

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

1st. Edition Printed in Taiwan June 2003

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.

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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-board 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 and 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 Display 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 Humidity:** 0%~90% relative humidity, non-condensing

1.4 Board Dimensions

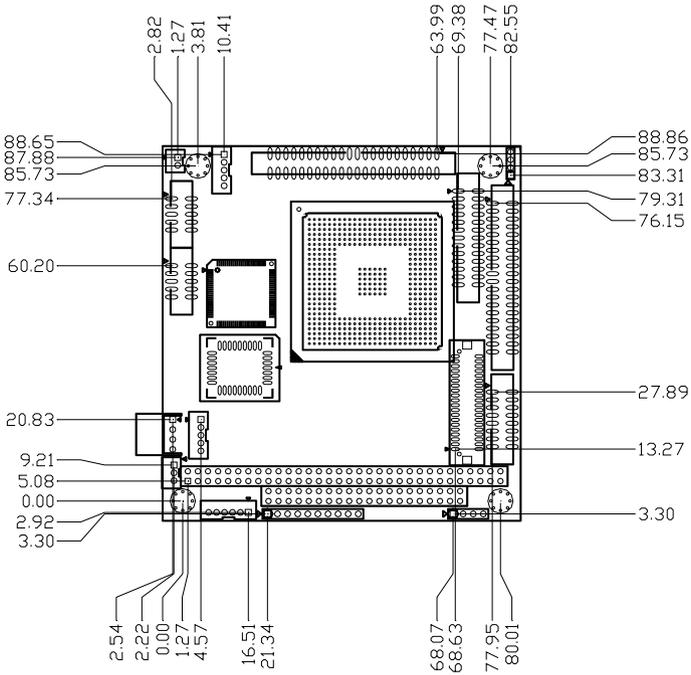


Figure 1.1: PCM-3341 Dimensions

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!*

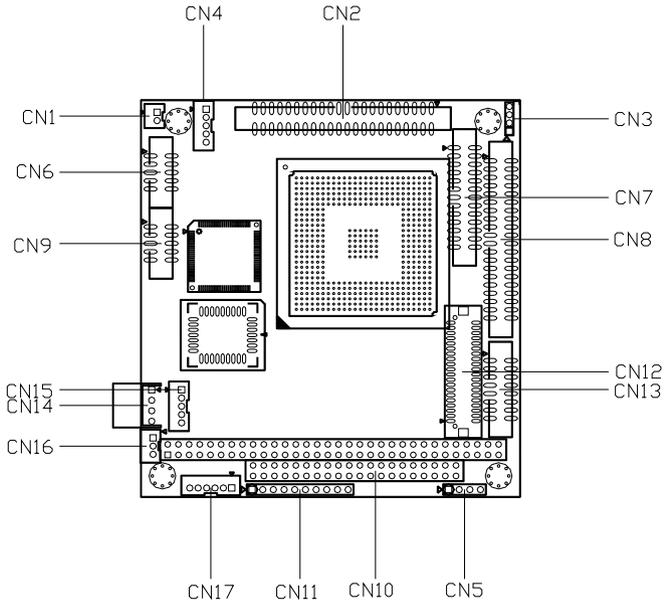


Figure 2.1: *Locating connectors (component side)*

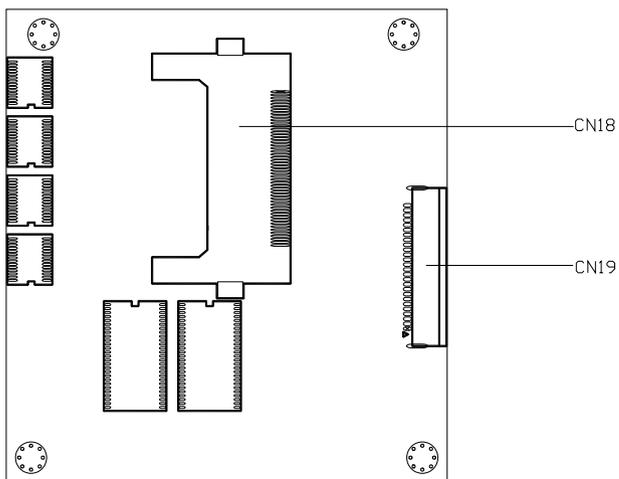


Figure 2.2: Locating connectors (solder side)

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-3341 offers 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 adapter 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 conventional 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 3¼" 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 connector 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 3¼" 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 CFC 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 *ipanel type* from the *integrated peripherals* 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 is 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.

