

PCM-9576F

Socket 370 Celeron™/Pentium® III
SBC with triple Ethernet, CFC and
GPIO

User's Manual

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This manual is for the PCM-9576F, Rev. A1.

Packing list

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

- 1 PCM-9576F all-in-one single board computer
- 1 CD disc with utility and drivers
- 1 Startup Manual

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

Please refer to Appendix E for the optional interface wiring kit.

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General Information

This chapter gives background information on the PCM-9576F.

Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

1.1 Introduction

The PCM-9576F is an all-in-one Celeron™/Pentium® III level single board computer (SBC) with triple Ethernet interfaces, 2 COM, 3 GPIO and one PCI expansion slot. The PCM-9576F supports Pentium III processors up to 850 MHz. It has optional 3D VGA/LCD function as well as an additional 2 COM ports. This compact unit is only 203 x 146 mm (8" x 5.75"). It offers all the functions of a single board industrial computer, but still fits in the space of a 5.25" CD ROM drive.

On-board features include two serial ports, one multi-mode parallel (ECP/EPP/SPP) port, two USB (Universal Serial Bus) ports, one infrared port (SIR), one CompactFlash socket for CFC, a floppy drive controller, and a keyboard/PS/2 mouse interface. The built-in high-speed PCI IDE controller supports PIO, UDMA/33 and bus master modes. Up to two IDE devices can be connected, including large hard disks, CD-ROM drives and tape backup drives.

The PCM-9576F features power management to minimize power consumption. It complies with the "Green Function" standard and supports doze, standby and suspend modes. In addition, the board's watchdog timer can automatically reset the system or generate an interrupt in case the system stops due to a program bug or EMI.

The PCM-9576F has been certified as complying with FCC Class A and CE Marking Class A.

Triple Ethernet for Communication Appliances

The PCM-9576F supports 3 Ethernet interfaces designed for the Communication Market. It can be used for firewall and VPN applications. A PCI slot is available so the customer can add a fourth ethernet or use a VPN & security PCI card.

1.2 Features

- **2 or 3 Ethernet function on board**
- **Wake on LAN, modem (Optional for RTL 8139 LAN chip)**
- **Supports 3 GPIO for Ethernet communication status display**
- **Optional: VGA/LCD function**
- **Optional: Additional 3rd and 4th serial ports**
- **Optional: Ethernet by pass control module**

1.3 Specifications

Standard SBC functions

- **CPU:** Socket 370 for Intel® Celeron™/Pentium III processors up to 850 MHz
- **BIOS:** Award 256 KB Flash BIOS, supports Plug & Play, APM
- **Chipset:** Intel 440BX
- **Green function:** APM 1.1 compliant
- **2nd level cache:** 128 KB on the Celeron™ processor; 256 KB on the Pentium® III processor
- **RAM:** Two 144-pin SODIMM sockets accept 32 ~ 512 MB SDRAM
- **Enhanced IDE interface:** Primary channel for 2 IDE devices. Secondary channel for CompactFlash card
- **FDD interface:** Supports up to two FDDs (360 KB/1.2 MB/ 720 KB/1.44 MB/2.88 MB)
- **Parallel port:** One parallel port, supports SPP/EPP/ECP parallel mode
- **Serial ports:** Two RS-232 serial ports with +5 V / +12 V power capability with option for additional third and fourth serial ports.

- **Watchdog timer:** Software enabled/disabled. 62-level interval from 1 to 62 seconds. Jumperless selection. Generates system reset or IRQ11
- **Keyboard/mouse connector:** 8-pin header connector for keyboard and PS/2 mouse
- **USB interface:** Two USB connectors with fuse protection. Complies with USB Spec. Rev. 1.0
- **Infrared port:** Supports up to 115 Kbps transfer rates
- **PC/104 expansion:** optional
- **I/O bus expansion:** One 32-bit PCI bus expansion slot

PCI SVGA/flat panel interface (optional)

