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PCM-3346 Series

486 DX66-based Module with SVGA/LCD/LAN Interface

User's Manual

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Packing list

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

- 1 PCM-3346 all-in-one single board computer
- 1 Startup Manual
- CD-ROM for utility, drivers, and manual (in PDF format)
- 1 2.5" IDE flat cable, 44-pin to 44-pin
- 1 PS/2 keyboard/mouse cable
- 2 serial port cables
- 1 parallel cable
- 1 floppy cable, for 3.5" FDD NB only
- 1 VGA cable
- 1 floppy cable converter
- 1 LAN cable (PCM-3346F/N only)

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

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CHAPTER 1

General Information

This chapter gives background information on the PCM-3346.

Sections include:

- Introduction
- Features
- Specifications
- Board dimensions

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1.1 Introduction

The PCM-3346 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-3346 comes with an embedded STPC Client processor on board. For maximum performance, the PCM-3346 also supports an EDO/FPM SODIMM socket that can accept up to 64 MB memory.

Onboard features include a socket for a CompactFlash™ Card, 36-bit interface, 100Base-T Ethernet, Enhanced IDE interface, one parallel port, two serial ports (RS-232), a keyboard, and a PS/2 mouse interface. A SVGA LCD display controller allows CRT resolutions up to 1024 x 768 @ 64 K colors, LCD resolutions up to 1024 x 768 @ 64 K colors.

The PCM-3346 complies with the "Green Function" standard and supports three types of power saving features: Normal, Doze, and Sleep modes.

If you need any additional functions, the PCM-3346 has a PC/104 connector for future upgrades.

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1.2 Features

- Ultra-compact size single board computer, smaller than a 3½" hard disk drive (96 mm x 90 mm)
- Onboard STPC Client CPU
- Up to 64 MB system memory, by way of SODIMM (EDO/FPM DRAM)
- Onboard VGA/36-bit LCD interface
- Supports CompactFlash™ card
- Built-in Enhanced IDE (AT bus) hard disk drive interface
- Onboard PS/2 keyboard/mouse connector
- Two serial ports (RS-232)
- Upgradeable through PC/104 module
- Green engine with sleep mode and low power consumption
- +5 V power supply (for CPU board), +12 V power supply (for PC/104, backlight)
- Onboard 10/100Base-T Ethernet interface

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1.3 Specifications

1.3.1 Standard SBC functions

- **CPU**: ST Thomson DX-66 STPC Client
- **BIOS**: Award 256 KB Flash BIOS, supports Plug & Play
- **Fanless operation**
- **DRAM**: One 144-pin 64-bit SODIMM socket supports 8/16/32/64 MB 3.3 V FPM / EDO SODIMM
- **SSD**: Supports one CompactFlash™ card
- **Network**: RTL 8139 chipset
- **Watchdog**:
  1.6 sec interval watchdog timer (optional flexible interval available)
- **IDE interface**: One Enhanced IDE
- **PC/104 expansion**: 104-pin 16-bit PC/104 module connectors

1.3.2 VGA function (PCM-3346F/P only)

- **Controller**: C&T 69000, supports CRT and 36-bit LCD
- **Display memory**: 2 MB SDRAM built-in
- **Display resolution**:
  1024 x 768 @ 16 bpp (CRT), 1024 x 768 @ 16 bpp (LCD)

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

Resolution Map for PCM-3346 Series

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1.3.3 VGA function (PCM-3346/N only)

- **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 1280 x 1024 @ 24 bpp

1.3.4 Ethernet function

- **Chipset**: RTL 8139
- **Ethernet interface**:
  PCI 10/100 Mbps Ethernet. IEEE 802.3u protocol compatible
- **Connection**: Onboard 10-pin 2 mm connector
- Boot ROM combined with BIOS

1.3.5 Solid state disk

- Supports CompactFlash™ cards

1.3.6 Mechanical and environmental

- **Operating voltage**: +5 V only
- **Power consumption**:
  +5 V @ 1.5 A (typical) @ 486 66 MHz CPU +32 MB
- **Size (L x W)**: 96 mm x 90 mm (3.77" x 3.54")
- **Weight**: 0.11 kg (0.24 lb)
- **Operating temperature**: 0 ~ 70° C (32 ~ 158° F)

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1.4 Board dimensions

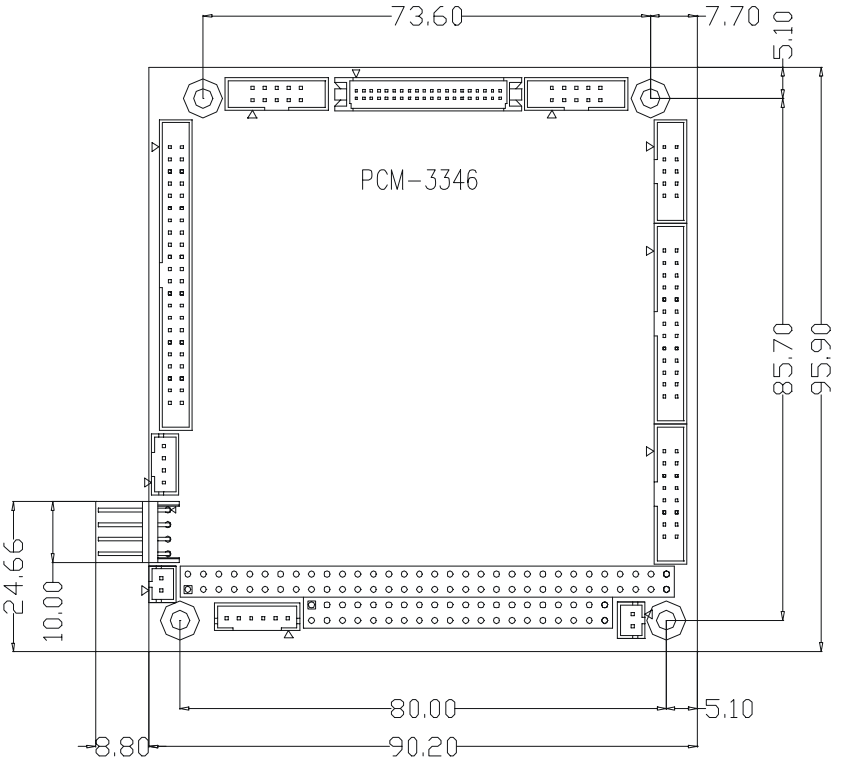


Figure 1-1: PCM-3346 dimensions

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CHAPTER 2

Installation

This chapter tells how to set up the PCM-3346 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.

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2.1 Connectors

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

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

Table 2-1: Connectors

Label	Function
CN1	Ethernet connector
CN2	LCD-A connector
CN3	COM1 connector
CN4	COM2 connector
CN5	EIDE HDD connector
CN6	PC/104 connector
CN7	Parallel port connector
CN8	Backlight connector
CN9	VGA connector
CN10	Reset button connector
CN11	Main power (+5 V) connector
CN12	PS/2 keyboard/mouse connector
CN13	5 V connector
CN14	FDD connector
CN15	LCD-B connector
CN16	CompactFlash™ socket
Slot 1	SODIMM socket

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2.2 Locating connectors

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

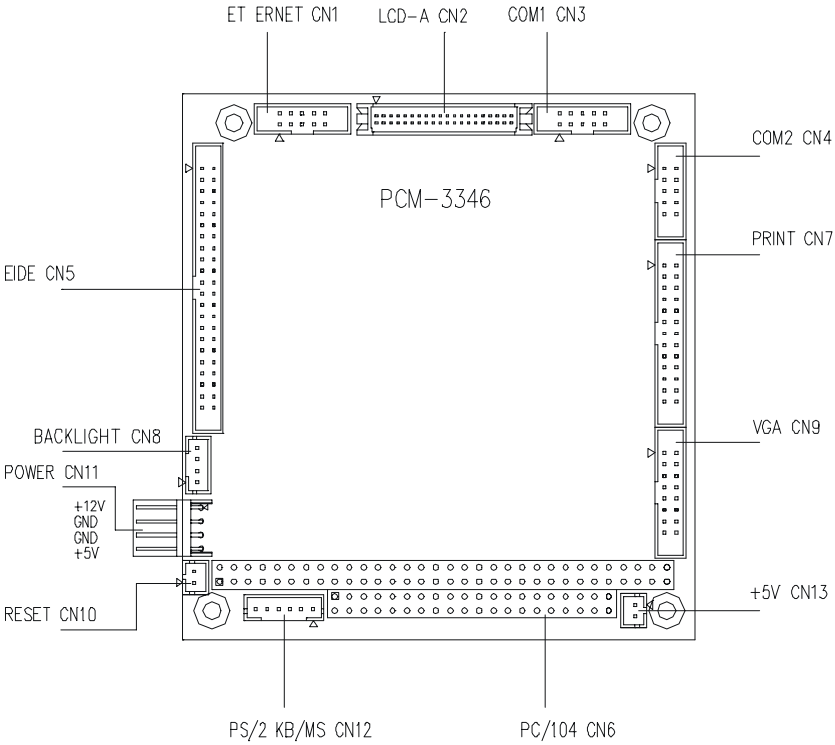


Figure 2-1: Locating connectors (component side)

