : PCI/ISA PnP
DMA-3  assigned to : PCI/ISA PnP      ESC : Quit        ↑↓→← : Select Item
DMA-5  assigned to : PCI/ISA PnP      F1  : Help        PU/PD/+/- : Modify
DMA-6  assigned to : PCI/ISA PnP      F5  : Old Values  (Shift)F2 : Color
DMA-7  assigned to : PCI/ISA PnP      F6  : Load BIOS  Defaults
                                      F7  : Load Setup Defaults
```

Figure 4-6: PnP/PCI configuration

4.2.7 Integrated peripherals

By choosing the INTEGRATED PERIPHERALS option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-5864/E/L. By default, the PANEL TYPE supports an 18-bit 640 x 480 TFT LCD panel display.

```
                  ROM PCI/ISA BIOS (2A5IIAKG)
                     INTEGRATED PERIPHERALS
                      AWARD SOFTWARE, INC.
┌─────────────────────────────────┬─────────────────────────────────┐
│ Internal PCI/IDE     : Disabled │ Onboard Parallel Mode   :       │
│                                 │ ECP Mode Use DMA        : 1     │
│                                 │ Parallel Port EPP Type  : EPP1.9│
│                                 │ Onboard Serial Port 3   : Disabled│
│                                 │ Onboard Serial Port 4   : Disabled│
│                                 │                                 │
│                                 │ PS/2 mouse function     : Disabled│
│                                 │ USB Controller          : Disabled│
│                                 │                                 │
│ IDE Data Port Post Write: Disabled│ Ethernet Boot Rom      : Disabled│
│ IDE HDD Block Mode   : Disabled │ WDT Active when Power ON: 62sec │
│                                 │ Panel Type     : 1024x768 DSTN  │
│ Onboard FDD Controller : Enabled│                                 │
│ Onboard Serial Port 1 : 3F8/IRQ4├─────────────────────────────────┤
│ Onboard Serial Port 2 :         │                                 │
│ UART 2 Mode          :          │ ESC : Quit      ↑↓→← : Select Item│
│ IR Function Duplex   : Full     │ F1  : Help      PU/PD/+/- : Modify│
│ RxD , TxD Active     : Hi,Hi    │ F5  : Old Values  (Shift)F2 : Color│
│ Onboard Parallel Port :         │ F6  : Load BIOS  Defaults       │
│                                 │ F7  : Load Setup Defaults        │
└─────────────────────────────────┴─────────────────────────────────┘
```

Figure 4-7: Integrated peripherals

4.2.8 Load BIOS defaults

LOAD BIOS DEFAULTS loads the default system values directly from ROM. If the stored record created by the Setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-5864/E/L on.

```
                  ROM PCI/ISA BIOS (2A5IIAKG)
                      CMOS SETUP UTILITY
                     AWARD SOFTWARE, INC.

    STANDARD CMOS SETUP              INTEGRATED PERIPHERALS

    BIOS FEATURES SETUP             PASSWORD SETTING

    CHIPSET FEATURES SETUP          IDE HDD AUTO DETECTION

    POWER MANAGEMENT SETUP          SAVE & EXIT SETUP

    PNP/PCI CONFIGURA┌─────────────────────────┐SAVING
                     │  Load BIOS  Defaults (Y/N)? N │
    LOAD BIOS DEFAULT│                         │
                     └─────────────────────────┘
    LOAD SETUP DEFAULTS

 Esc : Quit                        ↑ ↓ → ←   : Select Item
 F10 : Save & Exit Setup           (Shift)F2 : Change Color
```

Figure 4-8: Load BIOS defaults screen

4.2.9 Change password

To change the password, choose the PASSWORD SETTING option form the Setup main menu and press <Enter>.

1. If the CMOS is bad or this option has never been used, a default password is stored in the ROM. The screen will display the following messages:

    <div style="background:black;color:white;text-align:center">Enter Password:</div>

    Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

    <div style="background:black;color:white;text-align:center">Confirm Password:</div>

    Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can only be eight (8) characters long at most.

Remember - to enable this feature, you must first select either Setup or System in BIOS FEATURES SETUP.

4.2.10 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.

```
                ROM PCI/ISA BIOS (2A5IIAKG)
                    CMOS SETUP UTILITY
                    AWARD SOFTWARE, INC.




HARD DISK TYPE  SIZE  CYLS. HEADS  PRECOMP  LANDZ  SECTORS MODE
Drive C      : (MB) 790   15     65535    789    57

     ┌─────────────────────────────────────────────────┐
     │      SELECT SECONDARY SLAVE OPTION (N=Skip): N   │
     ├─────────────────────────────────────────────────┤
     │                                                 │
     └─────────────────────────────────────────────────┘