- **Chipset:** SMI Lynx 721 (3D Engine), or Lnnx 712 (2D Engine)
- **Display memory:** 2 MB of SDRAM frame buffer on SMI 712 LCD chip. Optional 4 MB/8 MB memory on the SMI 721 chip.
- **Display type:** Simultaneously supports CRT and flat panel (EL, LCD and gas plasma) displays
- **Interface:** 2x AGP, Accelerator Graphics Ports 1.0 compliant
- **Display mode:**
 LCD panel supports up to 800 x 600 @ 24 bpp, 1024 x 768 @ 24 bpp.
 CRT displays support up to 800 x 600 @ 24 bpp, 1024 x 768 @ 24bpp

PCI bus Ethernet interface

- **Chipset:** 3 x Intel 82559ER Ethernet controller (optional Realtek RTL8139) PCI-bus Ethernet controller
- **Ethernet interface:** PCI 100/10 Mbps Ethernet, IEEE 802.3U protocol compatible
- **Connection:** On-board 10 pin header x 3
- **I/O address switchless setting**
- **Built-in boot ROM (optional for RTL8139 LAN chip)**

Solid state disk

- **One 50-pin socket:** For one CompactFlash card, shared with one IDE channel

Mechanical and environmental

- **Dimensions (L x W):** 203 x 146 mm (8" x 5.75")
- **Power supply voltage:** +5 V \pm 5%
- **Power requirements:**
 - 5.2 A @ 5 V (4.75 to 5.25) (typical, 64 MB DRAM, Celeron™-433 CPU)
 - 8 A @ 5 V for Pentium III 850 MHz processor
- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F)
- **Weight:** 0.32 kg (0.7 lb)

1.4 Board layout and dimensions

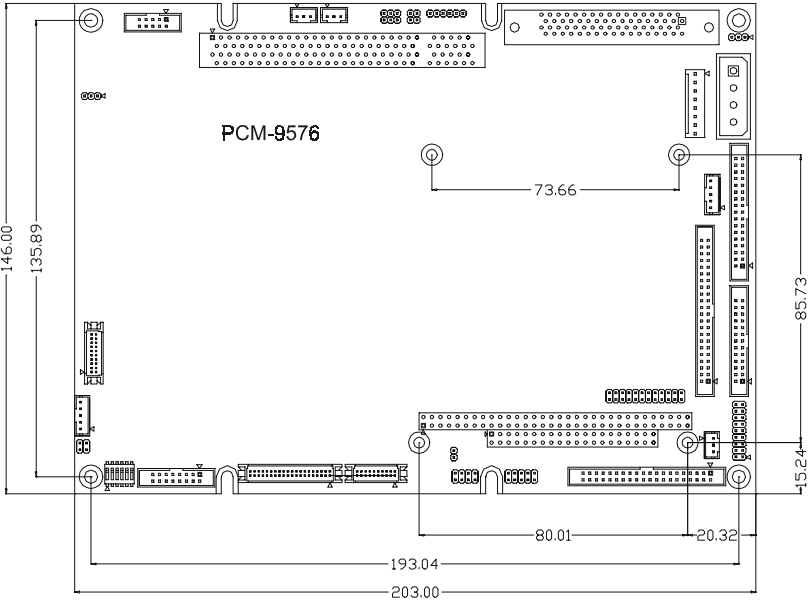


Figure 1-1: PCM-9576F dimensions

Installation

This chapter tells how to set up the PCM-9576F hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

2.1 Jumpers

The PCM-9576F has a number of jumpers that allow you to configure your system to suit your application. The table below lists the function of each of the board's jumpers:

Table 2-1: Jumpers

Label	Function
J1	CMOS clear
J2	Watchdog timer action
J3	ATX power switch button
J4	ATX power on function select
J7	COM port RI pin setting
J8	Buzzer enable/disable
J9	COM2 RS-232/422/485 setting(optional)
SW2	LCD Panel type select (Optional)

2.2 Connectors

On-board connectors link the PCM-9576F to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors:

