PCM-3335
All-in-one 386SX with Flat
Panel/CRT PC/104 Module

FCC STATEMENT

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

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

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Packing list

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

- 1 PCM-3335 CPU card
- 1 5-pin PC-AT keyboard adapter
- 1 Hard disk drive (IDE) interface cable (40 pin)
- 1 Floppy disk drive interface cable (34 pin)
- 1 Flat panel cable (44 pin)
- PC/104 module mounting supports
- 1 SVGA adapter (16 pin)
- 1 parallel port adapter (26-pin)
- 2 Serial port adapters (10-pin)
- 1 utility disk with SVGA utility programs and drivers
- 1 VGA BIOS disk which contains the standard BIOS files for both CRT and LCD displays

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

Contents

General Information

This chapter provides background information for the PCM-3335.

Sections include:

- Card specifications

- Board layout

Introduction

The PCM-3335 comes equipped with an embedded microcontroller ALI M6117 which is Intel 386SX-40 compatible. In addition, it comes with two serial ports (RS-232), one bi-directional printer port supporting SPP, ECP and EPP modes, an IDE HDD interface and a floppy disk controller. With its industrial grade reliability, the PCM-3335 can operate continuously at temperatures up to 140º F (60º C).

The PCM-3335 is specially designed as a compact all-in-one CPU card which incorporates a PC/104 connector into its design, making non-passive backplane SBC applications possible. The numerous features provide an ideal price/performance solution for high-end commercial and industrial applications where stability and reliability are essential.

The PCM-3335 features an SVGA interface which supports CRT and Flat Panel (TFT, STN, Mono and EL displays), with 512 KB on-board display memory.

Specifications

CPU	40MHz 80386SX
Bus Interface	PC/104 (ISA) bus
Data Bus	16-bit
Processing Ability	32-bit
RAM memory	2MB or 4MB
Shadow RAM	Support for system and video BIOS up to 256KB in 32KB blocks
Display Memory	512KB DRAM chip on board
IDE HDD interface	Supports up to two IDE (AT bus) HDDs
FDD interface	Supports up to two FDDs
Parallel port	Bi-directional parallel port (SPP/ECP/EPP modes)
Serial ports	Two RS-232 (both use 16C550 UART with 16-byte FIFO)
Real time clock	ALI M6117B internal RTC, lithium battery for up to 10 years data retention
PC/104 connector	104 pins for 16-bit bus. Supports pc/104 modules such as Flash/RAM/ROM disk modules and/or a PCMCIA module.
DMA channels	7
Interrupt levels	15
Keyboard interface	5-pin mini-DIN keyboard connector.
Bus speed	8 MHz
Max. power req.	+5V @ 1.5A (typical)
Power supply voltage	+5V ±10%
Operating temp.	32 to 140º F (0 to 60º C)
Board size	3.55" (L) x 3.775" (W) (90 mm x 96 mm)
MTBF	55,532 hours @ 25º C (Standard: MIL-HDBK-217F Notice 1)

Installation

This chapter explains set up procedures for the PCM-3335 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Jumpers and connectors

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

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

Jumpers and connectors

Number	Function
HARD CON.	HDD connector
FLOPPY CON.	FDD connector
FLAT PANEL CON.	LCD panel connector
PRINTER PORT	Parallel port
COM2	COM2 (RS-232)
COM1	COM1 (RS-232)
VGA CON.	VGA connector
CN2	PC/104 (64-pin)
CN1	PC/104 (40-pin)
PS2 KB	External keyboard connector
CN4, CN6	Power connector
HD-LED	HDD LED connector
RST SW.	Reset switch connector
CLEAR CMOS	Clear CMOS connector

