PCM-3341 Series

**STPC Atlas 133MHz CPU Module
with VGA/LAN/SSD/FDD**

Users Manual

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This manual is for the PCM-3341.

Part No. 2006334110

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Packing List

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

- PCM-3341 SBC
- 1 Start-up manual
- CD-ROM or Disks for utility, drivers, and manual (in PDF format)
- 1 KB/Mouse Y-Cable(2 PS/2)   p/n: 1700060202
- 1 VGA cable   p/n: 1701160150
- 1 Ethernet RJ-45 conversion cable   p/n: 1701100202
- 1 IDE (HDD) cable   p/n: 1701440504
- 4 COM port cables   p/n: 1700100181
- 1 LPT port cable   p/n: 1700260250

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

Contents

General Information

This chapter gives background information on the PCM-3341.

Sections include:

- Introduction
- Features
- Specifications
- Board dimensions

Chapter 1 General Information

1.1 Introduction

The PCM-3341 is the ultimate cost-effective PC/104 solution for limited-space applications. It offers all the functions of an AT-compatible industrial computer on a single board, and occupies less space than a 3¾" hard drive. The PCM-3341 comes with an embedded STPC Atlas 133MHz processor on board. For maximum performance, the PCM-3341 also supports on board memory that can accept up to 32/64 MB memory. Onboard features include a socket for a CompactFlash™ Card, 100Base-T Ethernet, Enhanced IDE interface, one parallel port, four serial ports (RS-232), a keyboard, and a PS/2 mouse interface. A SVGA LCD display controller allows CRT resolutions up to 1024 x 768 @ 16bpp colors, LCD resolutions up to 1024 x 768 @ 16bpp colors.

If you need any additional functions, the PCM-3341 has a PC/104 connector for future upgrades.

1.2 Features

- STMicroelectronics STPC Atlas 486 processor
- Onboard 32 MB memory(64MB memory optional)
- Supports 10/100 based-T Ethernet
- Supports 18-bit TFT LCD and CRT (18-bit TFT need to ask ST FAE support and co-work with STPC FAE, the min request is specify BIOS for specify LCD panel)
- On-borad 4 serial ports
- On-board 1 LPT and 2 USB 1.1 port
- PC/104 expansion connector
- Socket for Compact Flash(CFC)

1.3 Specifications

1.3.1 Standard SBC functions
- **CPU:** STMicroelectronics, STPC Atlas 133MHz CPU Module
- **BIOS:** Award 256 KB Flash BIOS
- **DRAM:** On board 32MB SDRAM (64MB optional)
- **SSD:** Supports CompactFlash™ card Type I(share 2nd channel)
- **Network:** RTL 8100BL chipset
- **Watchdog:** 63 scale, hardware reset ane IRQ selection
- **IDE interface:** One Enhanced IDE

PC/104 expansion: 104-pin 16-bit PC/104 module connectors

1.3.2 Display

- **Chipset:** STPC Atlas support 18-bit TFT LCD Panel

- **Display memory:** Shared Memory Architecture, up to 4MB using system memory

- **Display resolution:** CRT Disaplay Code: up to 1280 x 1024 at 75Hz

    LCD Display Code: up to 1024 x 768 and up to 18-bit TFT

1.3.3 Ethernet function

- **Chipset:** RTL 8100BL

- **Ethernet interface:** PCI 10/100 Mbps Ethernet. IEEE 802.3u protocol compatible

1.3.4 Solid state disk

- Supports CompactFlash™ cards

1.3.5 Mechanical and environmental

- **Dimension:**(L x W)96 x 90 (3.8" x 3.5")

- **Weight:** 0.85kg (weight of total package)

- **Power Supply Voltage:** 4-pin power connector, +5V power

- **Power Requirement:** (STPC ATLAS, 32M SDRAM)

    Average: +5V@1.6A

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

- **Operating Humdity:** 0%~90% relative humdity, non-condensing

1.4 Board Dimensions
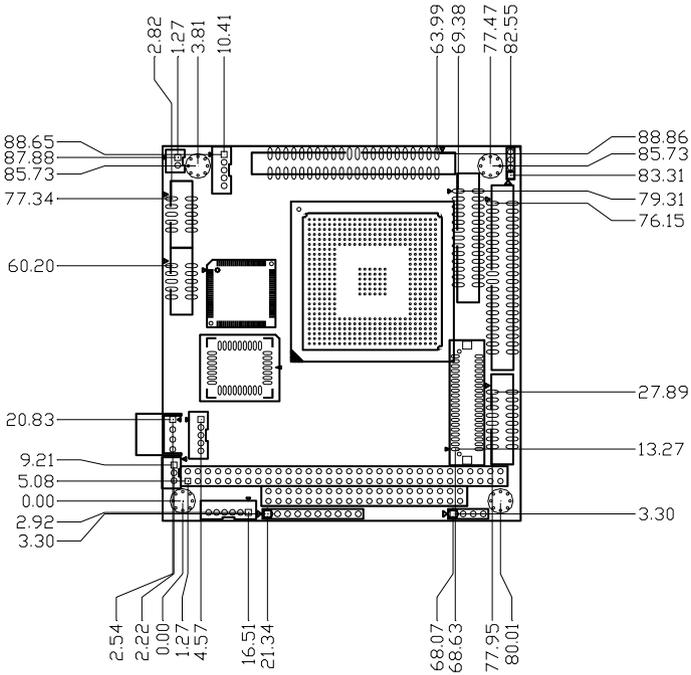
Figure 1.1: PCM-3341 Dimensions

Introduction

This chapter tells how to set up the PCM-3341 hardware. It includes instructions on setting jumpers and connecting peripherals, switches and indicators. Make sure you read all the safety precautions before you begin the installation procedure.

Chapter 2 Introduction

2.1 Connectors

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

The tables below shows the function of each of the board's connectors:.

Table 2.1: Connectors

Label	Function
CN1	System reset connector
CN2	Primary IDE 44-pin connector
CN3	RS422/485 connector
CN4	IR connector
CN5	Power and Hdisk LED connector
CN6	LAN connector
CN7	Print port
CN8	4 COM port connector
CN9	USB connector
CN10	PC104 connector
CN11	GPIO connector
CN12	TFT panel connector
CN13	VGA connector
CN14	Mini Power Input connector
CN15	Panel Back-light connector
CN16	External -5V, -12V power input
CN 17	KB/MS connector
CN18	CompactFlash Card connector
CN19	Floppy

2.2 Locating connectors

Warning: *Make sure you use the correct component side.*
Improper installation can cause serious damage
to your hardware!
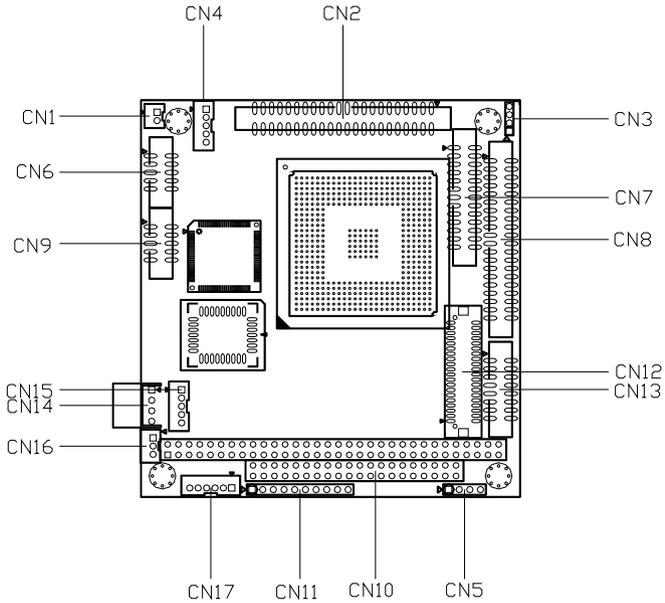
Figure 2.1: Locating connectors (component side)
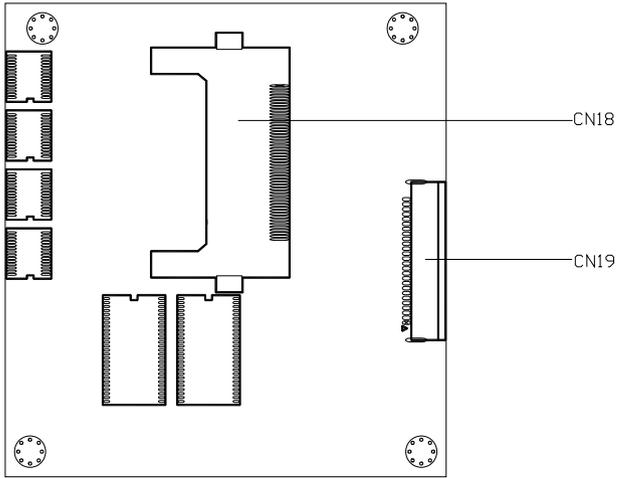
Figure 2.2: Locating connectors (solder side)

2.3 Installation Procedures

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

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

2.4 Ethernet connector (CN6)

The PCM-3341 is equipped with a high performance 32-bit PCI-bus Fast Ethernet interface which is fully compliant with IEEE 802.3u 100/ 10Base-T specifications. 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 5 for detailed information.)