                    ESC = SKIP
```

Figure 4-9: IDE HDD auto detection screen

4.2.11 Save & exit setup

If you select this option and 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.

4.2.12 Exit without saving

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

PCI SVGA Setup

- Introduction
- Installation of SVGA driver for
  - Windows 3.1
  - Windows 95
  - Windows NT
- Further information

5.1 Before you begin

To facilitate the installation of the enhanced display device drivers and utility software, you should read the instructions in this chapter carefully before you attempt installation. The enhanced display drivers for the PCM-5864/E/L board are located on the software installation disk. You must install the drivers and utility software by using the supplied SETUP program for DOS drivers.

Note:　*The files on the software installation disk are compressed. Do not attempt to install the drivers by copying the files manually. You must use the supplied SETUP program to install the drivers.*

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

5.2 Introduction

The PCM-5864/E/L has an on-board PCI flat panel/VGA interface. The specifications and features are described as follows:

5.2.1 Chipset

The PCM-5864/E/L uses a C&T 6900/69030 chipset for its PCI/SVGA controller. It supports many popular LCD, EL, and gas plasma flat panel displays, aa well as conventional analog CRT monitors. The 6900/69030 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. In addition, it also supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes, while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported.

Multiple frequency (multisync) monitors are handled as if they were analog monitors.

5.2.2 Display memory

With on-board 2 MB display memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 @ 64 K colors. With C&T 69030, the display memory can be expanded to 4 MB for true-color resolution of 1024 x 768.

5.2.3 Display types

CRT and panel displays can be used simultaneously. The PCM-5864/L can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. The CD utility disc includes three *.COM files in the subdirectory **Biscuit\5864\Utility** which can be used to configure the display. In order to use these configuration programs, type the file name and path at the DOS prompt.

> CT.COM: Enables CRT display only
>
> FP.COM: Enables panel display only
>
> SM.COM: Enables both displays simultaneously

5.3   Installation of SVGA driver

Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PCM-5864/E/L.

Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

Note: <Enter> means pressing the "Enter" key on the keyboard.

5.3.1 Installation for Windows 95/98

1. a. Select "Start",
      "Settings",
      "Control Panel",
      "Display",
      "Settings".
   b. Press "Advanced
      Properties".
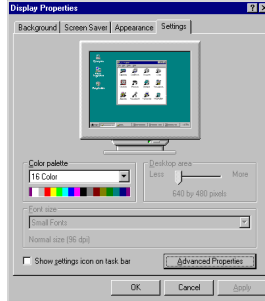
2. a. Choose the
      "Adapter" label.
   b. Press the
      "Change..."
      button.
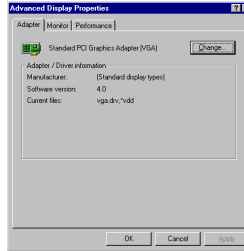
3. a. Press the "Have
      Disk" button.
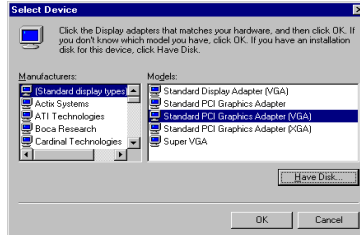
4. a. Insert the utility
      disk into the floppy
      disk drive.
   b. Type: "D:\Biscuit\
      5864\Video.100\
      69000W95."
   c. Press "OK".
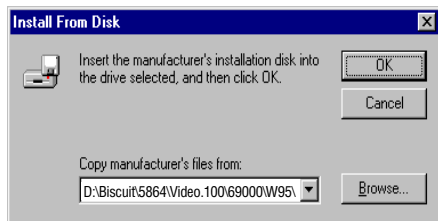
5.

a. Select the highlighted item.
b. Click the "OK" button.
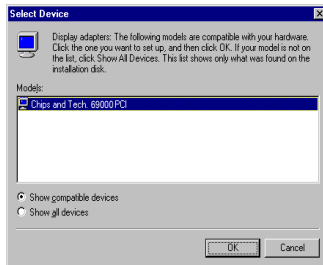
6.

a. C&T69000/69030 appears in the adapter label.
b. Click the "Apply" button.
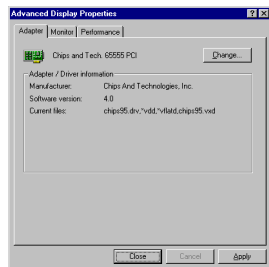
7.

a. Press "Yes" to reboot.
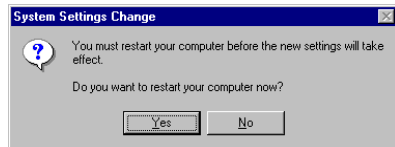
8.

a. Repeat Step 1 on the previous page of this manual. The "CHIPS" label appears in "Display".
b. Adjust resolution and color.

9.
a. Click the "CHIPS" label.
b. Adjust the refresh rate and display type.
c. Press "OK" to exit.

10.
a. Press "Yes" to set the monitor type.

11.
a. Select "Standard", "Super VGA 800 x 600", or "XGA".
b. Press the "OK" button.

12.
a. Choose "Restart" to reboot.

END
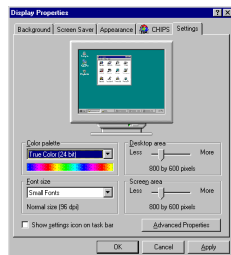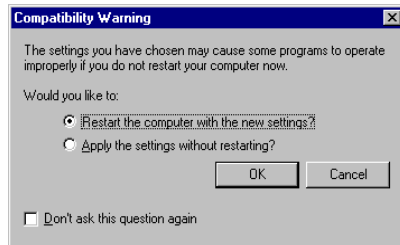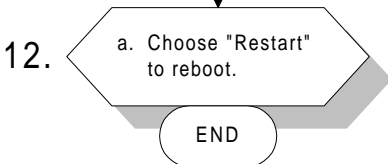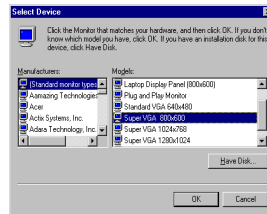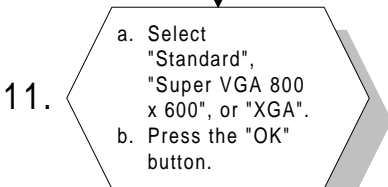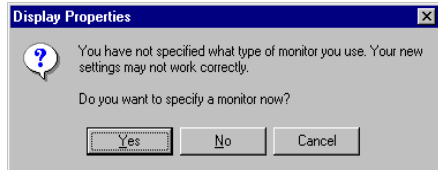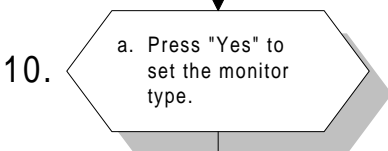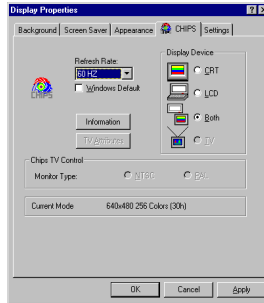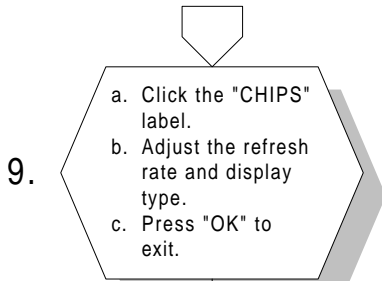
Note: *1. In step 4, for Windows 98, the path is:*
"D:\Biscuit\5864\Video.100\69000\Win98\"

2. In step 4, for the 4 MB VGA version, the path is:
"D:\Biscuit\5864\Video.100\69030\"

5.3.2 Installation for Windows 3.1

1.
a. Insert the utility disk into the floppy disk drive.
b. Select "File" in Program Manager.
c. Click "Run" and type: "D:\Biscuit\5864\ Video.100\69000\ Win31\Setup.exe".

Run

Command Line:
D:\Biscuit\5864\Video.100\69000\Win31\Setup.exe

☐ Run Minimized

OK
Cancel
Browse...
Help

2.
a. Choose the language you want to use during installation.

SETUP

```
**************************************************************
*                 CHIPS AND TECHNOLOGIES                    *
*                       SETUP MENU                          *
*                                                           *
*                    a. English                             *
*                    b. Japanese                            *
*                    c. French                              *
*                    d. Spanish                             *
*                    e. Dutch                               *
*                    f. Finnish                             *
*                    g. Portuguese                          *
*                    h. German                              *
*                    i. Swedish                             *
*                    j. Danish                              *
*                    k. Norwegian                           *
*                    l. Italian                             *
*                                                           *
*                    z. EXIT to DOS                         *
**************************************************************
Enter ?[A,B,C,D,E,F,G,H,I,J,K,L,Z]?_
```

3.
a. Select the highlighted item.
b. Press "ENTER".

SETUP

Select any Application Driver to install
Windows Version 3.1 (6555X accelerated drivers)

↑↓ = move cursor up/down, ENTER = enter selection, ESC = exit to DOS
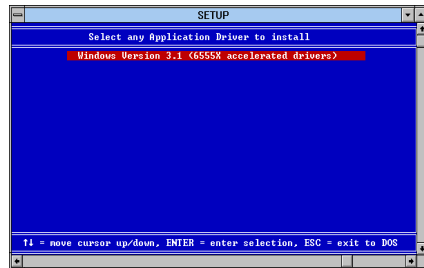
4.
a. Press "ENTER" to install all resolutions.

SETUP

Select any Application Driver to install

Windows Version 3.1 (6555X accelerated drivers)

✱ All Resolutions   selected

↑↓ = move cursor up/down, ENTER = toggle selection
ESC = exit to main menu, END = start to install

↑↓ = move cursor up/down, ENTER = enter selection, ESC = exit to DOS
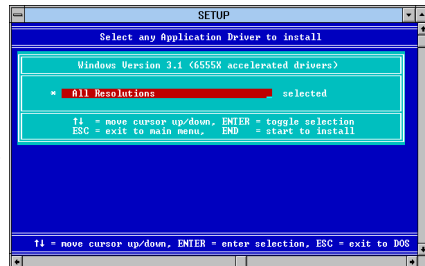
5. a. Type the path of the operating system.