Board Layout

Board layout diagram of the PCM-3335 showing:
- PC/104 Interface
- PS2 KB.
- CN4
- CN6
- VGA CON.
- ALI M6117B
- DRAM
- DRAM
- COM1
- BAT.
- AMI Flash BIOS
- UMC UM8663BF
- COM2
- FLAT PANEL CON.
- CLEAR CMOS
- HD-LED
- RST SW.
- HARD CON.
- PRINTER PORT
- FLOPPY CON.
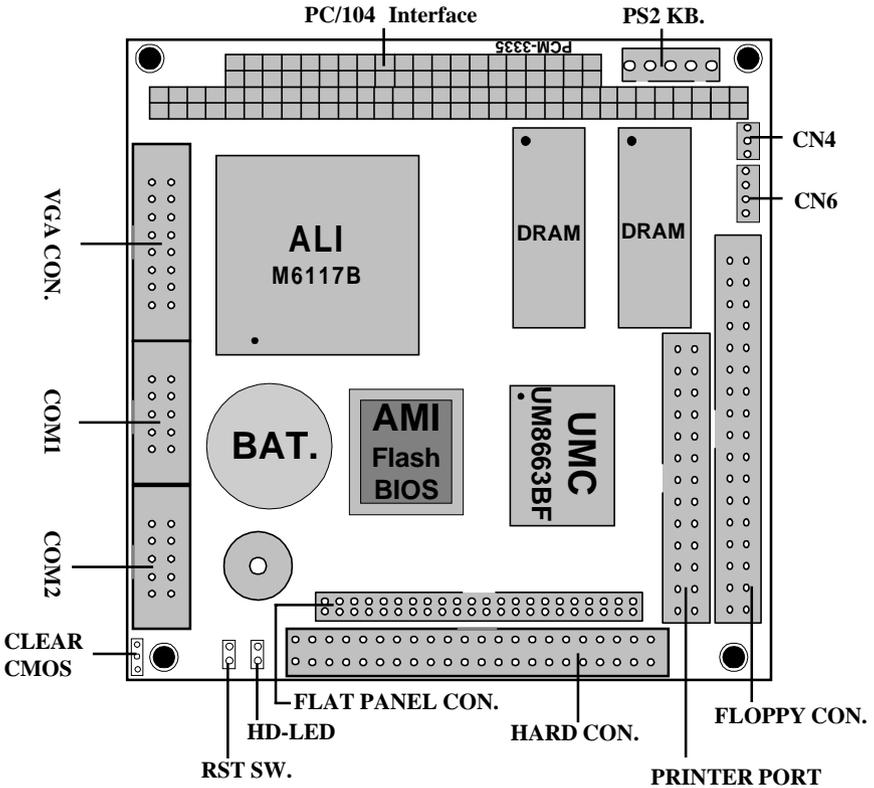
Setting jumpers

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

Open   **Closed**   **Closed 2-3**
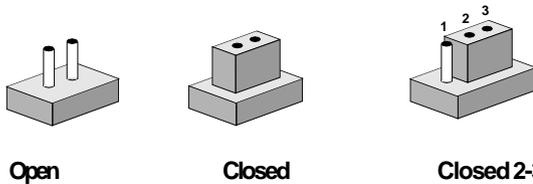
The jumper settings are schematically depicted in this manual as follows:

Open   **Closed**   **Closed 2-3**
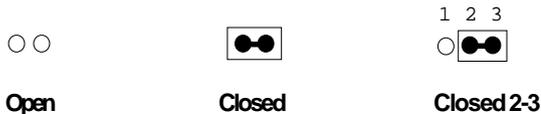
A pair of needle-nose pliers may be helpful when working with jumpers.

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

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

Safety precautions

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

Caution! Always ground yourself to remove any static charge before touching the CPU card. 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.

IDE hard drive connections (HARD CON.)

You can attach two Enhanced Integrated Device Electronics hard disk drives to the PCM-3335's internal controller. The card comes with a 40-pin flat cable.

Connecting the hard drive

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

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

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

Unlike floppy drives, you can make the connections with any of the connectors on the cable. If you install two drives, you will need to set one as the master and one as the slave. You do this using jumpers on the drives. If you install just one drive, set it as the master.

Pin assignments

The following table lists the pin numbers and their respective signals:

IDE Connector (HARD CON.)

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	N.C,	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	BALE
29	N.C.	30	GND
31	IRQ	32	-I/O CS16
33	A1	34	N.C.
35	A0	36	A2
37	CS0	38	CS1
39	-ACT	40	GND
41	VCC	42	VCC
43	GND	44	NC

Floppy drive connections (FLOPPY CON.)

You can attach up to two floppy disks to the PCM-3335's on-board controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

The PCM-3335 CPU card comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. There are two sets of floppy disk drive connectors, one in the middle, and one on the other end. Each set consists of a 34-pin flat-cable connector (usually used for 3.5" drives) and a printed-circuit board connector (usually used for 5.25" drives).

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into the floppy disk connector.

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

Pin assignments

The following table lists the pin assignments for the floppy disk connector:

FLOPPY DISK Connector (FLOPPY CON.)

Pin	Signal	Pin	Signal
1~33 (odd)	GND	2	High density
4, 6	Unused	8	Index
10	Motor enable A	12	Driver select B
14	Driver select A	16	Motor enable B
18	Direction	20	Step pulse
22	Write data	24	Write enable
26	Track 0	28	Write protect
30	Read data	32	Select head
34	Disk change		

Parallel port (PRINTER PORT)

Normally, the parallel port is used to connect the card to a printer. The PCM-3335 includes an on-board parallel port, accessed through PRINTER PORT, and a 26-pin flat-cable connector. The CPU card comes with an adapter cable, which lets you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other, mounted on a retaining bracket.

Installing the retaining bracket

The retaining bracket installs at an empty slot in your system's chassis. It provides an external port that allows your parallel peripheral to access to the card's parallel port connector.

1. Find an empty slot in your chassis.

2. Unscrew the plate that covers the end of the slot.

3. Screw in the bracket in place of the plate.

4. Next, attach the flat-cable connector to PRINTER PORT. Wire 1 of the cable is red or blue, and the other wires are gray. Make sure that Wire 1 connects to Pin 1 of PRINTER PORT. Pin 1 is on the right side of PRINTER PORT.