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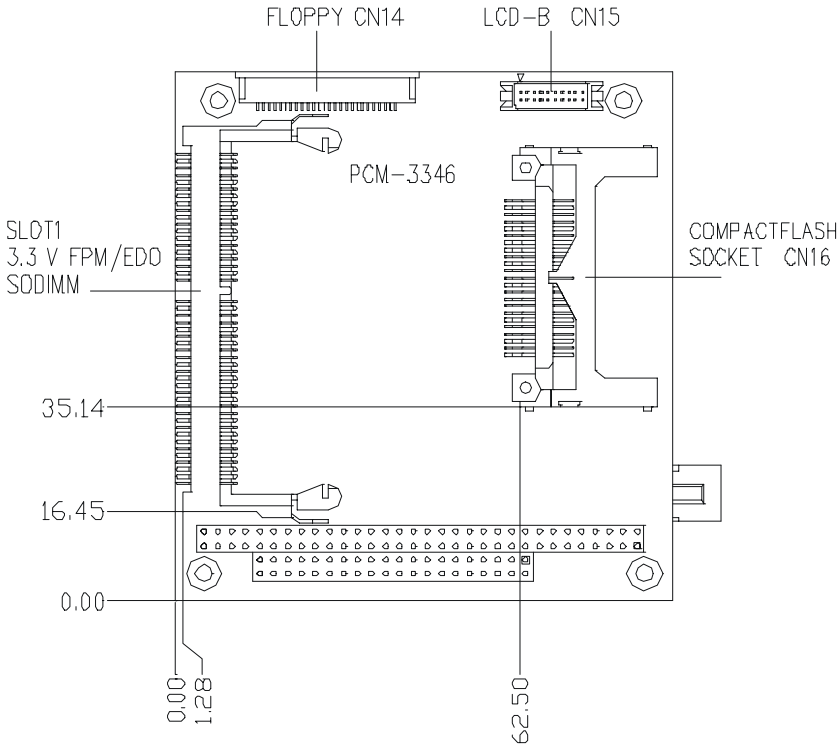


Figure 2-2: Locating connectors (solder side)

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2.3 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.*



2.4 Ethernet connector (CN1) (PCM-3346F/N only)

The PCM-3346F/N is equipped with a high performance 32-bit PCI-bus Fast Ethernet interface which is fully compliant with IEEE 802.3u 100/10Base-T specifications. It is supported by all major network operating systems.

The medium type can be configured via the RSet8139.EXE program included on the utility disk. (See Chapter 5 for detailed information.)

2.4.1 Ethernet connector (CN1)

10/100Base-T connects to the PCM-3346F/N via an adapter cable to the 10-pin 2 mm connector.

2.4.2 Network boot

The network boot feature is built into the BIOS. It can be enabled or disabled in the chipset setup of the CMOS configuration. Refer to "BIOS Setting" in Chapter 4 for more information.

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2.5 LCD-A display connector (CN2)

CN2 is a 40-pin dual-in-line header and is used to connect an LCD display to the PCM-3346F/P.

2.6 Serial ports (CN3, CN4)

The PCM-3346 offers two serial ports, both RS-232. These ports allow you to connect to any serial device (a mouse, printers, etc.) or communication network.

2.6.1 COM1 RS-232 port (CN3)

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

2.6.2 COM2 RS-232 port (CN4)

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-3346 board's ports.

Table 2-2: Serial port default settings

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

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2.7 EIDE HDD connector (CN5)

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

2.7.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion. It requires one or two cables, depending on the drive size. All necessary cables are included in your PCM-3346 package. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector. 3.5" drives need a 1 x 44-pin to 2 x 40-pin connector.

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

1. Connect one end of the cable to CN5. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install just one drive, set it as the master.

2.8 PC/104 connector (CN6)

Refer to Appendix B in this manual.

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2.9 Parallel port connector (CN7)

Normally, the parallel port is used to connect the card to a printer. The PCM-3346 includes a multi-mode (ECP/EPP/SPP) parallel port. It is accessed via CN7, a 26-pin flat-cable connector.

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

The parallel port interrupt channel is designated as IRQ7.

2.10 Backlight connector (CN8)

The LCD inverter is connected to CN8 via a 4-pin connector to provide +12 V power to the LCD display.

2.12 VGA connector (CN9)

The PCM-3346 board's SVGA interface can facilitate conventional CRT displays. The card has a connector to support CRT VGA monitors.

2.12.1 CRT display connector (CN9)

CN9 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 CN9 is given in Appendix C.

2.13 Reset button connector (CN10)

If you install a reset button, it should be a single pole switch rated at 5 V. Momentarily pressing the button will activate a reset.

For reset button pin assignments, please see Appendix C.

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2.14 Main power (+5 V / +12 V) connector (CN11)

This supplies main power to the PCM-3346 (+5 V), and also 12 V power to the backlight connector.

2.15 PS/2 Keyboard/mouse connector (CN12)

The PCM-3346 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-3346 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.

2.16 5 V connector (CN13)

The PCM-3346 is equipped with a low power dissipation STPC. With only a heat sink, the PCM-3346 will operate normally at temperatures up to 60° C. At temperatures above 60° C, a fan is recommended. A CPU fan power supply connector is provided (+5 V input) in addition to the CPU power supply.

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

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

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2.17 FDD connector (CN14)

You can attach one 3.5" floppy drive to the the PCM-3346's onboard controller. This is useful for notebooks, for example.

A daisy-chain drive cable converter (part no. 9681000044) is required for a single floppy system. A 34-pin flat-cable connector is fitted on one end of the cable converter, while the other end has one floppy disk drive connector. It consists of a 34-pin flat-cable connector (for the 3½" drives).

2.17.1 Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into the cable converter. Make sure that the red wire corresponds to pin 1 on the connector.
2. Attach the appropriate conector at the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set at the other end (after the twist in the cable) connects to the A: drive.

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

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2.18 LCD-B connector (CN15)

The PCM-3346F/P supports 36-bit LCD that must be connected to both CN2 (40-pin) and CN15 (20-pin).

The pin assignments for both CN2 and CN15 can be found in Appendix C.

2.19 CompactFlash™ socket (CN16)

The PCM-3346 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 128 MB. To fit the Advantech CFC into the PCM-3346, simply plug it into the designated connector. It will only fit when the red triangle on the CFC is aligned with the triangle on the connector. The card will not fit any other way (do NOT use excessive force).

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2.20 SODIMM socket (Slot1)

You can install anywhere from 8 MB to 64 MB of onboard EDO/FPM DRAM memory using 8, 16, 32 or 64 MB 144-pin SODIMMs (Small Outline Dual Inline Memory Modules).

2.20.1 Installing SODIMMs

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

To install SODIMMs, please follow this procedure 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.

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CHAPTER 3

Software Configuration

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

Sections include:

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

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3.1 Introduction

The PCM-3346 system BIOS and custom drivers are located in a 256 KB, 32-pin (JEDEC spec.) Flash ROM device, designated U18. A single Flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings. This method minimizes the number of chips and difficulty of configuration. To set different types of LCD panels, please choose “panel type” from the “integrated peripherals” menu in CMOS setup.

3.2 Connections for four standard LCDs

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

Table 3-1: Connections to Sharp LM64183P & LM64P89

LM64183/64P89		PCM-3346 CN2	
Pin	**Name**	**Pin**	**Name**
CN1-1	S	36	FLM
CN1-2	CP1	38	LP
CN1-3	CP2	35	SHFCLK
CN1-4	DISP	1	+5 V
CN1-5	VDD	2	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	-	External power*
CN1-8	DU0	12	P3
CN1-9	DU1	11	P2
CN1-10	DU2	10	P1
CN1-11	DU3	9	P0
CN1-12	DL0	16	P7
CN1-13	DL1	15	P6
CN1-14	DL2	14	P5
CN1-15	DL3	13	P4

* LM64183P -17 V LM64P89 -20 V

Note: Standard BIOS supports TFT and DSTN LCD panels.