```
SETUP
Select any Application Driver to install

Windows Version 3.1 (6555X accelerated drivers)

 *  All Resolutions                    selected
    Enter the [drive:path] for installation
    [C:\WIN31_                                    ]

↑↓ = move cursor up/down, ENTER = enter selection, ESC = exit to DOS
```
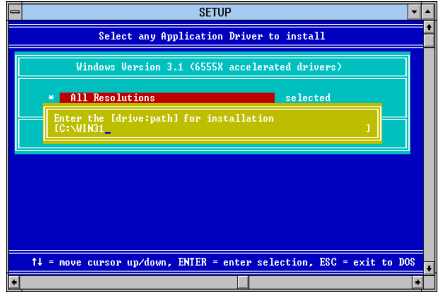
6. a. When installation is completed, reboot the system.
b. You will see the "ChipsCPL" icon in the control panel.

Control Panel

Settings   Help

MIDI Mapper   386 Enhanced   Drivers

Sound   ChipsCPL

Changes settings and calibration for you
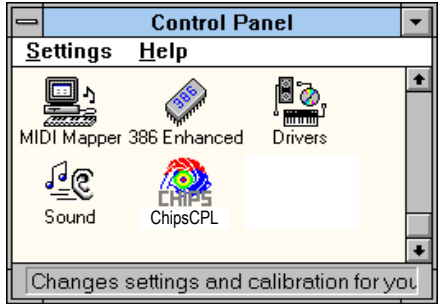
7. a. Double click "ChipsCPL".
b. Adjust screen size, color and refresh rate to your preferences.

END

Display Driver Control Panel

Screen Size
○ 640 × 480
◉ 800 × 600
○ 1024 × 768
○ 1280 × 1024

Color
○ 16
◉ 256
○ 32K
○ 64K
○ 16M

DPI
◉ Small
○ Large

Display
○ CRT
○ LCD
◉ BOTH
○ TV

Refresh
○ Interlaced
○ 56 Hz
◉ 60 Hz
○ 70 Hz
○ 72 Hz
○ 75 Hz
○ 85 Hz

☐ Cursor Animation
☐ Big Cursor

Monitor Selection
013, "Universal Sync"

Ok
Cancel
Help   Version

Current Driver:
65555 800x600 256 Colors Small Font
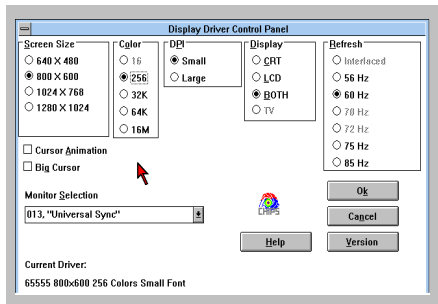
5.3.3 Installation for Windows NT

1.
   a. Select "Start", "Settings", "Control Panel".
   b. Double click the "Display" icon.

2.
   a. Choose the "Settings" label.
   b. Press the "Display Type" button.
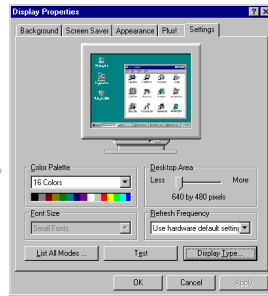
3.
   a. Press the "Change..." button.

4.
   a. Click the "Have Disk..." button.

5.

a. Insert the utility disk into the floppy disk drive.

b. Type: "D:\Biscuit\5864\ 69000\Video.100\Nt40\".

c. Press the "OK" button.

Install From Disk

Insert the manufacturer's installation disk into the drive selected, and then click OK.

OK

Cancel

Copy manufacturer's files from:

D:\Biscuit\5864\69000\Video.100\Nt40\ ▼   Browse...

6.

a. Select the highlighted item.

b. Press the "OK" button.

Change Display

Choose the manufacturer and model of your display adapter. If your display adapter came with an installation disk, click on HaveDisk.

Display:

Chips Video Accelerator(64300/10 65535/40/45/48/50/54/55)

OK   Cancel

7.

a. Press "Yes" to proceed.

Third-party Drivers.

You are about to install a third-party driver.

This driver was written by the hardware vendor, and is only provided here as a convenience. For any problem with this driver, please contact the hardware vendor.

Do you wish to proceed ?

Yes   No

8.

a. Press "OK" to reboot.

Installing Driver

The drivers were successfully installed.

You must exit from the Display Properties window and reboot in order for the changes to take effect.

OK

9.

a. Repeat Step 1 in this manual, to select the "Settings" label.

b. Adjust resolution and color.

c. Click "Test" to see the result.

d. Click "OK" to save the setting.

END

Display Properties

Background | Screen Saver | Appearance | Plus! | Settings

Color Palette
256 Colors

Desktop Area
Less ———|——— More
800 by 600 pixels

Font Size
Small Fonts

Refresh Frequency
60 Hertz

List All Modes ... | Test | Display Type...

OK | Cancel | Apply
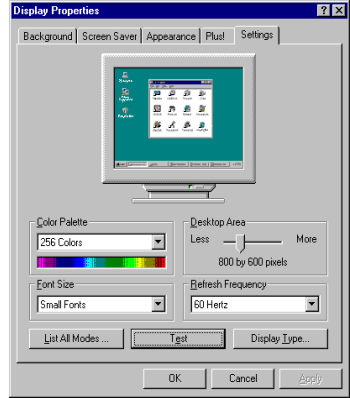
5.4 Further information

For further information about PCI/SVGA installation in your PCM-5864/E/L, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

C&T website: **www.chips.com**

Advantech websites: **www.advantech.com**
                             support.advantech.com.tw

Video

- Introduction

- Installation of video capture driver for Windows 95/98

6.1 Introduction

The PCM-5864/E/L's on-board Video-in and Video-out (TV-out) provides NTSC and PAL video standards. Video-in uses Philips SAA 7111A video input processor. TV-out uses Analog Device 725AR. Video-in provides an 8-pin header connector for S-video. Alternatively, an optional cable kit provides an RCA yellow jack for composite video input (see Appendix E). Video-out provides a 6-pin header connector for S-video. Alternatively, an optional cable kit provides an RCA yellow jack for composite video output (see Appendix E).

6.2 Installation of video driver

Before installing the Video-in driver, please take note of the procedures detailed below. You must know which operating system you are using in your PCM-5864/E/L, and then refer to the corresponding installation flow chart. Just follow the steps in the flow chart. You can quickly and successfully complete the installation, even if you are not familiar with instructions for Windows.

Note: *The CD-ROM drive is designated as "D" through-out this chapter.*

6.2.1 Installation for Windows 95/98

1.
a. Select "Start", "Settings", "Control Panel", "Add New Hardware".
b. Click "Next" to begin installing the new device.
c. Click "Next" to continue.

2.
a. Choose "No, I want to select hardware....".
b. Click "Next".

3.
a. Select "Sound, video,..".
b. Click "Next".

4.
a. Click "Have Disk...".

5.
a. Insert the disk into the CD-ROM drive.
b. Type the correct path: "D:\Biscuit\5864\ Video.100\69000\ Capture".
c. Click the "OK" button.

6.
a. Select the highlighted item.
b. Click "OK".

7.
a. Click "Finish" to complete.

END
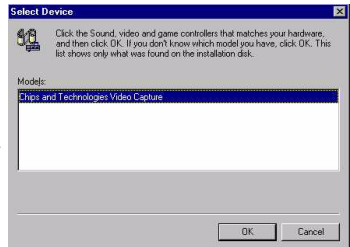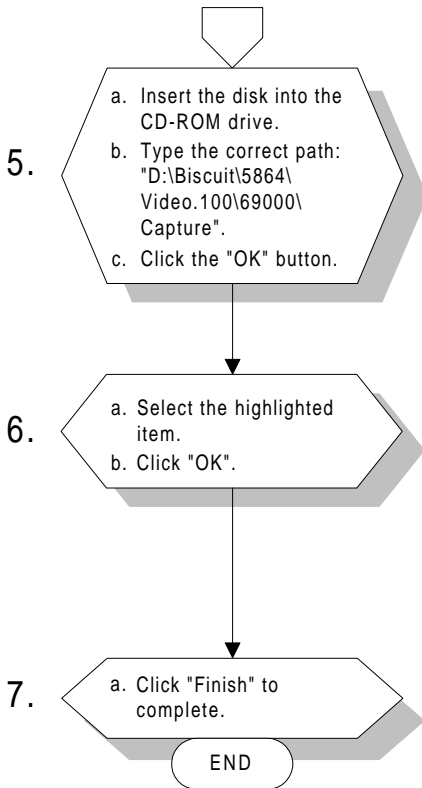
Note: Before you restart Windows, insert the following pcvideo.ini and ctmmhw.ini files into the Windows directory:

[GPIO]

GPIO_SDA=0

GPIO_SCL=1

6.3   Installation of Chips-TV utility

This utility is for demonstration only.

1.
- a. Select "Start", "Run".
- b. Type the correct path: "D:\Biscuit\5864\ Video.100\69000\ Chips-TV\Setup.exe".
- c. Click the "OK" button.

2.
- a. Click "Continue".

3.
- a. Click "Continue".

4.
- a. Click "OK" to complete the setup.

END
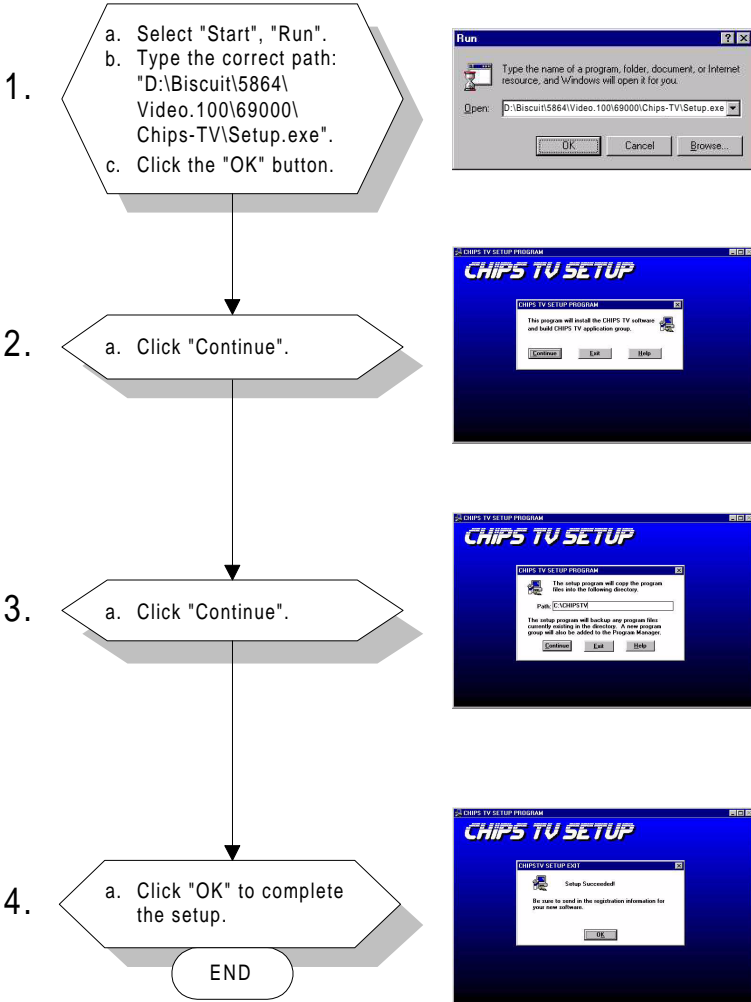
Audio

- Introduction

- Installation of audio driver for Windows 95/98/NT

7.1 Introduction