2.4.1 Ethernet connector (CN6)
10/100Base-T connects to the PCM-3341 via an adapter cable to the 10-pin 2 mm connector.

2.5 TFT panel connector (CN12)

CN12 is a 40-pin dual-in-line header and is used to connect an LCD display to the PCM-3341.

2.6 Serial ports (CN8)

The PCM-3341offers four serial ports, three RS-232. These ports allow you to connect to any serial device (a mouse, printers, etc.) or communication network.

2.6.1 COM1,COM3,COM4 RS-232 port (CN8)

The serial port connector's consist of a 10-pin dual-in-line pin head housing.

2.6.2 COM2 RS-232/422/485 port (CN3)

The secondary port, located above COM2, consists of two 10-pin, dual-in-line pin head housing.

The IRQ and address range for these ports are fixed. However, if you wish to disable the port or change these parameters later, you can do this in the system BIOS setup. The table below shows the settings for the PCM-3341 board's ports.

Table 2.2: Serial port default settings

Port	Address	Interrupt	Default
COM1	3E8, 3F8	IRQ4	3F8
COM2	2E8, 2F8	IRQ3	2F8
COM3	270,277	IRQ5	270
COM4	2F0,2F7	IRQ10	2F0

2.7 Primary IDE 44-pin connector (CN2)

The built-in Enhanced IDE (Integrated Device Electronics) controller supports up to two IDE devices, including CD-ROM drives, tape backup drives, a large hard disk drive and other IDE devices.

2.7.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion. It requires one or two cables, depending on the drive size. All necessary cables are included in your PCM-3341 package. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives need 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 CN2. 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. 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 PC/104 connector (CN10)

Refer to Appendix B in this manual.

2.9 Parallel port connector (CN12)

Normally, the parallel port is used to connect the card to a printer. The PCM-3341 includes a multi-mode (ECP/EPP/SPP) parallel port. It is accessed via CN12, a 26-pin flat-cable connector.

You will need an adapter cable if you use a traditional DB-25 connector. The adpater cable should have a 26-pin connector on one end and a DB-25 connector on the other.

The parallel port interrupt channel is designated as IRQ7.

2.10 Backlight connector (CN3)

The LCD inverter is connected to CN3 via a 4-pin connector to provide +12 V power to the LCD display.

2.11 VGA connector (CN13)

The PCM-3341 board's SVGA interface can facilitate con-ventional CRT displays. The card has a connector to support CRT VGA monitors.

2.11.1 CRT display connector (CN13)

CN13 is a 16-pin, pin head housing connector. Please use the VGA cable (provided with your kit) to convert the pin head housing connector into a connector for conventional CRT displays.

Detailed information on pin assignments for CRT display connector CN13 is given in Appendix C.

2.12 Reset button connector (CN13)

If you install a reset button, it should be a single pole switch rated at 5 V. Momentarily pressing the button will activate a reset. For reset button pin assignments, please see Appendix C.

2.13 Panel Back-light power (CN15)

This supplies main power to the PCM-3341 (+5 V), and also 12 V power to the backlight connector.

2.14 PS/MS connector (CN17)

The PCM-3341 board provides a pin head keyboard connector, which supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. If the keyboard is not present, the standard PC/AT BIOS will report an error or failure during the power-on self test (POST) after resetting the PC. The PCM-3341 board's BIOS standard setup menu allows you to select "Absent/Present" for your keyboard under the Advanced CMOS Setup section. This allows non-keyboard operation in embedded system applications without the system halting during the POST. When "PS/2 mouse support" is enabled, your PS/2 mouse is automatically detected by the system.

2.15 5 V connector (CN16)

The PCM-3341 is equipped with a low power dissipation STPC. With only a heat sink, the PCM-3341 will operate normally at temperatures up to 60× C. At temperatures above 60× C, a fan is recommended. A CPU fan power supply connector is provided (+5 V input) in addition to the CPU power supply.

This provides power supply to the optional CPU cooling fan. This connector is only available when +5 V power is supplied to the board.

Warning: *Before making the connection, make sure that the voltage is absolutely correct and matched with the correct connector.*

2.16 Floppy (CN19)

You can attach one 3.5" floppy drive to the the PCM-3341's onboard controller. This is useful for notebooks, for example.

A daisy-chain drive cable converter (part no. 9681000044) is required for a single floppy system. A 34-pin flat-cable connector is fitted on one end of the cable converter, while the other end has one floppy disk drive connector. It consists of a 34-pin flat-cable connector (for the 3¾î drives).

2.16.1 Connecting the floppy drive

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

2. Attach the appropriate conector at the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set at the other end (after the twist in the cable) connects to the A: drive.

When connecting a 3¾" floppy drive, you may have some difficulties in determining which pin is number one. Look for a number on the circuit board indicating pin number one. In addition, you should check if the connector on the floppy drive has an extra slot. If the slot is up, pin number one should be on the right. Please refer to any documentation that came with the drive for more information.

If your cable needs to be custom made, you can find the pin assignments for the board's connector in Appendix C.

2.17 LCD-B connector (CN11)

The PCM-3341 supports 36-bit LCD that must be connected to both CN7 (40-pin) and CN11 (20-pin).

The pin assignments for both CN7 and CN11 can be found in Appendix C.

2.18 CompactFlash™ socket (CN22)

The PCM-3341 is equipped with a CompactFlash™ disk socket on the solder side, which supports the IDE interface CompactFlash disk card. The socket itself is specially designed to prevent any incorrect installation of the CompactFlash disk card. When installing or removing the CompactFlash disk card, please make sure that the system power is off.

The CompactFlash disk card is defaulted as the E disk drive in your PC system. To fit the Compact flash into the PCM-3341, simply plug it into the designated connector. It will only fit when the red triangle on the CFC is aligned with the triangle on the connector. The card will not fit any other way (do NOT use excessive force).

2.19 I2C BUS (CN4)

PCM-3341 provides a 2-pin I2C connector.

2.20 HDD LED connector (CN15)

PCM-3341 provides a 2-pin LED connector.

2.21 SIR connector (CN20)

PCM-3341 provides a 5-pin SIR connector.

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 software configuration

Chapter 3 Software Configuration

3.1 Introduction

The PCM-3341 system BIOS and custom drivers are located in a 256 KB, 32-pin (JEDEC spec.) Flash ROM device. A single Flash chip holds the system BIOS and VGA BIOS. 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 ìpanel typeî from the ìintegrated peripheralsî menu in CMOS setup.