Pin assignments

PRINTER Connector (PRINTER PORT)

Pin	Signal	Pin	Signal
1	Strobe	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 9	10	-Acknowledge
11	Busy	12	Paper empty
13	+ Select	14	- Auto feed
15	- Error	16	- Init printer
17	- Select input	18~25	GND

Power supply connections (CN4, CN6)

Power supply connector

In single board computer (non-passive backplane) applications, you will need to connect power directly to the PCM-3335 board using CN4 and CN6. This connector is fully compatible with the standard PC power supply connectors. See the following table for its pin assignments:

Power connector (CN6)	
Pin	**Function**
1	+12 V
2	GND
3	GND
4	+5 V

Power connector (CN4)	
Pin	**Function**
1	-12 V
2	GND
3	-5 V

Display connections
(VGA CON., FLAT PANEL CON.)

The PCM-3335 CPU card's SVGA connector (VGA CON.) with PCI bus supports monochrome display as well as high resolution color displays. The card also features an LCD connector (FLAT PANEL CON.), which allows you to connect various flat panel displays. The following table lists their pin assignments:

LCD connector (FLAT PANEL CON.)

Pin	Function	Pin	Function
1	+12 V_{DC}	2	+12 V_{DC}
3	GND	4	GND
5	+5 V_{DC}	6	+5 V_{DC}
7	ENLCD	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	LCD clock (SHFCLK)	36	FLM (V SYS)
37	ACDCLK	38	LP (H SYS)
39	GND	40	-Blank
41	GND	42	ASFCLK
43	+5 V	44	+5 V

SVGA connector (VGA CON.)			
Pin	**Function**	**Pin**	**Function**
1	RED	9	SIGNAL GND
2	NC	10	H-SYNC
3	GREEN	11	CHASSIS GND
4	SIGNAL GND	12	V-SYNC
5	BLUE	13	CHASSIS GND
6	NC	14	NC
7	NC	15	CHASSIS GND
8	NC	16	NC

Keyboard connections (PS2 KB.)

The PCM-3335 board provides one keyboard connector. A 5-pin connector (PS2 KB.) supports passive backplane applications.

Keyboard connector (PS2 KB.)	
Pin	**Function**
1	K.B. clock
2	K.B. data
3	N.C.
4	GND
5	+5 V_{DC}

Serial ports (COM1, COM2)

The PCM-3335 offers two serial ports (RS-232). These ports let
you connect to serial devices (a mouse, printers, etc.), or a commu-
nication network.

Reset switch (COM1, COM2)	
Pin	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	N/C

Reset switch (RST SW.)

You can connect an external switch to easily reset your computer.
This switch restarts your computer as if you had turned off the
power then turned it back on. The following table shows the pin
assignments for the RST SW.

Reset switch (RST SW.)	
Pin	Function
1	Reset
2	GND

HDD LED (HD-LED)

You can connect a LED to indicate that an IDE device is in use.
The pin assignments for this jumper are as follows.

HDD LED pin assignments (HD-LED)	
Pin	**Function**
1	-R/W IDE
2	Pull high

Clear CMOS (CLEAR CMOS)

You can connect an external switch to clear CMOS. This switch
closes CLEAR CMOS and turns on the power, at which time the
CMOS setup can be cleared.

Clear CMOS (CLEAR CMOS)	
Protect (default)	**Clear CMOS**
1 2 3	1 2 3

AMIBIOS Setup

This chapter describes how to set BIOS
configuration data.

General information

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

Starting AMIBIOS setup

As POST executes, the following appears;

```
Hit <DEL> if you want to run SETUP
```

Press <DEL> to run AMIBIOS setup.

AMIBIOS main menu

The AMIBIOS setup screen appears as follows:

```
AMIBIOS SETUP — BIOS SETUP UTILITIES
(C) 1995 American Megatrends, Inc.  All Rights Reserved


              Standard CMOS Setup
              Advanced CMOS Setup
              Advanced Chipset Setup
            Power Management Setup
              Change User Password
           Change Supervisor Password
             Change Language Setting
      Auto-configuration with Optimal Settings
     Auto Configuration with Fail Safe Settings
               Save Settings and Exit
                Exit Without Saving


Standard CMOS setup for changing time, date, hard disk type, etc.
   ESC: Exit     :Sel    F2/F3: Color  F10: Save and Exit
```

Standard Setup

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

The Standard Setup screen appears:

```
            AMIBIOS SETUP — STANDARD CMOS SETUP
       (C) 1995 American Megatrends, Inc.  All Rights Reserved


Date (mm/dd/yyyy):          Wed Aug 21, 1996
Time (hh/mm/ss):            12: 19: 46

Floppy Drive A:             1.44 MB  3½"
Floppy Drive B:             Not Installed
                                                  LBA   BLK   PIO   32-bit
              Type    Size Cyln Head WPcom Sec    Mode  Mode  Mode  Mode
Pri Master:   Auto
Pri Slave     Auto


Boot Sector Virus Protection          Disabled

Month:   Jan - Dec                               Esc: Exit    :Sel
Day:     01-31                                   PgUp/PgDn: Modify
Year:    1901 -2099                              F2/F3: Color
```

Date, Day and Time Configuration
The current values for each category are displayed. Enter new values through the keyboard.