The PCM-5864/E on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the ES1373 audio controller from Creative Technology Ltd. The audio interface can record, compress, and play back voice, sound, and music with a built-in mixer control. The PCM-5864/E/L's on-board audio interface also supports the Plug and Play (PnP) standard and provides PnP configuration for audio, FM, and MPU-104 logical devices. It is compatible with AC97 version 2.0, voice, and music functions. The ESFM synthesizer is register compatible with the OPL3 and has extended capabilities.

7.2 Installation of audio driver

Before installing the audio driver, please take note of the procedures detailed below. You must know which operating system you are using in your PCM-5864/E/L, and then refer to the corresponding installation flow chart. Just follow the steps in the flow chart. You can quickly and successfully complete the installation, even though you are not familiar with instructions for Windows.

Note: *The CD-ROM drive is designated as "D" throughout this chapter.*

7.2.1 Installation for Windows 95/98/NT

1.
a. Select "Start", "Run".
b. Type the correct path: "D:\Biscuit\5864\ Audio.100\Driver\ Setup\Setup.exe".
c. Click the "OK" button.

2.
a. Click "Yes" to accept the agreement.
b. On the next page, read the Readme file and click "Next".

3.
a. Click "Next" to continue.
b. Follow the procedure which appears on your screen.

4.
a. After installation, select "Yes" and click "Finish" to restart the computer.

END
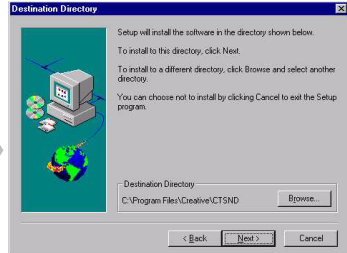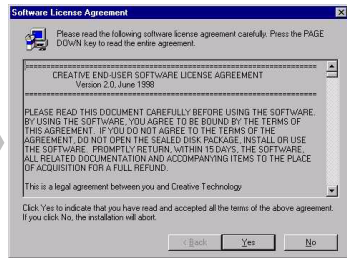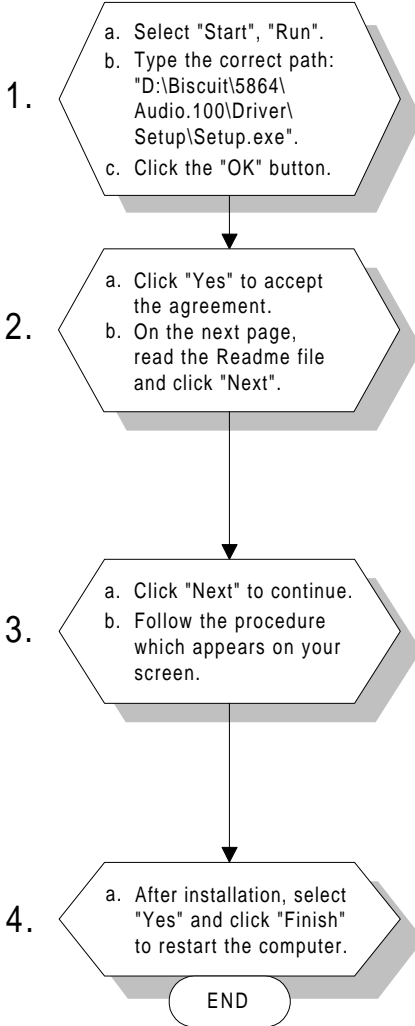
PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

- Introduction

- Installation of Ethernet driver for

  - MS-DOS

  - Windows 3.1

  - Windows 95

  - Windows 98

  - Windows NT

- Further information

8.1   Introduction

The PCM-5864/E/L is equipped with a high-performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the 82558.exe program included on the utility disk.

The Ethernet port provides a standard RJ-45 jack. 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 combined with system BIOS, which can be enabled/disabled in the BIOS setup.

8.2   Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCM-5864/E/L, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or WINDOWS.

Note: *The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.*

8.2.1 Installation for MS-DOS and Windows 3.1

If you want to set up your Ethernet connection under the MS-DOS or Windows 3.1 environment, you should first check your server system model. For example, MS-NT, IBM-LAN server, and so on.

Then choose the correct driver to install in your panel PC.

The installation procedures for various servers can be found on CD-ROM. The file path begins as:

D:\Biscuit\5864\Lan.100\8139A\wfw311

8.2.2 Installation for W~~indows 95~~

1.
a. Select "Start", "Settings", "Control Panel".
b. Double click "Network".

2.
a. Click "Add" and prepare to install network functions.

3.
a. Select the "Adapter" item to add the Ethernet card.

4.
a. Click "Have Disk" to install the driver.

5.
a. Insert the CD into the D: drive.
b. Fill in: "D:\Biscuit\5864\ Lan.100\8139A\ Win95".
c. Click "OK".

Install From Disk

Insert the manufacturer's installation disk into the drive selected, and then click OK.

OK
Cancel

Copy manufacturer's files from:
D:\Biscuit\5864\Lan.100\8139A\Win95

Browse...

6.
a. Choose the "Realtek" item.
b. Click "OK".

Select Network adapters

Click the Network adapter that matches your hardware, and then click OK. If you have an installation disk for this device, click Have Disk.

Models:
Intel 82557-based Integrated Ethernet PCI (10/100)

○ Show compatible devices
○ Show all devices

Have Disk...

7.
a. Make sure the configurations of relative items are set correctly.
b. Click "OK" to reboot.

END

Network

Configuration | Identification | Access Control

The following network components are installed:
Client for Microsoft Networks
Client for NetWare Networks
Intel 82557-based Integrated Fast Ethernet
IPX/SPX-compatible Protocol
NetBEUI

Add... | Remove | Properties

Primary Network Logon:
Client for Microsoft Networks

File and Print Sharing...

Description

OK | Cancel

Note: *The correct file path for Windows 98 is:*
D:\Biscuit\5864\Ethernet.100\Win98

8.2.3 Installation for Windows NT

1.
a. Select "Start", "Settings", "Control Panel".
b. Double click "Network".

2.
a. Choose the "Adapters" label.
b. Click the "Add" button.

3.
a. Press "Have Disk".

4.
a. Type "D:".
b. Press "OK".

5.
a. Insert the CD into the D: drive.
b. Fill in: "D:\Biscuit\ 5864\Lan.100\ 8139A\Winnt".
c. Press the "OK" button.

Install From Disk   ✕

Insert the manufacturer's installation disk into the drive selected, and then click OK.

[OK]
[Cancel]

Copy manufacturer's files from:

[D:\Biscuit\5864\Lan.100\8139A\Winnt ▼]   [Browse...]

6.
a. Choose the "Realtek" item.
b. Press the "OK" button.

Select OEM Option   ☒

Choose a software supported by this hardware manufacturer's disk.

Intel EtherExpress PRO Adapter

[OK]   [Cancel]   [Help]

7.
a. Make sure the configurations of relative items are set correctly.
b. Press the "OK" button to reboot.

END

Network   ? ✕

Identification | Services | Protocols | Adapters | Bindings

Network Adapters:

[1] Intel EtherExpress PRO Adapter

[Add...] [Remove] [Properties...] [Update]

Item Notes:

Intel EtherExpress PRO Adapter

[Close]   [Cancel]

8.3   Further information

Realtek website: **www.realtek.com**

Advantech websites: **www.advantech.com**
                     www.advantech.com.tw

Programming the Watchdog Timer

The PCM-5864/E/L is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

A.1 Programming the watchdog timer

In order to program the watchdog timer, you must write a program which writes I/O port address 443 (hex). The output data is a value of time interval. The value range is from 01 (hex) to 3E (hex), and the related time interval is 1 sec. to 62 sec.

Data	Time Interval
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
.	.
.	.
.	.
3E	62 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 read I/O port 443 (hex).

The following example shows how you might program the
watchdog timer in BASIC:

```
10      REM Watchdog timer example program
20      OUT &H443, data  REM Start and restart the
        watchdog
30      GOSUB 1000  REM Your application task #1
40      OUT &H443, data  REM Reset the timer
50      GOSUB 2000  REM Your application task #2
60      OUT &H443, data  REM Reset the timer
70      X=INP (&H443)  REM Disable the watchdog
        timer
80      END

1000    REM  Subroutine #1, your application task
  .
  .
  .
1070    RETURN
2000    REM  Subroutine #2, your application task
  .
  .
  .
2090    RETURN
```

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

B.1 Installing PC/104 modules

The PCM-5864/E/L's PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCM-5864/E/L is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCM-5864/E/L from your system, paying particular attention to the safety instructions already mentioned above.

2. Make any jumper or link changes required to the CPU card 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. (Refer to the diagram on the following page.)

4. Mount the PC/104 module onto the CPU card by pressing the module firmly but carefully onto the mounting connectors.

5. Secure the PC/104 module onto the CPU card using the four mounting spacers and screws.

PC/104
Mounting Support

Female

Male

PCM-5864/L
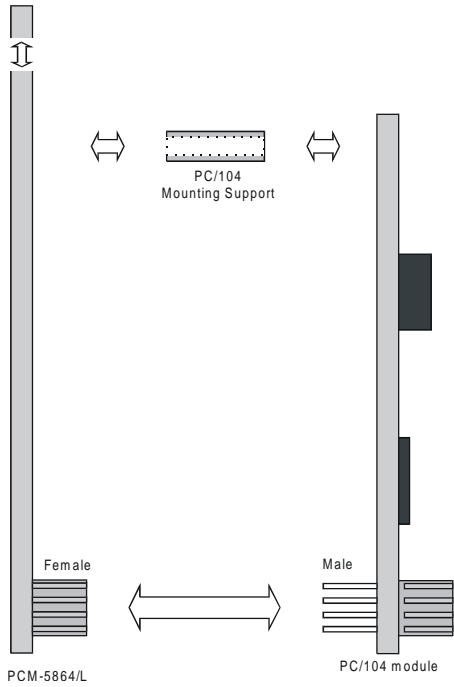
PC/104 module

Figure B-1: PC/104 module mounting diagram

8.9

82.5

95.9
90.8

∅6.4

90.8

∅3.2

5.1

5.1

0

5.1

0

85.1

90.2
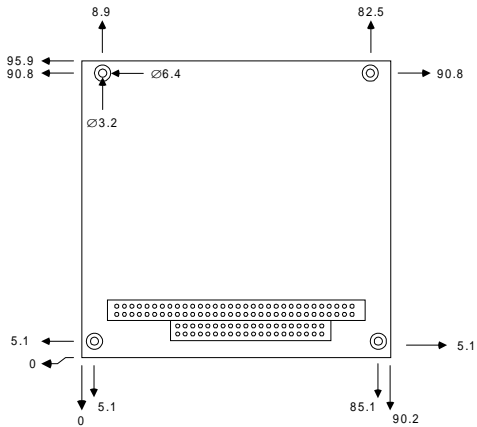
Figure B-2: PC/104 module dimensions (mm) (±0.1)

Pin Assignments

This appendix contains information of a detailed or specialized nature. It includes:

- CPU fan power connector
- Motherboard fan connector
- Ethernet 10/100Base-T connector
- Audio connector
- Speaker out connector
- CD audio input connector
- Aux line-in connector
- Main power connector
- Keyboard and PS/2 mouse connector
- Floppy disk drive connector
- PC/104 connectors
- IDE HDD connector
- Parallel port connector
- Front panel connector
- USB connector
- IR connector
- CRT display connector
- Video-out connector
- Flat panel connector
- Ext. flat panel connector
- Peripheral power connector
- COM port connector
- Video-in (capture) connector
- CompactFlash card connector
- ATX power feature connector
- ATX soft power switch connector
- LVDS connector

CPU fan power connector (CN1)

1   2   3

○   ○   ○
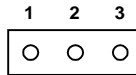
TABLE C-1: CPU FAN POWER CONNECTOR (CN1)

Pin	Signal
1	GND
2	+12 V
3	Fan 2 IN

Motherboard fan connector (CN2)

3   2   1

○   ○   ○
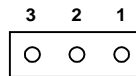
TABLE C-2: MOTHERBOARD FAN CONNECTOR (CN2)

Pin	Signal
1	GND
2	+12 V
3	Fan 1 IN

Ethernet 10/100Base-T connector (CN3)

