

PCA-6359 Series

Full-size Pentium® MMX 266
PCI/ISA-bus CPU card

User's Manual

Copyright notice

This document is copyrighted, 2000, by Advantech Co., Ltd. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties which may result from its use.

Acknowledgements

Award is a trademark of Award Software International, Inc.
IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows® is a registered trademark of Microsoft Corp.

UMC is a trademark of United Microelectronics Corporation.

All other product names or trademarks are properties of their respective owners.

For more information on this and other Advantech products, please visit our websites at: <http://www.advantech.com>
<http://www.advantech.com/nc>

For technical support and service, please visit our support website at: <http://support.advantech.com>

This manual is for the PCA-6359 Series Rev. A1.

Part No. 2006635901
Printed in Taiwan

2nd Edition
December 2000

Packing List

Before installing your card, make sure that the following materials have been received:

- 1 PCA-6359 Series single board computer
- 1 CD-ROM driver utility
- 4 SCSI driver disks (optional)
- 2 hard disk drive (IDE) interface cables (40-pin)
- 1 floppy disk drive interface cable (34-pin)
- 1 printer cable and 1 serial port cable kit
- 1 PS/2 keyboard and PS/2 mouse adapter
- 1 Ultra Wide SCSI cable (optional)
- 1 ATX-to-PS/2 power cable
- 1 warranty certificate

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

Optional Devices

- 1 USB cable (part no. 1700100170)
- 1 6-pin mini-DIN keyboard and PS/2 mouse adapter (part no. 1700060201)

PCA-6359 Series Comparison Table

Model	PCA-6359L	PCA-6359V	PCA-6359VE	PCA-6359F
CPU	Intel [®] 266 MHz (MMX)	Intel [®] 266 MHz (MMX)	Intel [®] 266 MHz (MMX)	Intel [®] 266 MHz (MMX)
System Chipset	430TX	430TX	430TX	430TX
BIOS	Award, P&P	Award, P&P	Award, P&P	Award, P&P
L2 Cache	512 KB	512 KB	512 KB	512 KB
Max. System RAM	256 MB SDRAM	256 MB SDRAM	256 MB SDRAM	256 MB SDRAM
VGA CRT/LCD	x	C&T 69000	C&T 69000	C&T 69000
LAN	x	x	10/100Base-T, Intel [®] 82559ER	10/100Base-T, Intel [®] 82559ER
SCSI	x	x	x	Symbios SYM53C875E Ultra Wide SCSI
USB	2	2	2	2
EIDE	4	4	4	4
2S/1P	✓	✓	✓	✓

Also refer to the PCA-6359 Series features elsewhere in this manual

Contents

Chapter 1 Hardware Configuration	1
1.1 Introduction	2
Embedded Pentium® MMX CPU	2
Guaranteed long product supply time	2
1.2 Features	3
1.3 Specifications	5
Standard SBC functions	5
VGA function (PCA-6359V/VE/F only)	5
Ethernet controller functions (PCA-6359VE/F only)	6
SCSI function (PCA-6359F only)	6
Mechanical and environmental specifications	6
1.4 Board Layout: Main Features	7
1.5 Safety Precautions	8
1.6 Jumper Settings	9
1.6.1 Clear CMOS (J1)	10
1.6.2 Watchdog output (J2)	10
1.6.3 44-pin LCD power select (J4)	11
1.6.4 DiskOnChip® 2000 Flash disk address select (J3)	12
1.7 System Memory	14
1.7.1 Sample calculation: DIMM memory capacity	14
1.7.2 Supplementary information about DIMMs	15
1.8 Memory Installation Procedures	15
Chapter 2 Connecting Peripherals	17
2.1 Board Layout: Connector Locations	18
2.2 Primary (CN1) and Secondary (CN2) IDE Connectors	21
2.3 Floppy Drive Connector (CN3)	22
2.4 Parallel Port Connector (CN4)	22
2.5 Ultra Wide SCSI Connector (CN5)	23
2.6 USB Connector (CN6)	23
2.7 VGA Connector (CN7)	24
2.8 Ethernet Connector (CN8)	24
2.9 Serial Ports (CN9: COM1; CN10: COM2)	25
2.10 PS/2 Keyboard and Mouse Connector (CN11)	26

2.11	External Keyboard Connector (CN12)	26
2.12	IR Connector (CN13)	26
2.13	Front Panel Connectors	
	(CN16, CN17, CN18, CN19 and CN21)	27
	2.13.1 Keyboard lock and power on LED (CN16)	27
	2.13.2 External speaker (CN17)	27
	2.13.3 Reset (CN18)	27
	2.13.4 IDE LED (CN19)	27
	2.13.5 ATX soft power switch (CN21)	28
2.14	ATX Power Control Connectors (CN20 and CN21)	28
	2.14.1 ATX feature connector (CN20) and soft power switch connector (CN21)	28
	2.14.2 Controlling the soft power switch	29
2.15	LCD Inverter Connector (CN23)	29
2.16	24-bit LCD Display Connector (CN24)	30
2.17	36-bit LCD Display Connector (CN25)	30
2.18	Ultra SCSI Connector (CN27)	31
Chapter 3 Award BIOS Setup		33
3.1	Introduction	34
3.2	Entering Setup	34
3.3	Standard CMOS Setup	35
	3.3.1 CMOS RAM backup	35
3.4	BIOS Features Setup	36
	3.4.1 Virus Warning	36
	3.4.2 CPU Internal Cache/External Cache	37
	3.4.3 Boot Sequence	37
	3.4.4 Boot Up Floppy Seek	37
	3.4.5 Boot Up NumLock Status	38
	3.4.6 Typematic Rate Setting	38
	3.4.7 Typematic Rate (Char/Sec)	38
	3.4.8 Typematic Delay (msec)	38
	3.4.9 Security Option	38
	3.4.10 OS Select for DRAM>64 MB	39
	3.4.11 PCI/VGA Palette Snoop	39
	3.4.12 Video BIOS Shadow	39
	3.4.13 C8000 - CFFFF Shadow/DC000-DFFFF Shadow	39

3.5	Chipset Features Setup	40
	3.5.1 SDRAM (CAS Lat / RAS-to-CAS)	40
	3.5.2 DRAM Speculative Read	41
	3.5.3 16 Bit I/O Recovery Time / 8 Bit I/O Recovery Time	41
	3.5.4 Memory Hole At 15M-16M	41
3.6	Power Management Setup	42
	3.6.1 Power Management	42
	3.6.2 PM Control by APM	42
	3.6.3 Video Off Method	43
	3.6.4 MODEM Use IRQ	43
	3.6.5 HDD Power Down	43
	3.6.6 ZZ Active in Suspend	43
	3.6.7 PCI/VGA Act-Monitor	43
	3.6.8 Soft-Off by PWR-BTTN	44
	3.6.9 PowerOn by Ring	44
	3.6.10 PowerOn by Alarm	44
3.7	PnP PCI Configuration Setup	45
	3.7.1 IRQ-xx assigned to : PCI/ISA PnP	45
	3.7.2 DMA-x assigned to : PCI/ISA PnP	46
3.8	Load BIOS Defaults	46
3.9	Load Setup Defaults	46
3.10	Integrated Peripherals	47
	3.10.1 IDE HDD Block Mode	47
	3.10.2 IDE Primary Master/Slave PIO/UDMA Mode, IDE Secondary Master/Slave PIO/UDMA Mode (Auto)	47
	3.10.3 On-Chip PCI IDE Primary/Secondary	48
	3.10.4 Onboard FDC Controller	48
	3.10.5 Onboard Serial Port 1 (3F8H/IRQ4)	48
	3.10.6 Onboard Serial Port 2 (2F8H/IRQ3)	48
	3.10.7 UART Mode Select	48
	3.10.8 UART2 Duplex Mode	48
	3.10.9 Rx/D, Tx/D Active	48
	3.10.10 Onboard Parallel Port (378H/IRQ7)	49
	3.10.11 Parallel Port Mode (ECP + EPP)	49
	3.10.12 ECP Mode Use DMA	49
3.11	Password Setting	49
3.12	IDE HDD Auto Detection	50
3.13	Save & Exit Setup	50
3.14	Exit Without Saving	50

Chapter 4 PCI SVGA Setup (PCA-6359V/VE/F only)	51
4.1 Introduction	52
4.1.1 Chipset	52
4.1.2 Display memory	52
4.1.3 Display types	52
4.2 Installation of SVGA Driver	53
4.2.1 Installation for Windows 95	53
4.2.2 Installation for Windows 98	54
4.2.3 Installation for Windows NT	57
Chapter 5 PCI Bus Ethernet Interface (PCA-6359VE/F only)	63
5.1 Introduction	64
5.2 Installation of Ethernet Driver	64
5.2.1 Installation for MS-DOS and Windows 3.1	64
5.2.2 Installation for Windows 95	65
5.2.3 Installation for Windows 98	66
5.2.4 Installation for Windows NT	72
5.3 Further Information	76
Chapter 6 SCSI Setup and Configurations (PCA-6359F only)	77
6.1 Introduction	78
6.2 Before You Begin	78
6.3 Basic Rules for SCSI Host Adapter and Device Installation	79
6.4 Configuring the SCSI Adapter	79
6.5 SCSI Terminators	80
6.6 SDMS Drivers	81

Appendix A Programming the Watchdog Timer	83
A.1 Programming the Watchdog Timer	84
Appendix B Pin Assignments	87
B.1 IDE Hard Drive Connector (CN1, CN2)	88
B.2 Floppy Drive Connector (CN3)	89
B.3 Parallel Port Connector (CN4)	90
B.4 Ultra Wide SCSI Connector (CN5)	91
B.5 USB Connector (CN6)	92
B.6 VGA Connector (CN7)	92
B.7 Ethernet 10/100Base-T RJ-45 Connector (CN8)	93
B.8 COM1/COM2 RS-232 Serial Port (CN9, CN10)	93
B.9 Keyboard and Mouse Connector (CN11)	94
B.10 External Keyboard Connector (CN12)	94
B.11 IR Connector (CN13)	95
B.12 CPU Fan Power Connector (CN14)	95
B.13 Power LED and Keylock Connector (CN16)	96
B.14 External Speaker Connector (CN17)	96
B.15 Reset Connector (CN18)	97
B.16 HDD LED Connector (CN19)	97
B.17 ATX Feature Connector (CN20)	97
B.18 LCD Connector (CN23)	98
B.19 24-bit LCD Display Connector (CN24)	99
B.20 36-bit LCD Display Connector (CN25)	100
B.21 System I/O Ports	101
B.22 DMA Channel Assignments	102
B.23 Interrupt Assignments	102
B.24 1st MB Memory Map	103
B.25 PCI Bus Map	103
Appendix C DiskOnChip® 2000 Installation Guide	105
C.1 DiskOnChip® 2000 Quick Installation Guide	106
C.1.1 DiskOnChip® 2000 installation instructions	106
C.1.2 Additional information and assistance	107
Appendix D LCD Services	109
D.1 LCD Services	110

Hardware Configuration

This chapter gives background information on the PCA-6359 Series. It then shows you how to configure the card to match your application and prepare it for installation into your PC.

Sections include:

- Introduction
- Specifications
- Board layout
- Safety precautions
- Jumper settings
- System memory
- Memory installation procedures

1.1 Introduction

The PCA-6359 Series is a full-size CPU card designed with an on-board Intel® Pentium® MMX CPU. Featuring powerful onboard functions such as VGA, LCD, LAN, SCSI and SSD, the versatile PCA-6359 Series can meet the needs of a great many different applications.

Embedded Pentium® MMX CPU

The PCA-6359 Series is equipped with Intel's new embedded Pentium® Tillamook MMX 266 MHz CPU. The CPU provides high performance with low power consumption and better thermal management.

Guaranteed long product supply time

In addition to the CPU, all the major components of the PCA-6359 Series are Intel® EMD solutions. These include the 430 TX system chipset, C&T 69000 VGA/LCD controller, and 82559ER 10/100Base-T Ethernet. Unlike regular commercial solutions, Intel EMD solutions provide higher system stability and longer product supply time (Intel EMD products' typical life cycle is 5 years). This guarantee is particularly important for end systems that will last for years.

1.2 Features

1. **ATX soft power switch:** Through the BIOS, the power button can be defined as the "Standby" (aka "Suspend" or "Sleep") button or as the "Soft-Off" button (see Section 3.6.8 Soft-off by PWR-BTN). Regardless of the setting, pushing the power button for more than 4 seconds will enter the Soft-Off mode.
2. **Wake-on-modem (requires modem):** This allows a computer to be turned on remotely through an internal or external modem. Users can thus access information on their computers from anywhere in the world!
3. **Message LED:** Chassis LEDs now act as information providers. The way a particular LED illuminates indicates the stage the computer is in. A single glimpse provides useful information to the user.
4. **Jumper free mode:** When enabled, this allows processor settings and easy overclocking of frequency and Vcore voltages all through the BIOS setup. Easy-to-use DIP switches instead of jumpers are included in case you want to manually adjust the processor's external frequency.