Table 2-2: Connectors

Label	Function
CN1	Ethernet 100/10Base-T connector (LAN1)
CN2	ATX feature connector
CN3	Reserve for programming
CN4	Ethernet 100/10 Base-T connector(LAN2)
CN5	Ethernet 100/10 Base-T connector(LAN3)
CN6	Ian GPIO 3 geneal purpose output
CN7	Keyboard and PS/2 mouse connector
CN9	Main power connector
CN10	IR connector
CN11	Floppy drive connector
CN12	PC/104 ISA-bus expansion
CN13	IDE hard drive connector
CN14	Parallel port connector
CN16	Peripheral power connector
CN17	CRT display connector (optional)
CN18	Flat panel connector (1st)(optional)
CN19	Ext. flat panel display connector (2nd)(optional)
CN20	Front panel connector
CN21	USB channel 1, 2 connector
CN22	COM-port connector (2COM ports)
CN24	CFC connector
CN25	Backlight connector (optional)
CN26	TV-out connector (optional)
LED1	Power LED
FAN1	Fan power connector

2.3 Locating jumpers

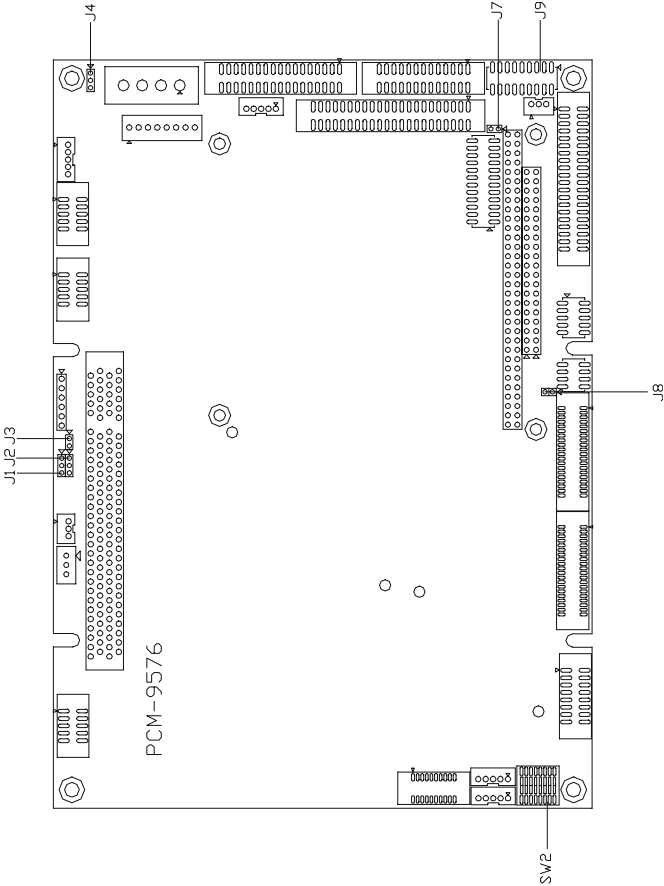


Figure 2-1: Locating jumpers

2.4 Locating connectors

2.4.1 Component side

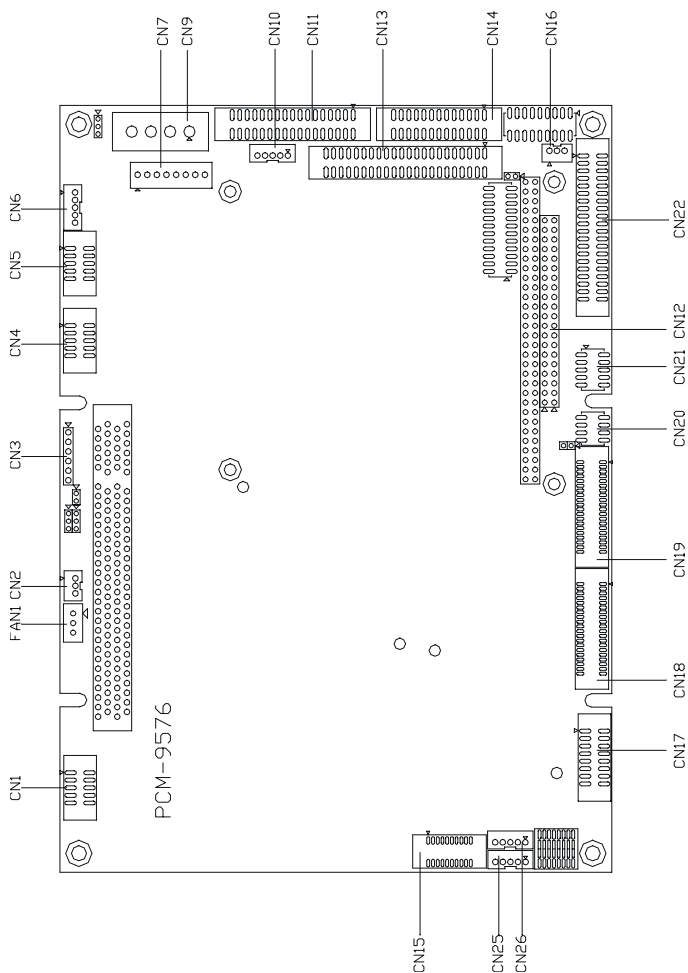


Figure 2-2: Locating connectors (component side)

2.4.2 Solder side

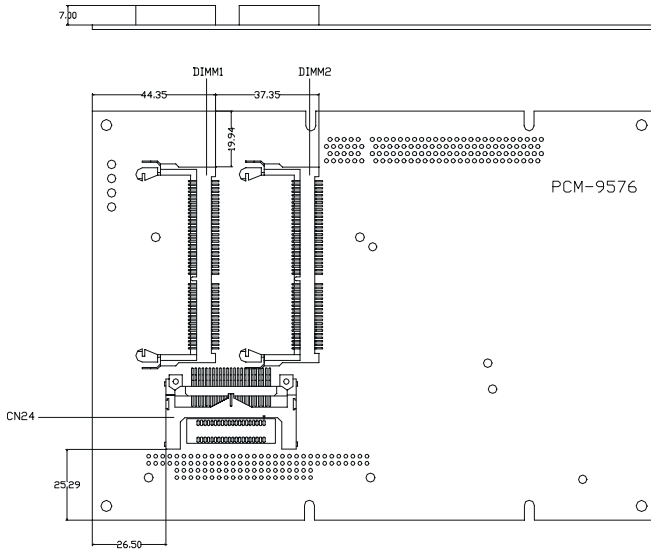
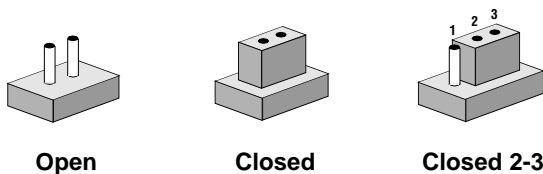


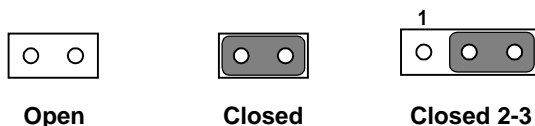
Figure 2-3: Locating connectors (solder side)

2.5 Setting jumpers

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



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



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

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

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

2.6 CPU installation and upgrading