```
9   7   5   3   1
┌─────────────────┐
│ ○   ○   ○   ○   □ │
│ ○   ○   ○   ○   ○ │
└─────────────────┘
10  8   6   4   2
```
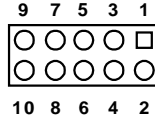
Table C-2: Ethernet 10/100Base-T connector (CN3)	
Pin	Signal
1	V_{CC}
2	CRS LED
3	RCV+
4	RCV-
5	BNC LED
6	GND
7	N/C
8	GND
9	XMT+
10	XMT-

Audio connector (CN4)

Pin	Signal	Pin	Signal
Table C-4: Audio connector (CN4)			
Pin	Signal	Pin	Signal
1	SPEAKER OUT R+	2	SPEAKER OUT R-
3	SPEAKER OUT L+	4	SPEAKER OUT L-
5	LINE OUT R	6	LINE OUT L
7	GND	8	GND
9	LINE IN R	10	LINE IN L
11	GND	12	GND
13	NC	14	NC
15	MIC IN	16	GND

Speaker out connector (CN502)
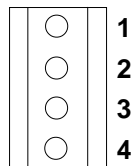
Pin	Signal
Table C-5: Speaker out connector (CN502)	
Pin	Signal
1	SPK_L
2	GND
3	GND
4	SPK_R

CD audio input connector (CN6)

```
1  ☐
2  ○
3  ○
4  ○
```
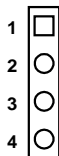
Table C-6: CD audio input connector (CN6)

Pin	Signal
1	GND
2	CD AUDIO R
3	GND
4	CD AUDIO L

Aux line-in connector (CN7)

```
1  ○
2  ○
3  ○
4  ○
```
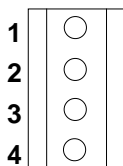
Table C-7: AUX line-in connector (CN7)

Pin	**Signal**
1	GND
2	AUX_R
3	GND
4	AUX_L

Main power connector (CN8)

```
1 □
2 ○
3 ○
4 ○
```

TABLE C-8: MAIN POWER CONNECTOR (CN8)
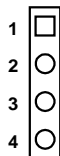
Pin	Signal
1	+12 V
2	GND
3	GND
4	+5 V

Keyboard and PS/2 mouse connector (CN9)
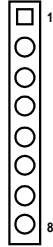
TABLE C-9: KEYBOARD AND MOUSE CONNECTOR (CN9)

Pin	Signal
1	GND
2	MS VCC
3	MS DATA
4	MS CLOCK
5	GND
6	KB VCC
7	KB DATA
8	KB CLOCK

Floppy disk drive connector (CN10)

```
33 31                                          3  1
┌─────────────────────────────────────────────┐
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ □ │
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────────┘
34 32                                          4  2
```
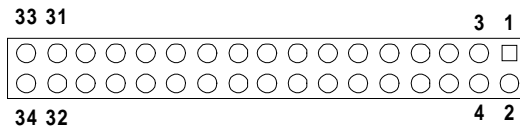
TABLE C-10: FLOPPY DISK DRIVE CONNECTOR (CN10)

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 0*
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 SELECT*
33	GND	34	DISK CHANGE*

* low active

PC/104 connectors (CN11)

CN11 (long side)

CN11 (short side)
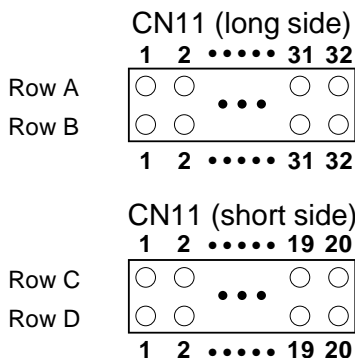
Table C-11: PC/104 connectors (CN11)

Pin Number	Signal (CN3) RowA	RowB	Signal (CN9) RowA	RowB
1	IOCHCHK*	0 V	0 V	0 V
2	SD7	RESET	SBHE*	MEMCS16*
3	SD6	+5 V	LA23	IOCS16*
4	SD5	IRQ9	LA22	IRQ10
5	SD4	-5 V	LA21	IRQ11
6	SD3	DRQ2	LA20	IRQ12
7	SD2	-12 V	LA19	IRQ15
8	SD1	ENDXFR*	LA18	IRQ14
9	SD0	+12 V	LA17	DACK0*
10	IOCHRDY	(KEY)	MEMR*	DRQ0
11	AEN	SMEMW*	MEMW*	DACK5*
12	SA19	SMEMR*	SD8	DRQ5
13	SA18	IOW*	SD9	DACK6*
14	SA17	IOR*	SD10	DRQ6
15	SA16	DACK3*	SD11	DACK7*
16	SA15	DRQ3	SD12	DRQ7
17	SA14	DACK1*	SD13	+5 V

Pin	Signal (CN3)		Signal (CN9)	
Number	RowA	RowB	RowA	RowB
18	SA13	DRQ1	SD14	MASTER*
19	SA12	REFRESH*	SD15	0 V
20	SA11	SYSCLK	(KEY)	0 V
21	SA10	IRQ7	—	—
22	SA9	IRQ6	—	—
23	SA8	IRQ5	—	—
24	SA7	IRQ4	—	—
25	SA6	IRQ3	—	—
26	SA5	DACK2*	—	—
27	SA4	TC	—	—
28	SA3	BALE	—	—
29	SA2	+5 V	—	—
30	SA1	OSC	—	—
31	SA0	0 V	—	—
32	0V	0 V	—	—

* low active

IDE HDD connector (CN12)

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
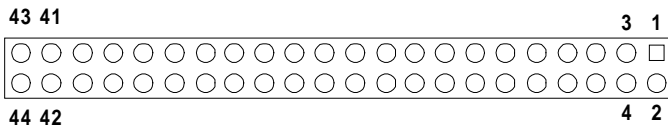
Table C-12: IDE HDD connector (CN12)

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	HDD 0	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	HD READY	28	N/C
29	HDACK 0*	30	GND
31	IRQ14	32	N/C
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	GND
41	VCC	42	VCC
43	GND	44	N/C

* low active

Parallel port connector (CN14)

```
25 23                                    3   1
┌─────────────────────────────────────────┐
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ □ │
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────┘
26 24                                    4   2
```

Table C-13: Parallel port connector (CN14)
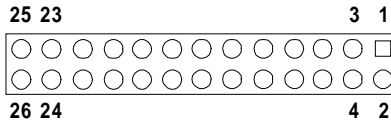
Pin	Signal	Pin	Signal
1	STROBE*	2	AUTOFD*
3	D0	4	ERR
5	D1	6	INIT*
7	D2	8	SLCTINI*
9	D3	10	GND
11	D4	12	GND
13	D5	14	GND
15	D6	16	GND
17	D7	18	GND
19	ACK*	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	N/C

* low active

Front panel connector (CN15)