Warning!   *Do not remove the plastic rear cover until you have verified that no power is flowing within the panel PC. Power must be switched off and the power cord must be unplugged. Every time you service the panel PC, you should be aware of this.*

3.2 Connections for four standard LCDs (PCM-3341)

Note: *Standard BIOS supports TFT LCD panels.*

3.2.1 Toshiba LTM10C209A(640x480 TFT color LCD)

Table 3.1: Connections to Toshiba LTM10C209A

LTM10C209A		PCM-3341 CN12	
Pin	Name	Pin	Name
1	GND	3	GND
2	NCLK	35	SHFCLK
3	GND	4	GND
4	R0	9	R0
5	R1	12	R1
6	R2	15	R2
7	GND	33	GND
8	R3	18	R3

9	R4	21	R4
10	R5	24	R5
11	GND	33	GND
12	G0	10	G0
13	G1	13	G1
14	G2	16	G2
15	GND	34	GND
16	G3	19	G3
17	G4	22	G4
18	G5	25	G5
19	GND	4	GND
20	ENAB	37	M/(DE)
21	GND	3	GND
22	B0	11	B0
23	B1	14	B1
24	B2	17	B2
25	GND	8	GND
26	B3	20	B3
27	B4	23	B4
28	B5	26	B5
29	GND	4	GND
30	VDD 5V	1	LCD VDD +5V
31, 32	VDD 5V	2	LCD VDD +5V

3.2.2 Connections to Toshiba LTM12C275C (800 x 600 TFT color LCD)

Connections to Toshiba LTM12C275C			
LTM12C275C		PCM-3341 CN12	
Pin	Name	Pin	Name
1	GND	3	GND
2	NCLK	35	SHFCLK
3	NC	X	
4	NC	X	
5	GND	4	GND

6	R0	9	R0
7	R1	12	R1
8	R2	15	R2
9	R3	18	R3
10	R4	21	R4
11	R5	24	R5
12	GND	33	GND
13	G0	10	G0
14	G1	13	G1
15	G2	16	G2
16	G3	19	G3
17	G4	22	G4
18	G5	25	G5
19	GND	34	GND
20	B0	11	B0
21	B1	14	B1
22	B2	17	B2
23	B3	20	B3
24	B4	23	B4
25	B5	26	B5
26	ENAB	37	M/(DE)
27	GND	34	GND
28	VDD 5V	1	LCD VDD(+5V)
29	VDD 5V	2	LCD VDD(+5V)
30	GND	3	GND

3.3 Ethernet software configuration

The PCM-3341 ís onboard 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-3341 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 1:   *For Ethernet installation, please see Chapter 6.*

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Chapter 4 Award BIOS Setup

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. The system can usually continue the bootup sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

> press <F1> to RESUME

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

4.1.1 System configuration verification

These routines check the current system configuration against the values stored in the boardís 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-3341 ís CMOS memory has an integral lithium battery backup. The battery backup should last at least five years in normal service. When it finally runs down, you will need to replace the complete unit.

4.1.2 Further CMOS Data Safeguards

The PCM-3341 uses 2 additional functions that help ensure the integrity of the CMOS memory data. A Batteryless CMOS bootup function as well as automatic CMOS data refresh, are both utilized. Both these functions rely on utilizing free space in the BIOS Flash memory. Also, since the CMOS memory data and BIOS Flash saved CMOS memory data are stored simultaneously, you are always guaranteed an exact duplicate of the original CMOS memory data.

CMOS Data Backup

Because CMOS memory retention and integrity is especially critical for normal startup, original CMOS memory values stored in the BIOS Flash memory allow system boots to proceed normally. This is especially critical in unmanned applications where system monitoring is not convenient. This data redundancy (backup) combined with error detecting capability make for more stable and reliable systems.

Batteryless Bootup

Since the BIOS Flash memory does not need a battery to retain its contents (unlike the CMOS's lithium memory backup), and usually has extra capacity, CMOS memory values are stored here. So, in the event of CMOS backup battery failure and CMOS configuration information being erased, when the start-up routine encounters a CMOS memory error during bootup, CMOS configuration memory is automatically transferred out of the BIOS Flash memory back into CMOS memory. Hence, CMOS configuration information is replaced with the original memory data and system bootup can then proceed normally. This would reset the RTC, which is only a minor concern.

4.2 Award BIOS setup

Awardís 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.

Please note that all PCI functions are not supported in this product.

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

4.2.2 Standard CMOS setup

When you choose the Standard CMOS Setup option from the Award BIOS Setup Utility 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, on-line help information is displayed at the bottom left of the menu screen.

Figure 4.1: BIOS setup initial screen

4.2.3 Advanced CMOS setup

By choosing the Advanced CMOS Setup option from the Award BIOS Setup Utility menu, the screen below is displayed.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Standard CMOS Features

     Date (mm:dd:yy)          Thu, Jun 19 2003        Item Help
     Time (hh:mm:ss)            23 : 39 : 48
                                                  Menu Level    ▶
   ▶ IDE Primary Master
   ▶ IDE Primary Slave                            Change the day, month,
   ▶ IDE Secondary Master                         year and century
   ▶ IDE Secondary Slave       [ None]

     Drive A                   [1.44M, 3.5 in.]
     Drive B                   [None]

     Video                     [EGA/VGA]
     Halt On                   [All , But Keyboard]

     Base Memory                    640K
     Extended Memory               65472K
     Total Memory                   1024K


  ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value   F10:Save  ESC:Exit  F1:General Help
              F5:Previous Values               F7: Optimized Defaults
```

Figure 4.2: Standard CMOS setup screen

4.2.4 Advanced chipset setup

By choosing the Advanced Chipset Setup option from the Award BIOS Setup Utility menu, the screen below is displayed. This sample screen contains the manufacturerís default values for the PCM-3341.

```
             Phoenix - AwardBIOS CMOS Setup Utility
                    Advanced Chipset Features

 Auto Configuration        [Disabled]              Item Help
 Memory Hole (15M -16M)     [Disabled]
 ISA Clock                  [14.3MHz/2]         Menu Level    ▶
 SDRAM CAS Latency Time     [2]
 SDRAM RAS Precharge Time   [2]
 SDRAM RAS to CAS Delay     [2]
 SDRAM Cycle Time Tras/Trc  [5/7]
 Keep RAS Active            [NO]
 Video Memory Size          [1.0 M]
 Graphics Clock             [45MHZ]
 CPU Internal Cache         [Enabled]




 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
              F5:Previous Values           F7: Optimized Defaults
```

Figure 4.3: Advanced chipset setup

4.2.5 Power management setup

By choosing the Power Management Setup option from the Award BIOS Setup Utility menu, the screen below is displayed.

```
         Phoenix - AwardBIOS CMOS Setup Utility
                 Integrated Peripherals