You can upgrade to a higher power Pentium processor at any time. Simply remove the old CPU, install the new one, and set the jumpers for the new CPU type and speed.

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



Caution! *Always ground yourself to remove any static charge before touching the PC board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*



2.6.1 Installing a CPU in the ZIF socket

The PCM-9576F provides a Zero Insertion Force (ZIF) socket for easy CPU installation.

1. Make sure the ZIF socket lever is in the upright position. To raise the lever, pull it out to the side a little and raise it as far as it will go.
2. Place the CPU in the empty socket. Follow the instructions that came with the CPU. If you have no instructions, do the following: Carefully align the CPU so it is parallel to the socket and the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Gently slide the CPU in. It should insert easily. If it doesn't, pull the lever up a little more.
3. Press the lever down. The plate will slide forward. You will feel some resistance as the pressure starts to secure the CPU in the socket. This is normal and will not damage the CPU.

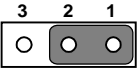
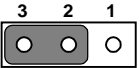
When the CPU is installed, the lever should snap into place at the side of the socket.

Note: To remove a CPU, pull the lever out to the side a little and raise it as far as it will go. Lift out the CPU chip.

2.6.2 CMOS clear (J1)

Warning: To avoid damaging the computer, always turn off the power supply before setting “Clear CMOS.” Set the jumper back to “3V Battery On” before turning on the power supply.



