PCM-3345

486 DX66-based Module with SVGA Interface

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This manual is for the PCM-3345 Rev. A1 or higher.

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Packing list

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

- 1 PCM-3345 all-in-one single board computer
- 1 Start-up Manual
- CD-ROM/disks for utility, drivers, and manual (in PDF format)
- 1 2.5" IDE flat cable, 44-pin to 44-pin (product no. 1701440350)
- 1 keyboard / PS/2 mouse cable (product no. 1700000190)
- 2 serial port cables (product no. 1700100250)
- 1 parallel cable (product no. 1700260250)
- 1 floppy cable, for 3.5" FDD only (product no. 1701340600)
- 1 VGA cable (product no. 1700160150)
- 1 ATX power cable (product no. 1700000450)

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

Contents

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Features 3
1.3 Specifications 4
1.3.1 Standard SBC functions 4
1.3.2 VGA interface 5
1.3.3 Mechanical and environmental 5
1.3.4 Solid state disk 5
1.4 Board dimensions 6

Chapter 2 Installation 7

2.1 Jumpers and connectors 8
2.2 Locating jumpers 9
2.3 Locating connectors 10
2.3.1 Component side - Rev A1 10
2.3.2 Component side - Rev A2 11
2.3.3 Solder side 12
2.4 Setting jumpers 13
2.5 Safety precautions 14
2.6 Installing DRAM (SODIMMs) (U12) 15
2.6.1 Installing SODIMMs 15
2.7 IDE hard drive connector (CN6) 16
2.7.1 Connecting the hard drive 16
2.8 CompactFlash disk (CN13) 17
2.9 Floppy drive connector (CN1) 17
2.9.1 Connecting the floppy drive 18
2.10 Parallel port connector (CN8) 18
2.11 Keyboard and PS/2 mouse connector (CN12) 19
2.12 Power connectors 19
2.12.1 Main power connector +5 V, +12 V (CN9) 19
2.12.2 Auxilary power connector (CN10) 19
2.13 IR connector (CN2 pin 2, 4, 6, 8, 10) 19

2.14 Serial ports (CN3, CN5) 20
2.14.1 COM1 RS-232 port (CN3) 20
2.14.2 COM2 RS-232 (CN5) 20
2.15 VGA interface connections 20
2.15.1 CRT display connector (CN11) 20
2.16 Watchdog timer configuration 21
2.17 ATX power (5VSB, PSON) input (CN4) 21
2.18 Clear CMOS (CN2) 22

Chapter 3 AMI BIOS Setup 23

3.1 System test and initialization 24
3.1.1 System configuration verification 24
3.2 AMI BIOS setup 25
3.2.1 Entering setup 25
3.2.2 Standard CMOS setup 26
3.2.3 Advanced CMOS setup 27
3.2.4 Advanced chipset setup 28
3.2.5 Power management setup 29
3.2.6 PCI / Plug and Play configuration 30
3.2.7 Peripheral setup 31
3.2.8 Load BIOS defaults 32
3.2.9 Change password 33
3.2.10 Auto-detect hard disks 34
3.2.11 Save settings and exit 34
3.2.12 Exit without saving 34

Chapter 4 SVGA Setup 35

4.1 Introduction 36
4.1.1 Chipset 36
4.1.2 Display memory 36
4.2 Installation of SVGA driver 36
4.2.1 Installation for Windows 3.1 37
4.2.2 Installation for Windows 95 40
4.3 Further information 44

Appendix A Pin Assignments 45

A.1 Floppy drive connector (CN1) 46
A.2 Multi-functional connector (CN2) 47
A.3 COM1 RS-232 serial port (CN3) 47
A.4 ATX power (SVSB, PSON) input connector (CN4) ... 48
A.5 COM2 RS-232 serial port (CN5) 48
A.6 IDE hard drive connector (CN6) 49
A.7 PC/104 connector (CN7) 49
A.8 Parallel port connector (CN8) 50
A.9 Main power connector (CN9) 51
A.10 Power input connector (CN10) 51
A.11 VGA connector (CN11) 52
A.12 Keyboard and mouse connnector (CN12) 52

Appendix B System Assignments 53

B.1 System I/O ports 54
B.2 DMA channel assignments 55
B.3 Interrupt assignments 56
B.4 1st MB memory map 57

Appendix C Installing PC/104 Modules 57

C.1 Installing PC/104 modules 58

Appendix D Mechanical Drawing 61

D.1 PCM-3345 mechanical drawing 62

Appendix E Programming the Watchdog Timer 63

E.1 Programming the watchdog timer 64

Tables

Table 2-1: Jumpers 8
Table 2-2: Connectors 8
Table 2-3: Serial port default settings 20
Table 2-4: Clear CMOS 22
Table A-1: Floppy drive connector (CN1) 46
Table A-2: Multi-functional connector (CN2) 47
Table A-3: COM1 RS-232 series port (CN3) 47
Table A-4: ATX power input connector (CN4) 48
Table A-5: COM2 RS-232 series port (CN5) 48
Table A-6: IDE hard drive connector (CN6) 49
Table A-8: Parallel port connector (CN8) 50
Table A-9: Main power connector (CN9) 51
Table A-10: Peripheral power connector (CN10) 51
Table A-11: VGA connector (CN11) 52
Table A-12: Keyboard and mouse connector (CN12) 52
Table B-1: System I/O ports 54
Table B-2: DMA channel assignments 55
Table B-3: Interrupt assignments 56
Table B-4: 1st MB memory map 57
Table C-1: PC/104 connectors (CN8) 60

Figures

Figure 1-1: PCM-3345 dimensions 6
Figure 2-1: Jumper settings 9
Figure 2-2: Component side connectors - Rev A1 10
Figure 2-3: Component side connectors - Rev A2 11
Figure 2-4: Connectors - solder side 12
Figure 3-1: BIOS setup program initial screen 25
Figure 3-2: Standard CMOS setup screen 26
Figure 3-3: Advanced CMOS setup 27
Figure 3-4: Advanced chipset setup 28
Figure 3-5: Power management setup 29
Figure 3-6: PCI / Plug and Play configuration 30
Figure 3-7: Peripheral setup 31
Figure 3-8: BIOS setup program initial screen (showing Auto Configuration items) 32
Figure 3-9: IDE HDD auto detection screen 34
Figure C-1: PC/104 module mounting diagram 59
Figure C-2: PC/104 module dimensions (mm) (±0.1) 59
Figure D-1: PCM-3345 mechanical drawing 62

CHAPTER 1

General Information

This chapter gives background information on the PCM-3345.

Sections include:

- Board specifications
- Board layout and dimensions

1.1 Introduction

The PCM-3345 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 3½" hard drive. The PCM-3345 comes with an embedded STPC Client processor on-board. For maximum performance, the PCM-3345 also supports an EDO/FPM SODIMM socket that can accept up to 32 MB memory.

On-board features include a socket for a CompactFlash Card, Enhanced IDE interface, one parallel port, two serial ports (RS-232), a keyboard, and a PS/2 mouse interface. An SVGA display controller allows CRT resolutions up to 1024 x 768 @ 64 K colors.