 On-Chip Local Bus IDE     [Enabled]    ▲        Item Help
 IDE Buffer for DOS & Win   [Enabled]
 The 2nd channel IDE        [Enabled]         Menu Level   ▶
 IDE Primary Master PIO     [Auto]
 IDE Primary Slave  PIO     [Auto]
 IDE Secondary Master PIO   [Auto]
 IDE Secondary Slave  PIO   [Auto]
 IDE HDD Block Mode         [Enabled]
 Onboard Serial Port 1      [3F8/IRQ4]
 Onboard Serial Port 2      [2F8/IRQ3]
 UART 2 Type
 RS485 Flow Control         [Enabled]
 Onboard Parallel Port
 Parallel Port Mode         [SPP]
 Onboard Serial Port 3      [3E8]
 Serial Port 3 Use IRQ      [IRQ10]
 Onboard Serial Port 4      [2E8]
 Serial Port 4 Use IRQ      [IRQ5]
 IR Controller                        ▼
 ───────────────────────────────────────────────────────
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
            F5:Previous Values              F7: Optimized Defaults
```

Figure 4.4: Power management setup

4.2.6 PCI / Plug and Play configuration

By choosing the PCI / Plug and Play Setup option from the Award BIOS Setup Utility menu, the screen below is displayed.
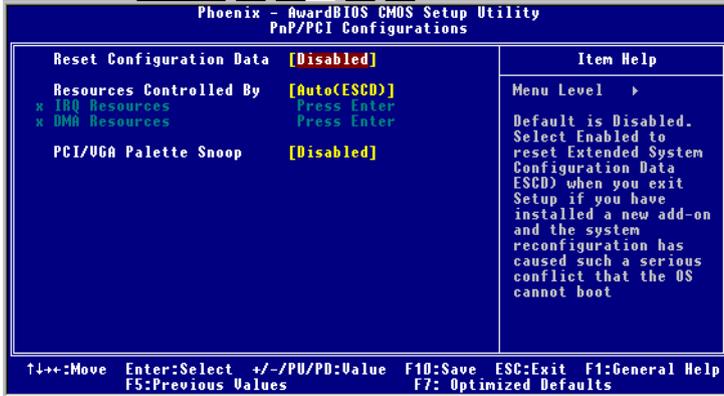
Figure 4.5: Plug and Play Configuration

4.2.7 Peripheral setup

By choosing the Peripheral Setup option from the Award BIOS Setup Utility menu, the screen below is displayed. This sample screen contains the manufacturerís default values for the PCM-3341.
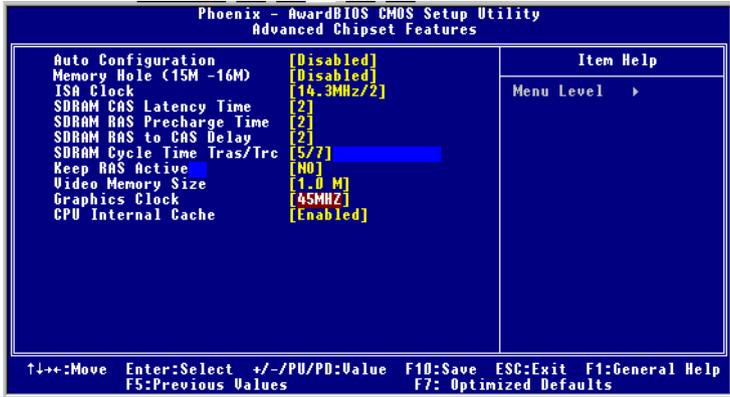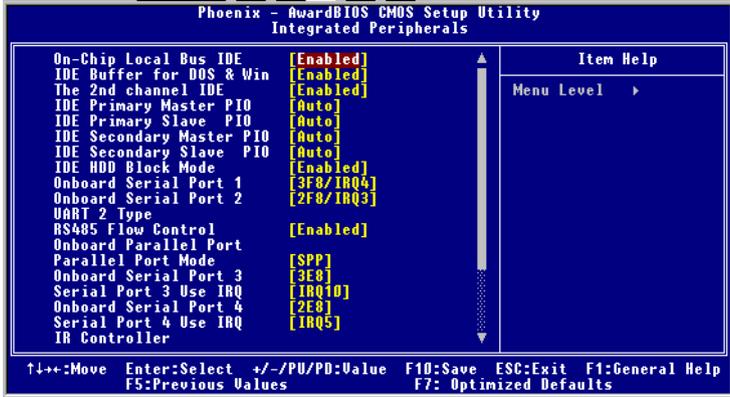
```
         Phoenix - AwardBIOS CMOS Setup Utility
                 Integrated Peripherals
  On-Chip Local Bus IDE      [Enabled]    ▲        Item Help
  IDE Buffer for DOS & Win   [Enabled]
  The 2nd channel IDE        [Enabled]          Menu Level    ▶
  IDE Primary Master PIO     [Auto]
  IDE Primary Slave  PIO     [Auto]
  IDE Secondary Master PIO   [Auto]
  IDE Secondary Slave  PIO   [Auto]
  IDE HDD Block Mode         [Enabled]
  Onboard Serial Port 1      [3F8/IRQ4]
  Onboard Serial Port 2      [2F8/IRQ3]
  UART 2 Type
  RS485 Flow Control         [Enabled]
  Onboard Parallel Port
  Parallel Port Mode         [SPP]
  Onboard Serial Port 3      [3E8]
  Serial Port 3 Use IRQ      [IRQ10]
  Onboard Serial Port 4      [2E8]
  Serial Port 4 Use IRQ      [IRQ5]
  IR Controller                        ▼
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
            F5:Previous Values              F7: Optimized Defaults
```

Figure 4.6: Peripheral setup

4.2.8 Load BIOS defaults

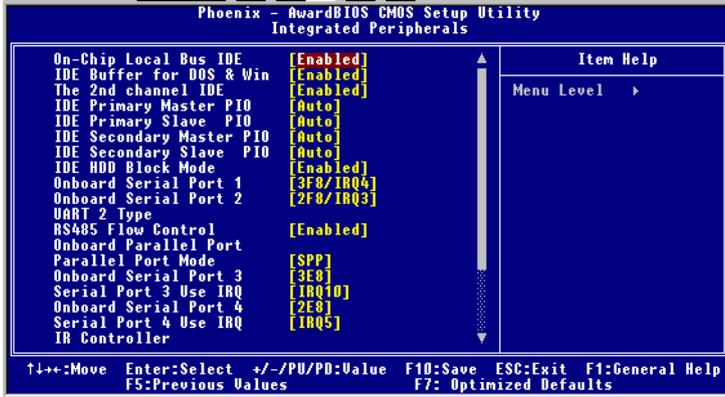Auto Configuration loads the default system values directly from ROM. If the stored record created by the setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-3341 on. Two settings can be used here: Fail-Safe or Optimized.
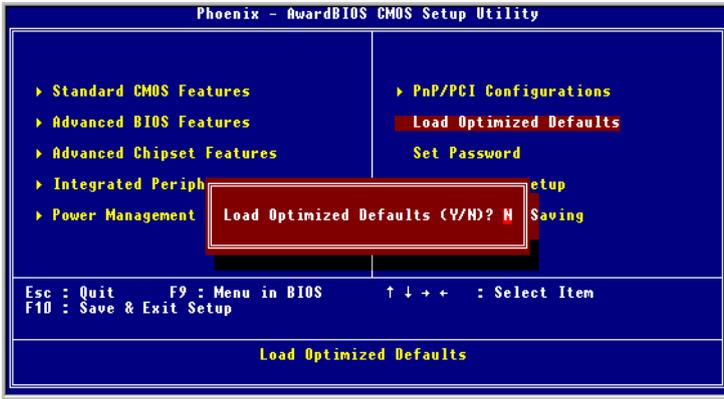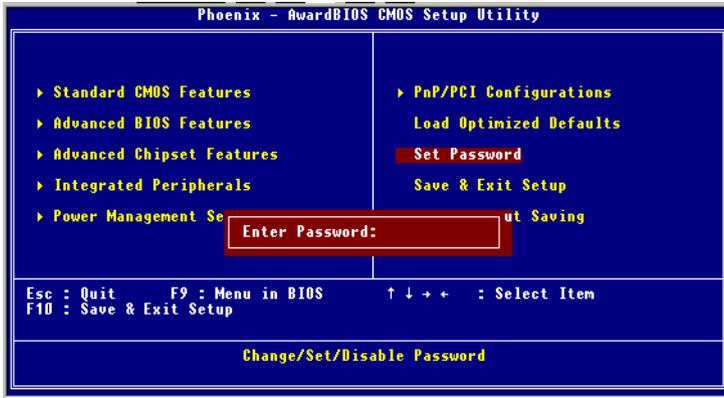

Figure 4.7: Load BIOS Defaults

4.2.9 Change password

To change the password, choose the Set Password option form the Award Bios setup utility 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 message:

```
                  Phoenix - AwardBIOS CMOS Setup Utility

    ▶ Standard CMOS Features          ▶ PnP/PCI Configurations

    ▶ Advanced BIOS Features            Load Optimized Defaults

    ▶ Advanced Chipset Features         Set Password

    ▶ Integrated Peripherals            Save & Exit Setup

    ▶ Power Management Se┌──────────────────────────┐ut Saving
                         │  Enter Password:         │
                         └──────────────────────────┘
    Esc : Quit      F9 : Menu in BIOS        ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup

                      Change/Set/Disable Password
```

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:

Confirm Password:

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 be at most eight (8) characters long.

Remember: To enable this feature, you must first select either Setup or System in Change User Password.

4.2.10 Save settings and exit

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipsetís 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.
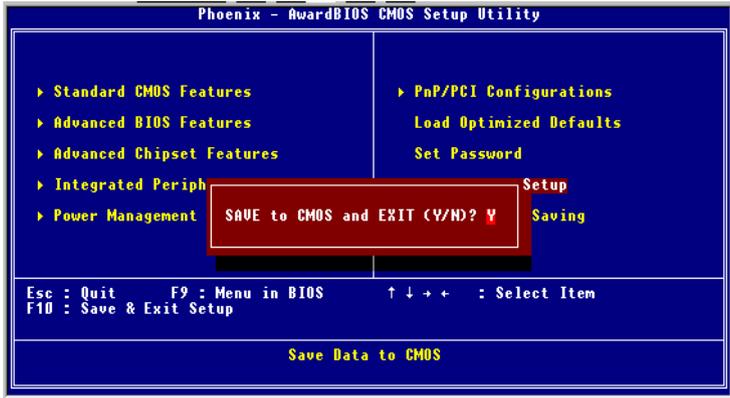

Figure 4.8: Save and exit settings

4.2.11 Exit without saving

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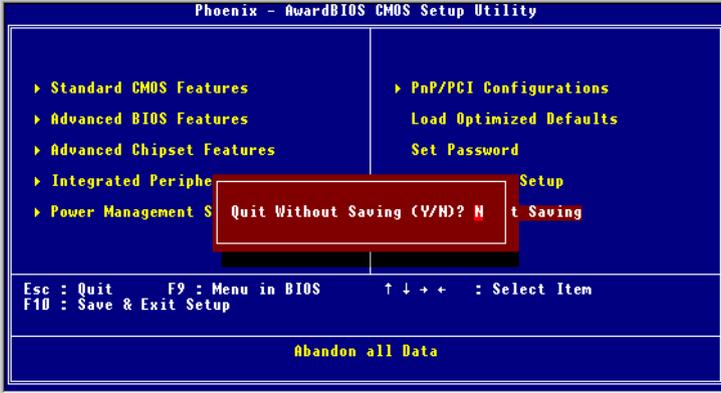

Figure 4.9: Exit without saving

VGA Setup

- Introduction
- Installation of VGA driver
- - for Windows 3.1
- - for Windows 95/98

Further information

Chapter 5 VGA Setup

5.1 Introduction

The PCM-3341 has an on-board VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PCM-3341 uses a Atlas STPC for its VGA controller, which supports conventional analog CRT monitors. 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.

5.1.2 Display memory

PCM-3341 has on board 32/64 memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 64 K colors.

5.2 Installation of VGA driver

Complete the following steps to install the VGA driver. Follow those procedures in the flow chart that apply to the operating system which you are using within your PCM-3341.

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 1:   *The CD-ROM drive is designated as "U" throughout this chapter.*

Note 2:   *<Enter> means pressing the "Enter" key on the keyboard.*

5.2.1 Installation for Windows 95/98

1. a. Select "Start", "Settings", "Control Panel", "Display", "Settings".
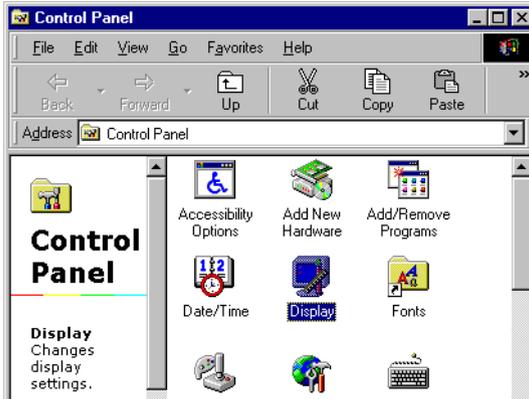
b. Press "Advanced Properties".
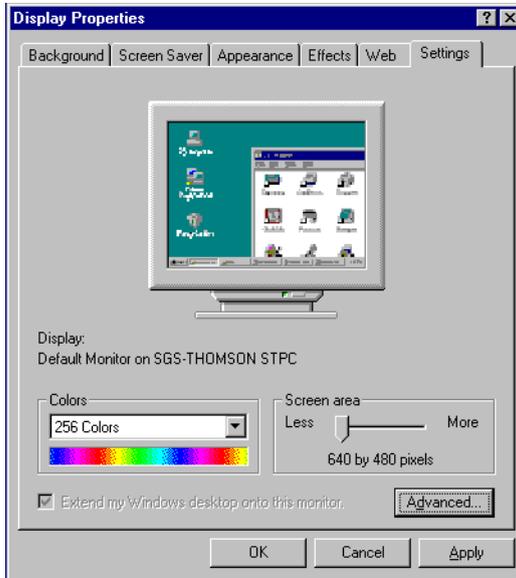
2. a. Choose the "Adapter" label.
    b. Press the "Change..." button.

c. Click "OK"

3. a. Update Device Driver Wizard.
    b. Click "Next".

c. Select "Display a list of all the drivers in a specific location, so you can select the driver you want" in display.

d. Click "Next".

e. Select the manufacturer and model of your hardware device.

f. If you have a disk that contains the updated driver, click "Have Disk".

g. To install the updates driver, click "Finish".
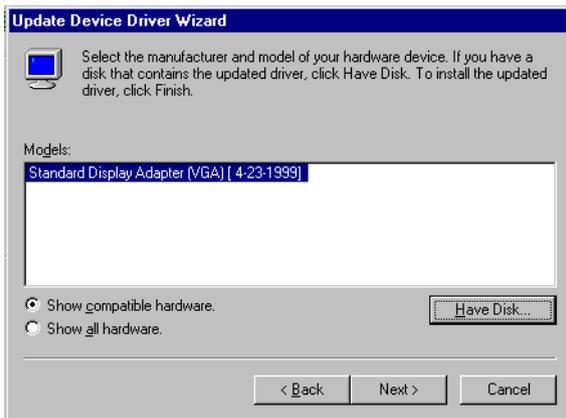
4.   a. Insert the utility disc into the CD-ROM drive, then click "OK".

b. Folders: U:\CD_CAT3\PC104\3341\Vga\Win95&98

c. Press "OK".
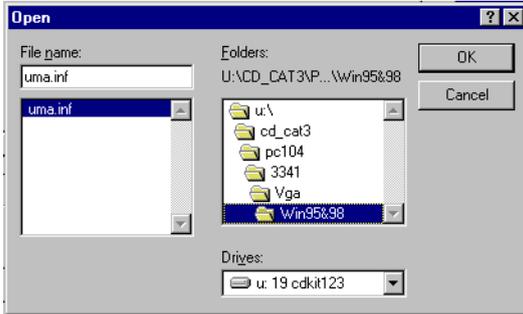
d. Click "OK".
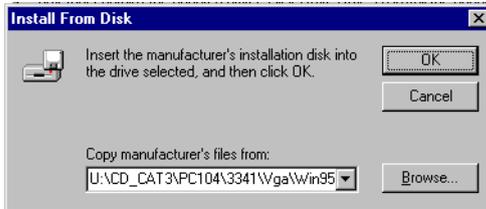
5.   a. Select the highlighted item.

b. Click the "OK" button.
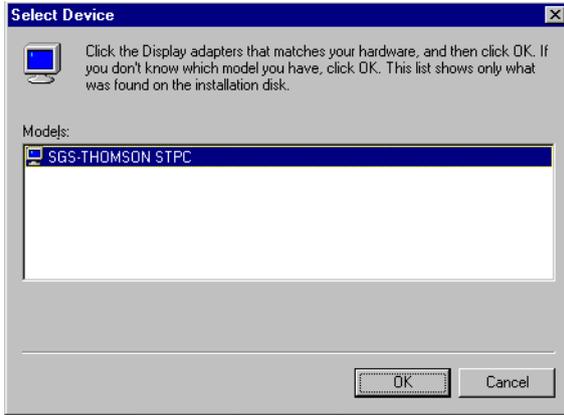
6. a. Update Device Drive Wizard.
    b. Click the "Next" button.

7.   Press "Finish".

8.   Click "Yes" to restart your computer.
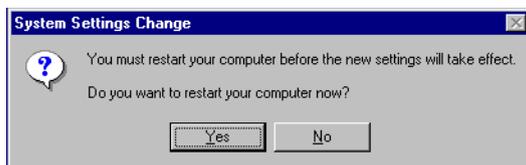
PCI Bus Ethernet Interface (PCM-3341)

This chapter provides information on Ethernet configuration.

Sections include:

- Introduction
- Installation of Ethernet driver
  - for Windows 95/98
- Further information

Chapter 6 PCI Bus Ethernet Interface

6.1 Introduction

The PCM-3341 is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3u 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 RSET8139.exe program included on the utility disk.

The Ethernet port provides a 10-pin 2 mm connector on board.

6.2 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-3341, 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 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.*

### 6.2.1 Installation for Windows 95/98/NT

1.   a. Insert the utility disc into the CD-ROM drive.