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

Table 3-2: Connections to Toshiba LTM10DC042

LTM10C042		PCM-3346 CN2	
Pin	**Name**	**Pin**	**Name**
1	GND	3	GND
2	CLK	35	SHFCLK
3	GND	4	GND
4	R0	27	P18
5	R1	28	P19
6	R2	29	P20
7	GND	8	GND
8	R3	30	P21
9	R4	31	P22
10	R5	32	P23
11	GND	33	GND
12	G0	19	P10
13	G1	20	P11
14	G2	21	P12
15	GND	33	GND
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	34	GND
20	ENAB	37	M
21	GND	34	GND
22	B0	11	P2
23	B1	12	P3
24	B2	13	P4
25	GND	3	GND
26	B3	14	P5
27	B4	15	P6
28	B5	16	P7
29	GND	4	GND
30	VDD	1	+5 V
31, 32	VDD	2	+5 V

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

Table 3-3: Connections to Sharp LM64C142

LM64C142		PCM-3346 CN2	
Pin	**Name**	**Pin**	**Name**
CN1-1	YD	36	FLM
CN1-2	LP	38	LP
CN1-3	XCX	35	SHFCLK
CN1-4	DISP	1	+5 V
CN1-5	VDD	2	+5 V
CN1-6	VSS	3	GND
CN1-7	VEE	—	+27*
CN1-8	DU0	20	P11
CN1-9	DU1	19	P10
CN1-10	DU2	18	P9
CN1-11	DU3	17	P8
CN1-12	DU4	12	P3
CN1-13	DU5	11	P2
CN1-14	DU6	10	P1
CN1-15	DU7	9	P0
CN2-1	VSS	4	GND
CN2-2	DL0	24	P15
CN2-3	DL1	23	P14
CN2-4	DL2	22	P13
CN2-5	DL3	21	P12
CN2-6	DL4	16	P7
CN2-7	DL5	15	P6
CN2-8	DL6	14	P5
CN2-9	DL7	13	P4
CN2-10	VSS	8	GND

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

Table 3-4: Connections to Toshiba LTM12C2775A

LTM12C275A		PCM-3346 CN2	
Pin	**Name**	**Pin**	**Name**
1	GND	3	GND
2	NCLK	35	SHFCLK
3	NC	-	NC
4	NC	-	NC
5	GND	4	GND
6	R0	27	P18
7	R1	28	P19
8	R2	29	P20
9	R3	30	P21
10	R4	31	P22
11	R5	32	P23
12	GND	8	GND
13	G0	19	P10
14	G1	20	P11
15	G2	21	P12
16	G3	22	P13
17	G4	23	P14
18	G5	24	P15
19	GND	33	GND
20	B0	11	P2
21	B1	12	P3
22	B2	13	P4
23	B3	14	P5
24	B4	15	P6
25	B5	16	P7
26	ENAB	37	M/DE
27	GND	34	GND
28	VCC	1	+5 V
29	VCC	2	+5 V
30	GND	3	GND

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3.3 Ethernet software configuration

The PCM-3346's onboard Ethernet interface supports all major network operating systems. To configure the medium type, to view the current configuration, or to run diagnostics, do the following:

1. Power the PCM-3346 on. Make sure that the RSET8139.EXE file is located in the working drive.
2. At the prompt, type RSET8139.EXE and press <Enter>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and Down keys. To change a selected item, press <Enter>, and a screen will appear with the available options. Highlight your option and press <Enter>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
4. After you have made your selections and are sure this is the configuration you want, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

The Ethernet Setup Menu also offers three very useful diagnostic functions. These are:

1. Run EEPROM Test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen that shows the format and result of any diagnostic tests undertaken.

Note: For Ethernet installation, please see Chapter 7.

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CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

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4.1 System test and initialization

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

```
press <F1> to RESUME
```

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

4.1.1 System configuration verification

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

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

1. You are starting your system for the first time.
2. You have changed the hardware attached to your system.
3. The CMOS memory has lost power and the configuration information has been erased.

The PCM-3346's CMOS memory has an integral lithium battery backup. The battery backup should last at least five years in normal service. When it finally runs down, you will need to replace the complete unit.

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4.1.2 Further CMOS Data Safeguards

The PCM-3346 uses 2 additional functions that help ensure the integrity of the CMOS memory data. A Batteryless CMOS bootup function as well as automatic CMOS data refresh, are both utilized. Both these functions rely on utilizing free space in the BIOS Flash memory. Also, since the CMOS memory data and BIOS Flash saved CMOS memory data are stored simultaneously, you are always guaranteed an exact duplicate of the original CMOS memory data.

CMOS Data Backup

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

Batteryless Bootup

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

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4.2 Award BIOS setup

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

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

4.2.1 Entering setup

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

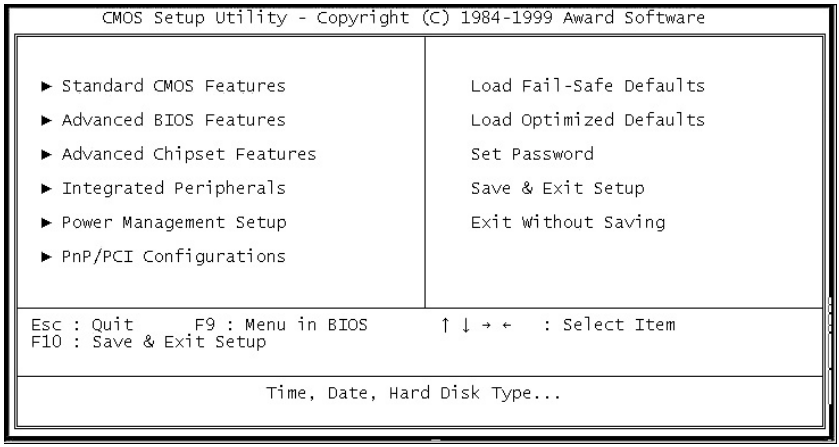


Figure 4-1: BIOS setup program initial screen

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4.2.2 Standard CMOS setup

When you choose the Standard CMOS Setup option from the Award BIOS Setup Utility menu**,** the screen shown below is displayed. This standard setup menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed at the bottom left of the menu screen.

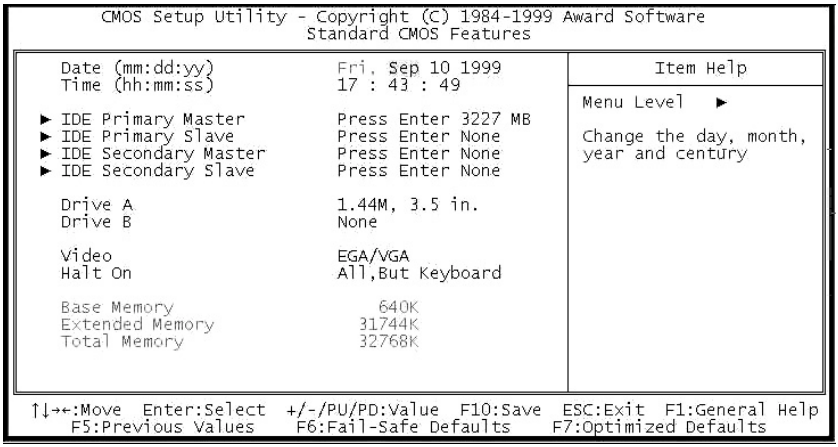


Figure 4-2: Standard CMOS setup screen

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4.2.3 Advanced CMOS setup

By choosing the Advanced CMOS Setup option from the Award BIOS Setup Utility menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3346.

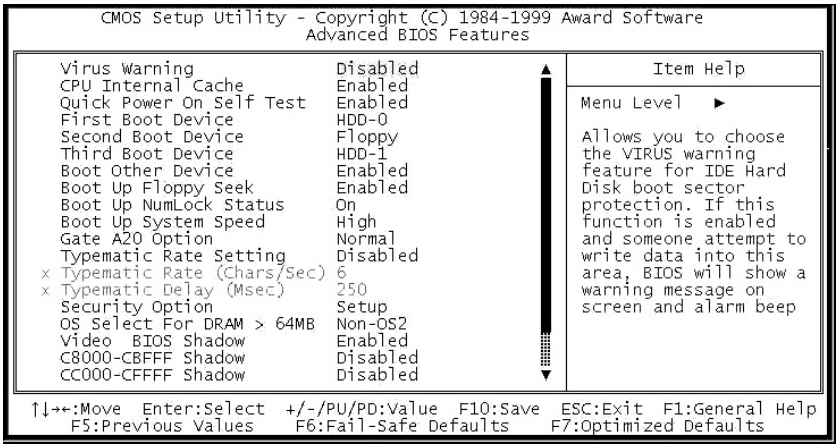


Figure 4-3: Advanced CMOS setup

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4.2.4 Advanced chipset setup

By choosing the Advanced Chipset Setup option from the Award BIOS Setup Utility menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3346.