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

Master Disk, Slave Disk

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

Boot Sector Virus Protection

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

Advanced Setup

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

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

```
          AMIBIOS SETUP — ADVANCED CMOS SETUP
       (C) 1995 American Megatrends, Inc.  All Rights Reserved

Quick Boot               Enabled
BootUp Num-Lock          On
BootUp Sequence          C:, A:
Floppy Drive Swap        Disabled
Mouse Support            Enabled
System Keyboard          Present
Primary Display          EGA/VGA
Password Check           Setup
C000, 32K Shadow         Enable
C800, 32K Shadow         Disabled
D000, 32K Shadow         Disabled
D800, 32K Shadow         Disabled
E000, 32K Shadow         Disabled
E800, 32K Shadow         Disabled
Onboard IDE              Enabled
Onboard FDC              Enabled
Onboard Serial Port 1    3F8
Onboard Serial Port 2    2F8
Onboard Parallel Port    378
Parallel Port Mode       SPP
ECP DMA                  DMA 3
Parallel Port IRQ        IRQ 7
```

The following is a list of options offered by Advanced Setup.

Advanced Setup Options

Function	Options
Quick Boot	Disable
	Enable
BootUp Num-Lock	On
	Off
BootUp Sequence	C:, A:
	A:, C:
Floppy Drive Swap	Disable
	Enable
Mouse Support	Disable
	Enable
System Keyboard	Disable
	Enable
Primary Display	VGA/EGA
	CGA 40 x 25
	CGA 80 x 25
	Mono
	Absent
Password Check	Setup
	Always
CO0O, 32K, Shadow	Disable
	Enable
C8OO, 32K, Shadow	Disable
	Enable
D0OO, 32K, Shadow	Disable
	Enable
D8OO, 32K, Shadow	Disable
	Enable
E0OO, 32K, Shadow	Disable
	Enable
E8OO, 32K, Shadow	Disable
	Enable

Advanced Setup Options (continued)

Onboard IDE	Disable
	Enable
Onboard FDC	Disable
	Enable
Onboard Serial Port 1	Disable
	3F8
	2F8
	3E8
	2E8
Onboard Serial Port 2	Disable
	3F8
	2F8
	3E8
	2E8
Onboard Parallel Port	Disable
	378
	278
	3BC
Parallel Port Mode	SPP
	EPP
	ECP
	EPP & ECP
ECP DMA	DMA 3
	DMA 1
Parallel Port IRQ	IRQ 7
	IRQ 5

Advanced Chipset Setup

Select the Advanced Chipset Setup from the AMIBIOS Setup main menu to enter the Chipset Setup.

The standard options of the Chipset Setup are shown in the following table. A detailed list of available options is also provided.

```
                 AMIBIOS SETUP — ADVANCED CHIPSET SETUP
            (C) 1995 American Megatrends, Inc.  All Rights Reserved

AT Bus Clock                        14.318/2    Available Options:
Slow Refresh                        15 us          14.318/2
Memory Remap                        Disable        PCLK2/10
RAS Precharge time                  2.5T
RAS Active Time Insert Wait         Disable
CAS Precharge Time Insert Wait      Disable
Memory Write Insert Wait            Disable
Memory Miss Read Insert Wait        Disable
ISA I/O High Speed                  Disable
ISA Memory High Speed               Disable
ISA Write cycle end Insert Write    Disable
I/O Recovery                        Disable
I/O Recovery  Period                0 us
On-Chip I/O Recovery                Disable
16Bit ISA Insert Wait               Disable

                                                ESC: Exit   :Sel
                                                PgUp/PgDn: Modify
                                                F2/F3: Color
```

Chipset Setup Options

Function	Options
At Bus Clock	14.318/2
	PCLK2/10
Slow Refresh	15us
	6Ous
	120us
Memory Remap	Disable
	Enable
RAS Precharge Time	1.5T
	2.5T
	3.5T
RAS Active Time Insert Wait	Disable
	Enable
CAS Precharge Time Insert Wait	Disable
	Enable
Memory Write Insert Wait	Disable
	Enable
Memory Miss Read Insert Wait	Disable
	Enable
ISA I/O High Speed	Disable
	Enable
ISA Memory High Speed	Disable
	Enable
ISA Write cycle end Insert Wait	Disable
	Enable
I/O Recovery	Disable
	Enable
I/O Recovery Period	Disable
	Enable
On-Chip I/O Recovery	Disable
	Enable
16-bit ISA Insert Wait	Disable
	Enable

Change User Password

1) Select this option from the main menu

2) Enter the Password and Press <Enter>

3) Retype the Password and Press <Enter>

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

Auto Configuration with Optimal Settings
You can load the optimal default settings for the AMIBIOS setup
options by selecting it from the main menu. The optimal default
settings are best case values that should optimize system perfor-
mance. If CMOS RAM is corrupted, the optimal settings are
loaded automatically.