Table 2-3: CMOS clear (J1)

	* 3 V battery on	Clear CMOS
J1		

* default setting

2.6.3 Buzzer enable/disable (J8)

Table 2-4: Buzzer enable/disable (J8)

	* Enabled	Disabled
J9		

* default setting

2.7 Installing DRAM (SODIMMs)

2.7.1 Introduction

You can install anywhere from 16 MB to 512 MB of on-board DRAM memory using 16, 32, 64 or 128, 256 MB 144-pin SODIMMs (Small Outline Dual In-Line Memory Modules).

2.7.2 Installing SODIMMs

Note: The modules can only fit into a socket one way and their gold pins must point down into the SODIMM socket.

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

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

2.8 IDE Hard Drive Connector (CN13)

You can attach one or two Enhanced Integrated Device Electronics hard disk drives to the PCM-9576F's internal controller. The PCM-9576F's IDE controller uses a PCI local-bus interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4.

2.8.1 Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables (not included in this packing), depending on the drive size.

1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flat-cable connector.

3.5" drives use a 1 x 44-pin to 2 x 40-pin connector.

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

1. Connect one end of the cable to CN13. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable to the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

Connect a second drive as described above.

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

2.9 Floppy drive connector (CN11)

You can attach up to two floppy drives to the PCM-9576F's on-board controller. You can use any combination of 5.25" (360 KB and 1.2 MB) and/or 3.5" (720 KB, 1.44 MB, and 2.88 MB) drives.

A 34-pin daisy-chain drive connector cable is required for a dual-drive system. 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).

2.9.1 Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN11. Make sure that the red wire corresponds to pin one on the connector.
2. Attach the appropriate connector on the other end of the cable to the floppy drive(s). You can use only one connector in the set. The set on the end (after the twist in the cable) connects to the A: drive. The set in the middle connects to the B: drive.
3. If you are connecting a 5¼" floppy drive, line up the slot in the printed circuit board with the blocked-off part of the cable connector.

If you are connecting a 3½" floppy drive, you may have trouble determining which pin is pin number one. Look for a number printed on the circuit board indicating pin number one. In addition, the connector on the floppy drive connector may have a slot. When the slot is up, pin number one should be on the right. Check the documentation that came with the drive for more information.

If you desire, connect the B: drive to the connectors in the middle of the cable as described above.

If you need to make your own cable, you can find the pin assignments for the board's connector in Appendix C.

2.10 Parallel port connector (CN14)

Normally, the parallel port is used to connect the card to a printer. The PCM-9576F includes a multi-mode (ECP/EPP/SPP) parallel port, accessed through CN14, a 26-pin flat-cable connector. You will need an adapter cable if you use a traditional DB-25 connector. The adapter cable has a 26-pin connector on one end and a DB-25 connector on the other.

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

The parallel port interrupt channel is designated to be IRQ7.

You can select ECP/EPP DMA channel via BIOS setup.

2.11 Keyboard and PS/2 mouse connector (CN7)

The PCM-9576F board provides a keyboard connector that supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset if the keyboard is not present. The PCM-9576F's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications without the system halting under POST (power-on-self-test).

2.12 Front panel connector (CN20)

Next, you may want to install external switches to monitor and control the PCM-9576F. These features are optional - install them only if you need them. The front panel connector (CN20) is an 8-pin male, dual in-line header and provides connections for a speaker, hard disk access indicator, watchdog output and an input switch for resetting the card.

2.12.1 Speaker

The PCM-9576F can drive an 8 Ω speaker at 0.5 watts. Make sure that alternatives to this specification do not overload the card.

2.12.2 LED interface

The front panel LED indicator for hard disk access is an active low signal (24 mA sink rate).

2.12.3 Watchdog output

When PCM-9576F watchdog timer times out, the front panel pin 6 will output an active low pulse signal (25 mA sink rate for 1 second).

2.12.4 Reset switch

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

If you need to make your own cable, you can find the pin assignments for the board's connector in Appendix C.

2.13 Power connectors (FAN1, CN16, CN9)

2.13.1 Peripheral power connector, -5 V, -12 V (CN16)

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

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

Supplies main power to the PCM-9576F (+5 V) and devices that require +12 V.