CHAPTER 4

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 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-3341's 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

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.

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

4.2.1 Entering setup

Power on the computer and press 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.

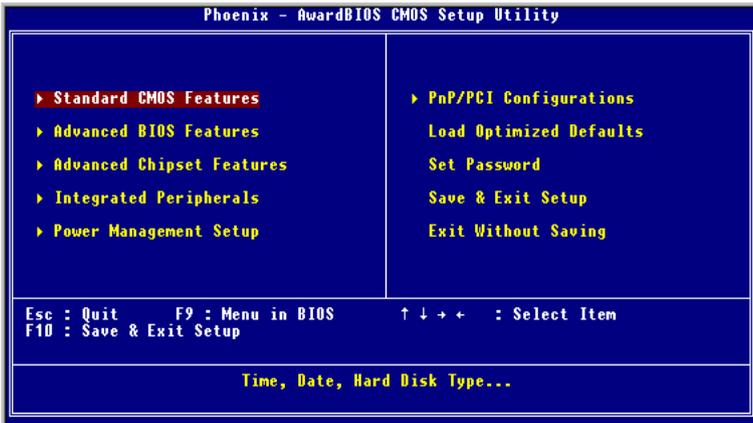


Figure 4.1: BIOS setup initial screen

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.

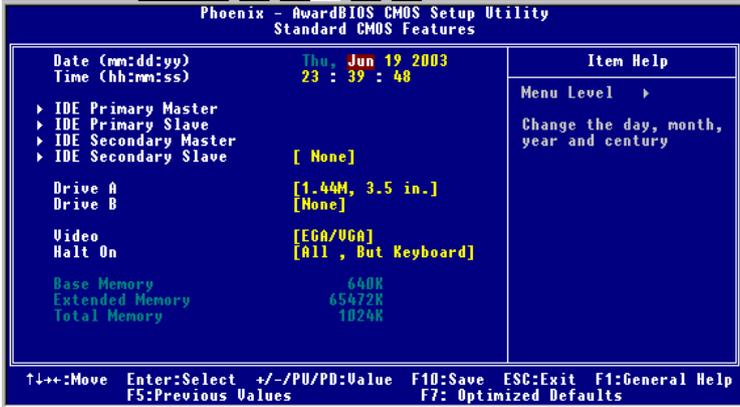


Figure 4.2: Standard CMOS setup screen

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 manufacturer's default values for the PCM-3341.

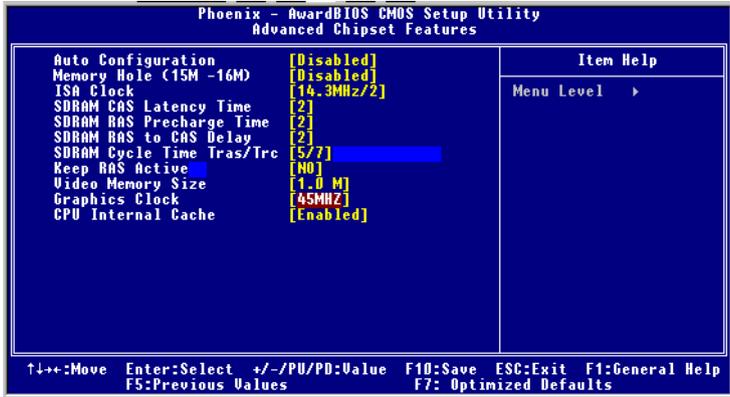


Figure 4.3: Advanced chipset setup

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.

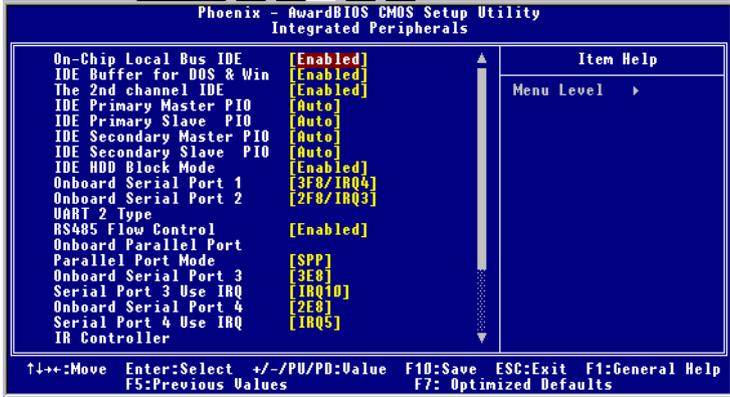


Figure 4.4: Power management setup

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.