       b. Folders:

           U:\CD_CAT3\LAN\3341\Vga\Win95&98

       c.Select on "Setup".
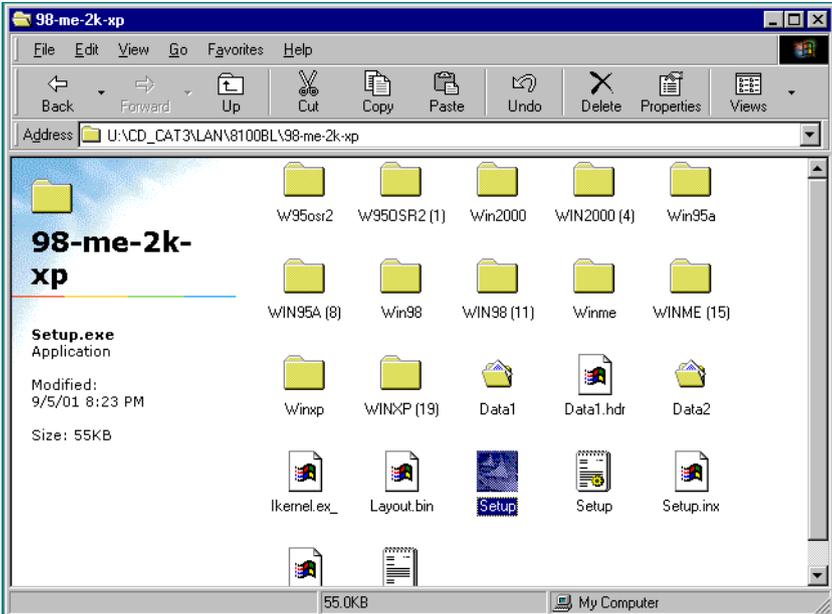
2. a. Click "Next" and prepare to install network functions.
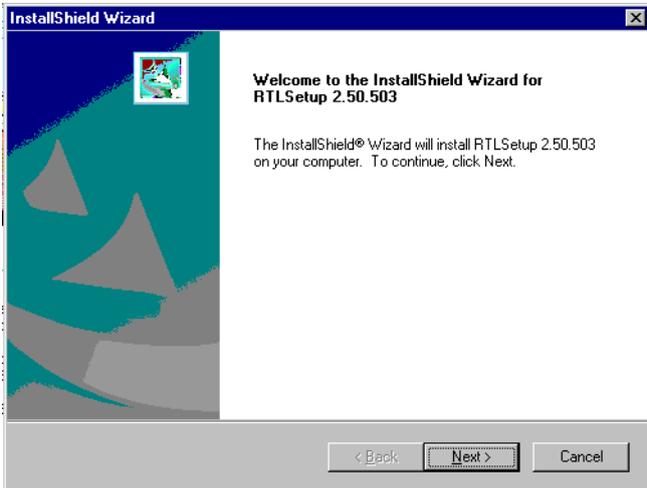
3.   a. Click "Finish"to finish the installing.
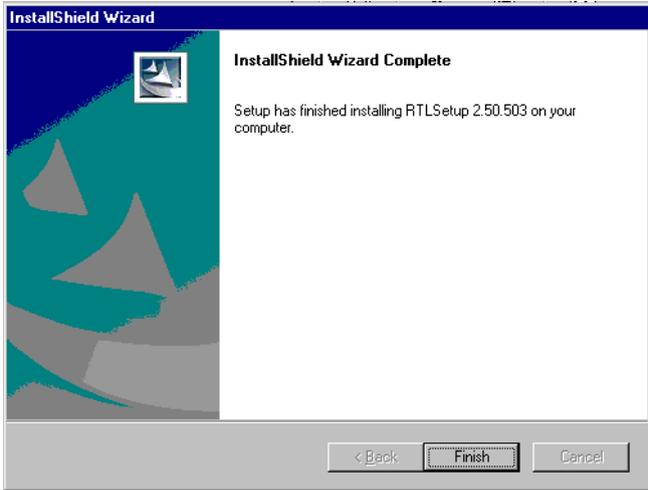
4.   a. choose "Yes, I want to restart my computer now".

6.3 Further information

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

EMAC website: **www.emacinc.com**

Keyboard and Mouse Driver for Win95/98

Chapter 7 Keyboard and Mouse Driver for Win95/98

7.1 Overview

The document provides installation instructions for a replacement driver which has been introduced to compensate for known bugs in Keyboard and Mouse Controller.

7.2 Keyboard and mouse Installation for Windows 98

1. a. Select "Start", "Settings", "Control Panel"
    b. Double click "Systerm"
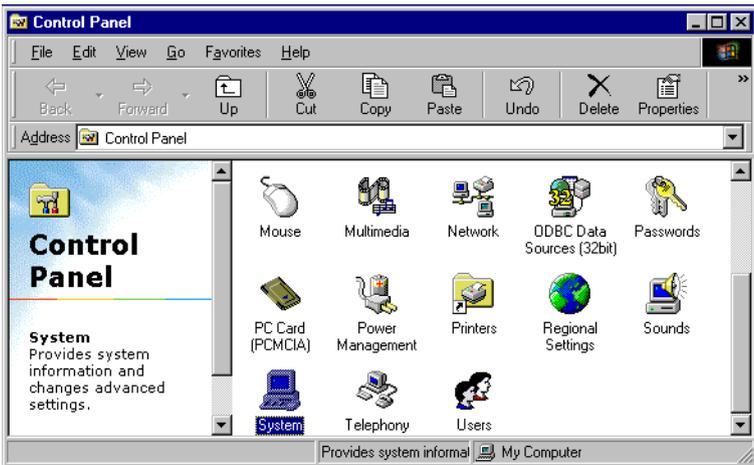
2. a. Choose the "Device Manager" label.
    b. Select "Standard 101/102-Key or Microsoft Natural Keyboard.

c. Click "OK".
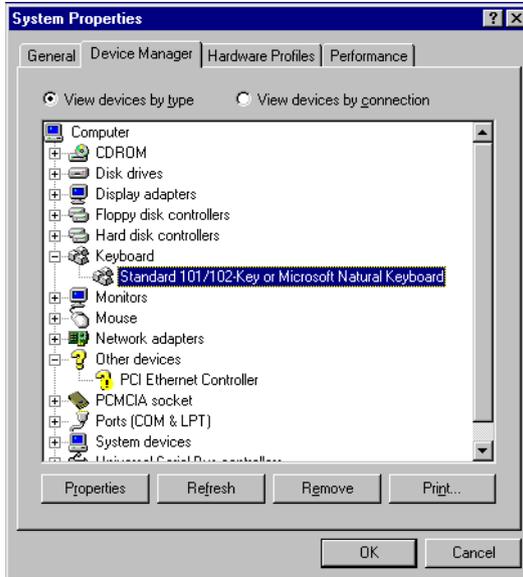
3.   a. Choose the "Driver" label.

b. Click "Update Driver".

4.   a. Click "Next" to update Device Driver Wizard.

5.   a. Choose the "Display a list of all the drivers in a specific location, so you can select the driver you want".

b. Click "Next".

6.   a. select the manufacturer and model of your hardware device.

b. If you have a disk that contains the updated driver, click "Have Disk".

c. To install the updates driver, click "Next".

Update Device Driver Wizard

Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.

Mo_dels:

Standard 101/102-Key or Microsoft Natural Keyboard [4-23-1999]

○ Show c_ompatible hardware.
○ Show a_ll hardware.

[Have Disk...]

[< _Back] [Next >] [Cancel]

7. a.Select the driver and 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:

A:\ [_Browse...]

8. a. Select "u:\CD_CAT3\PC104\3341\kbm.

b. Click "OK".

Open

File _name:
stkb9x.inf

stkb9x.inf

_Folders:
u:\CD_CAT3\PC104\...\KBM

[OK]
[Cancel]

📁 u:\
📁 cd_cat3
📁 pc104
📁 3341
📁 kbm

Dri_ves:
💾 u: 19 cdkit123
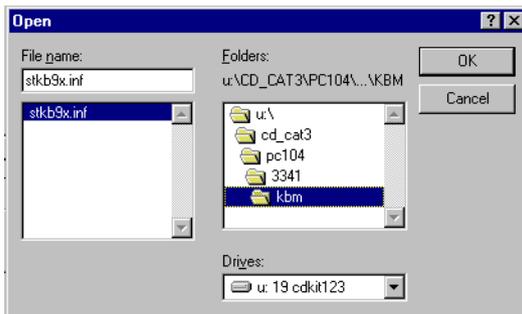
9. a. Choose the manufacturer's files and click "OK".

Install From Disk

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

OK

Cancel

Copy manufacturer's files from:

u:\CD_CAT3\PC104\3341\KBM

Browse...

Programming the Watchdog Timer

The PCM-3341 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.

Appendix A Programming the Watchdog Timer

A.1 Programming the watchdog timer

The default configuration of the timer is enabled with system reset.

To enable the watchdog timer, you must make a program which writes 1 to I/O port address 443 (hex) at regular intervals. The first time your program reads the port, it enables the watchdog timer. After that, your program must write 1 to port 443 at time intervals of less than 1.6 seconds. Otherwise, the watchdog timer will activate and reset the CPU. When you want to disable the watchdog timer, your program should write 0 to port 443.

If CPU processing comes to a standstill because of EMI or a software problem, your program's signals to I/O port address 443 of the timer will be interrupted. The timer will then automatically reset the CPU, and data processing will continue normally.

You must make your program so that it writes 1 to I/O port 443 at an interval shorter than the timer's preset interval. The timer's intervals have a tolerance of ± 30%, so you should program an instruction that will refresh the timer about every second.

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