The PCM-3345 complies with the "Green Function" standard and supports three types of power saving features: Normal, Doze, and Sleep modes.

The display type configuration is done through software. A single Flash chip holds the system BIOS and the VGA BIOS. This minimizes the number of chips and eases configuration. You can change the display BIOS simply by programming the Flash chip.

If you need any additional functions, the PCM-3345 has a PC/104 connector for future upgrades.

1.2 Features

- Ultra-compact size single board computer, smaller than a 3½" hard disk drive (96 mm x 90 mm)
- On-board STPC Client CPU
- Up to 32 MB system memory, by way of SODIMM (EDO/FPM DRAM)
- On-board VGA interface
- Supports CompactFlash Card
- Built-in Enhanced IDE (AT bus) hard disk drive interface
- On-board keyboard / PS/2 mouse connector
- Two serial ports (RS-232)
- Upgradeable through PC/104 module
- Green engine with sleep mode and low power consumption
- +5 V, +12 V, -5 V, -12 V power supply
- Modem ring-on (modem required)

1.3 Specifications

1.3.1 Standard SBC functions

- **CPU**: Embedded SGS Thomson DX/66 STPC Client processor
- **BIOS**: AMI 128 KB Flash memory
- **System memory**: One 144-pin SODIMM socket accepts 8, 16, or 32 MB EDO/FPR DRAM
- **Enhanced IDE interface**: Supports up to two EIDE devices. BIOS auto-detect, PIO Mode 3 or Mode 4 transfer
- **FDD interface**: Supports up to two FDDs
- **Serial ports**: Two serial RS-232 ports
- **Parallel port**: One parallel port, supports SPP/EPP/ECP mode
- **Infrared port**: Shared with COM2. Transfer rates up to 115.2 kbps
- **Keyboard/mouse connector**: Supports standard PC/AT keyboard and a PS/2 mouse
- **Power management**: Supports power saving modes including Normal/Standby/Suspend modes. APM 1.1 compliant
- **Watchdog timer**: 1.6 sec. intervals
- **Modem ring-on:** Hayes compatible modem required
- **Multiple power input:** ±12 V, ±5 V power supplies

1.3.2 VGA interface

- **Display memory**: 512 KB ~ 4 MB share memory, set in BIOS
- **Display type**: Supports CRT
- **CRT display mode**: Non-interlaced CRT monitors resolutions up to 1024 x 768 @ 64 K colors

Resolution	Colors		
	256	64 K	16 M
640 x 480	OK	OK	OK
800 x 600	OK	OK	OK
1024 x 768	OK	OK	NG

1.3.3 Mechanical and environmental

- **Dimensions (L x W)**: 96 x 90 mm (3.77" x 3.54")
- **Power supply voltage**: +5 V ± 5%
- **Power requirements**: +5 V @ 1.38 A (typical)
- **Operating temperature**: 0 ~ 70° C
- **Weight**: 0.11 kg (weight of total package)

1.3.4 Solid state disk

- Supports one 50-pin socket for CompactFlash card

1.4 Board dimensions

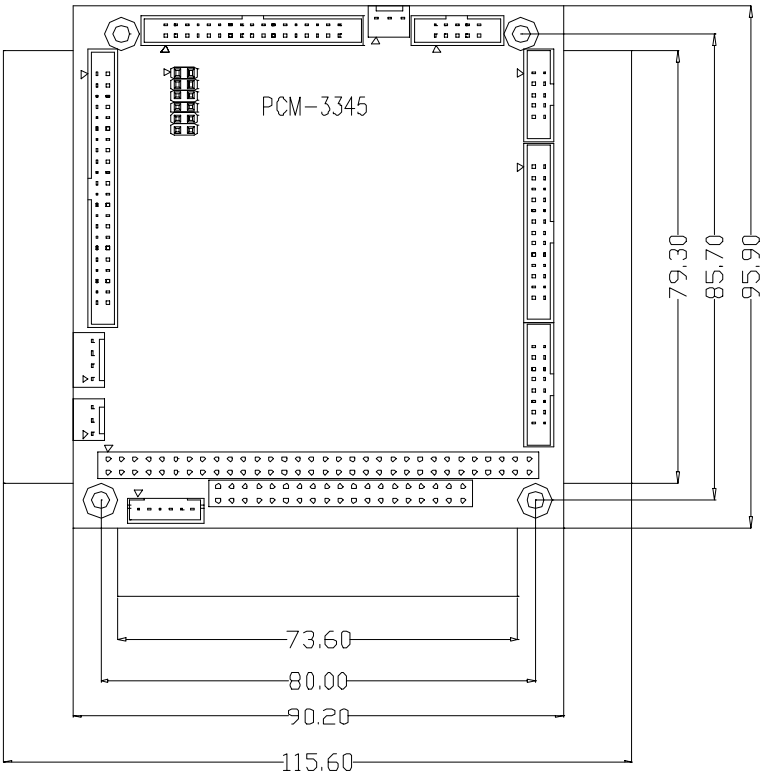


Figure 1-1: PCM-3345 dimensions

CHAPTER 2

Installation

This chapter tells how to set up the PCM-3345 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.

2.1 Jumpers and connectors

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

The tables below lists the function of each of the board jumpers and connectors:

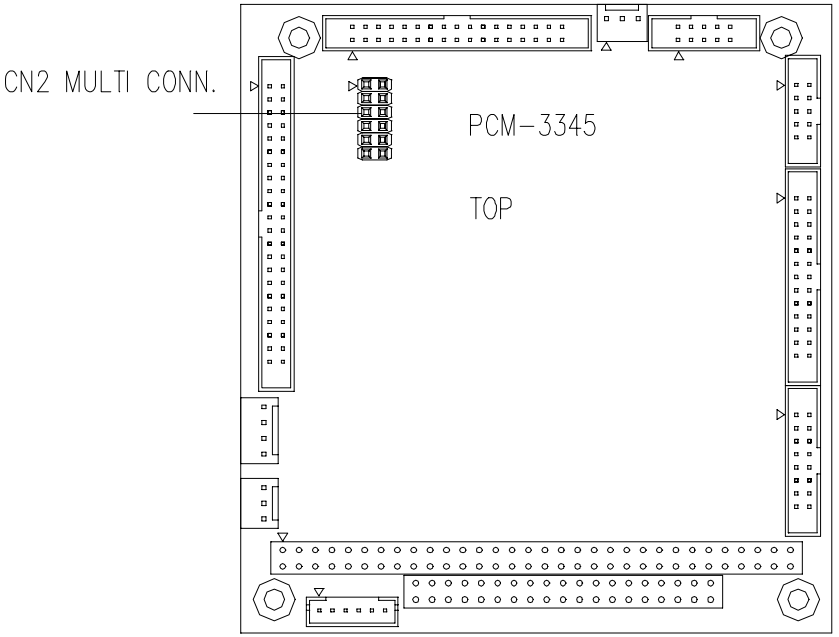
Table 2-1: Jumpers

Label	Function
CN2 pin 1,3,5	Clear CMOS
CN2 pin 7,9	Reset switch
CN2 pin 11,12	ATX panel switch