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

SVGA Setup

The PCM-3335 features an on-board flat panel/VGA interface. This chapter provides instructions for installing and operating the software drivers on the included display driver diskette.

Simultaneous display mode

The 65545 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. It also supports interlaced and non-interlaced analog monitors (VGA color and VGA monochrome) 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 supported as analog monitors.

Both CRT and panel displays can be used simultaneously. The PCM-3335 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. In the utility diskette, there are three COM files which can be used to select the display. Simply type the filename at the DOS prompt:

CT.COM Enables CRT display only

FP.COM Enables panel display only

SM.COM Enables both displays at the same time.

Sleep mode

The display driver diskette contains two files that support sleep mode. Simply type the filename at the DOS prompt:

ON.COM switches to normal display mode.

OFF.COM switches to sleep mode.

Software support

The drivers support the following applications using the filenames and resolutions listed:

Application	Filename	Resolution	Colors
Windows 3.1	LINEAR4.DRV	640x480	16
		800x600	16
		1024x768	16
	LINEAR8.DRV	640x480	256
		800x600	256
		1024x768	256
	LINEAR16.DRV	640x480	64K
	LINEAR24.DRV	640x480	16M
AutoCAD R12	RCTURBOC.EXP	640x480	16
		800x600	16
		1024x768	16
		640x480	256
		800x600	256
		1024x768	256
		640x480	32K
		640x480	64K
		640x480	16M
Lotus 1-2-3 2.0 and Lotus Symphony 1.0,1.1			
	V132X25.DRV	132x25 (Text)	16
	V132X50.DRV	132x50 (Text)	16
VESA 1.2	VESA.COM	800x600	16
		1024x768	16
		640x400	256
		640x480	256
		800x600	256
		1024x768	256
		640x480	32K
		640x480	64K

Word 5.0	VGA600.VID	800x600	16
	VGA768.VID	1024x768	16
Word 5.5	VGA55600.VID	800x600	16
	VGA55768.VID	1024x768	16
WordPerfect 5.0	CHIPS600.WPD	800x600	16
	CHIPS768.WPD	1024x768	16
WordPerfect 5.1	VGA600.VRS	800x600	16
	VGA768.VRS	1024x768	16

Driver installation

Necessary prerequisites

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver or utility you should: know how to copy files from a floppy disk to a directory on the hard disk, understand the MS-DOS directory structure, and know how to format a floppy disk. If you are uncertain about any of these concepts, please refer to the DOS or Windows user reference guides for more information before you proceed with the installation.

Before you begin

Before you begin installing software drivers, you should make a backup copy of the display driver diskette and store the original in a safe place. The display driver diskette contains drivers for several versions of certain applications. You must install the correct version in order for the driver to work properly so make sure you know which version of the application you have.

Windows setup

These drivers are designed to work with Microsoft Windows 3.1. You may install these drivers through Windows or in DOS.

Step 1: Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly.

Step 2: Place the display driver diskette in drive A. In Windows Program Manager, choose *File* from the Options Menu. Then from the pull-down menu, choose *Run . . . .* At the command line prompt, type **A:\WINSETUP**. Press the <ENTER> key or click *OK* to begin the installation. At this point the setup program locates the directory where Windows is installed. For proper operation, the drivers must be installed in the Windows subdirectory. Press <ENTER> to complete the installation. Once completed, the Display Driver Control Panel appears on the screen. This Control Panel allows you to select and load the installed drivers.

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

Changing Display Drivers in Windows

To change display drivers in Windows, select the *Windows Setup* icon from the Main window. You will be shown the current setup configuration. Select *Change System Settings* from the Option menu. Click on the arrow at the end of the Display line. You will be shown a list of display drivers. Click on the driver you want. Then click on the *OK* button. Follow the directions to complete the setup.

Changing Color Schemes

After you change display drivers, you may notice that the color scheme used by Windows looks strange. This is because different drivers have different default colors. To change the color scheme, select the *Control Panel* from the Main window. Select the *Color* icon. You will be shown the current color scheme. Choose a new color scheme and click the *OK* button.

DOS Setup

Step 1: Install Windows as you normally would for a VGA display. Run Windows to make sure that it is working correctly. Then exit Windows.

Step 2: Place the display driver diskette in drive A. Type **A:** <ENTER> to make this the default drive. Type **SETUP** <ENTER> to run the driver SETUP program. Press any key to get to the applications list. Using the arrow keys, select *Windows Version 3.1* and press the <ENTER> key. Press the <ENTER> key to select *All Resolutions*, and then press <END> to begin the installation. At this point you will be asked for the path to your Windows System directory (default C:\WINDOWS). When the installation is complete, press any key to continue. Press <ESC> followed by Y to exit to DOS.

Step 3: Change to the directory where you installed Windows (usually C:\WINDOWS).