5. **CMOS RAM backup:** When BIOS CMOS setup has been completed, data in the CMOS RAM is automatically backed up to the Flash ROM. This is particularly useful in industrial environments which may cause soft errors. Upon such an error occurring, BIOS will check the data, and automatically restore the original data for booting.
6. **More!:**
 - Additional metal bracket for CPU stabilization
 - **Power On by Alarm:** Powers up your computer at a certain time
 - Standard IR supports optional remote control package for wireless interfacing with external peripherals, personal gadgets, or an optional remote controller
 - **Virus warning:** During and after system boot-up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system. In this case, a warning message will be displayed. You can then run your anti-virus program to locate the problem

1.3 Specifications

Standard SBC functions

- **CPU:** Intel® Pentium® MMX CPU 266 MHz
- **BIOS:** Award 2 Mbit Flash BIOS, supports Plug & Play, APM 1.2, Ethernet boot ROM, and HDD/SCSI/ZIP/CD/Floppy/LS120 boot selection
- **Chipset:** Intel® 430TX
- **L2 cache:** 512 KB PB SRAM
- **System memory:** Two 168-pin DIMM sockets support SDRAM memory module from 16 MB to 256 MB
- **PCI IDE interface:** Two Enhanced IDE interfaces. Support 4 IDE devices, PIO mode 4 with bus mastering up to 16.7 MB/sec, Ultra DMA mode up to 33 MB/sec
- **Floppy disk drive interface:** Supports up to two floppy disk drives: 3½" (720 KB or 1.44 MB) and/or 5¼" (360 KB or 1.2 MB)
- **Parallel port:** One parallel port , supports EPP/ECP
- **Serial ports:** Two RS-232
- **Two USB ports**
- **Watchdog timer:** Can generate a system reset or IRQ 11. Software enabled/disabled. Time interval is from 1 ~ 63 seconds. Jumperless with run-time setup
- **SSD (optional):** Supports DOC® 2000 up to 144 MB

VGA function (PCA-6359V/VE/F only)

- **Controller:** C&T 69000 (69030 upon request), supports CRT and 36-bit LCD display types
- **Display memory:** 2/4 MB SDRAM built-in (upon request)
- **Display resolution:** Up to 1280 x 1024 @ 256 colors (16 million colors @ 4 MB)

Ethernet controller functions (PCA-6359VE/F only)

- **Controller:** Intel® 82559ER, 10/100 Mbps
- **I/O address switchless setting**
- **Connector type:** RJ-45
- **Boot ROM:** Built-in system (optional)

SCSI function (PCA-6359F only)

- **Controller:** Symbios SYM53C875E
- **PCI SCSI:** Supports Ultra Wide SCSI 8-bit or 16-bit interface, up to 40 MB/s

Mechanical and environmental specifications

- **Max. power requirement:** + 5 V @ 2.52 A
- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F)
- **Size:** 338 x 122 mm

1.4 Board Layout: Main Features

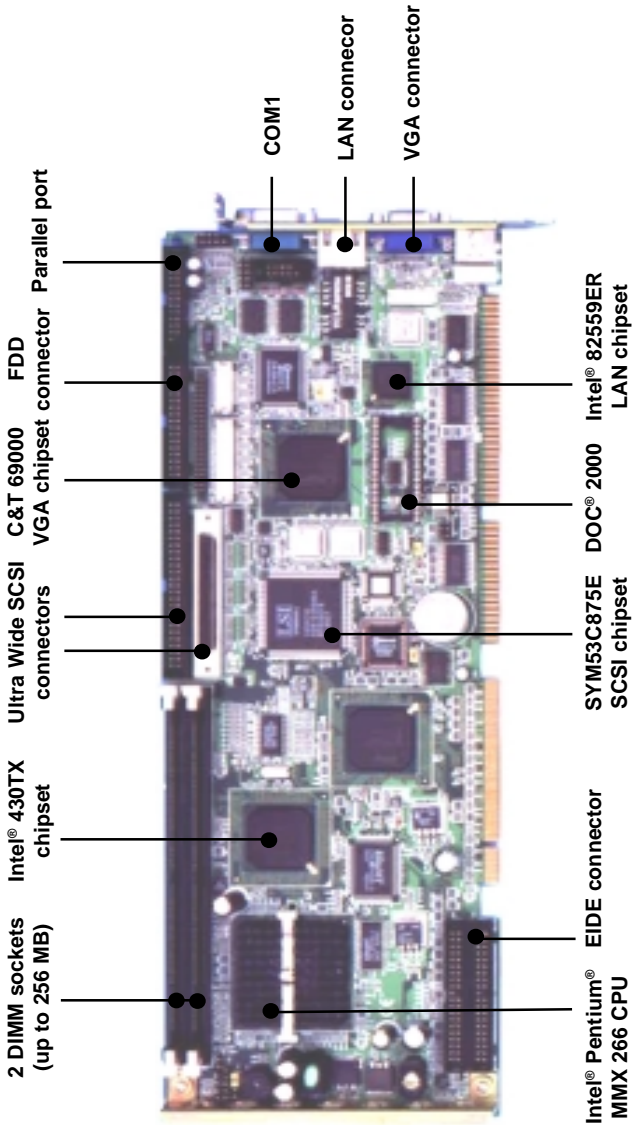


Figure 1-1: PCA-6359 Series board layout: dimensions

1.5 Safety Precautions

Follow these simple precautions to protect yourself from harm and your PC from damage.

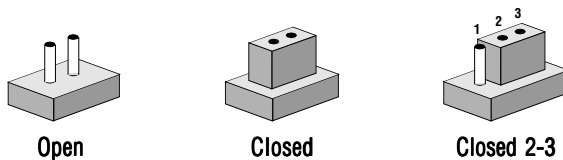
1. To avoid electric shock, always disconnect the power from your PC chassis before you work on it. Do not touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.
3. Always ground yourself to remove any static charge before you touch your CPU card. Be particularly careful not to touch the chip connectors. Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electric discharges and fields. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

1.6 Jumper Settings

This section tells how to set the jumpers to configure your card. It gives the card default configuration and your options for each jumper. After you set the jumpers and install the card, you will also need to run the BIOS Setup program (discussed in Chapter 3) to configure the serial port addresses, floppy/hard disk drive types and system operating parameters. Connections, such as hard disk cables, appear in Chapter 2.

For the locations of each jumper, see the board layout diagram depicted earlier in this chapter.

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



You may find a pair of needle-nose pliers useful for setting the 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.

Table 1-1: Jumpers

Label	Function
J1	CMOS clear
J2	Watchdog timer output
J3	DiskOnChip® 2000 address setting
J4	44-pin LCD power select (Reserved)

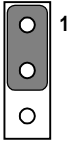
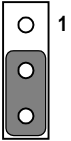
1.6.1 Clear CMOS (J1)

Warning: To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS". Set the jumper back to normal before turning on the power supply.

To clear the RTC data:

1. Turn off the computer and unplug the AC power.
2. Short the 2-3 pins.
3. Hold down <Delete> during boot-up and enter the BIOS setup to re-enter your preferences.

Table 1-1: Clear CMOS (J1)

	*Normal	CMOS data clear
J1		

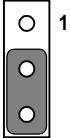
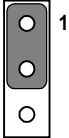
* default setting

1.6.2 Watchdog output (J2)

An onboard watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This is an invaluable protective device for standalone or unmanned applications. Setup involves two jumpers and running the control software. (Refer to Appendix A.)

When the watchdog timer is enabled and the CPU shuts down, the watchdog timer will automatically either reset the system or generate an interrupt on IRQ 11, depending on the setting of jumper JP4, as shown below:

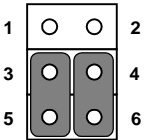
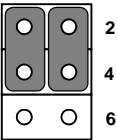
Table 1-2: Watchdog output (J2)

	*System reset	IRQ11 interrupt
J2		

* default setting

1.6.3 44-pin LCD power select (J4)

Table 1-3: 44-pin LCD power select (J4)

	*5 V	3.3 V
J4		

* default setting

1.6.4 DiskOnChip® 2000 Flash disk address select (J3)

The PCA-6359 Series includes a 32-pin socket for M-Systems' DiskOnChip® 2000 Flash disk module. This revolutionary solid state disk enables critical system information to be stored within an onboard Flash disk for virtually instantaneous data access.

You must specify the memory address you want to use for your DiskOnChip 2000 Flash disk module by setting jumper (J3). Available settings are shown in the following table.

Table 1-4: DiskOnChip® 2000 Flash disk memory address jumper settings (J3)

Segment	A	B	C										
CC00h	ON	ON	OFF	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	A	B	C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
A	B	C											
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
D000h	ON	OFF	ON	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>	A	B	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
A	B	C											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
D400h	ON	OFF	OFF	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	A	B	C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	B	C											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
D800h	OFF	ON	ON	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>	A	B	C	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A	B	C											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>											
DC00h	OFF	ON	OFF	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	A	B	C	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
A	B	C											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>											
E000h	OFF	OFF	ON	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>	A	B	C	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
A	B	C											
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>											
Disable	OFF	OFF	OFF	<table border="1"> <thead> <tr> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	A	B	C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	B	C											
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											

1.7 System Memory

The top-left edge of the PCA-6359 Series contains three sockets for 168-pin dual inline memory modules (DIMMs). All three sockets use 3.3 V unbuffered synchronous DRAMs (SDRAM). DIMMs are available in capacities of 16, 32, 64, or 128 MB. The sockets can be filled in any combination with DIMMs of any size, giving your PCA-6359 Series single board computer between 16 MB and 256 MB of memory. Use the following table to calculate the total DRAM memory within your computer:

Table 1-5: DIMM module allocation table

Socket number	168-pin DIMM memory
1	(16, 32, 64, or 128 MB) x 1
2	(16, 32, 64, or 128 MB) x 1

1.7.1 Sample calculation: DIMM memory capacity

Suppose you install a 128 MB DIMM into your PCA-6359 Series' socket 1 and a 32 MB DIMM into socket 2. Your total system memory is 160 MB, calculated as follows:

Table 1-6: DIMM memory capacity sample calculation

Socket number	168-pin DIMM memory	Total memory
1	128 MB x 1	128 MB
2	32 MB x 1	32 MB
Total memory		160 MB

1.7.2 Supplementary information about DIMMs

Your PCA-6359 Series can accept SDRAM memory chips (with or without parity). Also note:

- SDRAM chips are usually thinner and have higher pin density than EDO chips.
- Modules with 9 chips/side support ECC; modules with 8 chips/side do not support ECC.
- Single-sided modules are typically 16, 32 or 64 MB; double-sided modules are usually 32, 64, or 128 MB.

1.8 Memory Installation Procedures

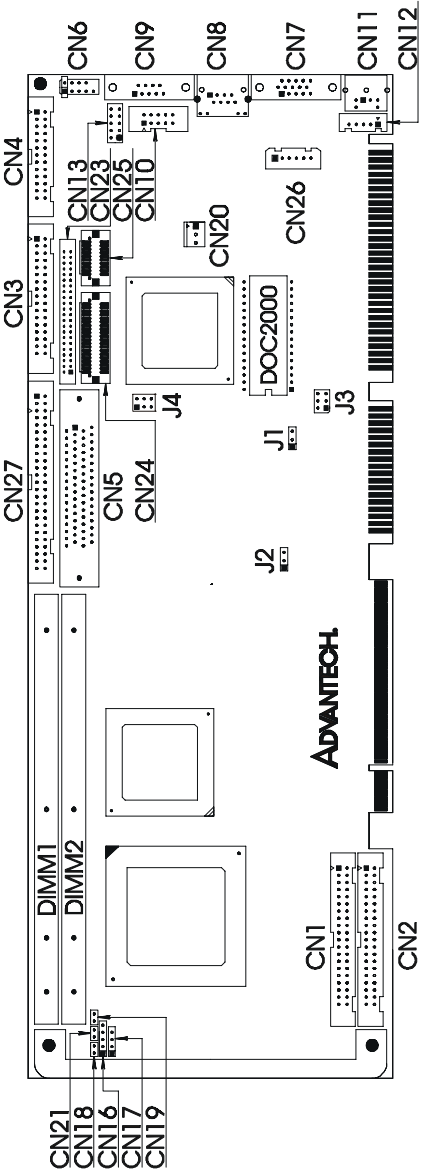
To install DIMMs, first make sure the two handles of the DIMM socket are in the "open" position. i.e. The handles lean outward. Slowly slide the DIMM module along the plastic guides on both ends of the socket. Then press the DIMM module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the DIMM socket. To remove the memory module, just push both handles outward, and the memory module will be ejected by the mechanism in the socket.

CHAPTER 2

Connecting Peripherals

This chapter tells how to connect peripherals, switches and indicators to the PCA-6359 Series board. You can access most of the connectors from the top of the board while it is installed in the chassis. If you have a number of cards installed, or your chassis is very tight, you may need to partially remove the board to make all the connections.

2.1 Board Layout: Connector Locations



The following table lists the connectors on the PCA-6359 Series.

Number	Function
CN1	Primary IDE connector
CN2	Secondary IDE connector
CN3	Floppy drive connector
CN4	Parallel port
CN5	Ultra Wide SCSI connector
CN6	USB port
CN7	VGA connector
CN8	10/100Base-T Ethernet connector
CN9	Serial port: COM1
CN10	Serial port: COM2
CN11	PS/2 keyboard and mouse
CN12	External keyboard connector
CN13	Infrared (IR) connector
CN16	Keyboard lock and power LED
CN17	External speaker
CN18	Reset connector
CN19	IDE LED
CN20	ATX feature connector
CN21	ATX soft power switch
CN23	LCD connector (Reserved)
CN24	LCD 24-bit LCD display connector
CN25	LCD 36-bit LCD display connector
CN26	Reserved
CN27	Ultra SCSI connector

The following sections tell how to make each connection. In most cases, you will simply need to connect a standard cable. All of the connector pin assignments are shown in Appendix B.

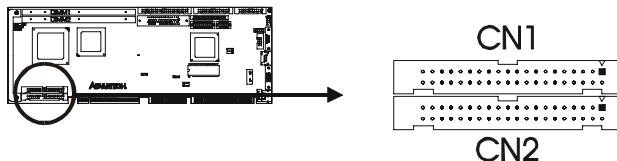
Warning! *Always completely disconnect the power cord from your chassis whenever you are working on it. Do not make connections while the power is on. Sensitive electronic components can be damaged by a sudden rush of power. Only experienced electronics personnel should open the PC chassis.*



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.*



2.2 Primary (CN1) and Secondary (CN2) IDE Connectors



You can attach up to four IDE (Integrated Device Electronics) drives to the PCA-6359 Series' internal controller. The primary (CN1) and secondary (CN2) connectors can each accommodate two drives.