Table 2-2: Connectors

Label	Function
CN1	Floppy disk connector
CN2 pin 2, 4, 6, 8, 10	IR connector (infrared)
CN2 pin 7, 9	Reset button
CN3	COM1 connector
CN4	ATX power (5VSB, PSON) input
CN5	COM2 connector
CN6	IDE hard disk connector
CN7	PC/104 connector
CN8	Parallel port connector
CN9	Main power connector (+5 V, +12 V)
CN10	Auxilary power connector (-5 V, -12 V)
CN11	VGA connector
CN12	Keyboard & PS/2 mouse connector
CN13	CompactFlash socket
U12	SODIMM socket

2.2 Locating jumpers



CN2: Multi-functional connector Clear CMOS	
Closed pins	**Result**
1-3	Normal
3-5	Clear CMOS

CN2: Multi-functional connector Reset switch	
Closed pins	**Result**
7-9	System reset

CN2: Multi-functional connector ATX panel switch	
Closed pins	**Result**
11-12	ATX power on

Figure 2-1: Jumper settings

2.3 Locating connectors

Warning: *Please note there are two different kinds of component sides: one for PCM-3345 Rev A1, and one for PCM-3345 Rev A2. Rev A1 and Rev A2 have different voltages at CN9 and CN10.*

Make sure you use the correct component side. Improper installation can cause serious damage to your hardware!

2.3.1 Component side - Rev A1

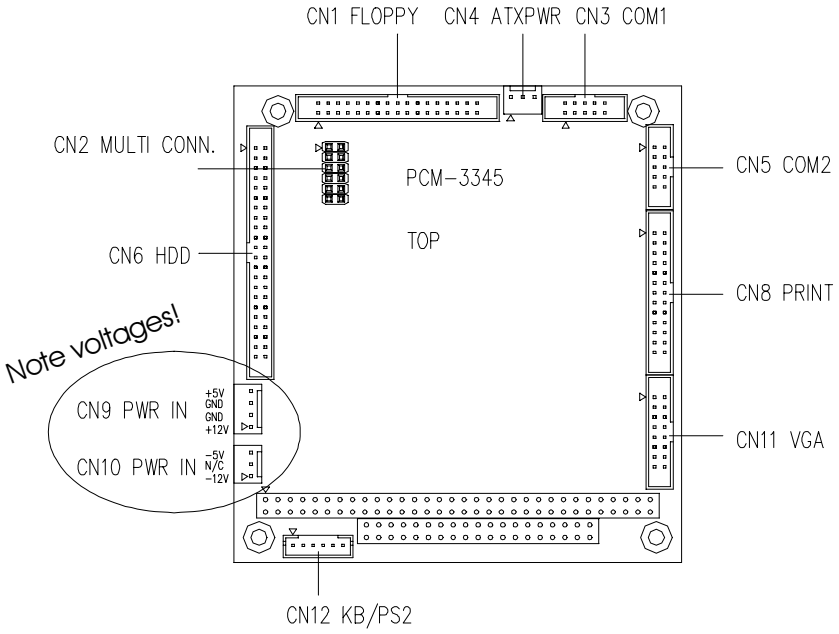


Figure 2-2: Component side connectors - Rev A1

2.3.2 Component side - Rev A2

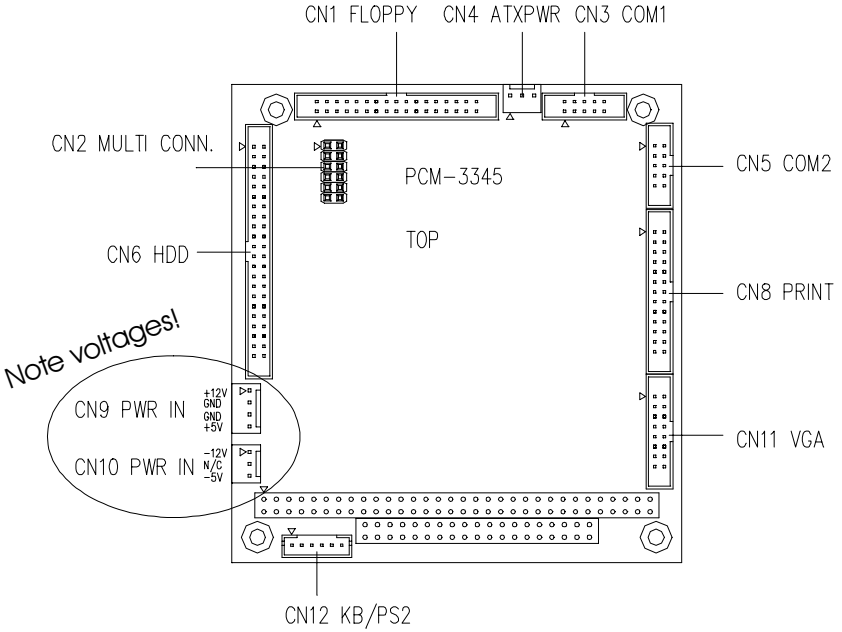


Figure 2-3: Component side connectors - Rev A2

2.3.3 Solder side

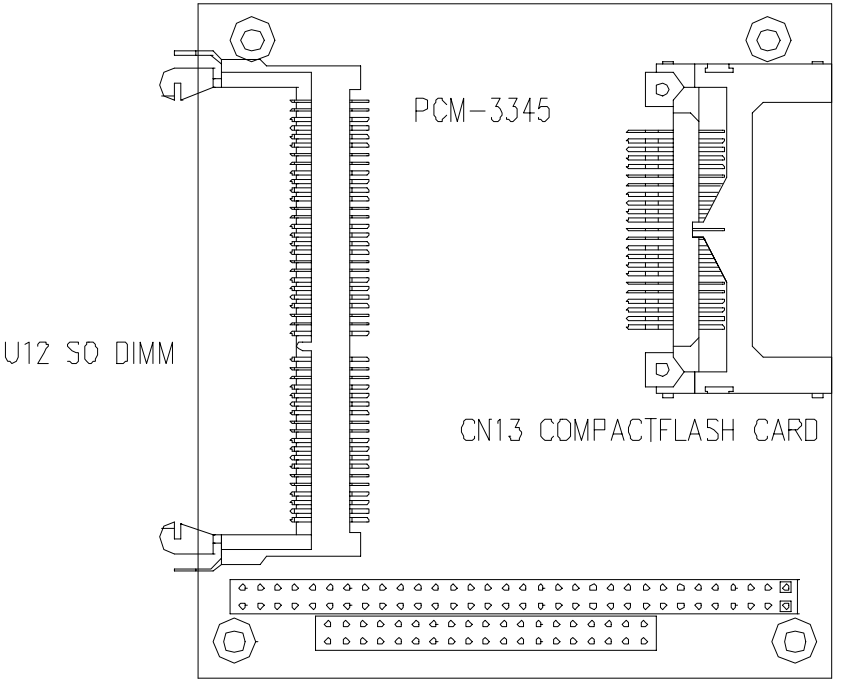
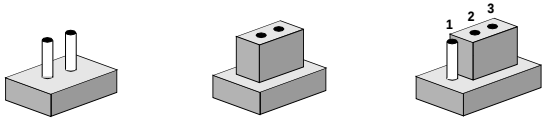


Figure 2-4: Connectors - solder side

2.4 Setting jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



Open **Closed** **Closed 2-3**

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

Open **Closed** **Closed 2-3**

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

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

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

2.5 Safety precautions

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.*

2.6 Installing DRAM (SODIMMs) (U12)

You can install anywhere from 8 MB to 32 MB of on-board EDO/FPM DRAM memory using 8, 16, or 32 MB 144-pin SODIMMs (Small Outline Dual In-line Memory Modules).