Step 4: Type **SETUP** <ENTER> to run the Windows Setup program. It will show the current Windows configuration. Use the up arrow key to move to the Display line and press <ENTER>. A list of display drivers will be shown. Use the arrow keys to select one of the drivers starting with an asterisk (*) and press <ENTER>.

Step 5: Follow the directions on the screen to complete the setup. In most cases, you may press <ENTER> to accept the suggested option. When Setup is done, it will return to DOS. Type **WIN** <ENTER> to start Windows with the new display driver.

Changing Display Drivers in DOS

To change display drivers from DOS, change to the Windows directory and run Setup, repeating steps 4 and 5 from the previous page. Besides the special display drivers marked by an asterisk (*), you should be able to use the following standard drivers:

VGA   640x480, 16 colors

Super VGA   800x600, 16 colors

Panning Drivers

Special panning drivers are provided to allow high-resolution modes to be displayed on a flat panel or CRT. These drivers will show a section of a larger screen and will automatically pan, or scroll, the screen horizontally and vertically when the mouse reaches the edge of the display.

Linear Acceleration Drivers

A special high-performance linear acceleration driver is provided for 256-color modes. This driver may require special hardware and may not be supported on all systems. It is only available for Windows3.1.

AutoCAD R12

These drivers are designed to work with Autodesk AutoCAD
R12. They conform to the Autodesk Device Interface (ADI) for
Rendering drivers and Display drivers. These display list drivers
accelerate redraw, pan, and zoom functions.

Driver installation

Step 1: Place the display driver diskette in drive A. Type **A:**
<ENTER> to make this the default drive. Type **SETUP** <EN-
TER> to run the SETUP program. Press any key to get to the
applications list. Using the arrow keys, select *AutoCAD Release
12* and press <ENTER>. This will display a list of supported
driver resolutions. Using the arrow keys and the <ENTER> key,
select the resolutions that are appropriate for your monitor. When
all of the desired resolutions have been selected, press <END> to
begin the installation. At this point you will be asked for a drive
and directory to copy the driver files. Enter the drive and directo-
ry that contains the installed AutoCAD R12. If the destination
directory does not exist you will be asked for confirmation. When
the installation is complete, press any key to continue. Press
<ESC> followed by Y to exit to DOS.

Step 2: Go to the AutoCAD directory where the new drivers were
installed and run the driver installation program by typing
ACAD12 -r <ENTER>. This program will configure your
AutoCAD R12 to use the new display drivers. Select *TurboDLD
Classic*.

Configuring TurboDLD

Select *Configure Video Display*. In Display Device Configura-
tion choose *Select Graphics Board/Resolution*. Then choose
Select Display Graphics Board. After choosing a graphics board,
go to *Select Display Resolution*. After selecting the display
resolution, save the new configuration, and return to the main
menu.

Basic Configuration Menu

This menu allows you to modify:

Number of AutoCAD Command Lines

Font Size	6x8/8x8/8x14/8x16/12x20/12x24
Dual Screen	Enable/Disable

User Interface Configuration

Double Click Interval Time

BP Button

BP Highlight	Patt Line/Xor Rect/Both
BP Refresh	Enable/Disable
BP Cache	Enable/Disable

Expert Configuration Menu

This menu allows you to modify:

Display List	Enable/Disable
Drawing Cache	Enable/Disable
Use Acad 31 bit space?	Yes/No
Internal Command Echo	Enable/Disable
BP Zoom Mode	Freeze/Float
Regen Mode	Incremental/Fast

If your previously installed driver is not TurboDLD, you will have to reconfigure the RENDER command the first time you use it.

Lotus 1-2-3 and Lotus Symphony

These drivers are designed to work with Lotus 1-2-3 versions 2.0, 2.01 and 2.2, and with Lotus Symphony versions 1.0 and 1.1.

Driver installation

Step 1: Place the display driver diskette into drive A. Make A the default drive by typing **A:** <ENTER>. Run the SETUP program by typing **SETUP** <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select *Lotus/ Symphony,* and press <ENTER>. A list of supported screen resolutions will be displayed. Use the arrow keys to select the desired screen resolution and press <ENTER>. (Make sure your monitor is able to display the resolution desired) Press <END> to begin the driver installation process. A default drive and directory path will be displayed. Use the backspace key to erase this default and type in the 123 directory. At this point you may be asked to create the target directory if it does not already exist. After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS. Copy all the files that were just created in the temporary directory onto a formatted floppy diskette.

Step 2: Go to your 123 directory, and start the installation program. Type the following commands:

   C: <ENTER>

   INSTALL <ENTER>

Step 3: The Lotus installation program will load and present the installation menu. From this menu, select *Advanced Options*. From the Advanced Options menu, select *Add New Drivers To Library*. From the Add New Drivers Menu, select *Modify Current Driver Set*. From the Modify Driver Set Menu, select *Text Display*. From the Text Display menu, select one of drivers.