```
7  5  3  1
○  ○  ○  □
○  ○  ○  ○
8  6  4  2
```

TABLE C-14: FRONT PANEL CONNECTOR (CN15)
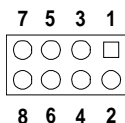
Pin	Signal
1	HDD LED- (HARD DISK ACTIVE)
2	HDD LED+ (V_{cc})
3	SPEAKER+
4	SPEAKER- (GND)
5	GND
6	WATCHDOG OUTPUT*
7	RESET SWITCH- (GND)
8	RESET SWITCH+

* low active

USB connector (CN16)

```
2   4   6   8  10
□  ○   ○   ○   ○
○  ○   ○   ○   ○
1   3   5   7   9
```

TABLE C-15: USB CONNECTOR (CN16)
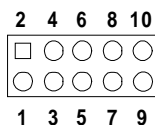
Pin	Signal	Pin	Signal
1	+5 V	2	+5 V
3	UV-	4	UV-
5	UV+	6	UV+
7	GND	8	GND
9	Chassis GND	10	N/C

IR connector (CN17)

```
 1   2   3   4   5
┌───┬───┬───┬───┬───┐
│ □   ○   ○   ○   ○ │
└───────────────────┘
```
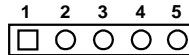
Pin	Signal
TABLE C-16: IR CONNECTOR (CN17)	
Pin	**Signal**
1	V_{cc}
2	FIR REceive
3	IR REceive
4	GND
5	FIR/IR Transmit

CRT display connector (CN18)

```
15 13 11  9  7  5  3  1
┌──────────────────────┐
│ ○  ○  ○  ○  ○  ○  ○  □ │
│ ○  ○  ○  ○  ○  ○  ○  ○ │
└──────────────────────┘
16 14 12 10  8  6  4  2
```
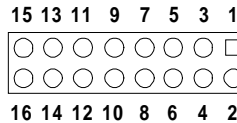
TABLE C-17: CRT DISPLAY CONNECTOR (CN18)

Pin	Signal	Pin	Signal
1	RED	9	VGA G
2	VGA DT	10	VGA H
3	GREEN	11	VGA G
4	VGA G	12	VGA V
5	BLUE	13	VGA G
6	VGA CK	14	N/C
7	N/C	15	VGA G
8	N/C	16	N/C

Video-out connector (CN19)

```
1 □ ○ 2
3 ○ ○ 4
5 ○ ○ 6
```
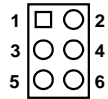
TABLE	C-19:	VIDEO-OUT	CONNECTOR	(CN19)

Pin	Signal
1	V Comp.
2	GND
3	V Luma.
4	GND
5	V Crma.
6	GND

Flat panel connector (CN20)

```
2  4                                              42 44
┌─────────────────────────────────────────────────┐
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
│ □ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────────────┘
1  3                                              41 43
```
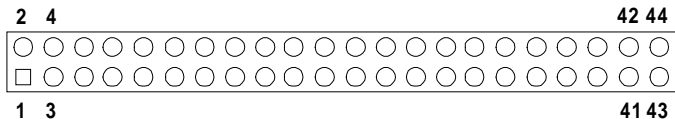
TABLE C-19: FLAT PANEL CONNECTOR (CN20)

Pin	Function	Pin	Function
1	+12 V	2	+12 V
3	GND	4	GND
5	3.3 V / 5 V (VDD SAFE)**	6	3.3 V / 5 V (VDD SAFE)**
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	GND	34	GND
35	SHFCLK	36	FLM
37	M	38	LPP
39	GND	40	ENABKL*
41	GND	42	ASHFCLK
43	ENAVDD*	44	3.3 V / 5 V (VDD SAFE)**

* high active

** 3.3 V / 5 V can be set via J16

Ext. flat panel connector (CN21)

2   4   ....   18 20

○ ○ ••• ○ ○
○ ○   ○ ○

1   3   ....   17 19

TABLE C-20: EXT. FLAT PANEL CONNECTOR (CN21)
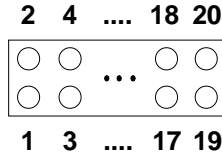
Pin	Signal	Pin	Signal
1	VDD SAFE	2	VCC
3	P24	4	P25
5	P26	6	P27
7	P28	8	P29
9	P30	10	P31
11	P32	12	P33
13	P34	14	P35
15	GND	16	GND

Peripheral power connector (CN22)

1 □
2 ○
3 ○
4 ○

TABLE C-21: PERIPHERAL POWER CONNECTOR (CN22)
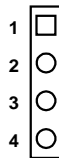
Pin	Function
1	GND
2	-5 V
3	GND
4	-12 V

COM port connector (CN23)

```
39 37 ....  3  1
┌─────────────────────┐
│  ○  ○        ○  ○    │
│         ● ● ●        │
│  ○  ○        ○  ○    │
└─────────────────────┘
40 38 ....  4  2
```

Pin	Signal	Pin	Signal
1	RLSD1	2	DSR1
3	RX1	4	RTS1
5	TX1	6	CTS1
7	DTR1	8	RI1
9	GND	10	NC
11	RLSD2	12	DSR2
13	RX2	14	RTS2
15	TX2	16	CTS2
17	DTR2	18	RI2
19	GND	20	NC
21	RLSD3	22	DSR3
23	RX3	24	RTS3
25	TX3	26	CTS3
27	DTR3	28	RI3
29	GND	30	NC
31	RLSD4	32	DSR4
33	RX4	34	RTS4
35	TX4	36	CTS4
37	DTR4	38	RI4
39	GND	40	NC
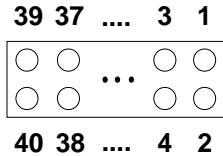
Table C-22: COM port connector (CN23)

Note: The cable of serial port (CN23) comes with four DSUB-9 male connectors. The pin assignments of each DSUB-9 connector are listed below for your reference

TABLE C-23: DSUB-9 CONNECTOR PIN ASSIGNMENTS

Pin	(RS-232) mode Signal	RS-422 mode Signal	RS-485 mode Signal
1	DCD	TX-	DATA-
2	RxD	TX+	DATA+
3	TxD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

Video-in (capture) connector (CN30)
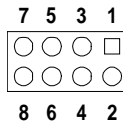
TABLE C-24: VIDEO-IN (CAPTURE) CONNECTOR (CN30)

Pin	Signal	Pin	Signal
1	AI22	5	AI12
2	GND	6	GND
3	GND	7	GND
4	AI21	8	AI11

CompactFlash card connector (CN501)

Table C-25: CompactFlash card connector (CN501)

Pin	Signal	Pin	Signal
1	GND	2	D03
3	D04	4	D05
5	D06	6	D07
7	-CS0	8	A10[2]
9	-ATA SEL	10	A09[2]
11	A08[2]	12	A07[2]
13	VCC	14	A06[2]
15	A05[2]	16	A04[2]
17	A03[2]	18	A02
19	A01	20	A00
21	D00	22	D01
23	D02	24	-IOCS16
25	-CD2	26	-CD1
27	D11[1]	28	D12[1]
29	D13[1]	30	D14[1]
31	D15[1]	32	-CS1[1]
33	-VS1	34	-IORD
35	-IOWR	36	-WE[3]
37	INTRQ	38	V_{CC}
39	-CSEL	40	-VS2
41	-RESER	42	IORDY
43	-INPACK	44	-REG[3]
45	-DASP	46	-PDIAG
47	D08[1]	48	D09[1]
49	D10	50	GND

ATX power feature connector (J1)

1   2   3

☐ ◯ ◯ ◯
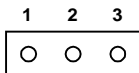
Table C-26: ATX power feature connector (J1)	
Pin	Signal
1	VPSON
2	N.C.
3	5VSB (stand by voltage)

ATX soft power switch connector (JP1)

1   2   3   4

☐ ◯ ◯ ◯
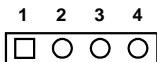
Table C-27: ATX soft power switch connector (JP1)	
Pin	Signal
1	SWITCH
2	GND
3	RESERVED
4	RESERVED

LVDS connector (JP3)