2.6.1 Installing SODIMMs

NOTE: The modules can only fit into a socket one way. Their gold pins must point down into the SODIMM socket.

The procedure for installing SODIMMs appears below. Please follow these steps carefully:

1. Make sure that all power supplies to the system are switched off.
2. Install the SODIMMcard. Install the SODIMMso that its gold pins point down into the SODIMM socket.
3. Slip the SODIMM into the socket at a 45 degree angle, and carefully fit the bottom of the card against the connectors.
4. Gently push the SODIMM into a perpendicular position until the clips on the ends of the SODIMM sockets snap into place.
5. Check to ensure that the SODIMM is correctly seated, and that all connector contacts touch. The SODIMM should not be able to be moved around in its socket.

2.7 IDE hard drive connector (CN6)

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. It also supports faster data transfer, PIO mode 3, mode 4, and LBA mode.

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-3345 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. Note that these connectors are not included in the PCM-3345 package.

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

1. Connect one end of the cable to CN6. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Connect a second drive as described above.

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

2.8 CompactFlash disk (CN13)

The PCM-3345 series 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. The maximum capacity of Advantech's CFC is 40 MB. To fit the Advantech CFC into the PCM-3345, 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 force).

2.9 Floppy drive connector (CN1)

You can attach up to two floppy drives to the the PCM-3345's on-board controller. Any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives is possible.

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

2.9.1 Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN1. 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. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

When connecting a 3½" 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 needed, connect the B: drive to the connectors in the middle of the cable as described as above.

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

2.10 Parallel port connector (CN8)

Normally, the parallel port is used to connect the card to a printer. The PCM-3345 includes a multi-mode (ECP/EPP/SPP) parallel port. It is accessed via CN8, 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.

2.11 Keyboard and PS/2 mouse connector (CN12)

The PCM-3345 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-3345 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.

2.12 Power connectors

2.12.1 Main power connector +5 V, +12 V (CN9)

Supplies main power to the PCM-3345 (+5 V) and devices that require +12 V.

2.12.2 Auxilary power connector (CN10)

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

2.13 IR connector (CN2 pin 2, 4, 6, 8, 10)

The PCM-3345 provides an IrDA port for transfer rates of 115 kbps. This connector supports the optional wireless infrared transmitting and receiving module, which is mounted on the system case. Configuration of the module is done through BIOS setup. You must also configure the setting through "IR Port Support" in **Peripheral Setup** to select whether UART2 is directed for use with COM2 or IrDA. Use the five pins as shown in Appendix A, and connect a ribbon cable from the module to the CPU board according to the pin assignments.

2.14 Serial ports (CN3, CN5)

The PCM-3345 offers two serial ports, both RS-232. These ports allow you to connect to any serial device (a mouse, printers, etc.) or communication network.

2.14.1 COM1 RS-232 port (CN3)

The serial port connector's pin head housing is mounted on the bottom edge of the card.

2.14.2 COM2 RS-232 (CN5)

The secondary port, located above COM1, consists of a 10-pin, dual-in-line pin head housing.

The IRQ and address range for both 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-3345 board's ports.

Table 2-3: Serial port default settings

Port	Address	Interrupt	Default
COM1	3E8, 3F8	IRQ4	3F8
COM2	2E8, 2F8	IRQ3	2F8

2.15 VGA interface connections

The PCM-3345 board's SVGA interface can facilitate conventional CRT displays. The card has a connector to support CRT VGA monitors.

2.15.1 CRT display connector (CN11)

CN11 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 CN11 is given in Appendix A.

2.16 Watchdog timer configuration

An on-board watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This is an invaluable protective device for standalone or unmanned applications. Please note that the PCM-3345's watchdog timer is always set on a 1.60 sec. interval.

2.17 ATX power (5VSB, PSON) input (CN4)

Please use the ATX cable (provided with your kit) to connect CN4 to an ATX power supply. This cable has an ATX power connector. The plug from the power supply can only insert one way, because of the different hole sizes. Make sure the pins are aligned, find the proper orientation, and push down firmly.

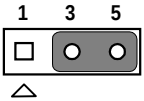
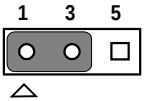
Important: Make sure that your ATX power supply can at least provide at least 10mA on the 5 volt standby lead (+5VSB). You may experience difficulty in powering on your system if your power supply cannot support the load.

2.18 Clear CMOS (CN2)

Clear CMOS: pin 3 and pin 5 shortage. (Normal: pin 1 and pin 3 shortage.)

Note: Pin 1 of each connector is indicated with a triangular mark on the PCB-NOT on the connectors. You can also use the triangular marks shown in the following diagrams as a reference.

Table 2-4: Clear CMOS

	Clear	Normal
CN2		

* default setting

CHAPTER 3

AMI BIOS Setup

This chapter describes how to set BIOS configuration data.

3.1 System test and initialization

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

3.1.1 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-3345's CMOS memory has an integral lithium battery backup. The battery backup should last at least ten years in normal service. When it finally runs down, you will need to replace the complete unit.

3.2 AMI 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.

3.2.1 Entering setup

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

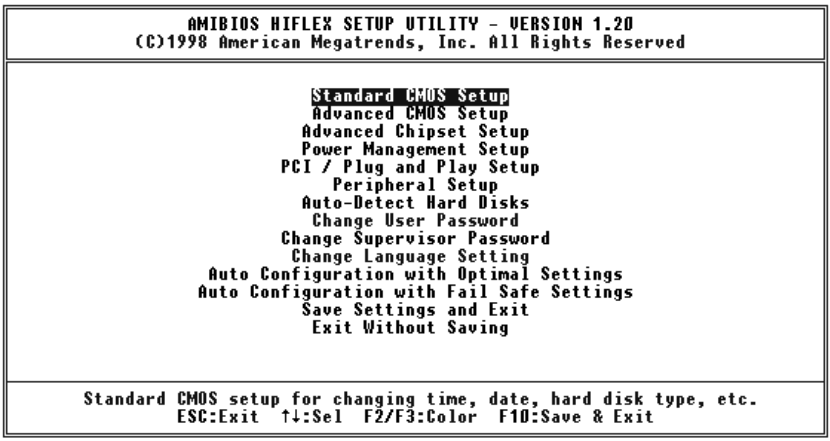


Figure 3-1: BIOS setup program initial screen

3.2.2 Standard CMOS setup

When you choose the Standard CMOS Setup option from the AMIBIOS HIFLEX 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.