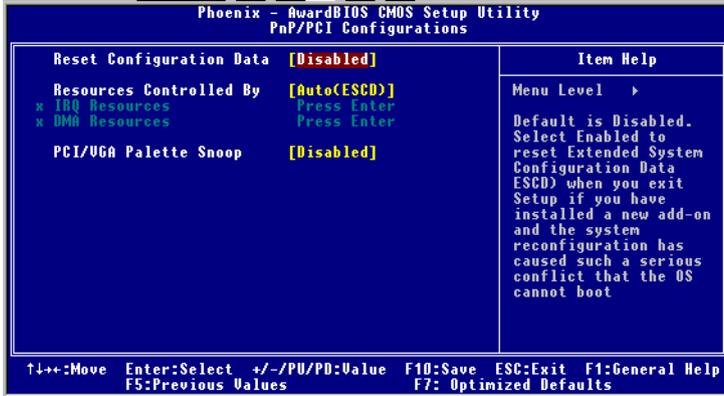


Figure 4.5: Plug and Play Configuration

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 manufacturer's default values for the PCM-3341.

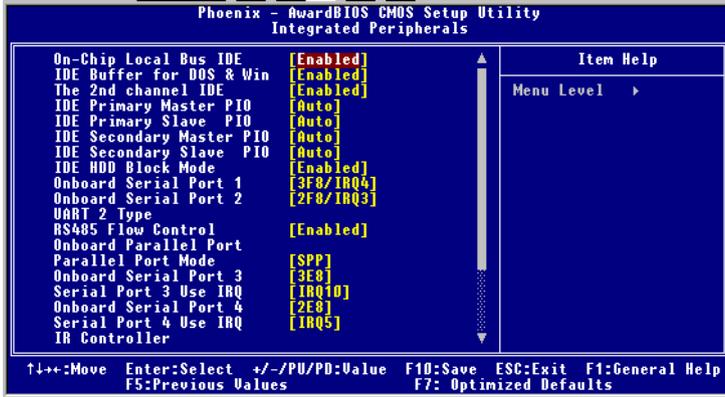


Figure 4.6: Peripheral setup

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.

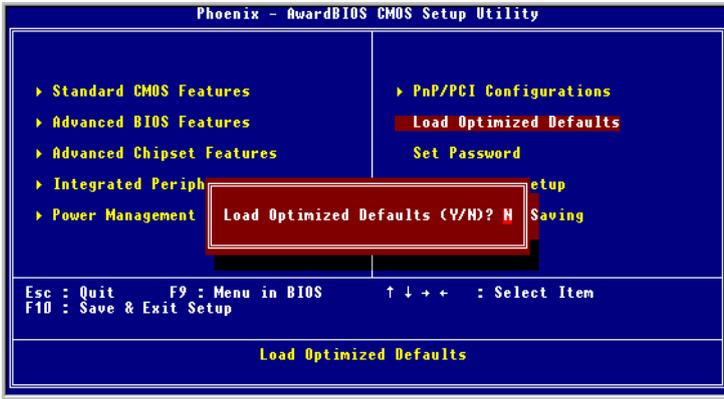
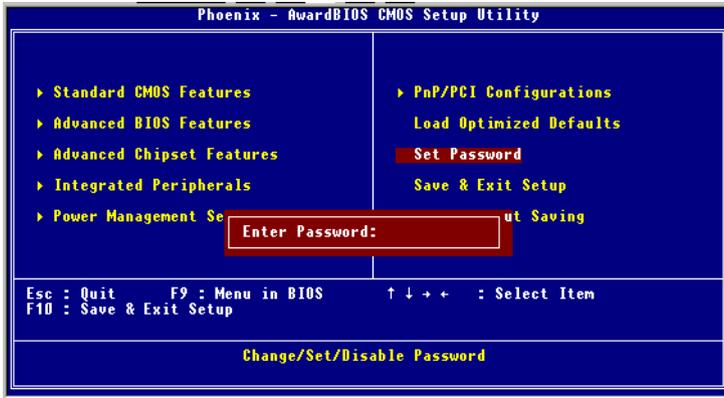


Figure 4.7: Load BIOS Defaults

4.2.9 Change password

To change the password, choose the Set Password option from 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:



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 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.