```
10    REM  Watchdog timer example program
20    X=Out &H443,1 REM  Enable and refresh the watchdog
30    GOSUB 1000 REM  Task #1, takes 1 second to complete
40    X=Out &H443,1 REM  Refresh the watchdog
50    GOSUB 2000 REM  Task #2, takes 1 second to complete
60    X=Out &H443,0 REM  Disable the watchdog
70    END
1000  REM  Subroutine #1, takes 1 second to complete
         .
         .
         .
```

```
1070  RETURN
2000  REM  Subroutine #2, takes 1 second to complete

      .

      .

      .

2090  RETURN
```

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

Appendix B Installing PC/104 Modules

B.1 Installing PC/104 modules

The PCM-3341's PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCM-3341 is quick and simple. The following steps show how to mount the PC/104 modules:

1.   Remove the PCM-3341 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

PCM-3346

Male

PC/104 module

8.9

82.5

95.9
90.8

φ 6.4

90.8

φ 3.2

5.1

5.1

0

85.1

5.1

90.2

0
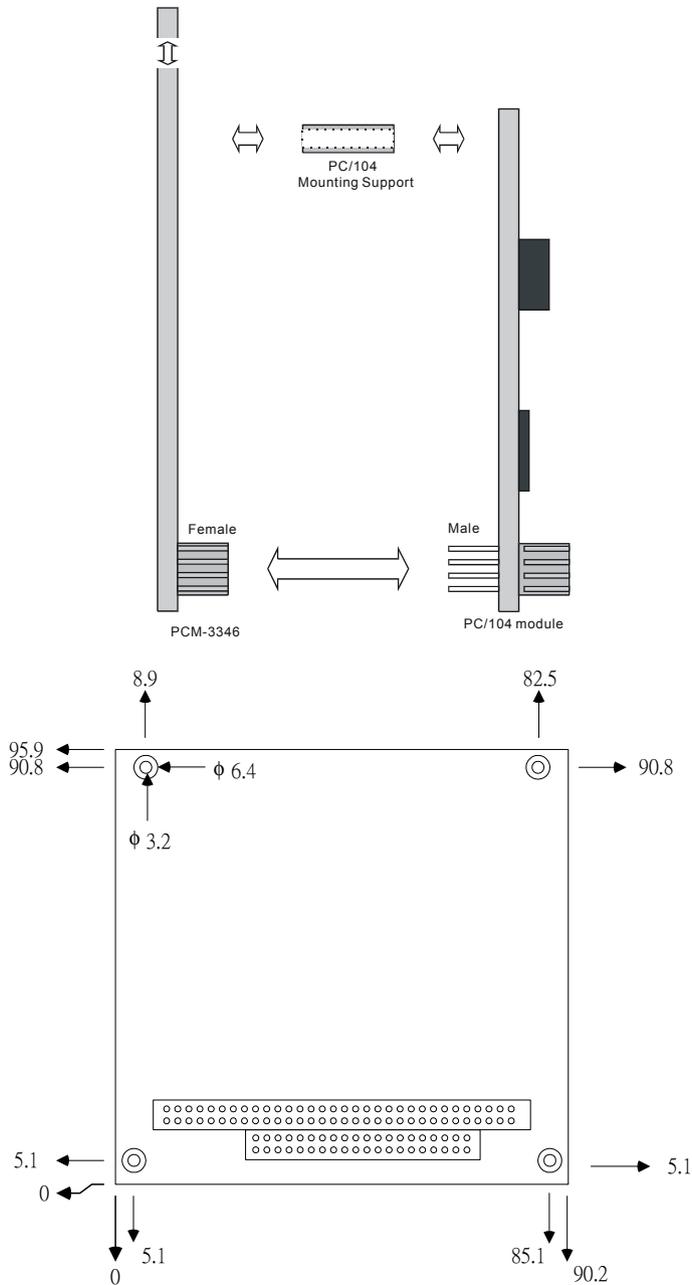
Table B.1: PCM-3341 PC/104 (CN10)

Pin	Signal		Signal	
Number	Row A	Row B	Row C	Row D
0			0 V	0 V
1	IOCHCHK*	0 V	SBHE*	MEMCS16*
2	SD7	RESETDRV	LA23	IOCS16*
3	SD6	+5 V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5 V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12 V	LA18	IRQ14
8	SD1	ENDXFR*	LA17	DACK0*
9	SD0	+12 V	MEMR*	DRQ0
10	IOCHRDY	N/C	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5 V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	0 V
19	SA12	REFRESH*	KEY	0 V
20	SA11	SYSCLK		
21	SA10	IRQ7		
22	SA9	IRQ6		

Table B.1: PCM-3341 PC/104 (CN10)

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	0 V	0 V		

* low active

Pin Assignments

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

- System reset button
- Primary IDE 44 pin connector
- RS422/485 connector
- IR connector
- Power and Hdisk LED connector
- LAN connector
- Print port
- 4 COM port connector
- USB connector
- PC/104 connector
- GPIO connector
- TFT panel connector
- VGA connector
- Main power input connector
- Panel back-light connector
- External -5v, -12v power connector
- KB/MS connector
- Compact flash card connector
- Floppy

Appendix C Pin Assignments

C.1 System reset button (CN1)

2   1
○ □

Table C.1: System reset button (CN1)

Pin	Pin name
1	Signal
2	GND

C.2 Primary IDE 44 pin Connector(CN2)

Table C.2: Primary IDE 44 pin Connector(CN2)

Pin	Signal	Pin	Signal
1	Reset	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N/C
21	DRQ	22	GND
23	DIOW	24	GND
25	DIOR	26	GND
27	IORDY	28	N/C
29	DACK	30	GND
31	IDE IRQ	32	IOCS16
33	ADDR1	34	N/C
35	ADDR0	36	ADDR2
37	HD SELECT0	38	HD SELECT1
39	IDE ACTIVE	40	GND
41	VCC	42	VCC
43	GND	44	NC
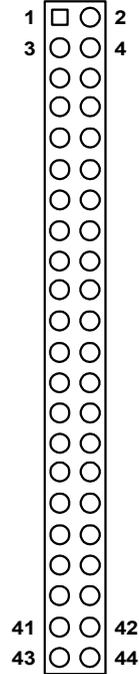
C.3 RS422/485 connector (CN3)

```
 4   3   2   1
┌───┬───┬───┬───┐
│ ○   ○   ○   □ │
└───────────────┘
```
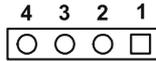
Table C.3: RS422/485(CN3)

Pin	Signal
1	RS422Rx-
2	RS422Rx+
3	RS422Tx+/RS485+
4	RS422Tx-/RS485-

C.4 IR connector (CN4)

```
 5   4   3   2   1
┌───┬───┬───┬───┬───┐
│ ○   ○   ○   ○   □ │
└───────────────────┘
```
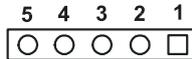
Table C.4: IR connector (CN4)

Pin	Signal
1	+5V
2	IRRXH
3	IRRX
4	GND
5	IRTX

C.5 Power and Hdisk LED connector (CN5)

```
4   3   2   1
┌─────────────┐
│ ○   ○   ○   □ │
└─────────────┘
```
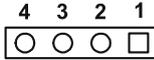
Table C.5: Power and Hdisk LED connector (CN5)

Pin	Signal
1	Power LED+
2	Power LED-
3	HDD LED+
4	HDD LED-

C.6 LAN connector (CN6)

```
1  □ ○  2
3  ○ ○  4
5  ○ ○  6
7  ○ ○  8
9  ○ ○  10
```
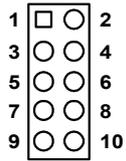
Pin	Signal
Table C.6: LAN connector(CN6)	
Pin	Signal
1	VCC_LAN
2	Active LED
3	RX+
4	RX-
5	Link LED
6	RXCT
7	NC
8	TXCT
9	TX+
10	TX-

C.7 Print port connector (CN7)

```
26 ○ ○ 25
24 ○ ○ 23
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
 4 ○ ○ 3
 2 ○ □ 1
```
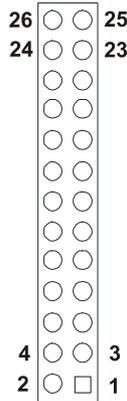
Table C.7: Print port connector (CN7)

Pin	Signal	Pin	Signal
1	STROBE	2	AUTOFD
3	D0	4	ERROR
5	D1	6	INIT
7	D2	8	SLCTIN
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

C.8 4 COM Port connector (CN8)