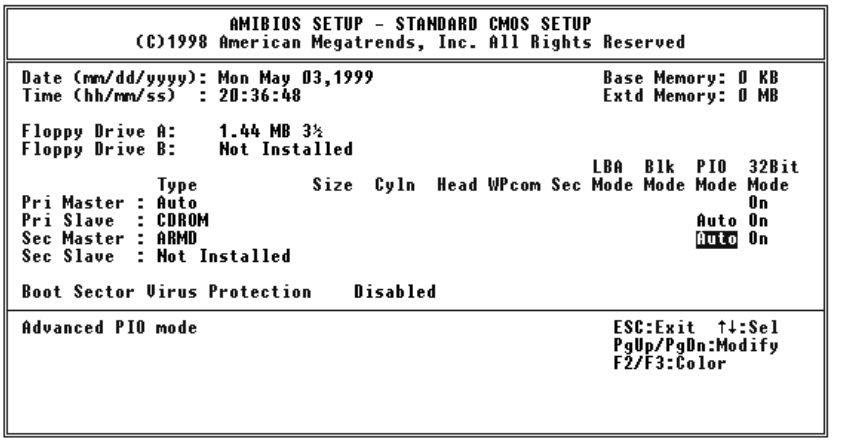


Figure 3-2: Standard CMOS setup screen

3.2.3 Advanced CMOS setup

By choosing the Advanced CMOS Setup option from the AMIBIOS HIFLEX SETUP UTILITY menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3345.

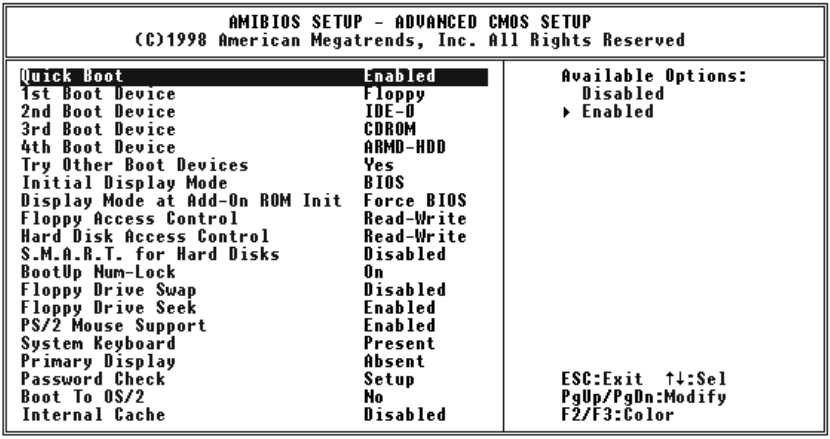


Figure 3-3: Advanced CMOS setup

3.2.4 Advanced chipset setup

By choosing the Advanced Chipset Setup option from the AMIBIOS HIFLEX SETUP UTILITY menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3345.

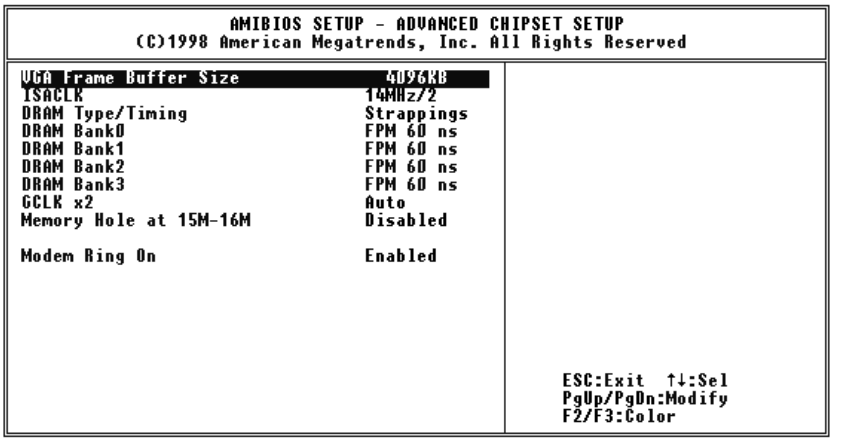


Figure 3-4: Advanced chipset setup

3.2.5 Power management setup

By choosing the Power Management Setup option from the AMIBIOS HIFLEX SETUP UTILITY menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3345.

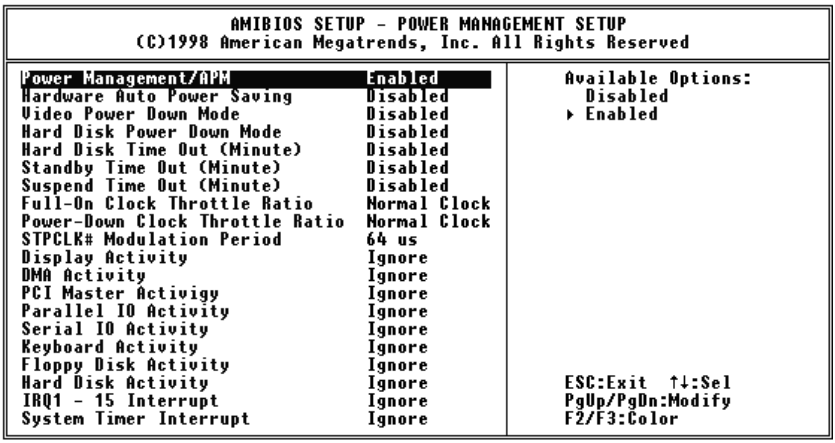


Figure 3-5: Power management setup

3.2.6 PCI / Plug and Play configuration

By choosing the PCI / Plug and Play Setup option from the AMIBIOS HIFLEX SETUP UTILITY menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3345.

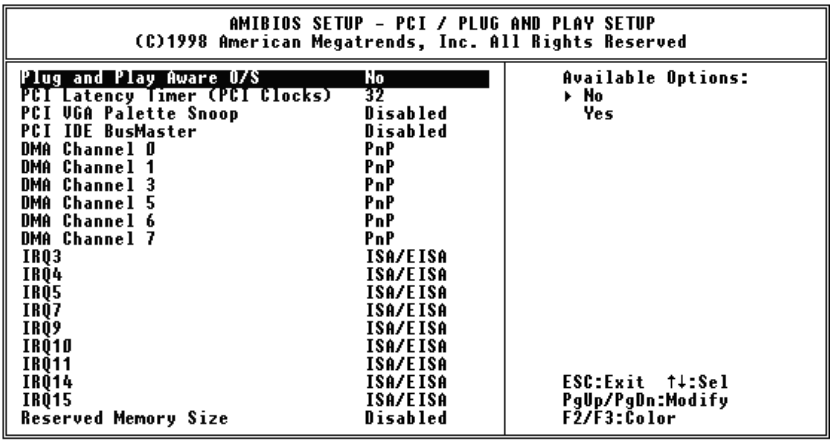


Figure 3-6: PCI / Plug and Play configuration

3.2.7 Peripheral setup

By choosing the Peripheral Setup option from the AMIBIOS HIFLEX SETUP UTILITY menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3345.