Step 4: After the selection of the appropriate VGA display driver, you will need to exit this menu and return to the Main Lotus Installation Menu. Do this by selecting *Return To Menu*.

Step 5: At the Lotus Installation Menu, select *Save Changes*.

Step 6: At this point the Installation Menu will prompt you for the name of your new Lotus configuration file. The Lotus system will prompt you with the default value — 123.SET, but you may want to use a filename that indicates the resolution of its driver. For example, if you installed the 132 column by 25 line driver, you could name this driver 132X25.SET, or if you installed the 80 by 50 driver, you may want to call the file 80X50.SET.

Step 7: The installation of your Lotus 1-2-3 driver is now complete. You will need to exit the Lotus installation program at this point. At the main Lotus Installation Menu, select ***Exit***.

NOTE: If your driver set is not 123.SET, you have to type the filename of your driver set in the command line when you start Lotus 1-2-3. For example, if you named your driver set 132X25.SET, type the following to start Lotus 1-2-3:

  123 132X25.SET <ENTER>

VESA

The Video Electronics Standards Association (VESA) has created a standard for a Super VGA BIOS Extension (VBE). This defines a standard software interface to allow application programs to set and control extended video modes, such as 800x600 graphics, on video adapters from different manufacturers.

The VESA driver adds this Super VGA BIOS Extension to the VGA BIOS. Any application program which supports the VESA standard driver interface can be used with this driver. This VESA driver conforms to the VESA Super VGA Standard #VS891001.

Driver installation

Step 1: Place the display driver diskette into drive A. Make A the default drive by typing **A:** <ENTER>. Run the SETUP program by typing **SETUP** <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select VESA Driver *Version 1.2* and press <ENTER>. Press the <ENTER> key to select *All Resolutions*, and press <END> to begin the installation. A default drive and directory path will be displayed. Use the backspace key to erase this and type in a directory that is in the directory path (such as C:\BIN or C:\UTILS). After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS.

Step 2: To install the VESA driver, type either **VESA** <ENTER> or **VESA** + <ENTER> at the DOS prompt. The optional + command line parameter enables all of the available modes. Make sure that your monitor is capable of displaying these high resolution modes before enabling them.

NOTE: If the video BIOS already supports VBE extended video modes, DO NOT use this driver. Run the VTEST.EXE program to see if the video BIOS supports the VBE modes.

Word

These drivers are designed to work with Microsoft Word 5.0 and 5.5.

Driver installation

If you have already installed Word on your computer, go to Step 2 to install the new video driver.

Step 1: Install Word as normal.

Step 2: After you complete the Word installation, place the display driver diskette into drive A. Make A the default drive by typing **A:** <ENTER>. Run the SETUP program by typing **SETUP** <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select *Word* and press <ENTER>. Use the arrow keys to select the desired screen resolution and press <ENTER> (make sure your monitor is able to display the resolution desired). Press <END> to begin the driver installation process. A default drive and directory path will be displayed. Use the backspace key to erase this and type in your Word directory. After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS.

Step 3: Copy the driver file for the desired resolution that was just installed to SCREEN.VID.

WordPerfect

These drivers are designed to work with WordPerfect 5.0 or 5.1. They support 132-column display in editing mode, and high-resolution graphics display in PreView mode.

Driver installation
Step 1: Place the display driver diskette into drive A. Make A the default drive by typing **A:** <ENTER>. Run the SETUP program by typing **SETUP** <ENTER>. Press any key to display a list of supported applications. Use the arrow keys to select *WordPerfect* and press <ENTER>. A list of supported screen resolutions will be displayed. Use the arrow keys to select the desired screen resolution and press <ENTER> (make sure your monitor is able to display the resolution desired). Press <END> to begin the driver installation process. A default drive and directory path will be displayed. Use the backspace key to erase this default and type in the WordPerfect directory. At this point you may be asked to create the target directory if it does not already exist. After the files have been installed, press any key to return to the list of supported applications. Press <ESC> followed by Y to exit to DOS.

Step 2: Start WordPerfect, and press <SHIFT>+<F1> to enter the setup menu. Select *D* for Display and *G* for Graphics Screen Type, and then choose the desired Chips VGA resolution.

Configuring WordPerfect 5.0 for 132 columns

Follow these instructions to configure WordPerfect 5.0 for 132 column text mode:

Step 1: To use the SETCOL program to set 132 columns and 25 rows, type the following command:

   SETCOL 132, 25 <ENTER>

Step 2: Start WordPerfect. The program will detect the number of rows and columns automatically. If for some reason WordPerfect is unable to adapt to 132 columns by 25 rows, start WordPerfect with the following command:

   WP /SS=25,132 <ENTER>

Configuring WordPerfect 5.1 for 132 columns

Start WordPerfect and press <SHIFT>+<F1> to enter the setup menu. Select *D* for Display and *T* for Text Screen Type and then select *Chips 132 Column Text*.