```
 1  3                                           37 39
┌─────────────────────────────────────────────┐
│ □ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
│ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ │
└─────────────────────────────────────────────┘
 2  4                                           38 40
```
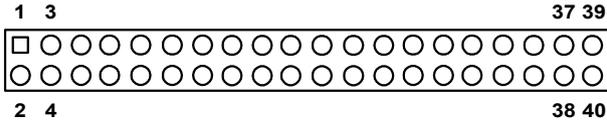
Table C.8: 4 COM Port connector (CN8)			
Pin	Signal	Pin	Signal
1	DCD1	2	DSR1
3	RX1	4	RTS1
5	TX1	6	CTS1
7	DTR1	8	RI1
9	GND	10	GND
11	DCD2	12	DSR2
13	RX2	14	RTS2
15	TX2	16	CTS2
17	DTR2	18	RI2
19	GND	20	GND
21	DCD3	22	DSR3
23	RX3	24	RTS3
25	TX3	26	CTS3
27	DTR3	28	RI3
29	GND	30	GND
31	DCD4	32	DSR4
33	RX4	34	RTS4
35	TX4	36	CTS4
37	DTR4	38	RI4
39	GND	40	GND

C.9 USB connector (CN9)

```
1  □ ○  2
3  ○ ○  4
5  ○ ○  6
7  ○ ○  8
9  ○ ○  10
```
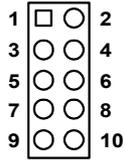
Table C.9: USB connector (CN9)

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	UV0-	4	UV1-
5	UV0+	6	UV1+
7	GND	8	GND
9	GND	10	NC

C.10 PC104 connector (CN10)

For details on PC/104 connectors, please refer to Appendix B.

C.11 GPIO connector (CN11)

1   **10**

Table C.10: GPIO connector (CN11)

Pin	Signal	Pin	Signal
1	+5V	2	GPIO0
3	GPIO1	4	GPIO2
5	GPIO3	6	GPIO4
7	GPIO5	8	GPIO6
9	GPIO7	10	GND

C.12 TFT Panel connector (CN12)

```
 1   3                                    37 39
 □ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
 ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○
 2   4                                    38 40
```
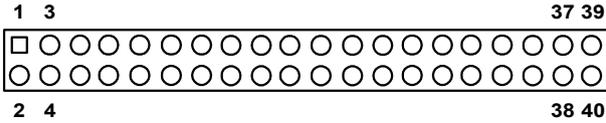
Table C.11: TFT Panel connector (CN12)

Pin	Signal	Pin	Signal
1	LCD VDD(+5V)	2	LCD VDD(+5V)
3	GND	4	GND
5	LCD VDD(+3.3V)	6	LCD VDD(+3.3V)
7	Vcon(optional)	8	GND
9	R0	10	G0
11	B0	12	R1
13	G1	14	B1
15	R2	16	G2
17	B2	18	R3
19	G3	20	B3
21	R4	22	G4
23	B4	24	R5
25	G5	26	B5
27	NC	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	GND
35	SHFCLK	36	FLM(V-SYNC)
37	M/(DE)	38	LP(H-SYNC)
39	NC	40	ENVEE

C.13 VGA connector (CN13)

```
   1 □ ○  9
   2 ○ ○  10
     ○ ○
     ○ ○
     ○ ○
     ○ ○
   7 ○ ○  15
   8 ○ ○  16
```
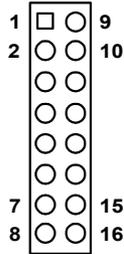
Table C.12: VGA connector (CN13)			
Pin	Signal	Pin	Signal
1	RED	2	DDC POWER(+5V)
3	GREEN	4	GND
5	BLUE	6	NC
7	NC	8	DDC DATA
9	GND	10	H-SYNC
11	GND	12	V-SYNC
13	GND	14	DDC CLOCK
15	GND	16	NC

C.14 Main power input connector (CN14)

4	3	2	1
○	○	○	□
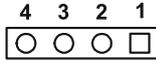
Table C.13: Main power input connector (CN14)

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

C.15 Panel back-light power connector (CN15)

```
  5   4   3   2   1
┌─────────────────┐
│ ○   ○   ○   ○  □ │
└─────────────────┘
```
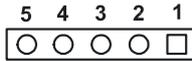
Table C.14: Panel back-light power connector (CN15)

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

C.16 External -5V, -12V power input (CN16)

```
  1   2   3
┌─────────────┐
│ □   ○   ○ │
└─────────────┘
```
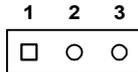
Table C.15: External -5V, -12V power input (CN16)

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

C.17 KB/MS connector (CN17)

```
 6   5   4   3   2   1
┌─────────────────────┐
│ ○   ○   ○   ○   ○  □ │
└─────────────────────┘
```
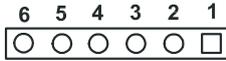
Table C.16: KB/MS connector (CN17)

Pin	Signal
1	KBCLK
2	KBDATA
3	MSCLK
4	GND
5	+5V
6	MSDATA

C.18 Compact flash card connector

C.19 Floppy

```
26 ○ ○ 25
24 ○ ○ 23
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
   ○ ○
 4 ○ ○ 3
 2 ○ □ 1
```
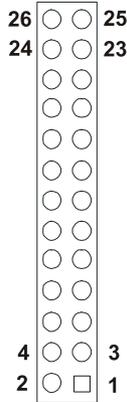
Table C.17: Floppy

Pin	Signal	Pin	Signal
1	+5V	2	INDEX
3	+5V	4	DSA
5	+5V	6	DSKCHG
7	NC	8	NC
9	NC	10	MOA
11	NC	12	DIR
13	NC	14	STEP
15	GND	16	WD
17	GND	18	WE
19	GND	20	TRACK0
21	GND	22	WP
23	GND	24	RDATA
25	GND	26	HEAD

System Assignments

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

- System I/O ports
- DMA Channel Assignments
- Interrupt Assignments
- 1st MB memory map

Appendix D System 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	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 DMA channel assignments

Table D.2: DMA channel assignments

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

* Audio DMA select 0, 1 or 3

D.3 Interrupt assignments

Table D.3: Table D-3: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 8	Real-time clock
IRQ 9	Cascaded to INT 0A (IRQ 2)
IRQ 10	Available
IRQ 11	Available
IRQ 12	PS/2 mouse (non-releasable)
IRQ 13	INT from co-processor
IRQ 14	Fixed disk controller (primary)
IRQ 15	Fixed disk controller (secondary)
IRQ 3	Serial communication port 2
IRQ 4	Serial communication port 1
IRQ 5	Parallel port 2
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

* PNP audio IRQ select: 5, 7, 9 or 10

* Ethernet function is auto-sensing

D.4 1st MB memory map

Table D.4: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
D000 - EFFFh	Expansion ROM
CC00 - CFFFh	Ethernet boot ROM
C000 - CBFFh	32/40/44 K VGA BIOS
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

LCD Services

This appendix contains information on LCD Display services.

Appendix E LCD Services

E.1 LCD Services

LCD screens are very popular on our CPU cards, Half EBX PCs
and PC104 series products. "Lighting" LCDs is virtually impossible without
technical expertise. We provide LCD lighting and integration services
to assist our customers in setting up their systems.
LCD lighting guide explains how to make connections between LCD
interfaces and LCD panels, as well as how to control contrast, brightness,
VEE source, LCD inverter and all other factors that affect the successful
installation of LCD panels.

The following information details our LCD lighting services:

a)   This policy is only valid for our products that include LCD support

b)   The customer should send the following LCD components for ser-
vice:

•   DC-AC inverter and cable (i.e. connector with/with-
out wires)   and data sheet

•   LCD flat panel and cable (connector with/without
wires) and   complete data sheet

c)   We will normally charge the customer a deposit. The
deposit will be refunded when servicing exceeds a minimum volume

d)   The customer must sign the agreement and fax it to us prior to
sending the LCD package. We reserve the right to refuse service
if the customer cannot provide the required documents and auxiliary parts

e)   We can supply a BIOS file and build a connection cable to the cus-
tomer upon completing the service

f)   A minimum of seven to ten working days is required for completion
of service, starting from receipt of the LCD package.

For TFT display support lists, see our website at:

http://www.emacinc.com/

Please contact our customer service department for more detailed infor-
mation and service files.