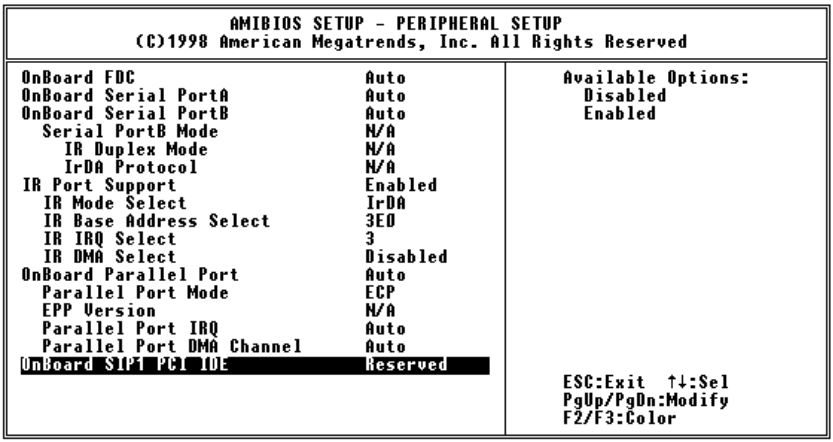


Figure 3-7: Peripheral setup

3.2.8 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-3345 on. Two settings can be used here: Optimal or Fail Safe.

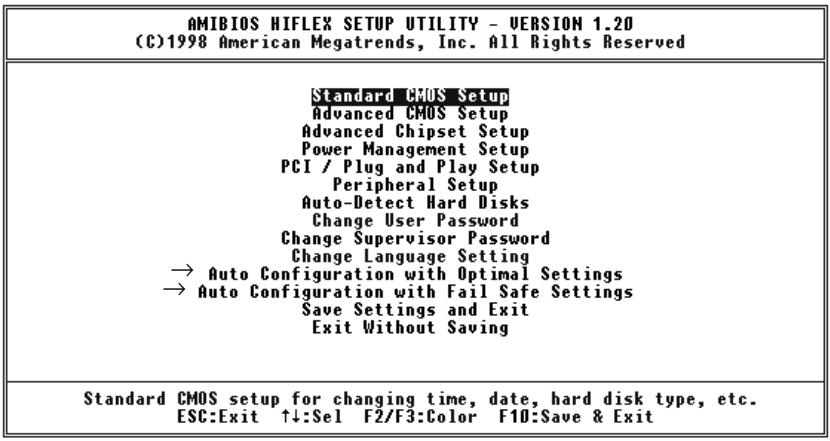


Figure 3-8: BIOS setup program initial screen (showing Auto Configuration items)

3.2.9 Change password

To change the password, choose the Change User Password option form the AMIBIOS HIFLEX 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:

   Enter 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.

3.2.10 Auto-detect hard disks

The Auto-Detect Hard Disks utility in the AMIBIOS HIFLEX SETUP UTILITY menu can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration.

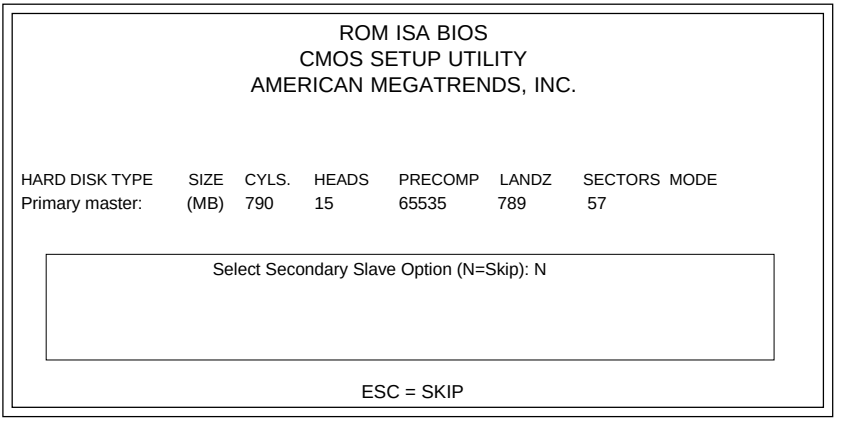


Figure 3-9: IDE HDD auto detection screen

3.2.11 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.

3.2.12 Exit without saving

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

CHAPTER 4

SVGA Setup

- Introduction
- Installation of SVGA driver for WINDOWS 3.1/95

4.1 Introduction

The PCM-3345 has an on-board VGA interface. The specifications and features are described as follows:

4.1.1 Chipset

The PCM-3345 uses a SGS Thomson STPC for its SVGA 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.

4.1.2 Display memory

With 512 K ~ 4 MB share memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 64 K colors.

4.2 Installation of SVGA driver

Complete the following steps to install the SVGA driver. Follow those procedures in the flow chart that apply to the operating system which you are using within your PCM-3345.

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 "D" throughout this chapter.

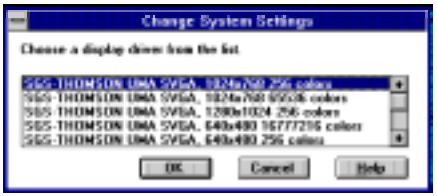
Note 2: <Enter> means pressing the “Enter” key on the keyboard.

4.2.1 Installation for Windows 3.1

1. a. Insert the CD/disk into the CD-ROM/ FDD drive.
   b. Select "Main" in Program Manager.
   c. Double click the "Windows Setup" icon.
   d. Select "Change System Setting" in Options.
   e. Select "Other display (Requires disk from OEM)" in display.

2. a. Type in the path of the VGA Win31 (driver A:\ or D:\).

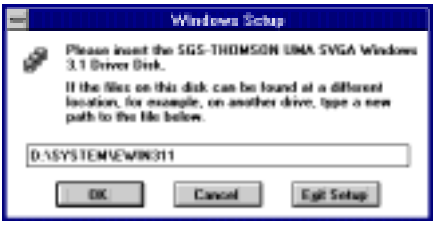
3. a. During the installation, you can choose the resolution and colors you want to use.
   b. Press "OK".



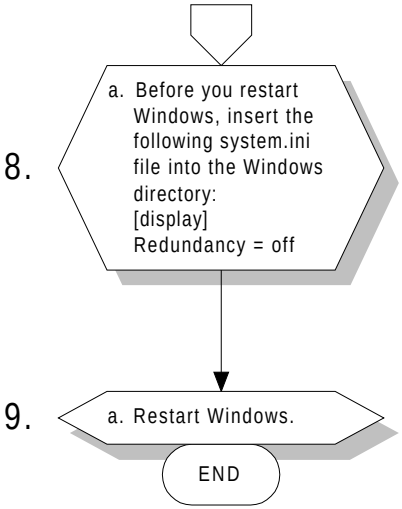
4. a. Type the path of the Win31 source code.
   b. Press "OK".