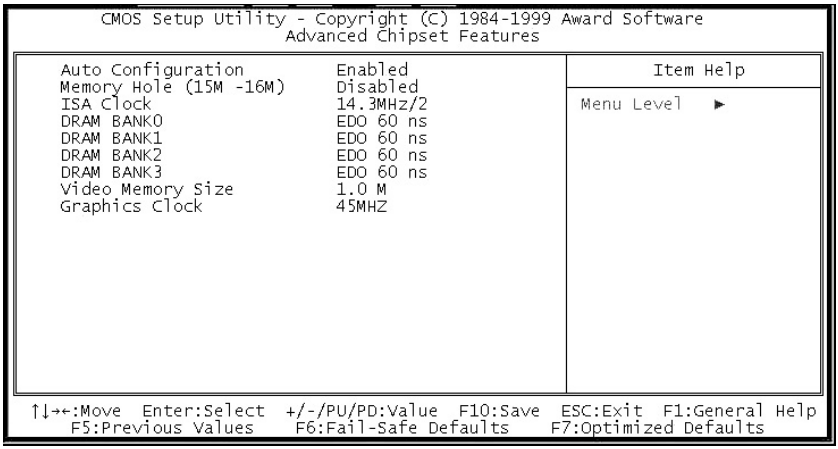


Figure 4-4: Advanced chipset setup

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4.2.5 Power management setup

By choosing the Power Management Setup option from the Award BIOS Setup Utility menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3346.

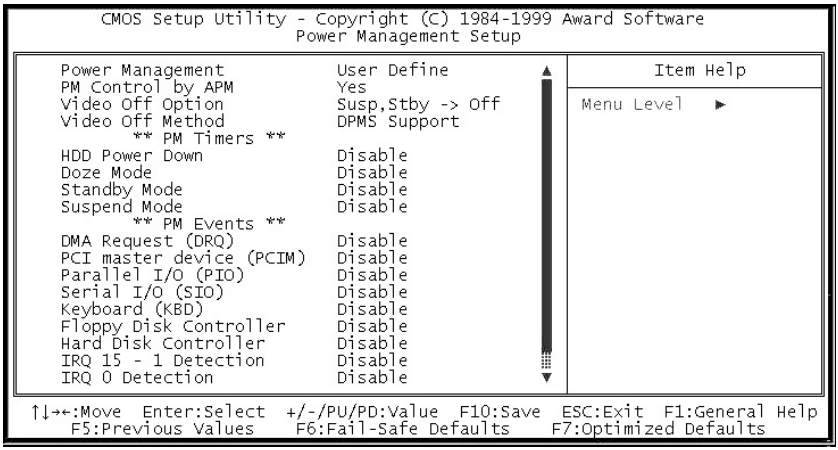


Figure 4-5: Power management setup

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4.2.6 PCI / Plug and Play configuration

By choosing the PCI / Plug and Play Setup option from the Award BIOS Setup Utility menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3346.

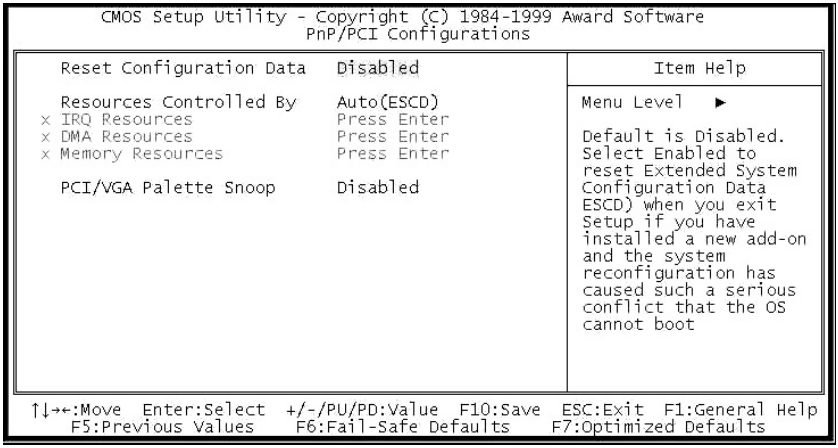


Figure 4-6: PCI / Plug and Play configuration

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4.2.7 Peripheral setup

By choosing the Peripheral Setup option from the Award BIOS Setup Utility menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3346.

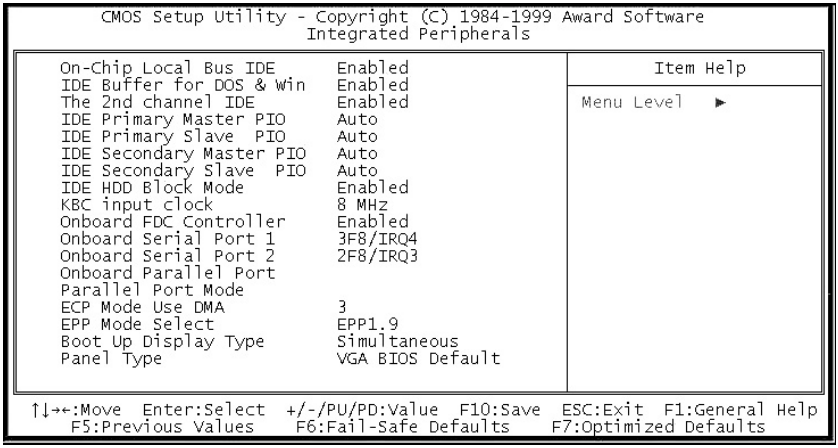


Figure 4-7: Peripheral setup

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4.2.8 Load BIOS defaults

Auto Configuration loads the default system values directly from ROM. If the stored record created by the setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-3346 on. Two settings can be used here: Fail-Safe or Optimized.

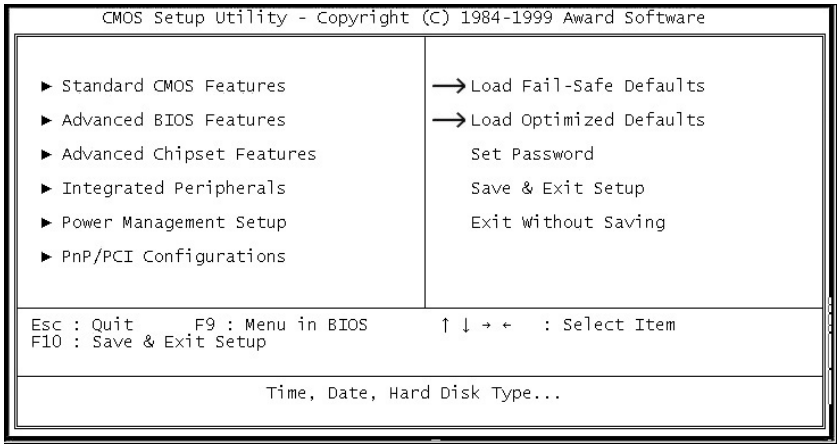


Figure 4-8: BIOS setup program initial screen (showing Auto Configuration items)

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4.2.9 Change password

To change the password, choose the Set Password option form the AWARD BIOS SETUP UTILITY menu, and press <Enter>.

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

   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.

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4.2.10 Quit screen

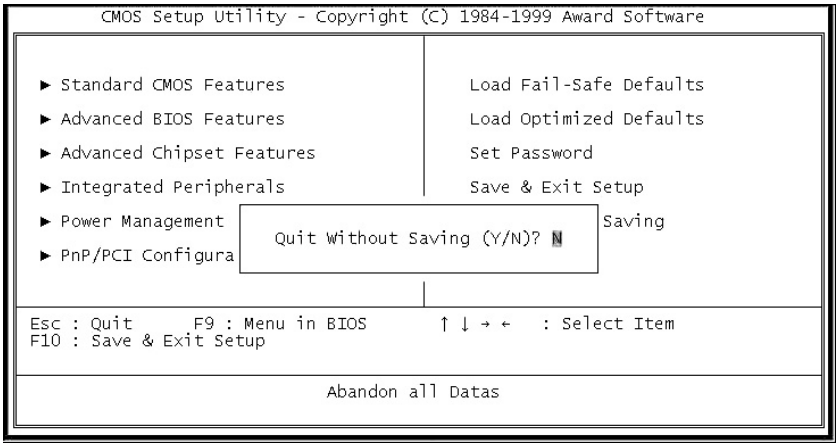


Figure 4-9: BIOS setup program quit screen

4.2.11 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.

4.2.12 Exit without saving

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

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CHAPTER 5

SVGA Setup (for PCM-3346/N only)

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

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5.1 Introduction

The PCM-3346/N has an on-board VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PCM-3346/N 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.

5.1.2 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.

5.2 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-3346/N.

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.