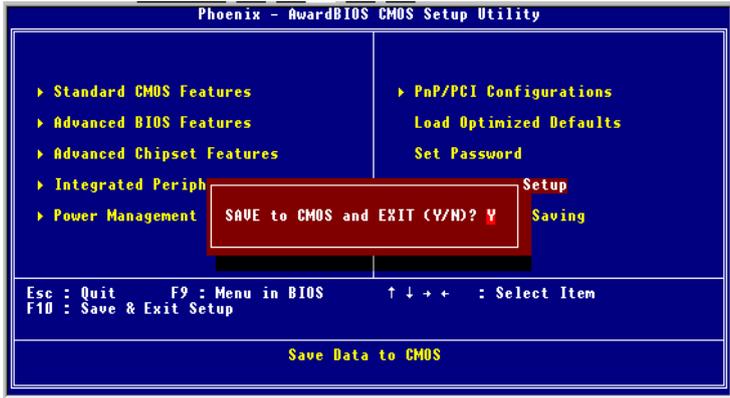


Figure 4.8: Save and exit settings

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.

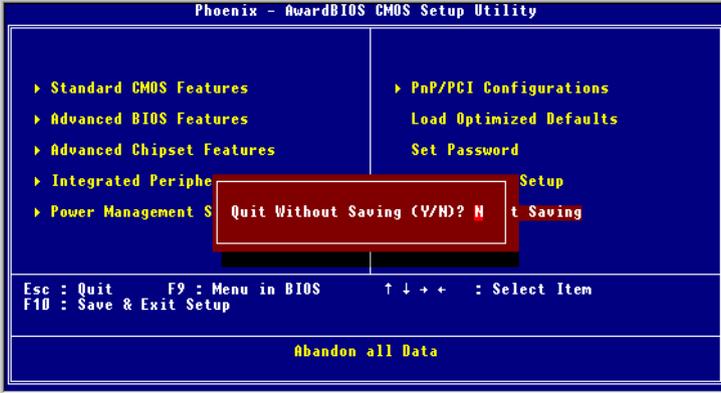


Figure 4.9: Exit without saving

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.

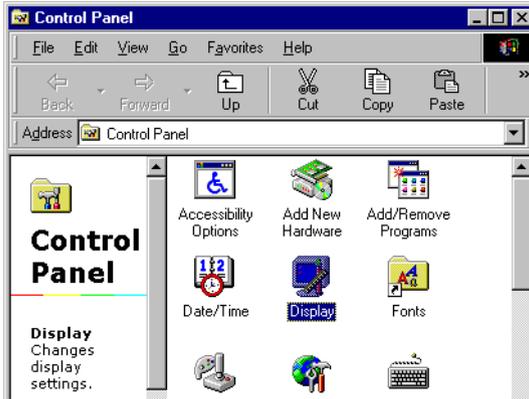
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

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

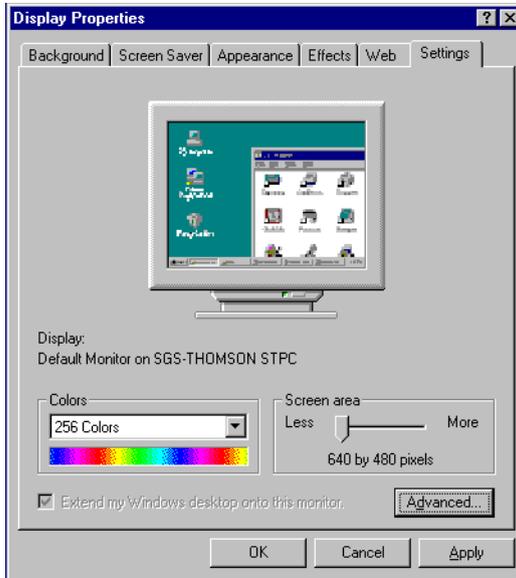
Note 2: <Enter> means pressing the "Enter" key on the keyboard.

5.2.1 Installation for Windows 95/98

- a. Select "Start", "Settings", "Control Panel", "Display", "Settings".



- b. Press "Advanced Properties".



- 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.