5. a. Type the path of Win31 VGA driver.
   b. Press "OK".

6. a. Type the path of the Win31 source.
   b. Press "OK" to finish.

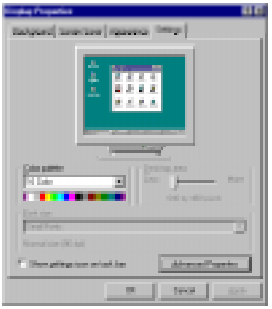


7. a. When Windows asks you to restart, select "Continue".

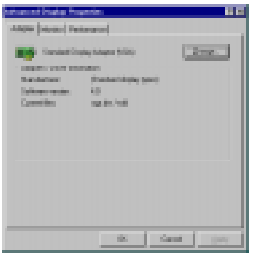

8.
a. Before you restart Windows, insert the following system.ini file into the Windows directory:
[display]
Redundancy = off
9.
a. Restart Windows.
END

4.2.2 Installation for Windows 95

1. a. Select "Start", "Settings", "Control Panel", "Display", "Settings".
   b. Press "Advanced Properties".



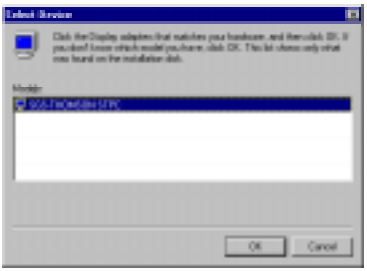
2. a. Choose the "Adapter" label.
   b. Press the "Change..." button.



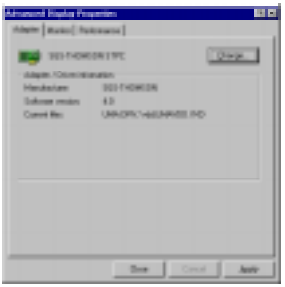
3. a. Press the "Have Disk" button.

4. a. Insert the disc into the CD-ROM drive.
   b. Type "A:\95".
   c. Press "OK".

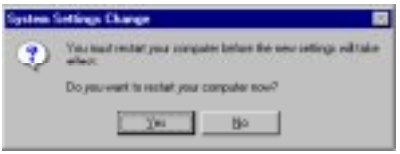
5. a. Select the highlighted item.
   b. Click the "OK" button.



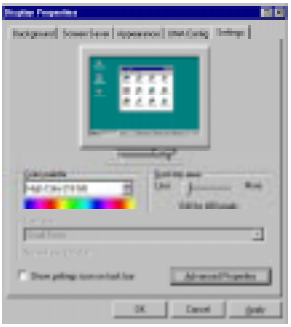
6. a. SGS-Thomson STPC appears in the adapter label.
   b. Click the "Apply" button.



7. a. Press "Yes" to reboot.



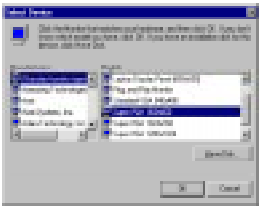
8. a. Repeat Step 1 on the previous page of this manual. The "UMA config" label appears in "Display".
   b. Adjust resolution and color.



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

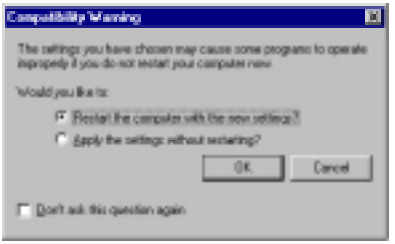
10. a. Press "Yes" to set set the monitor type.

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



12. a. Choose "Restart" to reboot.

END



Note: *You may find a "PCI Early non-VGA device" message in System Properties. This message merely indicates a normal situation, and your system's functionality remains unimpaired. Advantech will further resolve the display of this message in the near future.*

4.3 Further information

You can obtain further information about PCI/SVGA installation in your PCM-3345, including driver updates, troubleshooting guides and FAQ lists. Simply visit the following web resource:

Advantech web site: **http://support.advantech.com**

APPENDIX A

Pin Assignments

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

- Main power connector
- Keyboard and mouse connector
- Power input connector
- IDE connector
- RS-232 serial port connector
- Floppy connector
- Parallel connector
- IR connector

A.1 Floppy drive connector (CN1)

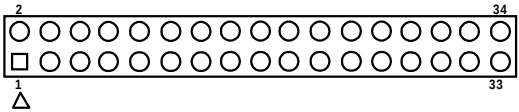
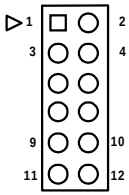


Table A-1: Floppy drive connector (CN1)

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

* low active

A.2 Multi-functional connector (CN2)



IR Pin 1

Table A-2: Multi-functional connector (CN2)

Pin	Signal	Pin	Signal
1	BAT_IN	2	IR_VCC
3	VBAT	4	N/C
5	GND	6	IR_RX
7	MR	8	IR_GND
9	MR_GND	10	IR_TX
11	PAN_SW_GND	12	PAN_SW

A.3 COM1 RS-232 serial port (CN3)

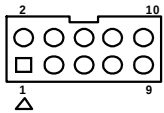


Table A-3: COM1 RS-232 series port (CN3)

Pin	RS-232 port
1	DCD
2	DSR
3	RxD
4	RTS
5	TxD
6	CTS
7	DTR
8	RI
9	GND
10	N/C

A.4 ATX power (SVSB, PSON) input connector (CN4)

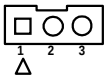


Table A-4: ATX power input connector (CN4)

Pin	Signal
1	SVSB
2	N/C
3	PS_ON

A.5 COM2 RS-232 serial port (CN5)

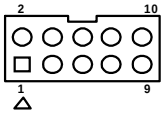


Table A-5: COM2 RS-232 series port (CN5)

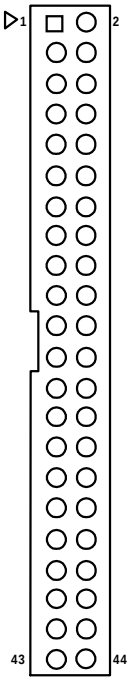
Pin	RS-232 port
1	DCD
2	DSR
3	RxD
4	RTS
5	TxD
6	CTS
7	DTR
8	RI
9	GND
10	N/C

A.6 IDE hard drive connector (CN6)

Table A-6: IDE hard drive connector (CN6)

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

* low active



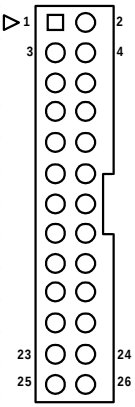
A.7 PC/104 connector (CN7)

For details on PC/104 connectors, please refer to Apeendix C, table C-1.