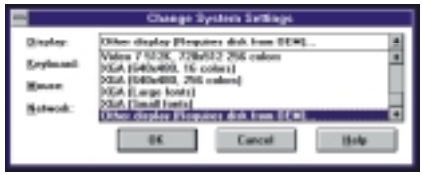
Note 1: The CD-ROM drive is designated as "D" throughout this chapter.

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

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5.2.1 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.



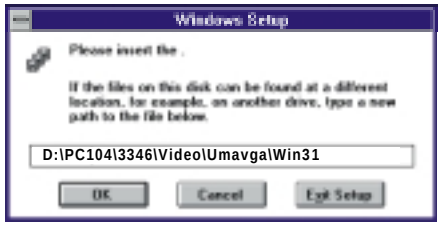
2. a. Type in the path of the VGA Win31 driver (drive D:\).



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

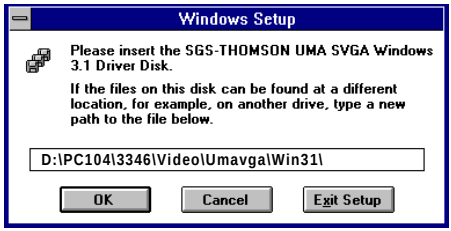


4. a. Type in the path of the Win31 source code.
   b. Press "OK".

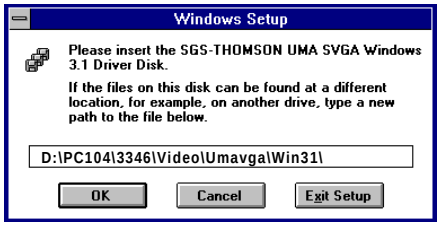


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5. a. Type in the path of Win31 VGA driver.
b. Press "OK".



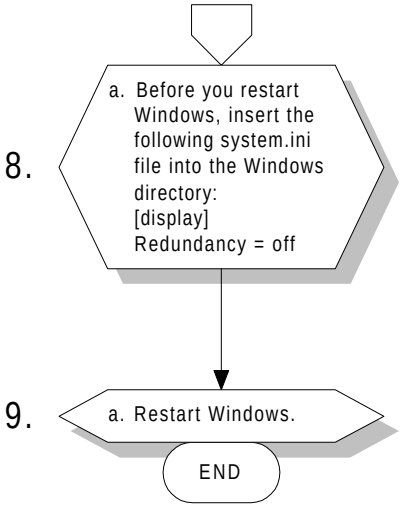
6. a. Type in the path of the Win31 source.
b. Press "OK" to finish.



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



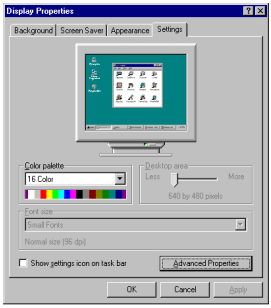
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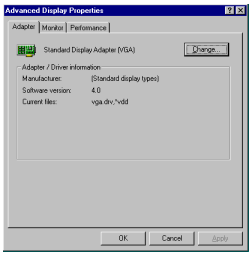
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5.2.2 Installation for Windows 95

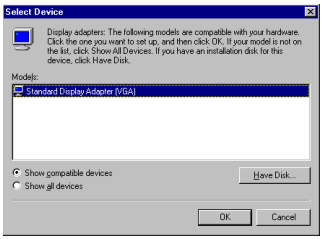
1. a. Select "Start", "Settings", "Control Panel", "Display", "Settings".
   b. Press "Advanced Properties".



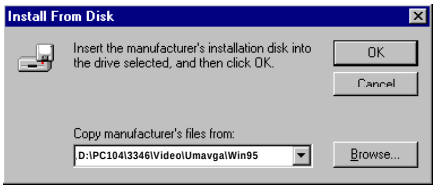
2. a. Choose the "Adapter" label.
   b. Press the "Change..." button.



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

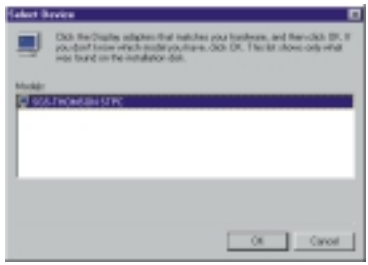


4. a. Insert the utility disc into the CD-ROM drive.
   b. Type: D:\PC104\3346\Video\Umavga\Win95
   c. Press "OK".

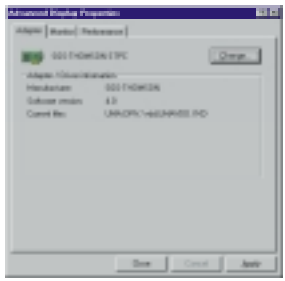


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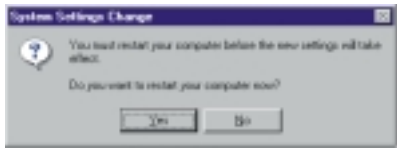
5. a. Select the highlighted item.
   b. Click the "OK" button.



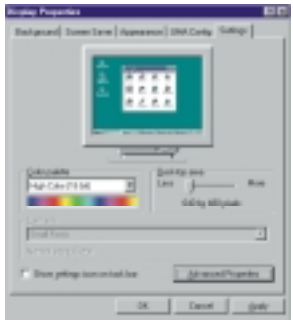
6. a. SGS-Thomson STPC appears in the adapter label.
   b. Click the "Apply" button.



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.



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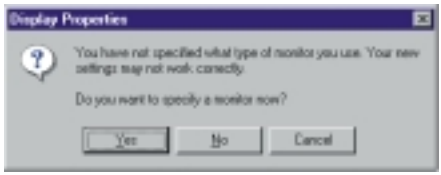
9.

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



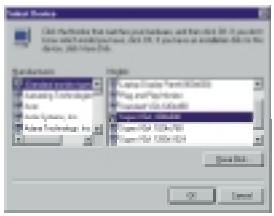
10.

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



11.

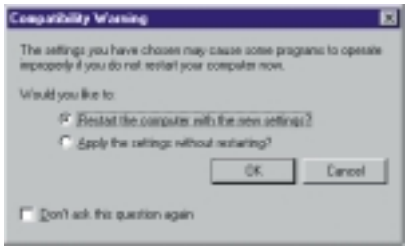
a. Select "Standard", "Super VGA 800 x 600", or "XGA".
b. Press the "OK" button.



12.

a. Choose "Restart" to reboot.

END



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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.*

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5.3 Further information

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CHAPTER 6

PCI SVGA Setup (for PCM-3346F/P only)

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

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6.1 Introduction

The PCA-3346F/P has an onboard PCI flat panel/VGA interface. The specifications and features are described as follows:

6.1.1 Chipset

The PCM-3346F/P uses a C&T 69000 chipset for its PCI/SVGA controller. It supports many popular LCD, EL, and gas plasma flat panel displays and conventional analog CRT monitors. The 69000 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. In addition, it also supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

6.1.2 Display memory

With onboard 2 MB display memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 64 K colors.

6.1.3 Display types

CRT and panel displays can be used simultaneously. The PCM-3346F/P can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. The utility disks includes three *.COM files in the subdirectory `Utility\vga\` which can be used to configure the display. In order to use these configuration programs, type the file name and path at the DOS prompt.

CT.COM: Enables CRT display only

FP.COM: Enables panel display only

SM.COM: Enables both displays simultaneously

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6.2 Installation of SVGA driver

Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you you are using within your PCA-3346F/P.

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.

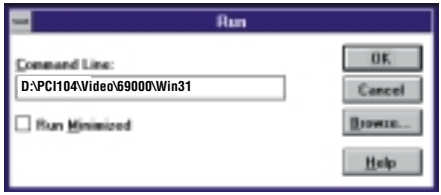
Note 1: The CD-ROM drive is designated as "D" throughout this chapter.

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

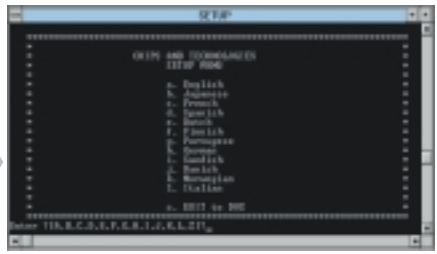
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6.2.1 Installation for Windows 3.1

1. a. Insert the utility disc into the CD-ROM drive.
   b. Select "File" in Program Manager.
   c. Click "Run" and type: D:\PC104\Video\69000\Win31



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



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

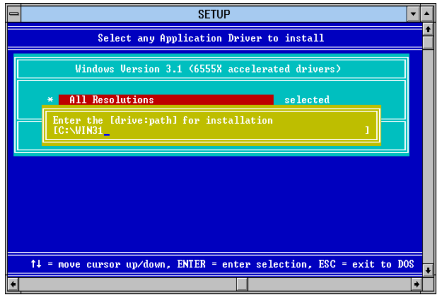


4. a. Press "ENTER" to install all resolutions.