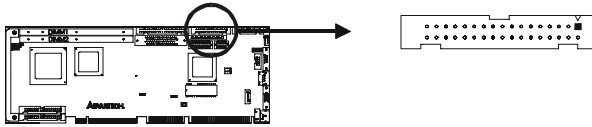
Wire number 1 on the cable is red or blue and the other wires are gray. Connect one end to connector CN1 or CN2 on the CPU card. Make sure that the red/blue wire corresponds to pin 1 on the connector (in the upper right hand corner). See Chapter 1 of this manual for help finding the connector.

Unlike floppy drives, IDE hard drives can connect in either position on the cable. If you install two drives to a single connector, you will need to set one as the master and one as the slave. You do this by setting the jumpers on the drives. If you use just one drive per connector, you should set each drive as the master. See the documentation that came with your drive for more information.

Connect the first hard drive to the other end of the cable. Wire 1 on the cable should also connect to pin 1 on the hard drive connector, which is labeled on the drive circuit board. Check the documentation that came with the drive for more information.

Connect the second hard drive to the remaining connector (CN2 or CN1), in the same way as described above.

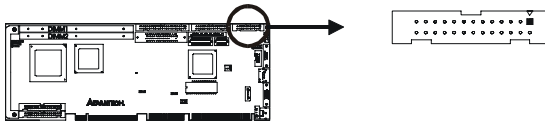
2.3 Floppy Drive Connector (CN3)



You can attach up to two floppy disk drives to the PCA-6359 Series' onboard controller. You can use any combination of 5.25" (360 KB / 1.2 MB) and/or 3.5" (720 KB / 1.44/2.88 MB) drives.

The card comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. 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). You can use only one connector in each set. The set on the end (after the twist in the cable) connects to the A: floppy drive. The set in the middle connects to the B: floppy drive.

2.4 Parallel Port Connector (CN4)



The parallel port is normally used to connect the CPU card to a printer. The PCA-6359 Series includes an onboard parallel port, accessed through a 26-pin flat-cable connector, CN4. The 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. The bracket installs at the end of an empty slot in your chassis, giving you access to the connector.

The parallel port is designated as LPT1, and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

To install the bracket, find an empty slot in your chassis. Unscrew the plate that covers the end of the slot. Screw in the bracket in place of the plate. Next, attach the flat-cable connector to CN4 on the CPU card. Wire 1 of the cable is red or blue, and the other wires are gray. Make sure that wire 1 corresponds to pin 1 of CN4. Pin 1 is on the upper right side of CN4.

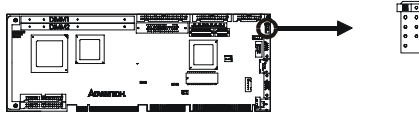
2.5 Ultra Wide SCSI Connector (CN5)



Note: Only the PCA-6359F model contains an Ultra Wide SCSI connector.

The PCA-6359F has a 68-pin, dual in-line connector for Ultra Wide SCSI devices. Connection of SCSI devices requires special attention, especially when determining the last drive on the SCSI chain. Refer to Chapter 6 and your device's operating manual for detailed installation advice.

2.6 USB Connector (CN6)

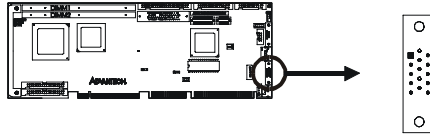


The PCA-6359 Series CPU card provides one USB (Universal Serial Bus) interface, which give complete Plug & Play and hot attach/detach for up to 127 external devices. The USB interface complies with USB Specification Rev. 1.0, and is fuse-protected.

The USB interface is accessed through a 10-pin flat-cable connector, CN6. The adapter cable has a 10-pin connector on one end and a USB connector on the bracket.

The USB interface can be disabled in the system BIOS setup.

2.7 VGA Connector (CN7)



Note: Only the PCA-6359V/VE/F models include an on-board VGA connector.

The PCA-6359V/VE/F includes a PCI SVGA interface that can drive conventional CRT displays. CN7 is a standard 15-pin D-SUB connector commonly used for VGA. Pin assignments for CRT connector CN7 are detailed in Appendix B of this manual.

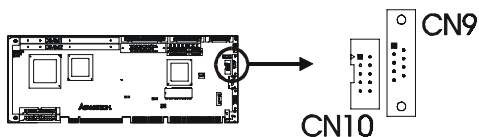
2.8 Ethernet Connector (CN8)



Note: Only the PCA-6359VE/F models include a 10/100Base-T Ethernet connector.

The PCA-6359VE/F is equipped with a high performance 32-bit PCI-bus Ethernet interface, which is fully compliant with IEEE 802.3/u 10/100 Mbps CSMA/CD standards. It is supported by all major network operating systems, and is 100% Novell NE-2000 compatible. An onboard RJ-45 jack provides convenient 10/100Base-T RJ-45 operation.

2.9 Serial Ports (CN9: COM1; CN10: COM2)



The PCA-6359 Series offers two serial ports, CN9 as COM1 and CN10 as COM2. These ports can connect to serial devices (such as a mouse, printers, and so on) or to a communication network.

Table 2-2: Serial port connections (COM1, COM2)

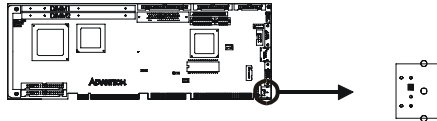
Connector	Ports	Address	Interrupt
CN9	COM1	3F8*, 3E8	IRQ4
CN10	COM2	2F8*, 2E8	IRQ3

* default settings

The IRQ and address ranges for both ports are fixed. However, if you want to disable the port or change these parameters later, you can do this in the system BIOS setup.

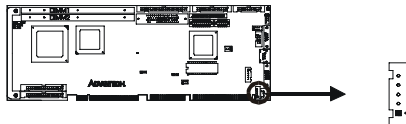
Different devices implement the RS-232 standard in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

2.10 PS/2 Keyboard and Mouse Connector (CN11)



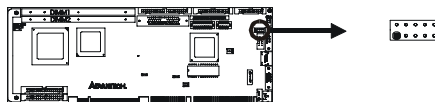
The PCA-6359 Series board provides a keyboard connector. A 6-pin mini-DIN connector (CN11) on the card mounting bracket supports single-board computer applications. The card comes with an adapter to convert from the 6-pin mini-DIN connector to a standard DIN connector and to a PS/2 mouse connector.

2.11 External Keyboard Connector (CN12)



In addition to the PS/2 mouse/keyboard connector on the PCA-6359 Series' rear plate, there is also an extra onboard external keyboard connector. This gives system integrators greater flexibility in designing their systems.

2.12 IR Connector (CN13)



This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through the BIOS setup (see Chapter 3).

2.13 Front Panel Connectors (CN16, CN17, CN18, CN19 and CN21)

There are several external switches to monitor and control the PCA-6359 Series.



2.13.1 Keyboard lock and power on LED (CN16)

CN16 is a 5-pin connector for the keyboard lock and power on LED. Refer to Appendix B for detailed information on the pin assignments. If a PS/2 or ATX power supply is used, the system's power LED status will be as indicated below:

Table 2-2: PS/2 or ATX power supply LED status

Power mode	LED (PS/2 power)	LED (ATX power)
System On	On	On
System Suspend	Fast flashes	Fast flashes
System Off	Off	Slow flashes

2.13.2 External speaker (CN17)

CN17 is a 4-pin connector for an external speaker. If there is no external speaker, the PCA-6359 Series provides an onboard buzzer as an alternative. To enable the buzzer, set pins 3-4 as closed.

2.13.3 Reset (CN18)

Many computer cases offer the convenience of a reset button. Connect the wire from the reset button to CN18.

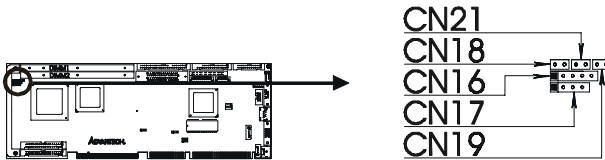
2.13.4 IDE LED (CN19)

You can connect an LED to connector CN19 to indicate when the HDD is active.

2.13.5 ATX soft power switch (CN21)

If your computer case is equipped with an ATX power supply, you should connect the power on/off button on your computer case to CN21. This connection enables you to turn your computer on and off.

2.14 ATX Power Control Connectors (CN20 and CN21)



Note: Refer to the diagram on the previous page for the location of CN21.

2.14.1 ATX feature connector (CN20) and soft power switch connector (CN21)

The PCA-6359 Series can support an advanced soft power switch function if an ATX power supply is used. To enable the soft power switch function:

1. Take the specially designed ATX-to-PS/2 power cable out of the PCA-6359 Series' accessory bag.
2. Connect the 3-pin plug of the cable to CN20 (ATX feature connector).
3. Connect the power on/off button to CN21. (A momentary type of button should be used.)

Note: If you will not be using an ATX power connector, make sure that pins 2-3 are closed.

Warnings: 1. Make sure that you unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your CPU card and expansion cards.



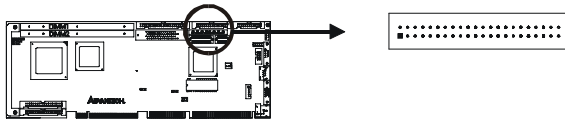
2. ATX power supplies may power on if certain motherboard components or connections are touched by metallic objects.

Important: Make sure that the ATX power supply can take at least a 720 mA load on the 5 V standby lead (5VSB). If not, you may have difficulty powering on your system and/or supporting the "Wake on LAN" function.

2.14.2 Controlling the soft power switch

Users can also identify the current power mode through the system's power LED (see Section 2.13.1).

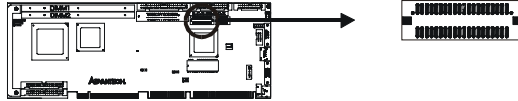
2.15 LCD Inverter Connector (CN23)



CN23 consists of a 44-pin dual inline header.

The PCA-6359 Series provides a bias control signal that can be used to control the LCD bias voltage. It is recommended that the LCD bias voltage not be applied to the panel until the logic supply voltage (+5 V or +3.3 V) and panel video signals are stable. Under normal operation, the control signal (ENAVEE) is active high. When the PCA-6359 Series' power is applied, the control signal is low until just after the relevant flat panel signals are present.

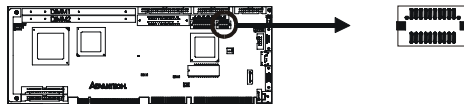
2.16 24-bit LCD Display Connector (CN24)



CN24 is a 40-pin dual in-line header and is used to connect an LCD display to the PCA-6359 Series. The PCA-6359 Series has bias control which can be used to control the LCD signal voltage. Pin 7 of CN24 is for LCD contrast adjustments. The LCD contrast can be adjusted via the BIOS.

The VGA interface is done completely with the software utility provided, please refer to Chapter 4 for details.

2.17 36-bit LCD Display Connector (CN25)

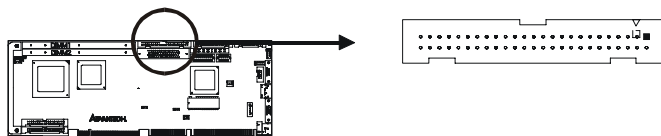


The PCA-6359 Series supports a 36-bit LCD that must be connected to both CN24 (40-pin) and CN25 (20-pin).

The pin assignments for both CN24 and CN25 can be found in Appendix B.

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

2.18 Ultra SCSI Connector (CN27)



The PCA-6359F has a 50-pin dual inline connector for Ultra SCSI devices. Refer to Chapter 6 and your device's operating manual for detailed installation advice.

CHAPTER 3

Award BIOS Setup

This chapter describes how to set the card's BIOS configuration data.

3.1 Introduction

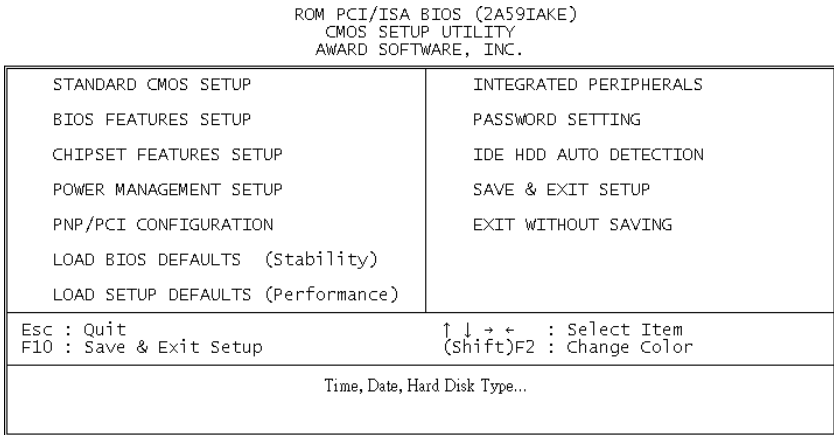


Figure 3-1: Setup program initial screen

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 RAM so that it retains the Setup information when the power is turned off.

3.2 Entering Setup

Turning on the computer and pressing immediately will allow you to enter Setup.