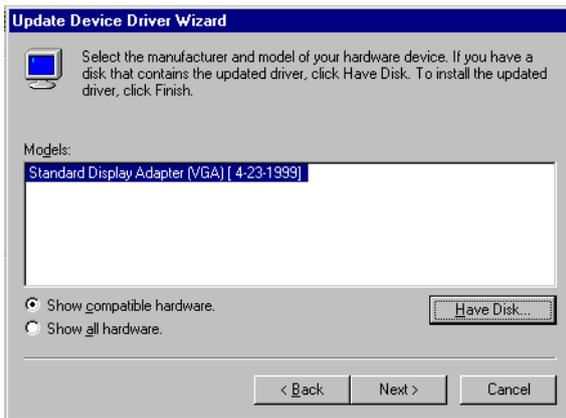
d. Click “Next”.



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".

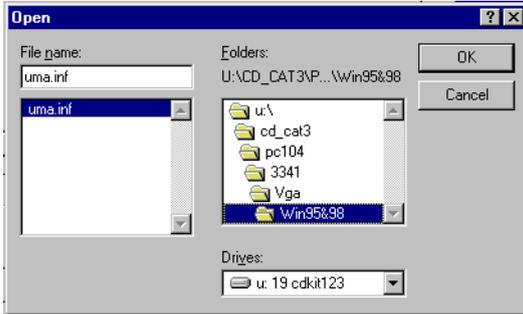


4. a. Insert the utility disc into the CD-ROM drive, then click "OK".

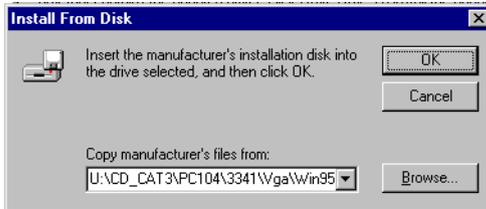


- b. Folders: U:\CD_CAT3\PC104\3341\Vga\Win95&98

- c. Press "OK".

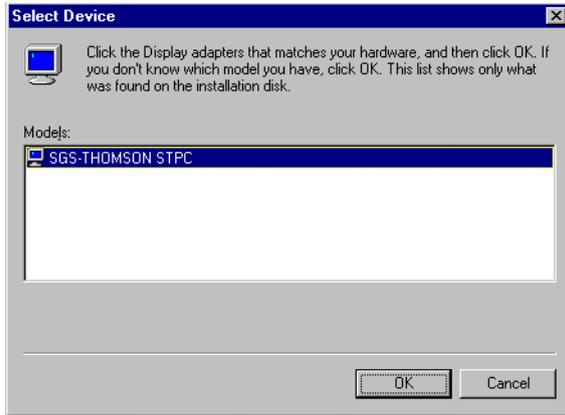


- d. Click "OK".



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.

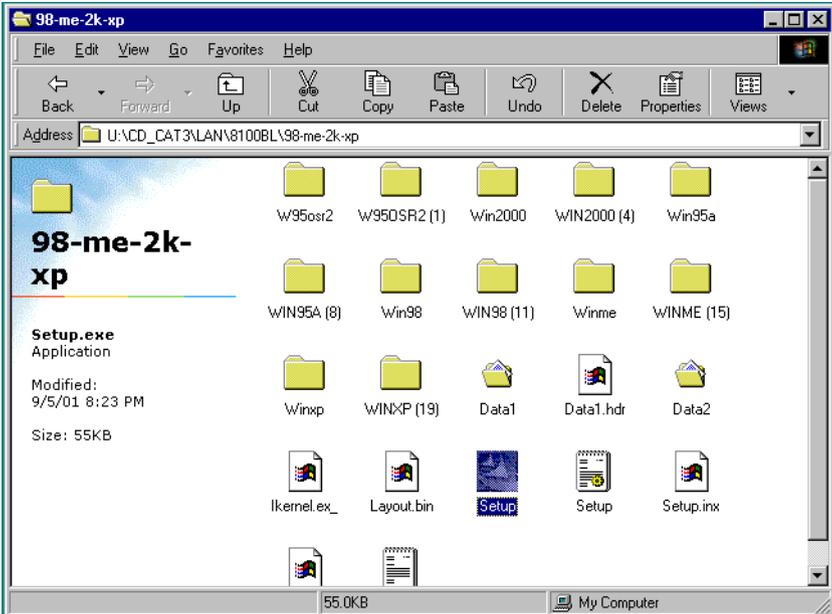
6.2 Installation of Ethernet driver

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.