A.8 Parallel port connector (CN8)

Table A-8: Parallel port connector (CN8)

Pin	Signal
1	STROBE*
2	AUTOFD*
3	D0
4	ERROR*
5	D1
6	INIT*
7	D2
8	SLCTINI*
9	D3
10	GND
11	D4
12	GND
13	D5
14	GND
15	D6
16	GND
17	D7
18	GND
19	ACK*
20	GND
21	BUSY
22	GND
23	PE
24	GND
25	SLCT
26	GND



* low active

A.9 Main power connector (CN9)

Table A-9: Main power connector (CN9)

Pin	Signal
1	+12 V
2	GND
3	GND
4	+5 V (V_{CC})

A.10 Power input connector (CN10)

Table A-10: Peripheral power connector (CN10)

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

A.11 VGA connector (CN11)

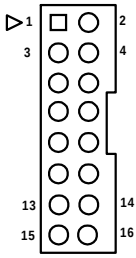


Table A-11: VGA connector (CN11)

Pin	Signal	Pin	Signal
1	RED_OUT	2	VCC_VGA
3	GREEN_OUT	4	GND
5	BLUE-OUT	6	N/C
7	N/C	8	D2C_DATA
9	GND	10	HS
11	GND	12	VS
13	GND	14	D2C_CLOCK
15	GND	16	N/C

A.12 Keyboard and mouse connnector (CN12)

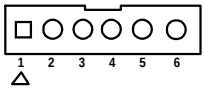


Table A-12: Keyboard and mouse connector (CN12)

Pin	Signal
1	KB DATA
2	MS DATA
3	GND
4	V_{CC}
5	KB CLOCK
6	MS CLOCK

APPENDIX B

System Assignments

- System I/O ports
- DMA channel assignments
- Interrupt assignments
- 1st MB memory map

B.1 System I/O ports

Table B-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
170- 178	2nd Fixed disk for Compact Flash
1F0-1F8	1st Fixed disk
200-207	Available
278-27F	Reserved
2F8-2FF	Serial port 2
300-31F	Available
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
443	Watchdog timer

B.2 DMA channel assignments

Table B-2: DMA channel assignments

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

* parallel port DMA default setting: DMA 3

parallel port DMA select: DMA 1.3

B.3 Interrupt assignments

Table B-3: Interrupt assignments

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

B.4 1st MB memory map

Table B-4: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
D800h - EFFFh	Unused
C800h - D7FFh	Unused
C000h - C7FFh	Expansion ROM**
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory
D000 - D400H	Available

APPENDIX C

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

C.1 Installing PC/104 modules

The PCM-3345's PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCM-3345 is quick and simple. The following steps explain how to mount the PC/104 modules:

1. Remove the PCM-3345 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 opposite.)
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.

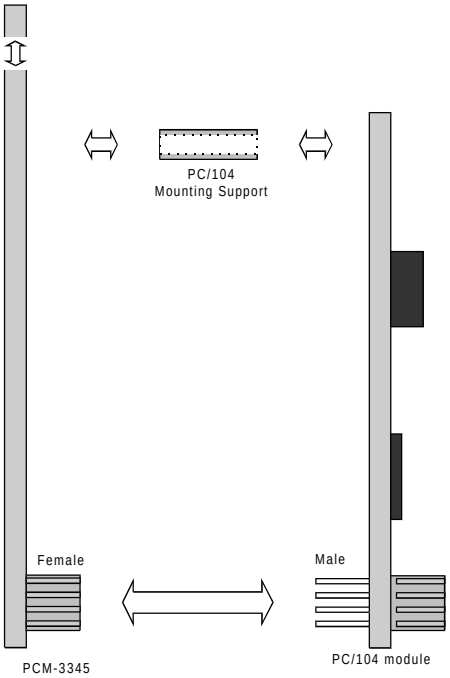


Figure C-1: PC/104 module mounting diagram

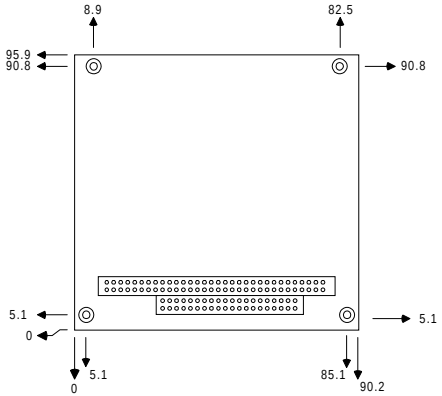


Figure C-2: PC/104 module dimensions (mm) (±0.1)

Table C-1: PC/104 connectors (CN7)

Pin Number	Signal Row A	Row B	Signal 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	—	—
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	—	—

* active low

APPENDIX D

Mechanical Drawing

D.1 PCM-3345 mechanical drawing

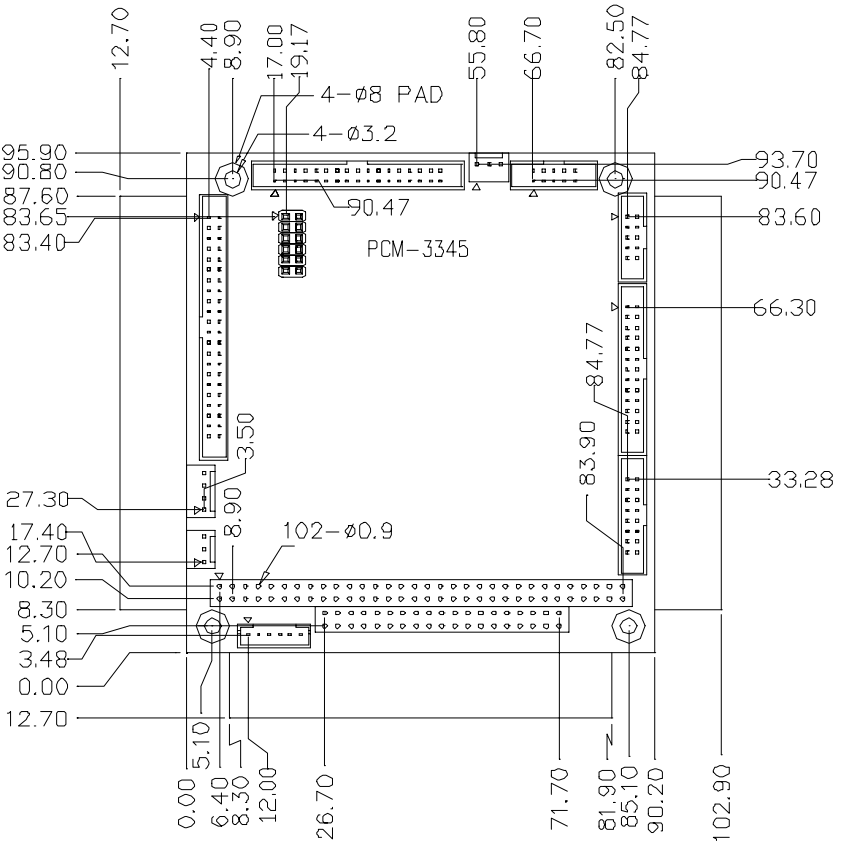


Figure D-1: PCM-3345 mechanical drawing

APPENDIX E

Programming the Watchdog Timer

The PCM-3345 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.

E.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 or generate an interrupt on IRQ11. 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 or invoke an IRQ, 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
```