3.3 Standard CMOS Setup

Choose the “STANDARD CMOS SETUP” option from the INITIAL SETUP SCREEN Menu, and the screen below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

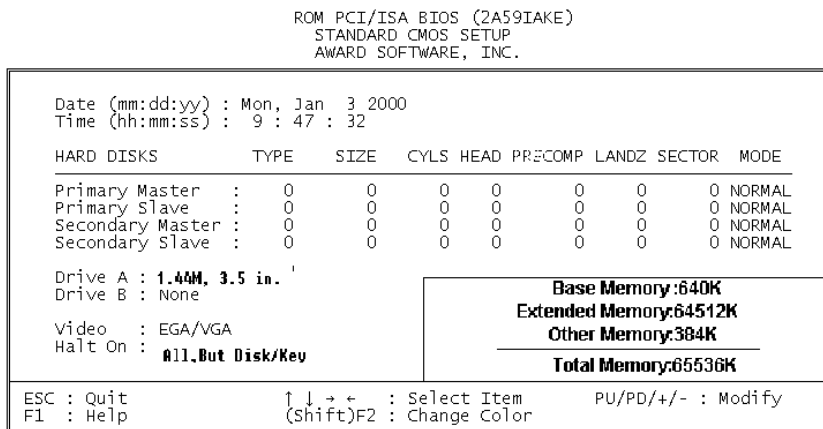


Figure 3-2: CMOS setup screen

3.3.1 CMOS RAM backup

The CMOS RAM is powered by an onboard button cell battery.

When BIOS CMOS Setup has been completed, CMOS RAM data is automatically backed up to Flash ROM. If conditions in a harsh industrial environment cause a soft error, BIOS will recheck the data and automatically restore the original data for booting.

Note: *If you intend to update CMOS RAM data, you have to click on “DEL” within two seconds of the “CMOS checksum error....” display screen message appearing. Then enter the “Setup” screen to modify the data.*

If the “CMOS checksum error....” message appears again and again, please check to see if you need to replace the battery in your system.

3.4 BIOS Features Setup

The “BIOS FEATURES SETUP” screen appears when choosing the BIOS FEATURES SETUP item from the CMOS SETUP UTILITY Menu. It allows the user to configure the PCA-6359 Series according to his particular requirements.

Below are some major items that are provided in the BIOS FEATURES SETUP screen:

```
ROM PCI/ISA BIOS (2A59IAKE)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.
```

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Boot Sequence	: C,A,SCSI	D0000-D3FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up NumLock Status	: On	DC000-DFFFF Shadow	: Disabled
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Enabled		
OS Select For DRAM > 64MB	: Non-OS2		
		ESC : Quit	↑↓↓+ : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values (Shift)	F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 3-3: BIOS features setup screen

3.4.1 Virus Warning

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system. In this case, a warning message will be displayed. You can run the anti-virus program to locate the problem.

If Virus Warning is Disabled, no warning message will appear if anything attempts to access the boot sector or hard disk partition.

3.4.2 CPU Internal Cache/External Cache

Depending on the CPU/chipset design, these options can speed up memory access when enabled.

3.4.3 Boot Sequence

This function determines the sequence in which the computer will search the drives for the disk operating system (i.e. DOS). The default value is “C, A”.

A,C	System will first search the FDD, then the HDD.
C,A	System will first search the HDD, then the FDD.
C only	System will only search the HDD.
•	•
•	•
•	•

3.4.4 Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360 KB type is 40 tracks while 720 KB, 1.2 MB, and 1.44 MB are all 80 tracks.

Enabled	BIOS searches the floppy drive to determine if it is 40 or 80 tracks. Note that BIOS cannot differentiate 720 KB, 1.2 MB, and 1.44 MB type drives as they are all 80 tracks.
---------	--

Disabled	BIOS will not search for the floppy drive type by track number. Note that there will not be any warning message if the drive installed is 360 KB.
----------	---

3.4.5 Boot Up NumLock Status

The default is “On”.

On	Keypad boots up to number keys.
Off	Keypad boots up to arrow keys.

3.4.6 Typematic Rate Setting

The typematic rate determines the characters per second accepted by the computer. Typematic Rate setting enables or disables the typematic rate.

3.4.7 Typematic Rate (Char/Sec)

BIOS accepts the following input values (character/second) for Typematic Rate: 6, 8, 10, 12, 15, 20, 24, 30.

3.4.8 Typematic Delay (msec)

When holding down a key, the Typematic Delay is the time interval between the appearance of the first and second characters. The input values (msec) for this category are: 250, 500, 750, 1000.

3.4.9 Security Option

This setting determines whether the system will boot if the password is denied, while limiting access to Setup.

System	The system will not boot, and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select **PASSWORD SETTING** in the main menu. At this point, you will be asked to enter a password. Simply hit the <ENTER> key to disable security. When security is disabled, the system will boot, and you can enter Setup freely.

3.4.10 OS Select for DRAM>64 MB

This setting is under the OS/2 system.

3.4.11 PCI/VGA Palette Snoop

This determines whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA.

3.4.12 Video BIOS Shadow

This determines whether video BIOS will be copied to RAM, which is optional according to the chipset design. When enabled, Video Shadow increases the video speed.

3.4.13 C8000 - CFFFF Shadow/DC000-DFFFF Shadow

These determine whether optional ROM will be copied to RAM in blocks of 16 KB.

Enabled	Optional shadow is enabled.
---------	-----------------------------

Disabled	Optional shadow is disabled.
----------	------------------------------

3.5 Chipset Features Setup

By choosing the “CHIPSET FEATURES SETUP” option from the INITIAL SETUP SCREEN Menu, the screen below is displayed. This sample screen contains the manufacturer’s default values for the PCA-6359 Series.

```
ROM PCI/ISA BIOS (2A59IAKE)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

SDRAM(CAS Lat/RAS-to-CAS): 3/3
SDRAM Speculative Read      : Disabled
System BIOS Cacheable     : Enabled
Video BIOS Cacheable      : Enabled
8 Bit I/O Recovery Time   : 1 BUSCLK
16 Bit I/O Recovery Time  : 1 BUSCLK
Memory Hole At 15M-16M   : Disabled
PCI 2.1 Compliance        : Enabled

Power-Supply Type         : ATX

ESC : Quit           1↓+ : Select Item
F1  : Help          PU/PD/+/- : Modify
F5  : Old Values    (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

Figure 3-4: Chipset features setup screen

3.5.1 SDRAM (CAS Lat / RAS-to-CAS)

This allows you to select the CAS latency for all SDRAM cycles and RAS# to CAS# delay.

2/2 Timing type.

3/3 Timing type.

3.5.2 DRAM Speculative Read

This is capable of allowing a DRAM read request to be generated slightly before the address has been fully decoded. This can reduce all read latencies.

The CPU will issue a read request, and included with this request is the place (address) in memory where the desired data is to be found. This request is received by the DRAM controller. When it is enabled, the controller will issue the read command slightly before it has finished determining the address.

The default is “Disabled”.

3.5.3 16 Bit I/O Recovery Time / 8 Bit I/O Recovery Time

Timing for 16-bit and 8-bit ISA cards respectively. Leave these on their respective default settings.

3.5.4 Memory Hole At 15M-16M

Enabling this feature reserves 15 MB to 16 MB memory address space for ISA expansion cards that specifically require this setting. This makes memory from 15 MB and up unavailable to the system. Expansion cards can only access memory up to 16 MB. The default setting is “Disabled.”

3.6 Power Management Setup

The power management setup controls the CPU cards' "green" features. The following screen shows the manufacturer's default.