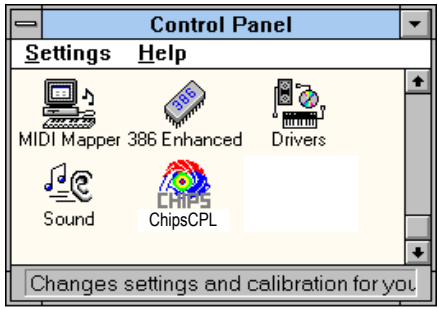


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5. a. Type the path of the operating system.

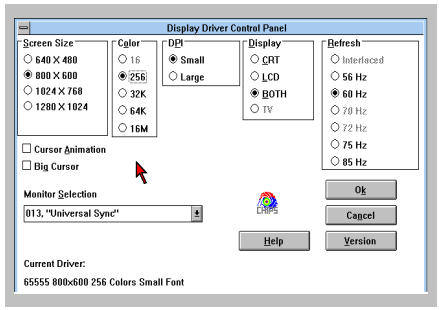


6. a. When installation is completed, reboot the system.
   b. You will see the "ChipsCPL" icon in the control panel.



7. a. Double click "ChipsCPL".
   b. Adjust screen size, color and refresh rate to your preferences.

END



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6.2.2 Installation for Windows 95

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



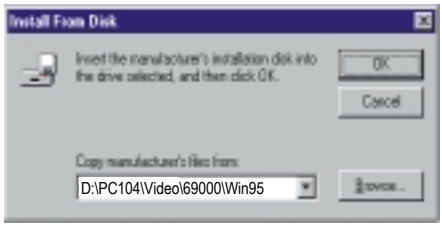
2. a. Choose the "Adapter" label.
   b. Press the "Change..." button.



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



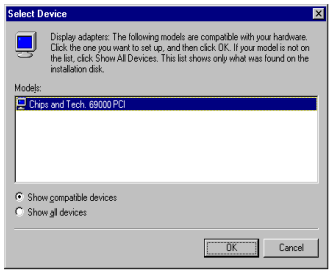
4. a. Insert the utility disc into the CD-ROM drive.
   b. Type D:\PC104\Video\69000\Win95
   c. Press "OK".



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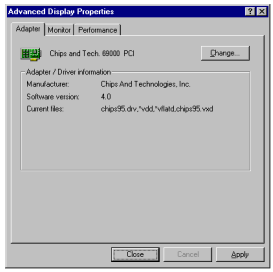
5.

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



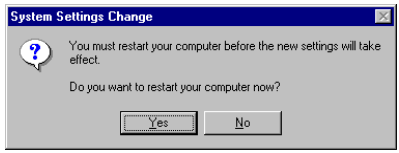
6.

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



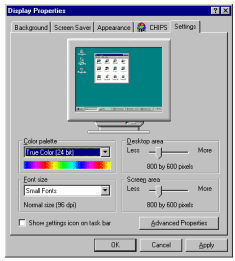
7.

a. Press "Yes" to reboot.



8.

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



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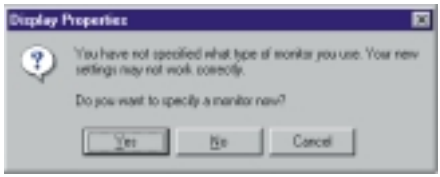
9.

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



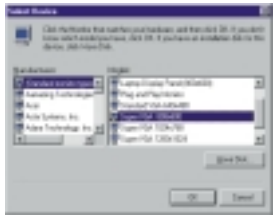
10.

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



11.

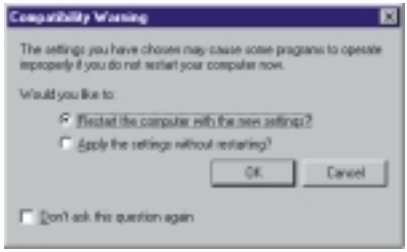
a. Select "Standard", "Super VGA 800 x 600", or "XGA".
b. Press the "OK" button.



12.

a. Choose "Restart" to reboot.

END



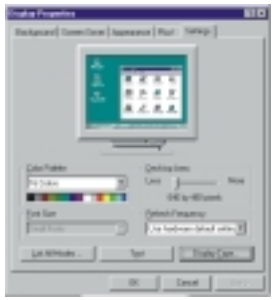
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6.2.3 Installation for Windows NT

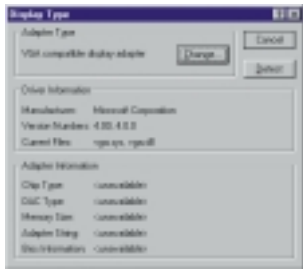
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click the "Display" icon.



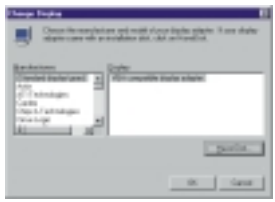
2. a. Choose the "Settings" label.
   b. Press the "Display Type" button.



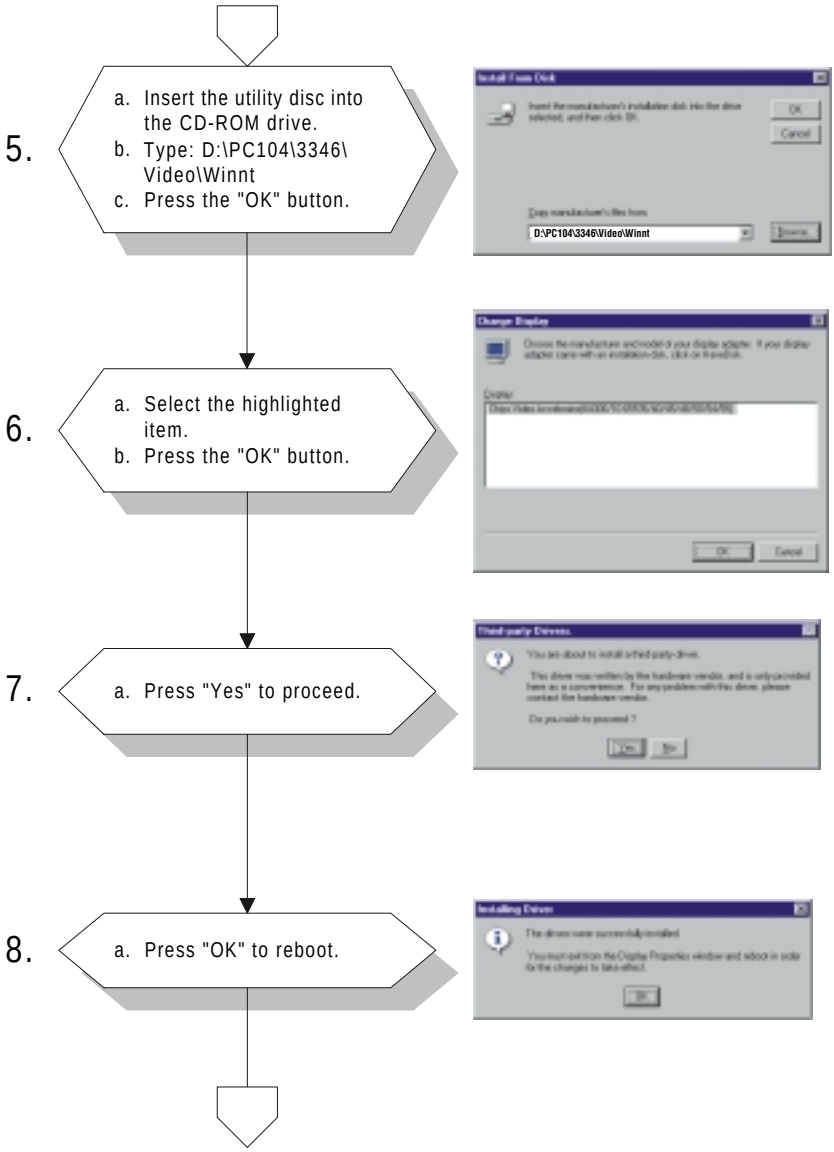
3. a. Press the "Change..." button.



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



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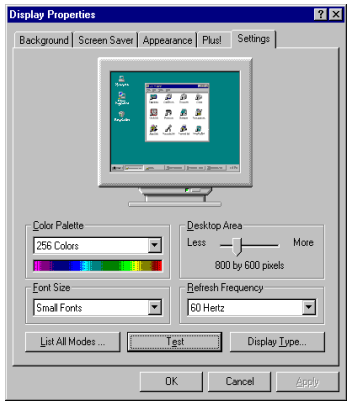


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9.

a. Repeat Step 1 in this manual, to select the "Settings" label.
b. Adjust resolution and color.
c. Click "Test" to see the result.
d. Click "OK" to save the setting.