```
      2  4                    18 20
     ┌─────────────────────────┐
     │ ○ ○ ○ ○ ○ ○ ○ ○ ○ □ │
     │ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
     └─────────────────────────┘
      1  3                    17 19
```
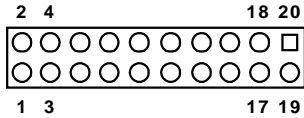
Table C-20: LVDS connector (JP3)

Pin	Signal	Pin	Signal
1	VDD	2	VDD
3	VDD	4	VDD
5	GND	6	GND
7	GND	8	GND
9	TX0-	10	TX0+
11	GND	12	TX1-
13	TX1+	14	GND
15	TX2-	16	TX2+
17	GND	18	TXCK-
19	TXCK+	20	GND

System Assignments

This appendix contains information of a detailed or specialized nature. It includes:

- System I/O ports

- 1st MB memory map

- DMA channel assignments

- Interrupt assignments

D.1 System I/O ports

Table D-1: System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Reserved (Game I/O)
278-27F	Parallel printer port 2 (LPT 3)
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* PNP audio I/O map range from 220 ~ 250H (16 bytes)
  MPU-401 select from 300 ~ 330H (2 bytes)

D.2   1st MB memory map

Table D-2: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
**DC00h - EFFFh	Unused
*CC00h - DBFFh	Ethernet ROM
C000h - CBFFh	Expansion ROM (for VGA BIOS)
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

* If Ethernet boot ROM is enabled

** E0000 - EFFFF is reserved for Pentium® POST

D.3   DMA channel assignments

Table D-3: DMA channel assignments

Channel	Function
0	Available
1	Available (audio)
2	Floppy disk (8-bit transfer)
3	Available (parallel port)
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

* Audio DMA select 1, 3, or 5

** Parallel port DMA select 1 or 3

D.4 Interrupt assignments

Table D-4: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	COM2
IRQ 4	COM1
IRQ 5	COM4
IRQ 6	FDD
IRQ 7	LPT1
IRQ 8	RTC
IRQ 9	Reserved (audio)
IRQ 10	COM3
IRQ 11	Reserved for watchdog timer
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Primary IDE
IRQ 15	Secondary IDE for CFC

* Ethernet interface IRQ select: 9, 11, 15
* PNP audio IRQ select: 9, 11, 15
* PNP USB IRQ select: 9, 11, 15

Note1: COM3 IRQ default setting is IRQ5. COM4 IRQ default setting is IRQ10 for BIOS V1.10

Note2: COM3 IRQ default setting is IRQ10. COM4 IRQ default setting is IRQ5 for BIOS V1.20 or higher.

Optional Extras

E.1 PCM-10586-3 cable kit for PCM-5864/E/L

The PCM-5864/E/L requires several cables for normal operation. You can make them yourself or purchase an optional cable kit assembly, which includes the following:

PCM-10586-3 cable kit for PCM-5864/E/L			
Part No.	Cable Description	PCM-5864/E/L connector	Terminating connector
1701440350	2.5" and 1.8" IDE, IDC 44P / IDC 44P / IDC 44P	CN12	44-pin, 2 mm, female IDC (350 mm)
1701440500	3.5" IDE (40P), IDC 40P / IDC 40P / Housing 44P	CN12	40-pin, 2,54 mm, female IDC (500 mm)
1701340700 and 5.25" (34p)	Dual floppy 3.5"	CN10	34-pin dual floppy
1701260301	Parallel port	CN14	25-pin female DSUB
1701100200	Network, 10Base-T	CN3	RJ45 8-pin modular jack
1701150150	VGA CRT	CN18	15-pin DSUB
1700060200	Keyboard & PS/2 mouse	CN9	5-pin circular DIN, 6-pin circular DIN
1703040300	Peripheral power (-5 V & -12 V)	CN22	(4-conductor) (300 mm)
1701440303	LCD cable	CN20	44-pin, 2 mm, pitch 300 mm
1701160302	Ext. LCD cable	CN21	16-pin, 2 mm, pitch 30 mm
1701080300	Front panel	CN15	(8-conductor pigtail)
1700400000	COM 1 ~ 4 cable	CN23	40-pin, 9-pin, male DSUB x 4
1700160000	Audio cable	CN4	Ø 3.5 mm, female telephone jack x 5
1700080301	Video in cable	CN30	RCA (AV) jack, 8-pin female
1700060300	Video out cable	CN19	RCA (AV) jack, 6-pin female

E.2 Optional LCD cables for 9.4" MONO, 10.4" TFT LCD panel (CN20)

Part no.	Cable description	Panel type
1700090501	Cable DF9 (2 mm) 50 cm	Toshiba LTM10C042
1700090403	Cable DF9 (2 mm) 40 cm	Sharp LM64183P Sharp LM64P89
1703440151	Wire 30P/44P 15 cm	Toshiba LTM12C275A

E.3 Optional USB cable (CN16)

Optional USB cable (2-channel)   Part no: 1700080170

E.4 Optional IrdA adapter (CN17)

Optional Infrared adapter (115 Kbps) Part no: 9689000042

E.5 Optional LVDS cables (JP3)

Optional low voltage differential signaling cables

1 meter   Part no: 1700261001

2 meters   Part no: 1700262001

3 meters   Part no: 1700263002
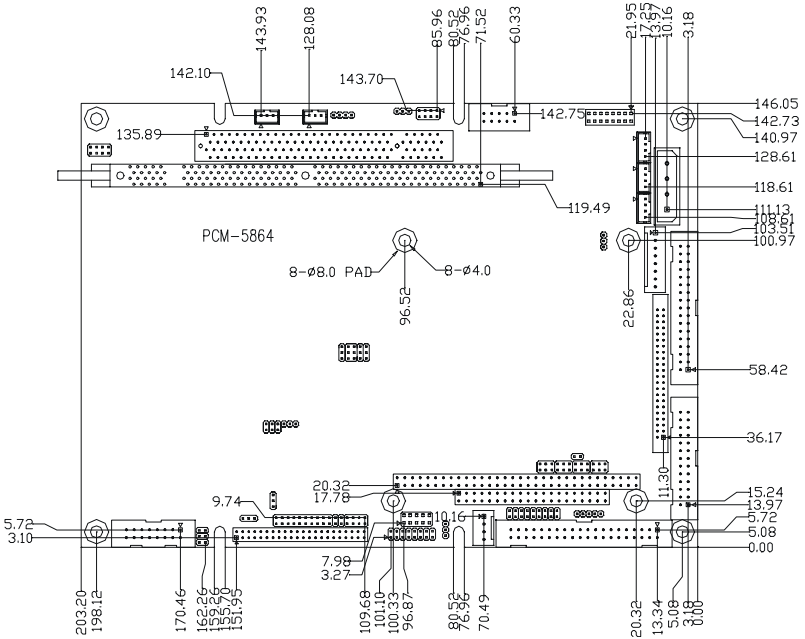
5 meters   Part no: 1700265003

8 meters   Part no: 1700268000

Mechanical Drawings

F.1 Component side

F.2 Solder side