```
ROM PCI/ISA BIOS (2A59IAKE)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.
```

Power Management	: Disabled	** Reload Global Timer Events **	
PM Control by APM	: Yes	IRQ[3-7,9-15],NMI	: Disabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0	: Disabled
Video Off After	: Disabled	Primary IDE 1	: Disabled
MODEM Use IRQ	: 3	Secondary IDE 0	: Disabled
Suspend Mode	: Disabled	Secondary IDE 1	: Disabled
HDD Power Down	: Disabled	Floppy Disk	: Disabled
ZZ Active in Suspend	: Disabled	Serial Port	: Enabled
PCI/VGA Act-Monitor	: Disabled	Parallel Port	: Disabled
Soft-Off by PWR-BTTN	: Instant-Off		
PowerOn by Ring	: Disabled		
PowerOn by Alarm	: Disabled		
		ESC : Quit	↑↓+ : Select Item
		F1 : Help	PU/PD/4/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Figure 3-5: Power management setup screen

3.6.1 Power Management

This option allows you to determine if the values in power management are disabled, user-defined, or predefined.

3.6.2 PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.

If the Max. Power Saving is not enabled, this will preset to "No".

3.6.3 Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+ Blank	This will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

3.6.4 MODEM Use IRQ

This determines the IRQ in which the MODEM can be used.

The default is “3”.

3.6.5 HDD Power Down

You can choose to turn the HDD off after a one of the time interval listed, or when the system is in Suspend mode. If in a power saving mode, any access to the HDD will wake it up.

Note: The HDD will not power down if the Power Management option is disabled.

3.6.6 ZZ Active in Suspend

In this mode, SRAM will enter a low-power state.

3.6.7 PCI/VGA Act-Monitor

In you enable this option, any video activity will restart the global timer for standby mode.

3.6.8 Soft-Off by PWR-BTTN

If you choose “Instant-Off”, then pushing the ATX soft power switch button once will switch the system to “system off” power mode.

You can choose “Delay 4 sec.” If you do, then pushing the button for more than 4 seconds will turn off the system, whereas pushing the button momentarily (for less than 4 seconds) will switch the system to “suspend” mode.

3.6.9 PowerOn by Ring

This allows either settings of Enabled or Disabled for powering up the computer (i.e. turning on the ATX power supply) when the modem receives a call while the computer is in Soft-Off mode.

Note: The computer cannot receive or transmit data until the computer and applications are fully running. Thus connection cannot be made on the first try. Turning an external modem off and then back on while the computer is off causes an initialization string that will also cause the system to power on.

3.6.10 PowerOn by Alarm

This allows you to have an unattended or automatic power up of your system. You may configure your system to power up at a certain time and day.

3.7 PnP PCI Configuration Setup

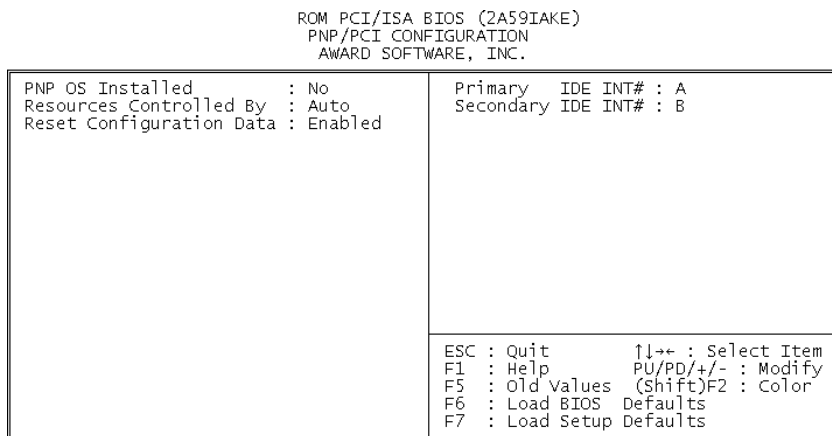


Figure 3-6: PCI configuration screen

3.7.1 IRQ-xx assigned to : PCI/ISA PnP

These fields indicate whether or not the displayed IRQ for each field is being used by a legacy (non-PnP) card. Two options are available: PCI/ISA PnP or Legacy ISA. The first option, the default setting, indicates that the displayed IRQ is not used to determine if an ISA card is using that IRQ. If you install a legacy ISA card that requires a unique IRQ, you must set the field for that IRQ to “Legacy ISA”. Say for example that you install a legacy ISA card that requires IRQ10. You must then set “IRQ-10 assigned to :” as “Legacy ISA”.

3.7.2 DMA-x assigned to : PCI/ISA PnP

These fields indicate whether or not the displayed DMA channel for each field is being used by a legacy (non-PnP) card. Two options are available: PCI/ISA PnP or Legacy ISA. The first option, the default setting, indicates that the displayed DMA channel is not used to determine if an ISA card is using that channel. If you install a legacy ISA card that requires a unique DMA channel, you must set the field for that channel to “Legacy ISA”.

3.8 Load BIOS Defaults

“LOAD BIOS DEFAULTS” indicates the most appropriate values for the system parameters for minimum performance. These default values are loaded automatically if the stored record created by the Setup program becomes corrupted (and therefore unusable).

3.9 Load Setup Defaults

“LOAD SETUP DEFAULTS” loads the values required by the system for maximum performance.

3.10 Integrated Peripherals

ROM PCI/ISA BIOS (2A59IAKE)
 INTEGRATED PERIPHERALS
 AWARD SOFTWARE, INC.

IDE HDD Block Mode : Disabled	UART Mode Select : Normal
IDE Primary Master PIO : Auto	
IDE Primary Slave PIO : Auto	
IDE Secondary Master PIO : Auto	
IDE Secondary Slave PIO : Auto	Onboard Parallel Port : 378/IRQ7
IDE Primary Master UDMA : Auto	Parallel Port Mode : ECP+EPP
IDE Primary Slave UDMA : Auto	ECP Mode Use DMA : 3
IDE Secondary Master UDMA : Auto	EPP Mode Select : EPP1.7
IDE Secondary Slave UDMA : Auto	
On-Chip Primary PCI IDE: Enabled	
On-Chip Secondary PCI IDE: Enabled	
Onboard PCI SCSI : Enabled	
Onboard PCI Lan : Enabled	
USB Keyboard Support : Disabled	
Boot Up Display Type : CRT & Panel	
Panel Type : 800x600 TFT	
Onboard FDC Controller : Enabled	ESC : Quit ↑↓←→ : Select Item
Onboard Serial Port 1 : 3F8/IRQ4	F1 : Help PU/PD/+/- : Modify
Onboard Serial Port 2 : 2F8/IRQ3	F5 : Old Values (Shift)F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Figure 3-7: Integrated peripherals

3.10.1 IDE HDD Block Mode

If you enable IDE HDD Block Mode, the enhanced IDE driver will be enabled. Leave IDE HDD Block Mode on the default setting.

3.10.2 IDE Primary Master/Slave PIO/UDMA Mode, IDE Secondary Master/Slave PIO/UDMA Mode (Auto)

Each channel (Primary and Secondary) has both a master and a slave, making four IDE devices possible. Because each IDE device may have a different Mode timing (0, 1, 2, 3, 4), it is necessary for these to be independent. The default setting “Auto” will allow autodetection to ensure optimal performance.

3.10.3 On-Chip PCI IDE Primary/Secondary

You can enable the Primary IDE channel and/or the Secondary IDE channel. Any channel not enabled is disabled. This field is for systems with only SCSI drives.

3.10.4 Onboard FDC Controller

When enabled, this field allows you to connect your floppy disk drives to the on-board floppy disk drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy disk drives, set this field to Disabled.

3.10.5 Onboard Serial Port 1 (3F8H/IRQ4)

The settings are 3F8H/IRQ4, 2F8H/IRQ3, 3E8H/IRQ4, 2E8H/IRQ10, and Disabled for the on-board serial connector.

3.10.6 Onboard Serial Port 2 (2F8H/IRQ3)

The settings are 3F8H/IRQ4, 2F8H/IRQ3, 3E8H/IRQ4, 2E8H/IRQ10, and Disabled for the onboard serial connector.

3.10.7 UART Mode Select

The item allows you to determine the Infrared (IR) function of the onboard I/O chip. The default setting is Normal.

3.10.8 UART2 Duplex Mode

You can select the IR function when your UART2 Mode is ASKIR.

3.10.9 Rx/D, Tx/D Active

This item allows you to determine the activity of Rx/D and Tx/D.

3.10.10 Onboard Parallel Port (378H/IRQ7)

This field sets the address of the on-board parallel port connector. You can select either 3BCH/IRQ7, 378H/IRQ7, 278H/IRQ5 or Disabled. If you install an I/O card with a parallel port, make sure there is no conflict in the address assignments. The PCA-6359 Series can support up to three parallel ports, as long as there are no conflicts for each port.

3.10.11 Parallel Port Mode (ECP + EPP)

This field allows you to set the operation mode of the parallel port. The setting “Normal” allows normal speed operation, but in one direction only. “EPP” allows bidirectional parallel port operation at maximum speed. “ECP” allows the parallel port to operate in bidirectional mode and at a speed faster than the maximum data transfer rate. “ECP + EPP” allows normal speed operation in a two-way mode.

3.10.12 ECP Mode Use DMA

This selection is available only if you select “ECP” or “ECP + EPP” in the Parallel Port Mode field. In ECP Mode Use DMA, you can select DMA channel 1, DMA channel 3, or Disable. Leave this field on the default setting.

Note: If you enable the IDE HDD block mode, the enhanced IDE driver will be enabled.

3.11 Password Setting

To change, confirm, or disable the password, choose the “PASSWORD SETTING” option from the Setup main menu and press [Enter]. The password can be at most 8 characters long.

Remember, to enable this feature. You must first select the Security Option in the BIOS FEATURES SETUP to be either “Setup” or “System.” Pressing [Enter] again without typing any characters can disable the password setting function.

3.12 IDE HDD Auto Detection

“IDE HDD AUTO DETECTION” automatically self-detects for the correct hard disk type.

3.13 Save & Exit Setup

If you select this and press the [Enter] key, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

3.14 Exit Without Saving

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

PCI SVGA Setup (PCA-6359V/VE/F only)

- Introduction
- Installation of SVGA driver
 - for Windows 95
 - for Windows 98
 - for Windows NT
- Further information

4.1 Introduction

The PCA-6359V/VE/F has an onboard PCI flat panel/VGA interface. The specifications and features are described as follows:

4.1.1 Chipset

The PCA-6359V/VE/F 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.

4.1.2 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. The display memory can be expanded to 4 MB for true-color resolution of 1024 x 768 with C&T 69030 upon request.

4.1.3 Display types