2.13.3 Fan power supply connector (FAN1)

Provides power supply to optional CPU cooling fan. Only present when +5 V and +12 V power is supplied to the board.

2.14 ATX power control connector (CN2, J3)

2.14.1 ATX feature connector (CN2) and power button (J3)

The PCM-9576F can support an advanced power button if an ATX power supply is used. To enable the power button:

1. Take the specially designed ATX-to-PS/2 power cable PCM-9576F optional item, P/N 1703200201.
2. Connect the 3-pin plug of the cable to CN2 (ATX feature connector).
3. Connect the power on/off button to J3. (A momentary type of button should be used.)

Important: *Be sure that the ATX power supply can take at least a 10 mA load on the 5 V standby lead (5 VSB). If not, you may have difficulty powering on your system.*

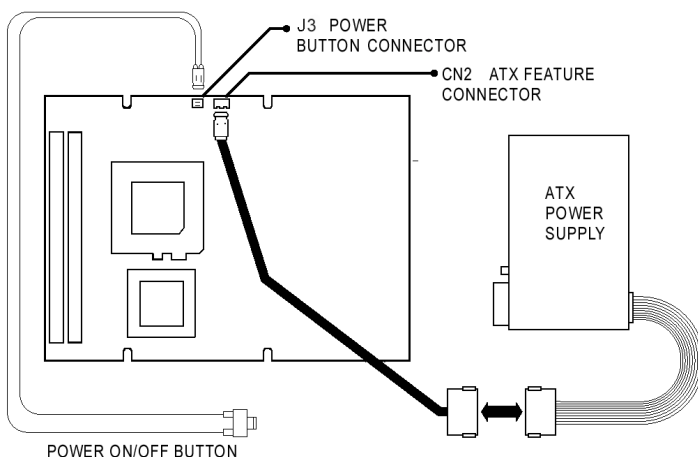




Figure 2-4: Wiring for ATX power switch function

2.15 ATX power on function select (J4)

Table 2-5: ATX power on function select (J4)

J4	ATX power	AT power*
	3 2 1	3 2 1
		

* default setting

Note1: J4 select 1-2, that while AC power is turned on, the system cannot boot up without ATX power switch button J3.

Note2: J4 select 2-3, that while AC power is turned on, the cannot boot up without ATX power switch button J3.

2.16 IR connector (CN10)

The PCM-9576F provides an IrDA port for transfer rates of 115 Kbps. This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through BIOS setup.

2.17 COM-port connector (CN22)

The PCM-9576F provides two serial ports in one COM port connector. The COM port connector is a 20-pin, dual-in-line, male header and provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix C. For the optional 4 serial ports in one COM port connector (using 40 pin header), will use pin assignment and cable same as PCM-9574

2.17.1 COM2 RS-232/422/485 setting (J9) (optional)

COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode. This optional function is done via J9.

Table 2-6: COM2 RS-232/422/485 setting (J9)

	* RS-232	RS-422	RS-485
J9			

* default setting

The IRQ and the address range for COM1, 2, 3, 4 are fixed. However, if you wish to disable the port or change these parameters later you can do this in the system BIOS setup. The table below shows the settings for the PCM-9576F's serial ports.

Table 2-7: Serial port default settings

Port	Address range	Interrupt
COM1	3F8 ~ 3FF	IRQ4
COM2	2F8 ~ 2FF	IRQ3
COM3	3E8 ~ 3EF	IRQ10
COM4	2E8 ~ 2EF	IRQ5

2.17.2 COM1 - COM4 RI pin setting (J7)

COM1 through COM4 can supply +5 V or +12 V power to the serial devices via the RI pin of the COM port connector. The outputs of the COM1 ~ COM4 RI pins are selected by setting J7.