A

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

Installing PC/104 modules

The PCM-3335's PC/104 connectors give you the flexibility to attach PC/104 expansion modules. These modules perform the functions of traditional plug-in expansion cards, but save space and valuable slots. Modules include:

- **PCM-3810**   Solid State Disk Module
- **PCM-3820**   High Density Flash Disk Module
- **PCM-3110**   PCMCIA Module
- **PCM-3111**   Secondary PCMCIA Module
- **PCM-3610**   Isolated RS-232 and RS-422/485 Module
- **PCM-3660**   Ethernet Module
- **PCM-3718**   30 KHz A/D Module
- **PCM-3724**   48-channel DIO Module
- **PCM-3910**   Breadboard Module

Installing these modules on the PCM-3335 is a quick and simple operation. The following steps indicate how to mount the PC/104 modules:

Step1   Remove the PCM-3335 from your system paying particular attention to the safety instructions already mentioned above.

Step2   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.

Step3   Normal PC/104 modules have "male" connectors and mount directly onto the main card. Please refer to the PC/104 module mounting diagram on the following page. After this is in place, you have the correct mounting connector to accept your PC/104   module.

Step4   Mount the PC/104 module onto the CPU card. Do this
         by pressing the module firmly but carefully onto the
         mounting connectors.

Step5   Secure the PC/104 module onto the CPU card using
         the four mounting spacers and screws.

PC/104
Mounting Support

Male   Female   Male

PCM-3335   PC/104 Module
CPU Card
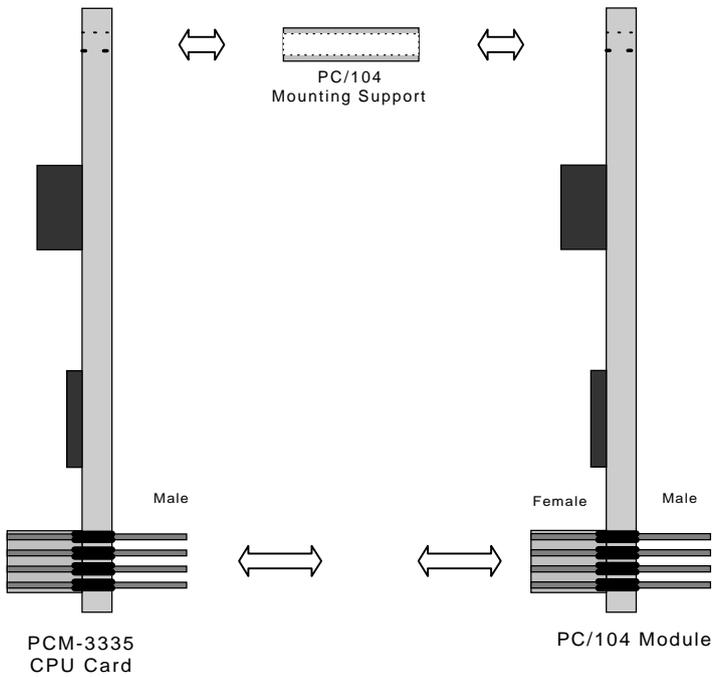
PC/104 Module Mounting Diagram
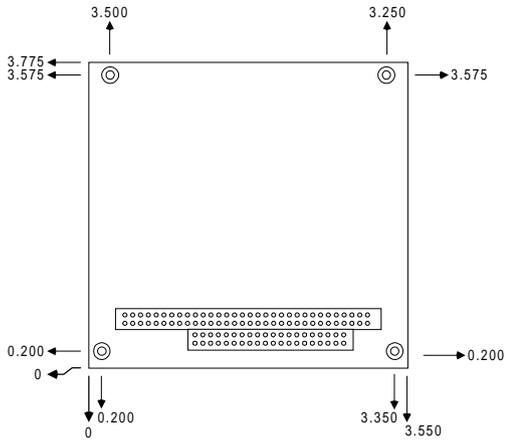
PC/104 module dimensions (inches ±5%)

LCD Display BIOS Configuration

This appendix gives instructions for configuring various LCD displays.

Configuring various LCD display

Follow the instructions below to integrate an LCD VGA BIOS into the PCM-3335 system BIOS.

1. Combine the VGA BIOS with the system BIOS following the instructions at the DOS prompt.

```
DEBUG                                    ; DOS utility program
-N              SBC-355.ROM              <ENTER>
-L              4000:0                   <ENTER>
-N              <VGABIOS.DAT>            <ENTER>; Read STN.DAT in BIOS files
                                                    for example
-L              4000:0                   <ENTER>
-R              CX                       <ENTER>
CX  2000
:0                                       <ENTER>
-R              BX                       <ENTER>
BX  0000
:2                                       <ENTER>
-N              <Newfile.ROM>            <ENTER>; Assign new file name to
                                                    new SBC-355V BIOS
-W              4000:0                   <ENTER>; Write the BIOS back to disk
-Q                                       <ENTER>
```

2. Use the utility program AMIFLASH.COM to write the system BIOS file you just created to the BIOS chip on board.

```
AMIFLASH <Newfile.ROM>
```