CRT and panel displays can be used simultaneously. The PCA-6359V/VE/F 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 include 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

4.2 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 are using within your PCA-6359V/VE/F.

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

4.2.1 Installation for Windows 95

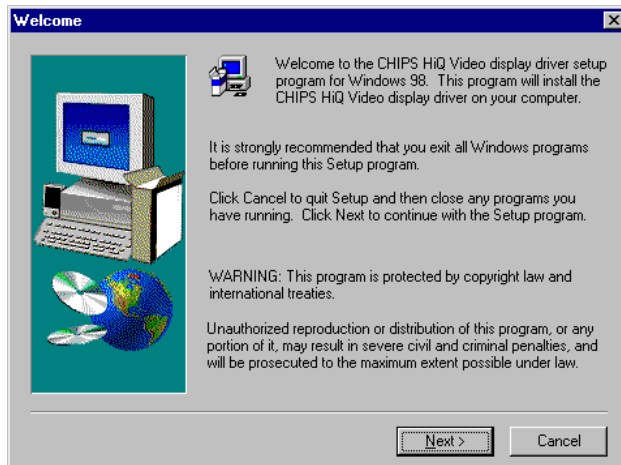
The procedure is virtually identical to the procedure for installing Windows 98. Refer to "Installation for Windows 98" on the next page, and follow the procedure therein.

4.2.2 Installation for Windows 98

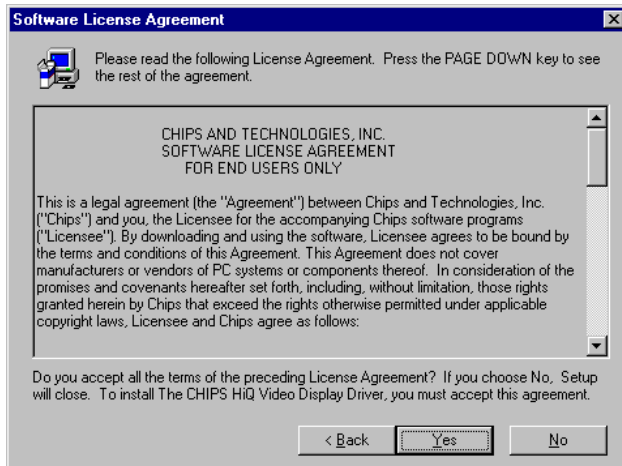
1. Insert the utility CD into drive D:. Navigate to Pca6359\Vga\Win98\w98600. Double-click on "w98600".



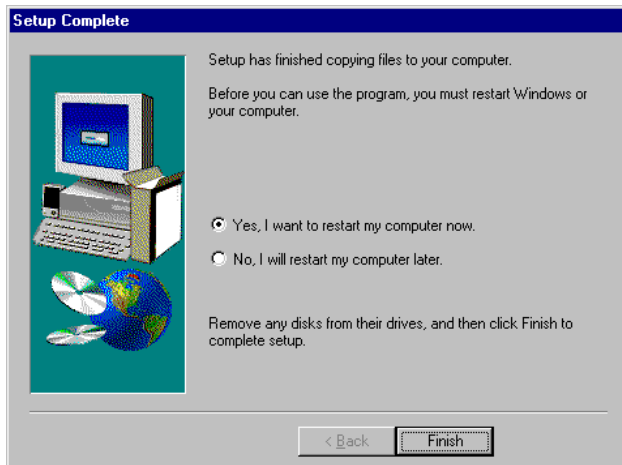
2. In the "Welcome" window, make sure that all other Windows programs have been exited. Then click on "Next".



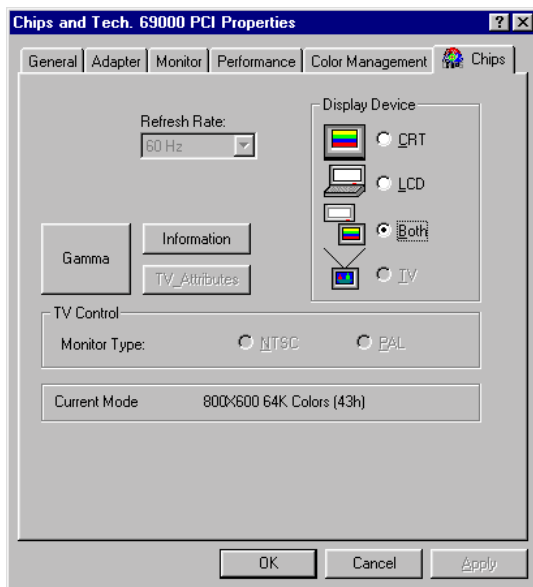
3. In the "Software License Agreement" window, carefully read the "Software License Agreement". If you accept all the terms of this Agreement, click on "Yes".



4. In the "Setup Complete" window, select "Yes, I want to ...". Then click on "Finish".

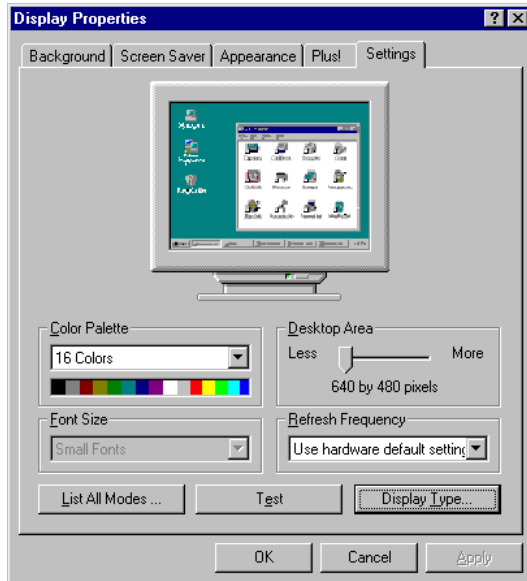


5. In the "Chips and Tech. 69000 PCI Properties" window, select the "Chips" tab. Then click on "OK".

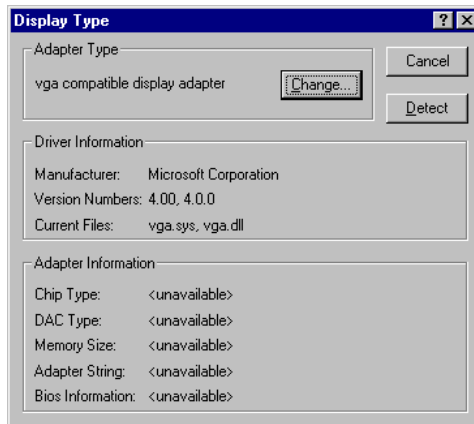


4.2.3 Installation for Windows NT

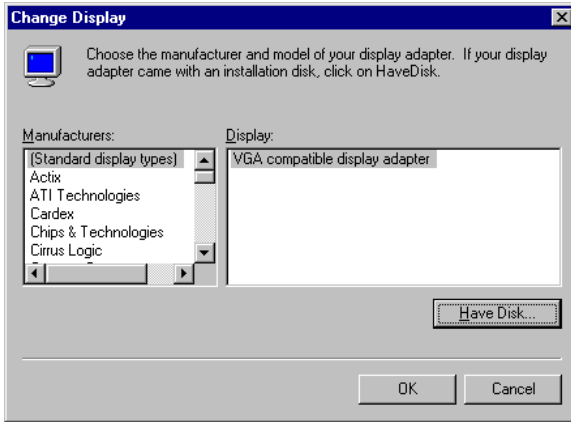
1. In the "Control Panel" screen, select the "Display" icon. In the "Display Properties" window, select the "Settings" tab. Then click on "Display Type...".



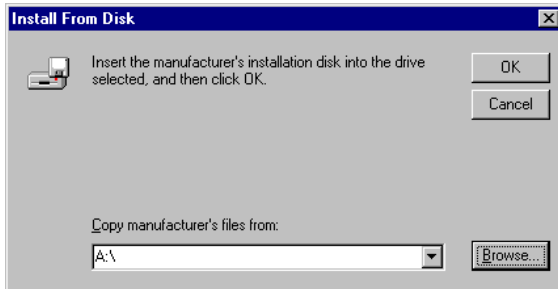
2. In the "Display Type" window, click on "Change...".



3. In the "Change Display" window, select "[Standard display types]" under "Manufacturers:", and "VGA compatible display adapter" under "Display". Then click on "Have Disk...".



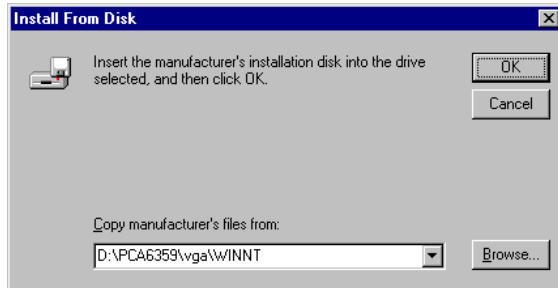
4. In the "Install From Disk" window, click on "Browse...".



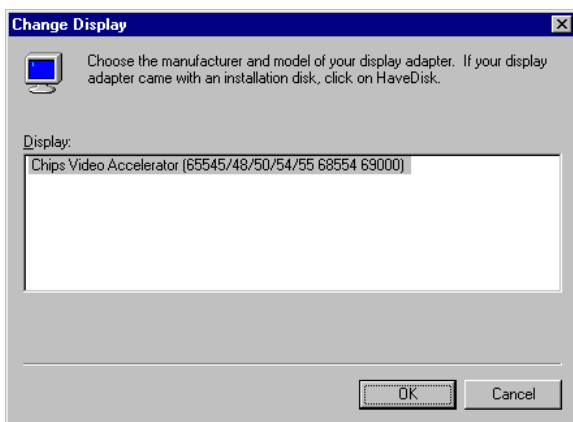
5. In the "Locate File" window, click on "Cancel". Using Windows Explorer, navigate to: D:\PCA6359\vga\WINNT\Oemsetup. Double-click on the "Oemsetup" file to open it.



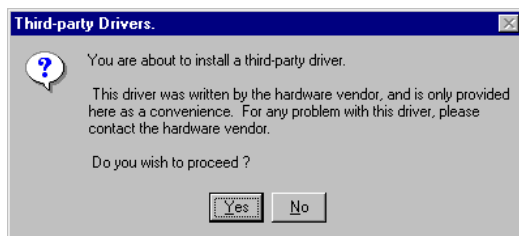
6. In the "Install From Disk" window, click on "OK".



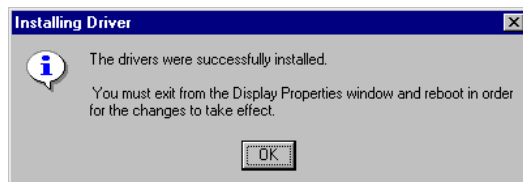
7. In the "Change Display" window, click on "OK".



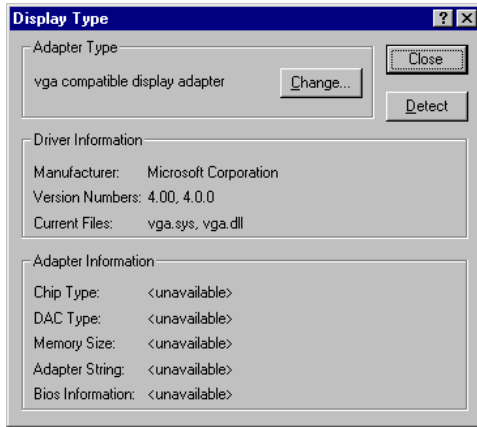
8. In the "Third-party Drivers" window, click on "Yes".



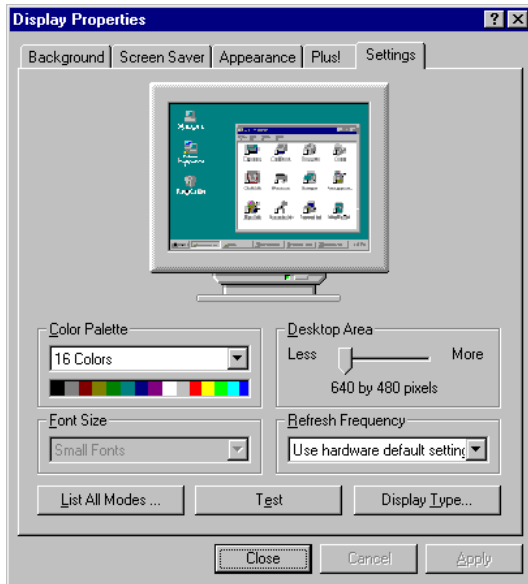
9. In the "Installing Driver" window, click on "OK".



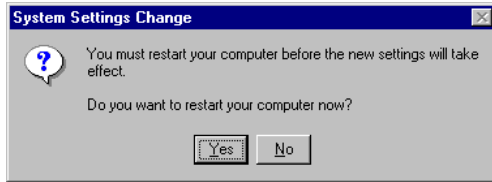
10. In the "Display Type" window, click on "Close".



11. In the "Display Properties" window, click on "Close".



12. In the "System Settings Change" window, click on "Yes".



CHAPTER 5

PCI Bus Ethernet Interface (PCA-6359VE/F only)

This chapter provides information on Ethernet configuration.

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

5.1 Introduction

The PCA-6359VE/F 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 82558.exe program included on the utility disc.

The Ethernet port provides a standard RJ-45 jack. 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.

5.2 Installation of Ethernet Driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCA-6359VE/F, 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.

5.2.1 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.

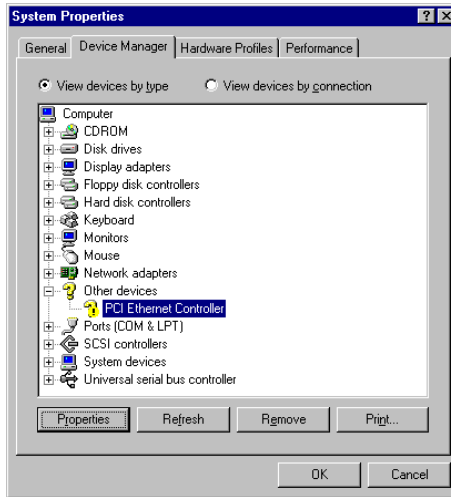
The installation procedures for various servers can be found in the directory path "LAN/TXT/*" of the drivers and utilities disc, where * is your server model.

5.2.2 Installation for Windows 95

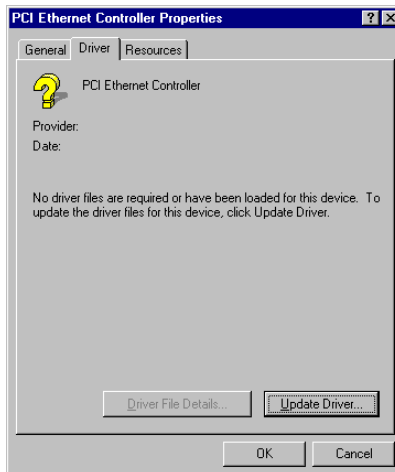
The procedure is virtually identical to the procedure for installing Windows 98. Refer to "Installation for Windows 98" on the next page, and follow the procedure therein.

5.2.3 Installation for Windows 98

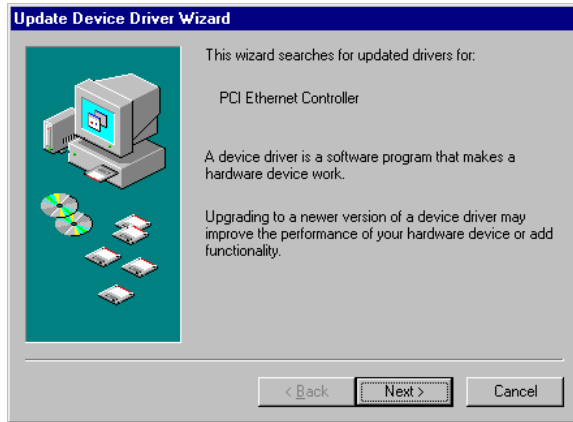
1. In the "Control Panel" screen, select the "System" icon. In the "System Properties" window, select the "Device Manager" tab. Navigate to: Other Devices/PCI Ethernet Controller. Highlight "PCI Ethernet Controller". Then click on "Properties".



2. In the "PCI Ethernet Controller Properties" window, select the "Driver" tab. Then click on "Update Driver...".



3. In the "Update Device Driver Wizard" window, click on "Next".



4. In the "Add New Hardware Wizard" window, select "Search for the best driver ...". Then click on "Next".



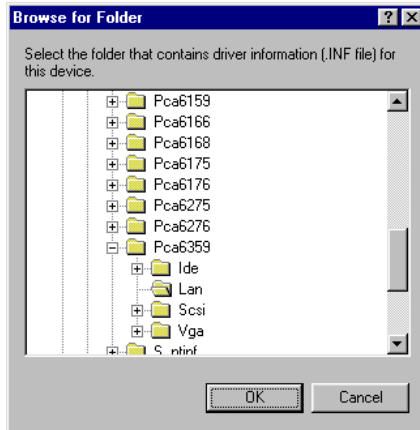
5. In the following "Add New Hardware Wizard" window, select "Specify a location". Then click on "Browse...".



6. In the "Browse for Folder" window, click on "Cancel".



7. In the following "Browse for Folder" window, navigate to: Pca6359/Lan. Highlight "Lan". Then click on "OK".



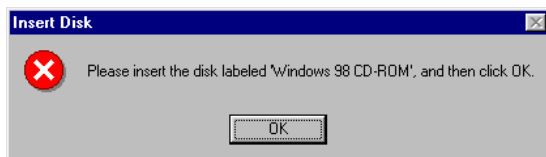
8. In the "Add New Hardware Wizard" window, select "Specify a location:". Then click on "Next".



9. In the following "Add New Hardware Wizard" window, click on "Next".



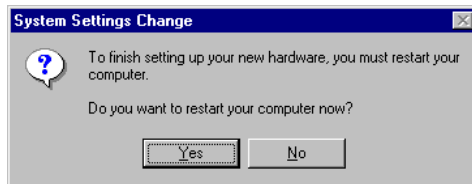
10. When the "Insert Disk" window appears, insert the utility disk into the D: drive. Then click on "OK".



11. In the "Add New Hardware Wizard" window, click on "Finish".

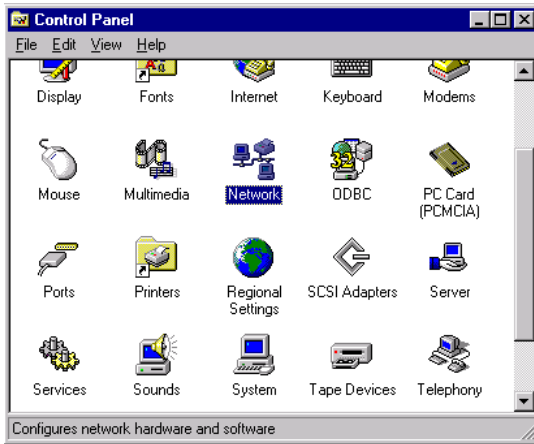


12. In the "System Settings Change" window, click on "Yes".

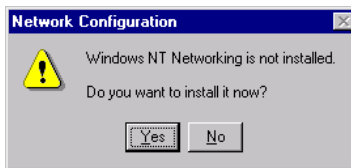


5.2.4 Installation for Windows NT

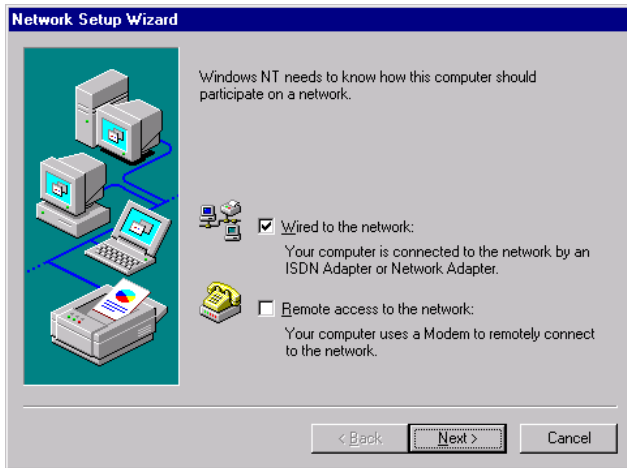
1. In the "Windows NT" screen, click "Start" and select "Settings". Then click the "Control Panel" icon to select "Network". Double-click on "Network".



2. In the "Network Configuration" window, click on "Yes".



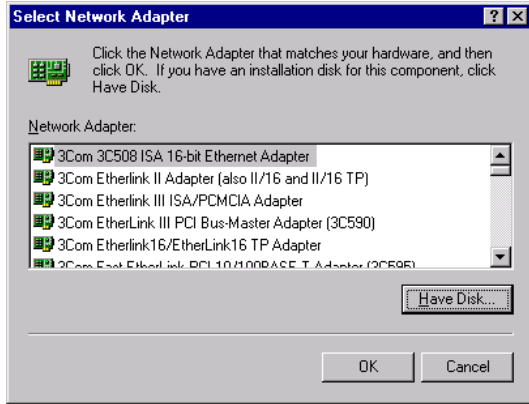
3. In the "Network Setup Wizard" window, select "Wired to the network:". Then click on "Next".



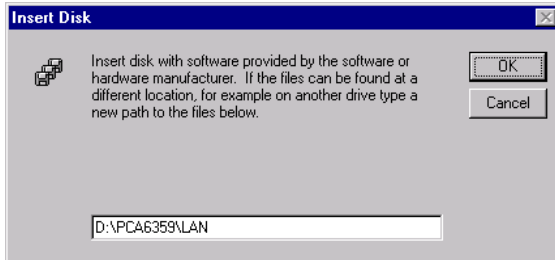
4. In the following "Network Setup Wizard" window, click on "Select from list...".



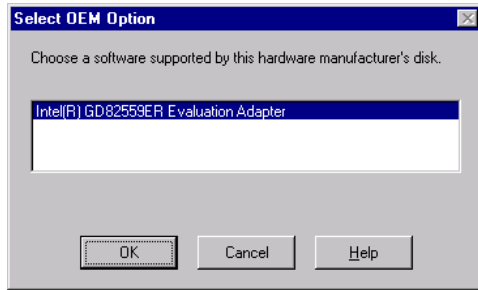
5. In the "Select Network Adapter" window, click on "Have Disk...".



6. When the "Insert Disk" window appears, insert the utility CD-ROM into the D: drive. Key in: D:\PCA6359\LAN. Then click on "OK".



7. In the "Select OEM Option" window, click on "OK".



8. For the remainder of the installation procedure, simply follow the further instructions which appear on screen. Continue to click on "Next" until the installation is completed.

5.3 Further Information

Intel® website: www.intel.com

Advantech websites: www.advantech.com
support.advantech.com

CHAPTER
6

SCSI Setup and Configurations (PCA-6359F only)

The PCA-6359F features an onboard SCSI interface. This chapter provides basic SCSI concepts and instructions for installing the software drivers with the SCSI driver CD/disks included in your package.

6.1 Introduction

The PCA-6359F is equipped with a Symbios SYM53C875E single-chip PCI-to-SCSI host adapter which provides a powerful Ultra Wide multitasking interface between your computer's PCI bus and SCSI devices (disk drives, CD-ROM drives, scanners, tape backups, removable media drives, etc.). Up to a total of 15 SCSI devices can be connected to the SCSI connector through the Symbios SYM53C875E.

The Symbios SYM53C875E is a 16-bit single-ended SCSI solution for your computer. It can support both legacy Fast SCSI and Ultra SCSI devices, as well as the newest Ultra Wide SCSI devices.

If you need to configure the SCSI, the onboard SCSI Select configuration utility allows you to change host adapter settings without opening the computer or handling the board. The SCSI Select utility also contains a utility to low-level format and verifies the disk media on your hard disk drives.

6.2 Before You Begin

SDMS software requires an IBM PC/AT or compatible computer with an 80486 or higher microprocessor. An understanding of basic operating system commands is assumed. In addition, users should have a general knowledge of the SCSI standard.

Before using the SDMS software, you should configure the Symbios SCSI controller into your system, taking into account the configuration of other host adapters and system resources (see Section 6.3).

Symbios recommends that you back up all data before making any changes or installing any software, including the Symbios SCSI controllers and software. Failure to adhere to this accepted computer practice may lead to loss of data.

6.3 Basic Rules for SCSI Host Adapter and Device Installation

You must terminate both ends of the SCSI bus. Refer to the hardware manuals for the devices and the host adapter to properly terminate the bus.

Unless your system is SCSI Configured AutoMatically (SCAM) capable, you must configure each SCSI device with a different SCSI ID number. Refer to the hardware manuals for the devices to locate where the jumpers of dip switches are for setting SCSI ID numbers. Usually, the host adapter is ID 7. The devices are then set at IDs 0 through 6 (plus 8 through 15 for Wide SCSI). The bootable hard drive must have the lowest numerical SCSI ID, unless you are able to use the BIOS Boot Specification (BBS).

The red or blue line on a standard SCSI cable (or the black line on one end of a multi-colored SCSI cable) designates Pin One on the cable connector, and must connect to Pin One on the device or host adapter connector. Refer to Appendix B of this manual to find Pin One of the connector.

6.4 Configuring the SCSI Adapter

Access the SCSI BIOS by holding down both the CTRL and C keys when you see the BIOS banner message listing the driver name and the attached devices. For example:

```
Symbios Inc. SDMS (TM) V 4.0 PCI SCSI BIOS
```

```
PCI Rev. 2.0, 2.1
```

```
Copyright 1995, 1998 Symbios Inc.
```

```
PCI-4.14.00
```

```
Press Ctrl-C to start Symbios Configuration  
Utility...
```

The SCSI Select screen will come up. Instructions on how to move the cursor and select options are listed on the bottom of the program windows. You can select either Configure/View Host Adapter Settings or SCSI CD Utilities.

6.5 SCSI Terminators

To ensure reliable communication, the SCSI bus must be properly terminated. Termination is controlled by a set of electrical resistors, called terminators. Terminators must be placed (or enabled) at the two extreme ends of the SCSI bus. All devices that lie between the ends must have their terminators removed (or disabled).

Since the method for terminating a SCSI peripheral can vary widely, refer to the peripheral's documentation for instructions on how to enable or disable termination. Here are some general guidelines for termination:

- Termination on internal SCSI peripherals is usually controlled by manually setting a jumper or switch on the peripheral, or by physically removing or installing one or more resistor modules on the peripheral.
- Termination on external SCSI peripherals is usually controlled by installing or removing a SCSI terminator. On some external peripherals, termination is controlled by setting a switch on the rear of the drive.
- By default, termination on the CPU card itself is automatic (the preferred method).
- Internal Ultra Wide peripherals are set at the factory with termination disabled, which cannot be changed. Proper termination for internal Ultra Wide peripherals is provided by the built-in terminator at the end of the Ultra Wide internal SCSI cable.
- Most non-Ultra Wide SCSI peripherals come from the factory with termination enabled.

6.6 SDMS Drivers

The SDMS device drivers translate an operating system I/O request into a SCSI request. Each Symbios SCSI device driver is operating system specific and is designed to work on standard Symbios chip implementations.

We provide PCI SDMS device drivers for the following operating systems:

- MS-DOS/Windows
- Windows 95/98
- Windows NT - 3.51 and above
- OS/2 4.x Warp
- SCO UNIX - Open Server 5.0.2 and above
- Novell NetWare - 3.12, 4.11 (NWP)

Note: *When you start the Windows NT installation with either a CD-ROM boot or from the floppy disks, a black screen will initially appear with the following text at the top:*

```
Setup is inspecting your computer's  
hardware configuration...
```

While this is on the screen (before entering the initial blue screen), press the F6 key. Windows NT setup will allow a SCSI driver to be added before the second disk is requested. Add the appropriate driver from a prepared floppy disk. Follow the rest of the instructions to finish the installation.

Programming the Watchdog Timer

The PCA-6359 Series 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.

A.1 Programming the Watchdog Timer

To program the watchdog timer, you must write a program which writes I/O port address 443 (hex). The output data is a value of time interval. The value range is from 01 (hex) to 3F (hex), and the related time interval is 1 sec. to 63 sec.

Data	Time Interval
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
•	•
•	•
•	•
3F	63 sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read I/O port 443 (hex).

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

```
10      REM  Watchdog timer example program
20      OUT &H443, data REM  Start and restart the watchdog
30      GOSUB 1000 REM  Your application task #1,
40      OUT &H443, data REM  Reset the timer
50      GOSUB 2000 REM  Your application task #2,
60      OUT &H443, data REM  Reset the timer
70      X=INP (&H443) REM, Disable the watchdog timer
80      END

1000    REM  Subroutine #1, your application task
.      .
.      .
.      .
1070    RETURN
2000    REM  Subroutine #2, your application task
.      .
.      .
.      .
2090    RETURN
```


APPENDIX **B**

Pin Assignments

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

- IDE hard drive connector
- Floppy drive connector
- Parallel port connector
- Ultra Wide SCSI connector
- USB connector
- VGA connector
- Ethernet 10/100Base-T RJ-45 connector
- COM1/COM2 RS-232 serial port
- Keyboard and mouse connector
- External keyboard connector
- IR connector
- CPU fan power connector
- Power LED and keylock connector
- External speaker connector
- Reset connector
- HDD LED connector
- ATX feature connector
- LCD connector
- 24-bit LCD display connector
- 36-bit LCD display connector
- System I/O ports
- DMA channel assignments
- Interrupt assignments
- 1st MB memory map
- PCI bus map

B.1 IDE Hard Drive Connector (CN1, CN2)

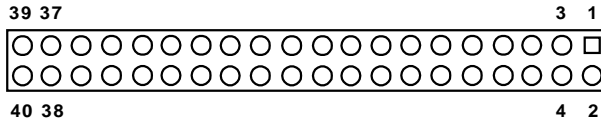


Table B-1: IDE hard drive connector (CN1, CN2)

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

* low active

B.2 Floppy Drive Connector (CN3)

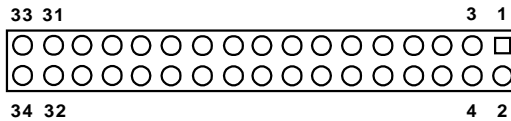


Table B-2: Floppy drive connector (CN3)

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

* low active

B.3 Parallel Port Connector (CN4)

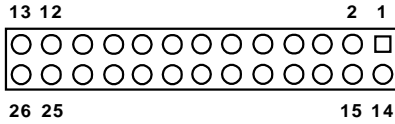


Table B-3: Parallel port connector (CN4)

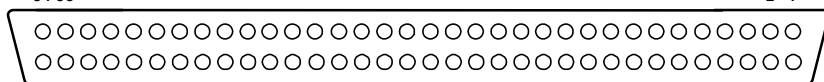
Pin	Signal	Pin	Signal
1	STROBE*	14	AUTOFD*
2	D0	15	ERR
3	D1	16	INIT*
4	D2	17	SLCTINI*
5	D3	18	GND
6	D4	19	GND
7	D5	20	GND
8	D6	21	GND
9	D7	22	GND
10	ACK*	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	N/C

* low active

B.4 Ultra Wide SCSI Connector (CN5)

34 33

2 1



68 67

36 35

Table B-4: Ultra Wide SCSI connector (CN5)

Pin	Function	Pin	Function
1	SD+12	35	SD-12
2	SD+13	36	SD-13
3	SD+14	37	SD-14
4	SD+15	38	SD-15
5	SDP+1	39	SDP-1
6	SD+0	40	SD-0
7	SD+1	41	SD-1
8	SD+2	42	SD-2
9	SD+3	43	SD-3
10	SD+4	44	SD-4
11	SD+5	45	SD-5
12	SD+6	46	SD-6
13	SD+7	47	SD-7
14	SDP+0	48	SDP-0
15	GND	49	GND
16	DIFS	50	SENIN
17	TPWEX	51	TPWEX
18	TPWEX	52	TPWEX
19	NC	53	NC
20	GND	54	GND
21	SATN+	55	SATN-
22	GND	56	GND
23	SBSY+	57	SBSY-
24	SACK+	58	SACK-
25	SRST+	59	SRST-
26	SMSG+	60	SMSG-
27	SSEL+	61	SSEL-
28	SCD+	62	SCD-
29	SREQ+	63	SREQ-
30	SIO+	64	SIO-
31	SD+8	65	SD-8
32	SD+9	66	SD-9
33	SD+10	67	SD-10
34	SD+11	68	SD-11

B.5 USB Connector (CN6)

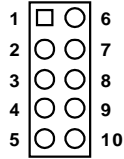


Table B-5: USB1/USB2 connector (CN6)

Pin	USB1 Signal	Pin	USB2 Signal
1	+5 V	6	+5 V
2	UV-	7	UV-
3	UV+	8	UV+
4	GND	9	GND
5	Chassis GND	10	Key

B.6 VGA Connector (CN7)

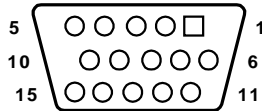


Table B-6: VGA connector (CN7)

Pin	Signal	Pin	Signal
1	RED	9	V _{CC}
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDT
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	SCK
8	GND		

B.7 Ethernet 10/100Base-T RJ-45 Connector (CN8)

Table B-7: Ethernet 10/100Base-T RJ-45 connector (CN8)

Pin	Signal
1	XMT+
2	XMT-
3	RCV+
4	N/C
5	N/C
6	RCV-
7	N/C
8	N/C

B.8 COM1/COM2 RS-232 Serial Port (CN9, CN10)

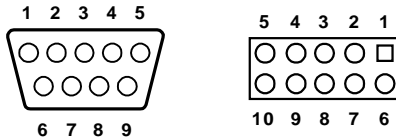


Table B-8: COM1/COM2 RS-232 serial port (CN9, CN10)

Pin	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

B.9 Keyboard and Mouse Connector (CN11)

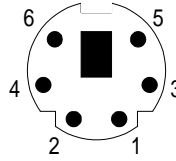


Table B-9: Keyboard and mouse connector (CN11)

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

B.10 External Keyboard Connector (CN12)

Table B-10: External keyboard connector (CN12)

Pin	Signal
1	CLK
2	DATA
3	NC
4	GND
5	V _{CC}

B.11 IR Connector (CN13)

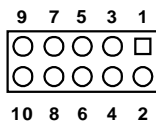


Table B-11: IR connector (CN13)

Pin	Signal	Pin	Signal
1	+5 V	2	N/C
3	FIRRX	4	CIRRX
5	IR_RX	6	+5VSB
7	GND	8	N/C
9	IR_TX	10	N/C

B.12 CPU Fan Power Connector (CN14)

Table B-12: CPU fan power connector (CN14)

Pin	Signal
1	GND
2	+12 V
3	Detect

B.13 Power LED and Keylock Connector (CN16)

You can use an LED to indicate when the CPU card is on. Pin 1 of CN16 supplies the LED's power, and Pin 3 is the ground.

You can use a switch (or a lock) to disable the keyboard so that the PC will not respond to any input. This is useful if you do not want anyone to change or stop a program which is running. Simply connect the switch from Pin 4 to Pin 5 of CN16.

Table B-13: Power LED and keylock connector (CN16)

Pin	Function
1	LED power (+5 V)
2	NC
3	GND
4	Keyboard lock
5	GND

B.14 External Speaker Connector (CN17)

The CPU card has its own buzzer. You can also connect it to the external speaker on your computer chassis.

Table B-14: External speaker (CN17)

Pin	Function
1	+5 V _{CC}
2	GND
3	Internal buzzer
4	Speaker out

B.15 Reset Connector (CN18)

Table B-15: Reset connector (CN18)

Pin	Signal
1	GND
2	RESETIN

B.16 HDD LED Connector (CN19)

Table B-16: HDD LED connector (CN19)

Pin	Signal
1	V_{CC} (LED+)
2	LED0 (LED-)

B.17 ATX Feature Connector (CN20)

Table B-17: ATX feature connector (CN20)

Pin	Signal
1	PS-ON
2	V_{CC}
3	V_{CC} SB

B.18 LCD Connector (CN23)

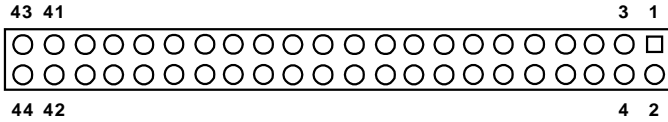


Table B-18: LCD Connector (CN23)

Pin	Function	Pin	Function
1	+12 V	2	+12 V
3	GND	4	GND
5	5 V / 3.3 V	6	5 V / 3.3 V
7	ENAVEE*	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	SHFCLK/ASHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL*
41	KB_DT	42	KB_CK
43	N/C	44	5 V / 3.3 V

* low active

B.19 24-bit LCD Display Connector (CN24)

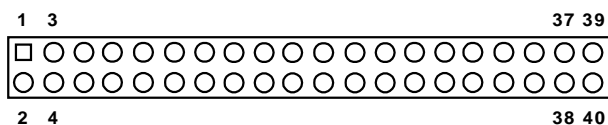


Table B-19: 24-bit LCD display connector

Pin	Signal	Pin	Signal
1	VDDSAFE5	2	VDDSAFE5
3	GND	4	GND
5	VDDSAFE3	6	VDDSAFE3
7	Vcon	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	FILM
37	M	38	LP
39	N/C	40	ENAVEE

Note: The model number of the CN24 socket is DF13A-40DP-1.25V (Hirose Electric Co., Ltd.)

B.20 36-bit LCD Display Connector (CN25)

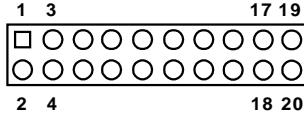


Table B-20: 36-bit LCD display connector (CN25)

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	N/C	18	N/C
19	N/C	20	N/C

Note: *The model number of the CN25 socket is DF13A-20DP-1.25V (Hirose Electric Co., Ltd.)*

B.21 System I/O Ports

Table B-21: 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 (LPT3)
290-297	Onboard hardware monitor
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1
443	Watchdog timer

B.22 DMA Channel Assignments

Table B-22: 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

B.23 Interrupt Assignments

Table B-23: Interrupt assignments

Priority	Interrupt#	Interrupt source
1	NMI	Parity error detected
2	IRQ0	Interval timer
3	IRQ1	Keyboard
-	IRQ2	Interrupt from controller 2 (cascade)
4	IRQ8	Real-time clock
5	IRQ9	Cascaded to INT 0A (IRQ 2)
6	IRQ10	Available
7	IRQ11	Available
8	IRQ12	PS/2 mouse
9	IRQ13	INT from co-processor
10	IRQ14	Fixed disk controller
11	IRQ15	Available
12	IRQ3	Serial communication port 2
13	IRQ4	Serial communication port 1
14	IRQ5	Parallel port 2
15	IRQ6	Diskette controller (FDC)
16	IRQ7	Parallel port 1 (print port)

B.24 1st MB Memory Map

Table B-24: 1st MB memory map

Addr. range (Hex)	Device
F0000h - FFFFFh	System ROM
C8000h - EFFFFh	Unused
C0000h - CBFFFh	VGA BIOS
B8000h - BFFFFh	CGA/EGA/VGA text
B0000h - B7FFFh	Unused
A0000h - AFFFFh	EGA/VGA graphics
00000h - 9FFFFh	Base memory

B.25 PCI Bus Map

Table B-25: PCI bus map

Function	Signals: Device ID	INT# pin	GNT# pin
Onboard LAN	AD21	INT D	GNT A
Onboard SCSI	AD20	INT A	GNT B
PCI slot 1	AD31	INT B, C, D, A	GNT A
PCI slot 2	AD30	INT C, D, A, B	GNT B
PCI slot 3	AD29	INT D, A, B, C	GNT C
PCI slot 4	AD28	INT A, B, C, D	GNT D

Note: *In the PCA-6359VE/F, SCSI devices use "GNT B" signals via PCI slot 2 and LAN uses "GNT A" via PCI slot 1. Therefore, both PCI slots cannot be used for plug-in bus master add-on cards such as a SCSI card or LAN card.*

DiskOnChip® 2000 Installation Guide

This appendix contains information on the DiskOnChip® 2000 quick installation guide. It includes:

- DiskOnChip® 2000 Installation Instructions
- Additional Information and Assistance

C.1 DiskOnChip® 2000 Quick Installation Guide

C.1.1 DiskOnChip® 2000 installation instructions

1. Make sure the target platform is powered OFF.
2. Plug the DiskOnChip® 2000 device into its socket. Verify the direction is correct (pin 1 of the DiskOnChip 2000 is aligned with pin 1 of the socket).
3. Power up the system.
4. During power up you may observe the messages displayed by the DiskOnChip 2000 when its drivers are automatically loaded into the system's memory.
5. At this stage, the DiskOnChip 2000 can be accessed as any disk in the system.
6. If the DiskOnChip 2000 is the only disk in the system, it will appear as the first disk (drive C: in DOS).
7. If there are more disks besides the DiskOnChip 2000, the DiskOnChip 2000 will appear by default as the last drive, unless it was programmed as the first drive. (Please refer to the DiskOnChip 2000 utilities user manual.)
8. If you want the DiskOnChip 2000 to be bootable:
 - a. Copy the operating system files to the DiskOnChip by using the standard DOS command (for example, SYS d:).
 - b. The DiskOnChip should be the only disk in the systems or would be configured as the first disk in the system (c:) using the DUPDATE utility.