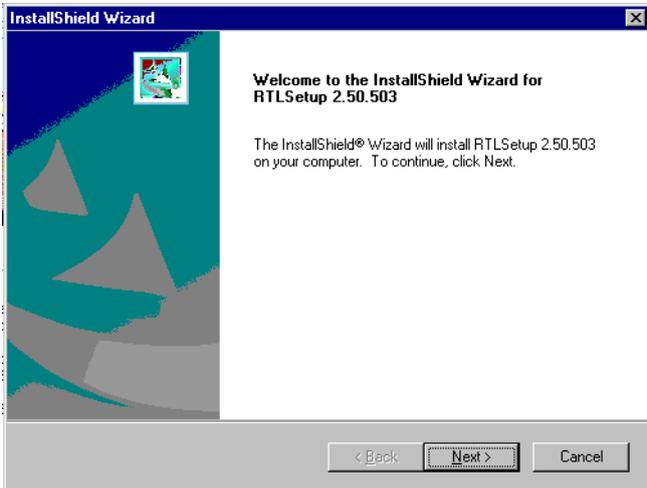
Note: The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

6.2.1 Installation for Windows 95/98/NT

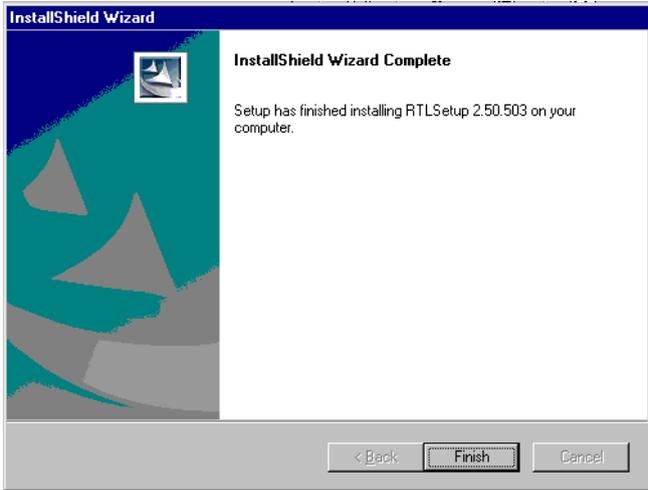
1.
 - a. Insert the utility disc into the CD-ROM drive.
 - b. Folders:
U:\CD_CAT3\LAN\3341\Vga\Win95&98
 - c. Select on "Setup".



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

CHAPTER **7**

**Keyboard and Mouse
Driver for Win95/98**

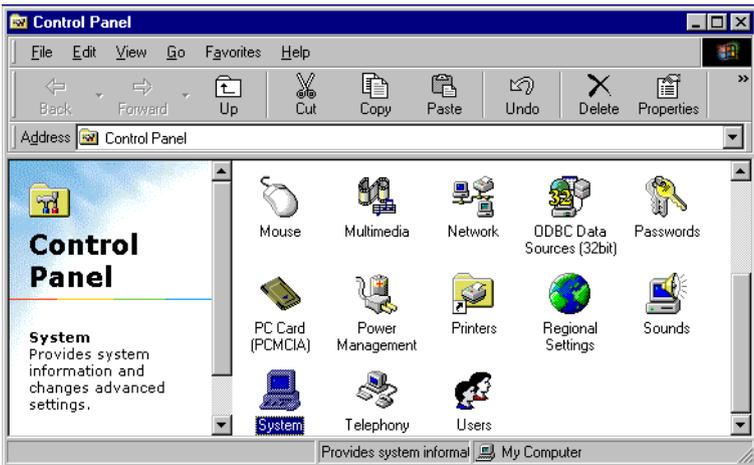
Chapter 7 Keyboard and Mouse Driver for Win95/98

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.

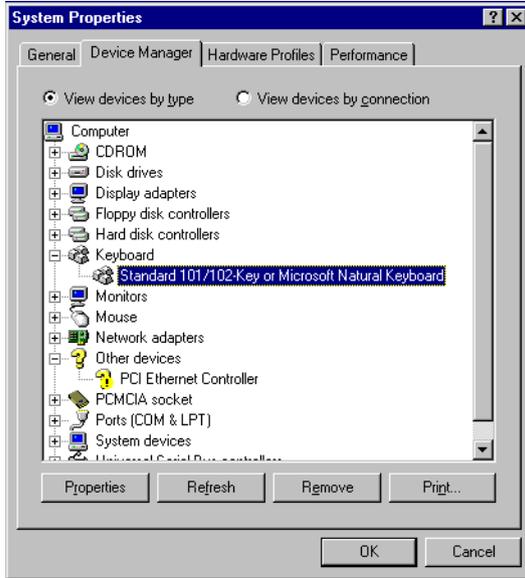
7.2 Keyboard and mouse Installation for Windows 98

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



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".