END



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6.3 Further information

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CHAPTER 7

PCI Bus Ethernet Interface (PCM-3346F/N only)

This chapter provides information on Ethernet configuration.

- Introduction
- Installation of Ethernet driver
  - for MS-DOS and Windows 3.1
  - for Windows 95/98
- Further information

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7.1 Introduction

The PCM-3346F/N is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the RSET8139.exe program included on the utility disk.

The Ethernet port provides a 10-pin 2 mm connector on board. The network boot feature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

7.2 Installation of Ethernet driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCM-3346, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or Windows.

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

7.2.1 Installation for MS-DOS and Windows 3.1

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

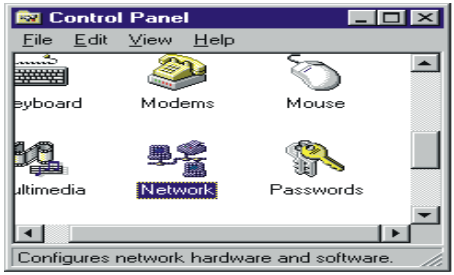
Then choose the correct driver to install in your panel PC.

The installation procedures for various servers can be found on CD-ROM. The file path is: **D:PC104\3346\Ethernet\wfw311**

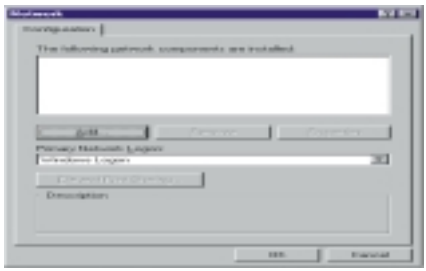
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7.2.2 Installation for Windows 95/98

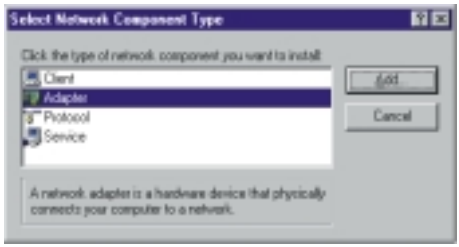
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click "Network".



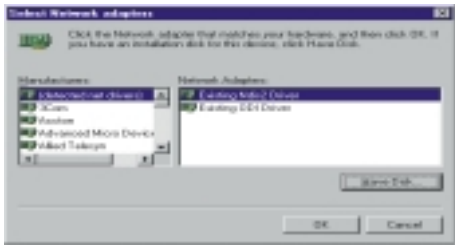
2. a. Click "Add" and prepare to install network functions.



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

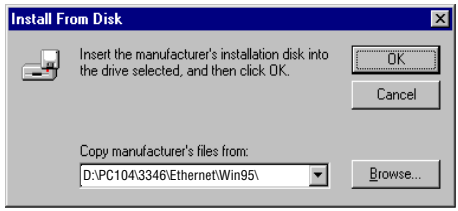


4. a. Click "Have Disk" to install the driver.

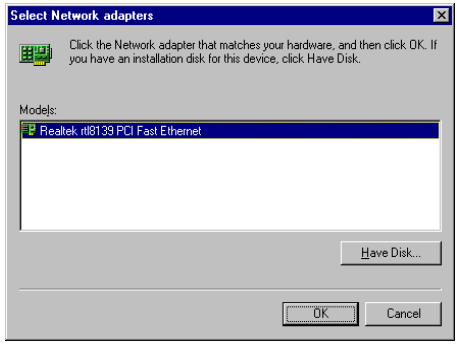


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5. a. Insert the CD into the D:\ drive.
   b. Type: D:\PC104\3346\Ethernet\Win95\
   c. Click "OK".

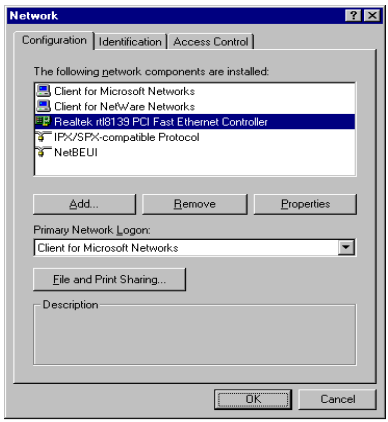


6. a. Choose the "Realtek" item.
   b. Click "OK".



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

END

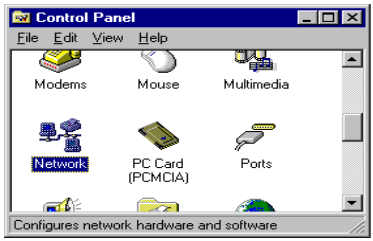


Note: *The correct path for Windows 98 is: D:\PC104\3346\Ethernet\Win98*

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7.2.3 Installation for Windows NT

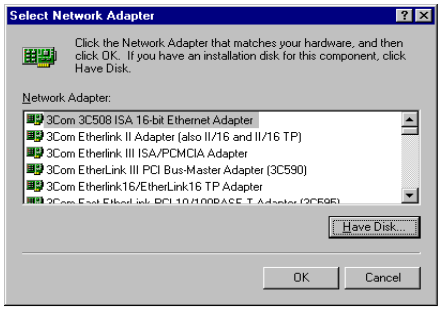
1. a. Select "Start", "Settings", "Control Panel".
   b. Double click "Network".



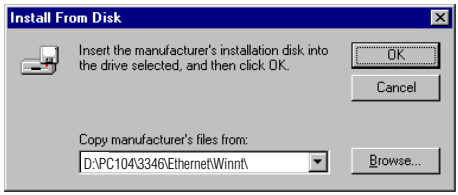
2. a. Choose the "Adapters" label.
   b. Click the "Add" button.



3. a. Press "Have Disk".



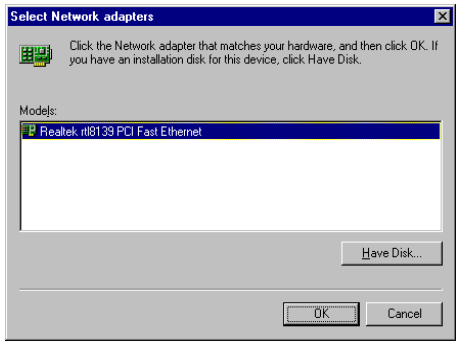
4. a. Insert the CD into the D:\ drive.
   b. Type: D:\PC104\3346\Ethernet\Winnt\
   c. Click "OK".



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5.

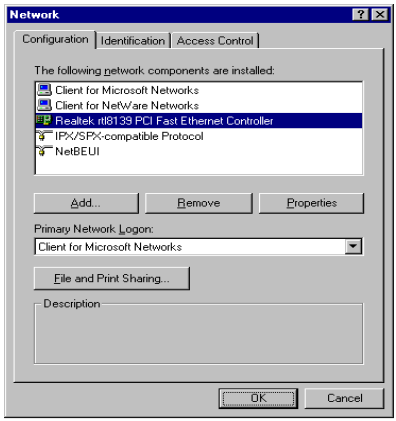
a. Choose the "Realtek" item.
b. Click "OK".



6.

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

END



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7.3 Further information

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

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APPENDIX A

Programming the Watchdog Timer

The PCM-3346 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.

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A.1 Programming the watchdog timer