```
DUPDATE C /S: DOC104.EXB /FIRST      (set as c:)
```

```
DUPDATE D /S: DOC104.EXB            (set as d:)
```

C.1.2 Additional information and assistance

1. Visit M-Systems' website at <http://www.m-sys.com>, where you can find the Utilities Manual, data sheet and Application Notes. In addition, you can find the latest DiskOnChip 2000 software utilities.
2. Contact your dealer for technical support if you need additional assistance, and have the following information ready:
 - Product name and serial number.
 - Description of your computer hardware (manufacturer, model, attached devices, etc.)
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem.
 - The exact wording of any error messages.

LCD Services

This appendix contains information of a detailed or specialized nature, including:

- Color STN LCD interface
- DSTN LCD interface
- EL LCD interface
- Mono STN LCD interface
- TFT LCD interface

D.1 LCD Services

LCD screens are very popular on Advantech's CPU cards, biscuit PCs and POS series products. These include the PCA-6359 Series, PCA-6135/6145/6153, and PCA-6751/6751V. "Lighting" LCDs is virtually impossible without technical expertise. Advantech provides LCD lighting and integration services to assist our customers in setting up their systems. Advantech's LCD lighting guide explains how to make connections between LCD interfaces and LCD panels, as well as how to control contrast, brightness, V_{EE} source, LCD inverter and all other matters pertaining to the successful installation of LCD panels.

The following is a summary of our LCD lighting services:

- a) This policy is only valid for Advantech products that include LCD support
- b) The customer should **send** the following LCD components for service:
 - DC-AC inverter and cable (i.e. connector with/without wires) and datasheet
 - LCD flat panel and cable (connector with/without wires) and complete datasheet
- c) Advantech will normally charge the customer a deposit. The deposit will be refunded when servicing exceeds a minimum volume
- d) The customer must sign the agreement and fax it to us prior to sending the LCD package. Advantech reserves the right to refuse service if the customer cannot provide the required documents and auxiliary parts
- e) Advantech will supply a BIOS file and connection cable to the customer upon completing the service
- f) A minimum of seven working days is required for completion of service, starting from receipt of the LCD package by Advantech

The table shows the TFT display support list. Please contact our customer service department for more detailed information and service files. See our website at: <http://support.advantech.com/>

Model Number	PCM-5862/E/L, 5862/L, 4862, 4825/L PCM-4823/L, 3864, PCA-6153, 6145B, 6145L		
	VGA BIOS Type	Size	Resolution
COLOR STN			
SHARP			
LM32C04P	standard	5.5	320 x 240
LM64C04P	standard	5.5	320 x 240
DSTN			
CITIZEN			
K6483-FF/K6488-FF	standard	7.7	640 x 480
K6484L-FF	standard	8.6	640 x 480
DENSITRON			
LMG8336E-DF2	standard	11.6	640 x 480
LMG8343E-DF2	standard		
HITACHI			
LMG8328E-DF2	standard		
LMG8334E-DF	standard		
LMG9460XUCC	standard	10.4	640 x 480
KYOCERA			
KCS3224ASTT-X6	standard	5.7	320 x 240
KCS6448BSTT-X1	standard	10.5	640 x 480
OPTREX			
DMF-50414NCU-FW	standard	9.6	640 x 480
SAMSUNG			
UG-64L-011A	standard		
UG-64L-011A	standard		
SANYO			
LCM5328-22NK	standard	8	640 x 480
LCM5331-22NK	standard	9.7	640 x 480
LCM5333	standard		
LCM5334/5343	standard		
LCM5365-22NK	800x600.exe	11.6	800 x 640
LM-CH53-22NK	standard	10.4	640 x 480
SHARP			
LM10V33	standard	10.4	640 x 480
LM14X82		13.8	1024 x 768
LM64C08P/C142	standard	9.5	640 x 480
LM64C152	standard	9.5	640 x 480
LM64C21P/C35P	standard	10.5	640 x 480

Model Number	PCM-5862/E/L, 5862/L, 4862, 4825/L PCM-4823/L, 3864, PCA-6153, 6145B, 6145L		
	VGA BIOS Type	Size	Resolution
EL			
PLANAR			
320.240.36	Standard	5.7	320 x 240
EL640.400-CB1	640400	9.1	640 x 480
EL640.480-A4	Standard	10.4	640 x 480
EL640.480-AA1	Standard	10.4	640 x 480
EL640.480-AD4	Standard	10.4	640 x 480
EL640.480-AM1	ELDD	10.4	640 x 480
SHARP			
LJ64H052	ELDD	10.4	640 x 480
LJ64ZU50/52	Standard	10.4	640 x 480
LJ64ZU51	Standard	9.4	640 x 480
MONO STN			
FPD			
LDH096T-11	Standard	9.5	640 x 480
HITACHI			
LMG5278XUFC/7550XUF	Standard		
LMG6910PGR	Standard	7.6	320 x 240
HOSIDEN			
HLM8619	Standard		
NAN-YA	Standard		
LLHSHTO24G	Standard		
OPTREX			
DMF-50081NF-FW	Standard	5.1	320 x 240
DMF-5075SNFU-FW	Standard		640 x 480
SAMSUNG			
UG-64I-0003 BP	Standard		
SANYO			
LM5541-23NK	Standard		
LM5571-32NK	Standard		
SEIKO			
G321E	Standard	4.7	320 x 240
SHARP			
LM320081	Standard		
LM32008F	Standard	5	320 x 240
LM32P07	Standard	6	320 x 240

Model Number	PCM-5862/E/L, 5862/L, 4862, 4825/L PCM-4823/L, 3864, PCA-6153, 6145B, 6145L		
	VGA BIOS Type	Size	Resolution
SHARP (cont...)			
LM64183P	Standard	9.7	640 x 480
LM64P11	Standard		
LM64P81/83/86/839/101	Standard	9.7	640 x 480
SOLOMON			
LM6430FBF	SOLOMAN	4.5	320 x 200
TFT			
FPD			
LDE052T-12	16BTFT		
LDH102T-10 (24-bit)	LDH102T		
LDH102T-20 (12-bit)	16BTFT		
LDH102T-20 (24-bit)	16BTFT	10.4	640 x 480
HITACHI			
TX24D55VC1CAA	16BTFT	10.4	640 x 480
HLSIDEN			
HLD1209	18BTFT	12.1	800 x 600
HOSIDEN			
HLD0912	16BTFT		
HLD1036	18BTFT		
IBM			
ITVS50D	18BTFT		
ITVS50N	18BTFT		
LG			
LC95VA01A	16BTFT		
LCA4SE01A (18-bit)	800x600	10.4	800 x 600
MITSUBISHI			
AA12SB6C-ADFD	18BTFT	12.1	800 x 600
NEC			
NL6448AC20-05	16BTFT	6.4	640 x 480
NL6448AC20-06	18BTFT		
NL6448AC30-06	18BTFT		
NL6448AC30-10			
NL6448AC32-01 (16-bit)	16BTFT	9.4	
NL6448AC32-01 (18-bit)	18BTFT	10.2	
NL6448AC33-10	16BTFT	10.4	640 x 480
NL6448AC33-13		10.4	640 x 480

Model Number	PCM-5862/E/L, 5862/L, 4862, 4825/L PCM-4823/L, 3864, PCA-6153, 6145B, 6145L		
	VGA BIOS Type	Size	Resolution
TFT (cont...)			
NEC (cont...)			
NL6448AC33-18	18BTFT	10.4	640 x 480
NL8060AC26-11	18BTFT	10.4	640 x 480
NL8060AC31-12	18BTFT	12.1	800 x 600
NL8060BC31-01/02	18BTFT	12.1	800 x 600
NL8060BC31-09	18BTFT	12.1	800 x 600
SAMSUNG			
LT104V3-101/102	18BTFT	10.4	800 x 600
LT104V4-101	18BTFT	10.4	800 x 600
LT121S1-103	18BTFT	12.1	800 x 600
SHARP			
LQ10D131	16BTFT	10.4	640 x 480
LQ10D321(15-bit)	16BTFT	10.4	640 x 480
LQ10D321(18-bit)	18BTFT	10.4	640 x 480
LQ10D341(18-bit)	18BTFT	10.4	640 x 480
LQ10D344(18-bit)	18BTFT	10.4	640 x 480
LQ10D361(18-bit)	18BTFT	10.4	640 x 480
LQ10D42	18BTFT	10.4	640 x 480
LQ10DS01/05(18-bit)	18BTFT	10.4	800 x 600
LQ10DS21(18-bit)	18BTFT	10.4	800 x 600
LQ12S31	18BTFT	12.1	800 x 600
LQ12S41	18BTFT	12.1	800 x 600
LQ14X03E		13.8	1024 x 768
LQ64D141	18BTFT	6.4	640 x 480
LQ64D321(18-bit)	18BTFT	6.4	640 x 480
LQ64D341(18-bit)	18BTFT	6.4	640 x 480
LQ94D021	16BTFT		
LQ9D011	16BTFT	9.4	640 x 480
LQ9P341(18-bit)	18BTFT	8.4	
TOSHIBA			
LTM09C015A/016	16BTFT	9.4	640 x 480
LTM10C042(18-bit)	18BTFT	10.4	640 x 480
LTM10C2091(18-bit)	18BTFT	10.4	640 x 480
LTM11C016/062	18BTFT		800 x 600
LTM12C275A	800x600		800 x 600

Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>