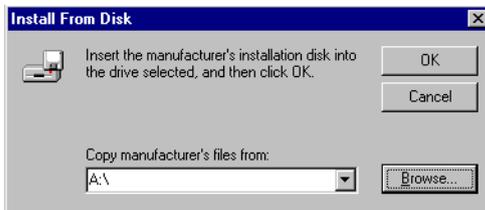


6. a. select the manufacturer and model of your hardware device.
b. If you have a disk that contains the updated driver, click "Have Disk".

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

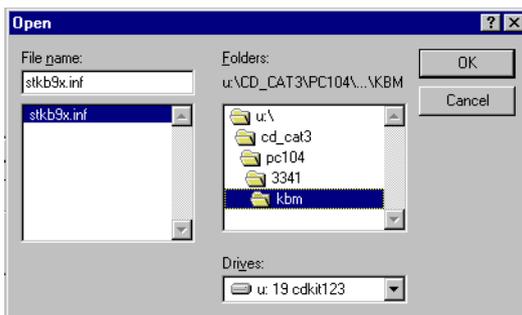


7. a. Select the driver and click "OK".

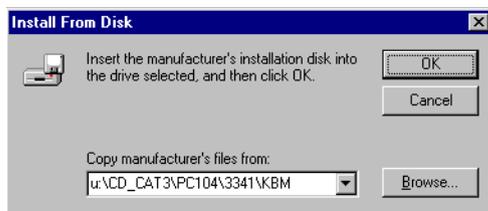


8. a. Select "u:\CD_CAT3\PC104\3341\kbm".

b. Click "OK".



9. a. Choose the manufacturer's files and click "OK".



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 $\pm 30\%$, 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.