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

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

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

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

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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
```


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APPENDIX B

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

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B.1 Installing PC/104 modules

The PCM-3346's PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCM-3346 is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCM-3346 from your system paying particular attention to the safety instructions already mentioned above.
2. Make any jumper or link changes required to the CPU card now. Once the PC/104 module is mounted you may have difficulty in accessing these.
3. Normal PC/104 modules have male connectors and mount directly onto the main card. (Refer to the diagram on the following page.)
4. Mount the PC/104 module onto the CPU card by pressing the module firmly but carefully onto the mounting connectors.
5. Secure the PC/104 module onto the CPU card using the four mounting spacers and screws.

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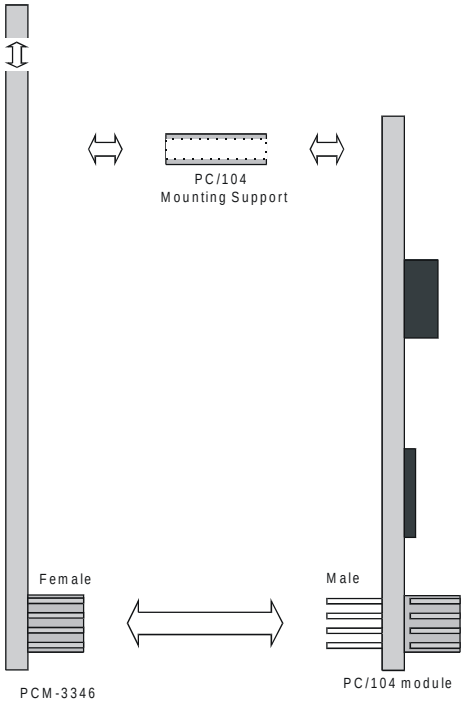


Figure B-1: PC/104 module mounting diagram

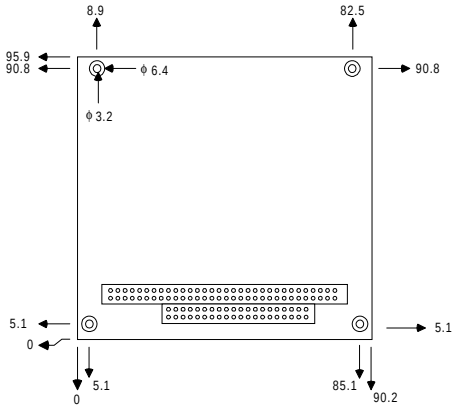


Figure B-2: PC/104 module dimensions (mm) (±0.1)

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Table B-1: PCM-3346 PC/104 connectors (CN12)

Pin Number	Signal (CN12) Row A	Row B	Signal (CN13) 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	—	—

* low active

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APPENDIX C

Pin Assignments

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

- Ethernet connector
- LCD-A connector
- COM1 connector
- COM2 connector
- EIDE HDD connector
- PC/104 connector
- Parallel port connector
- Backlight connector
- VGA connector
- Reset button connector
- Main power (+5 V) connector
- PS/2 keyboard/mouse connector
- 5 V connector
- FDD connector
- LCD-B connector
- CompactFlash™ socket

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C.1 Ethernet connector (CN1)

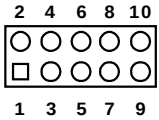


Table C-1: Ethernet connector (CN1)

Pin	Signal	Pin	Signal
1	Vcc (+5 V)	2	ACTLED-
3	RX+	4	RX-
5	LILED-	6	GND
7	NC	8	GND
9	TX+	10	TX-

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C.2 LCD-A connector (CN2)

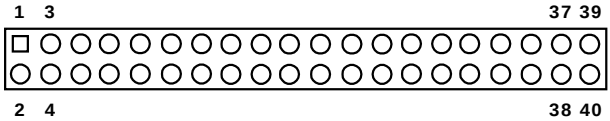


Table C-2: LCD-A connector (CN2)

Pin	Signal	Pin	Signal
1	VDDSAFE +5 V	2	VDDSAFE +5 V
3	GND	4	GND
5	VDDSAFE +3.3 V	6	VDDSAFE +3.3 V
7	NC	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	SHIFT CLOCK	36	FLM (FIRST LINE MARKER)
37	M (DISPLAY ENABLE)	38	LP (LATCH PULSE)
39	ENABKL	40	ENAVEE

Note: The model number of the CN2 socket is DF13A-40DP-1.25V (Hirose Electric Co., Ltd.)

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C.3 COM1 connector (CN3)

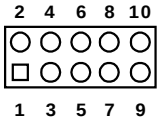


Table C-3: COM1 connector (CN3)

Pin	Signal	Pin	Signal
1	RLSD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	NC

C.4 COM2 connector (CN4)

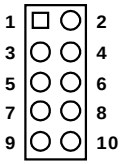


Table C-4: COM2 connector (CN4)

Pin	Signal	Pin	Signal
1	RLSD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	NC

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C.5 EIDE hard drive connector (CN5)

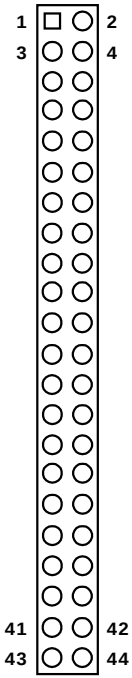


Table C-5: EIDE hard drive connector (CN5)

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	NC
21	DRQ	22	GND
23	IOW-	24	GND
25	IOR-	26	GND
27	IOCHRDY	28	GND
29	DACK-	30	GND
31	IRQ	32	NC
33	SA1	34	NC
35	SA 0	36	SA2
37	HDCS1-	38	HDCS3-
39	NC	40	GND
41	Vcc	42	Vcc
43	GND	44	NC

* low active

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C.6 PC/104 connector (CN6)

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

C.7 Parallel port connector (CN7)

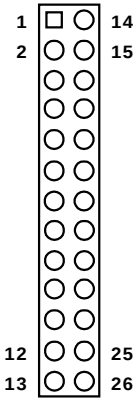


Table C-7: Parallel port connector (CN7)

Pin	Signal	Pin	Signal
1	*STROBE	14	AFD
2	PD0	15	ERROR
3	PD1	16	INIT
4	PD2	17	SLIN
5	PD3	18	GND
6	PD4	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	ACKNOWLEDGE	23	GND
11	BUSY	24	GND
12	PE (PAPER EMPTY)	25	GND
13	SLCT	26	N/C

* low active

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C.8 Backlight connector (CN8)

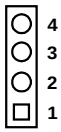


Table C-8: Backlight connector (CN8)

Pin	Signal
1	+12 V
2	GND
3	BACKLIGHT ENABLE
4	N/C

C.9 VGA connector (CN9)

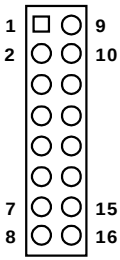


Table C-9: VGA connector (CN9)

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

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C.10 Reset button connector (CN10)



Table C-10: Reset button connector (CN10)

Pin	Signal
1	*MASTER RESET
2	GND

* low active

C.11 Main power (+5 V) connector (CN11)



Table C-11: Main power (+5 V) connector (CN11)

Pin	Signal
1	Vcc (+5 V)
2	GND
3	GND
4	+12 V

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C.12 PS/2 keyboard/mouse connector (CN12)

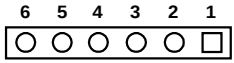


Table C-12: PS/2 keyboard/mouse connector (CN12)

Pin	Signal
1	PS/2 KB CLOCK
2	PS/2 KB DATA
3	PS/2 MOUSE CLOCK
4	GND
5	Vcc
6	PS/2 MOUSE DATA

C.13 5 V connector (CN13)



Table C-13: 5 V connector (CN13)

Pin	Signal
1	Vcc (+5 V)
2	GND

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C.14 FDD connector (CN14)

Table C-14: FDD connector (CN14)

Pin	Signal
1	Vcc (5 V)
2	INDEX
3	Vcc (5 V)
4	DRIVE SELECT 0
5	Vcc (5 V)
6	DISK CHANGE
7	NC
8	NC (READY)
9	NC (HD OUT)
10	MOTOR ON
11	NC
12	DIRECTION SELECT
13	NC (1.6 MB IN)
14	STEP
15	GND
16	WRITE DATA
17	GND
18	WRITE GATE
19	GND
20	TRACK 00
21	GND
22	WRITE PROTECT
23	GND
24	READ DATA
25	GND
26	SIDE SELECT

* low active

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C.15 LCD-B connector (CN15)

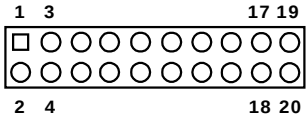


Table C-15: LCD-B connector (CN15)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	P24	4	P25
5	P26	6	P27
7	P28	8	P29
9	P30	10	P31
11	P32	12	P33
13	P34	14	P35
15	GND	16	GND
17	NC	18	NC
19	NC	20	NC

Note: The model number of the CN15 socket is DF13A-20DP-1.25V (Hirose Electric Co., Ltd.)

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C.16 CompactFlash™ socket (CN16)

Table C-16: CompactFlash™ socket (CN16)

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

* low active

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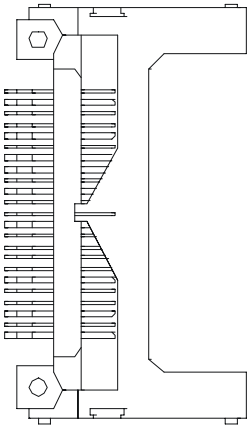


Figure C-1: CompactFlash™ socket

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APPENDIX D

System Assignments

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

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

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D.1 System I/O ports

Table D-1: System I/O ports

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

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

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D.2 DMA channel assignments

Table D-2: DMA channel assignments

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

* Audio DMA select 0, 1 or 3

D.3 Interrupt assignments

Table D-3: Interrupt assignments

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

* PNP audio IRQ select: 5, 7, 9 or 10
* Ethernet function is auto-sensing

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D.4 1st MB memory map

Table D-4: 1st MB memory map

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

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