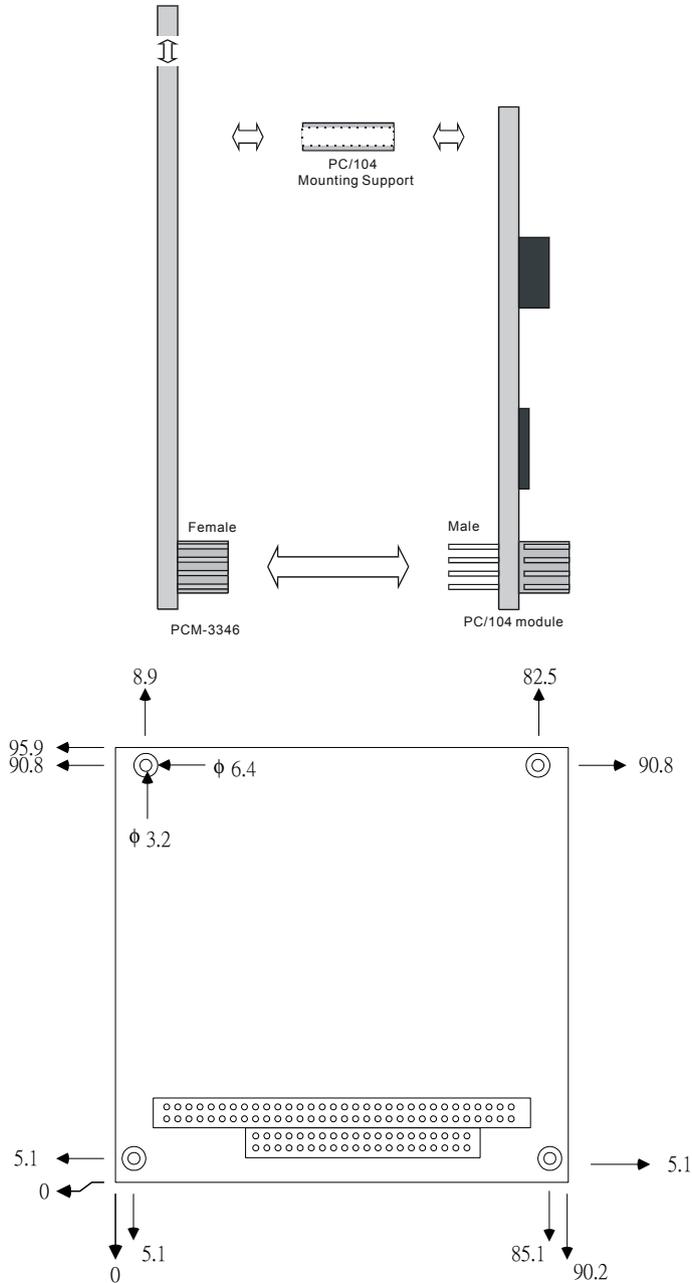


Table B.1: PCM-3341 PC/104 (CN10)

| Pin Number | Signal | | Signal | |
|---------------|----------|----------|--------|----------|
| | 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)



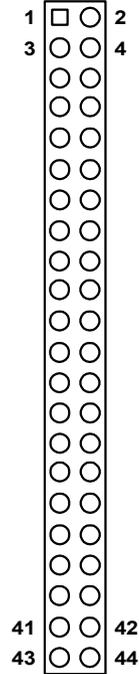
Table C.1: System reset button (CN1)

| 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)

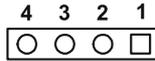


Table C.3: RS422/485(CN3)

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

C.4 IR connector (CN4)

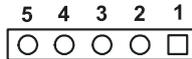


Table C.4: IR connector (CN4)

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

C.5 Power and Hdisk LED connector (CN5)

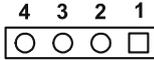


Table C.5: Power and Hdisk LED connector (CN5)

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

C.6 LAN connector (CN6)

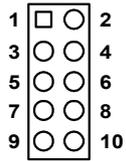


Table C.6: LAN connector(CN6)

| 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)

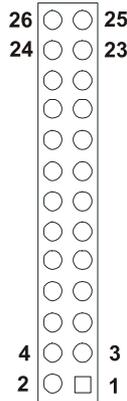


Table C.7: Print port connector (CN7)

| 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)

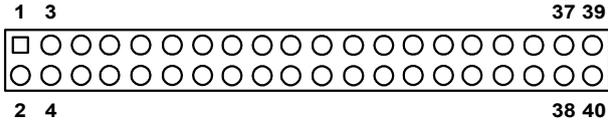


Table C.8: 4 COM Port connector (CN8)

| 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)

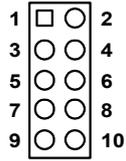


Table C.9: USB connector (CN9)

| 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)



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)

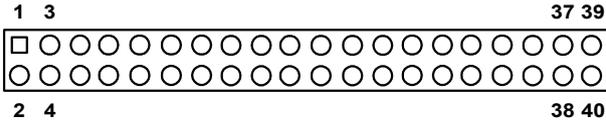


Table C.11: TFT Panel connector (CN12)

| 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)

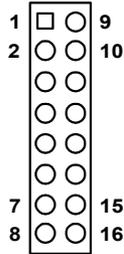


Table C.12: VGA connector (CN13)

| 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)

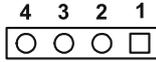


Table C.13: Main power input connector (CN14)

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

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

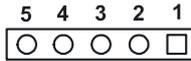


Table C.14: Panel back-light power connector (CN15)

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

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

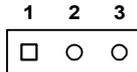


Table C.15: External -5V, -12V power input (CN16)

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

C.17 KB/MS connector (CN17)

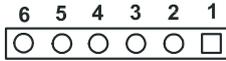


Table C.16: KB/MS connector (CN17)

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

C.18 Compact flash card connector

C.19 Floppy

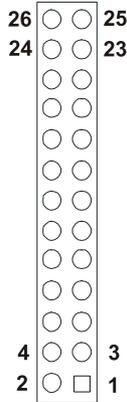


Table C.17: Floppy

| 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 lighting services.

Appendix E LCD Services

E.1 LCD Services

LCD screens are very popular on CPU cards, Biscuit PCs and POS 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. The 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 products that include LCD support
- b) The customer should send the following LCD components for service:
 - DC-AC inverter and cable (i.e. connector with/without 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 will supply a BIOS file and connection cable to the customer upon completing the service
- f) A minimum of seven working days is required for completion of service, starting from receipt of the LCD package

Please contact our customer service department for more detailed information and service files.