Table 2-8: COM1 RI pin setting (J6)

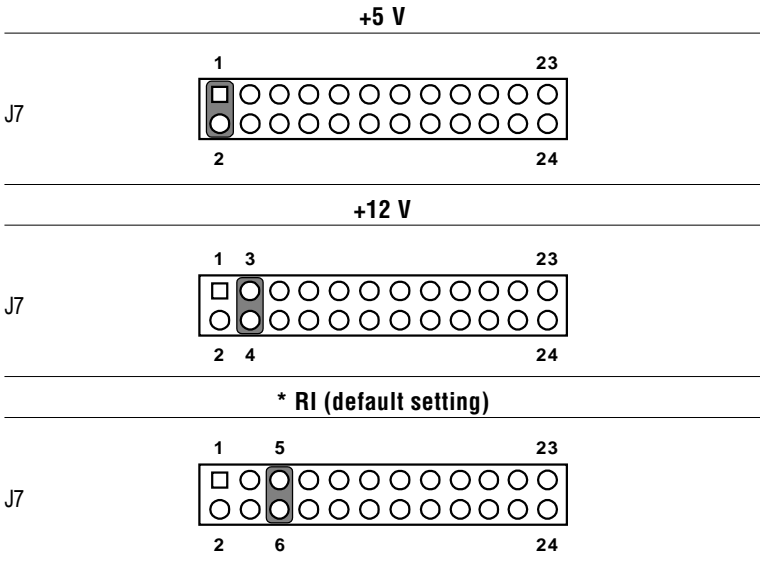


Table 2-9: COM2 RI pin setting (J7)

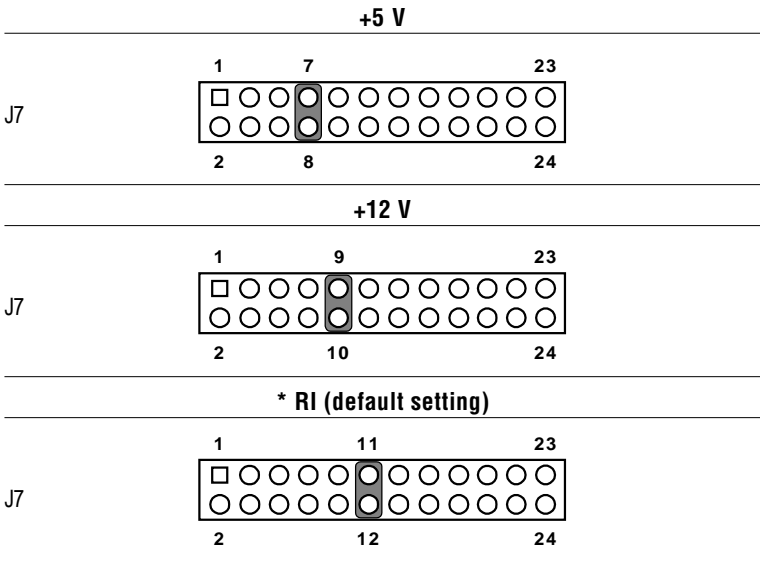


Table 2-10: COM3 RI pin setting (J7) (optional)

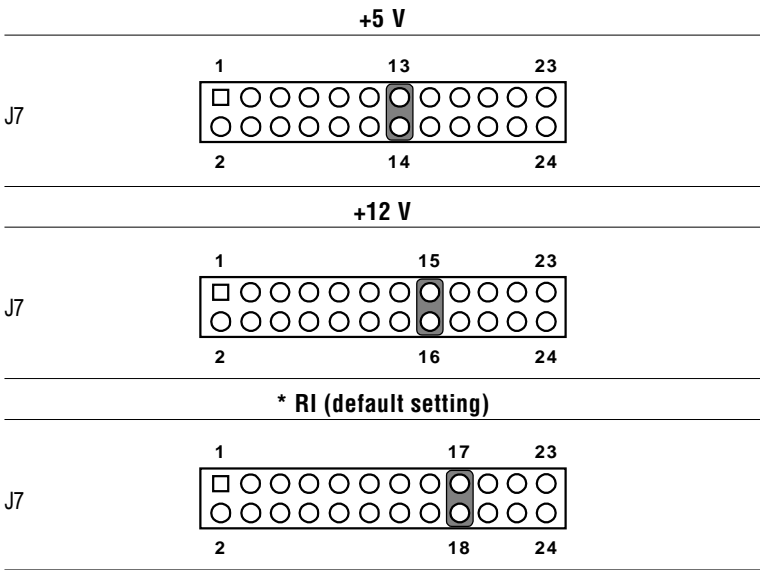
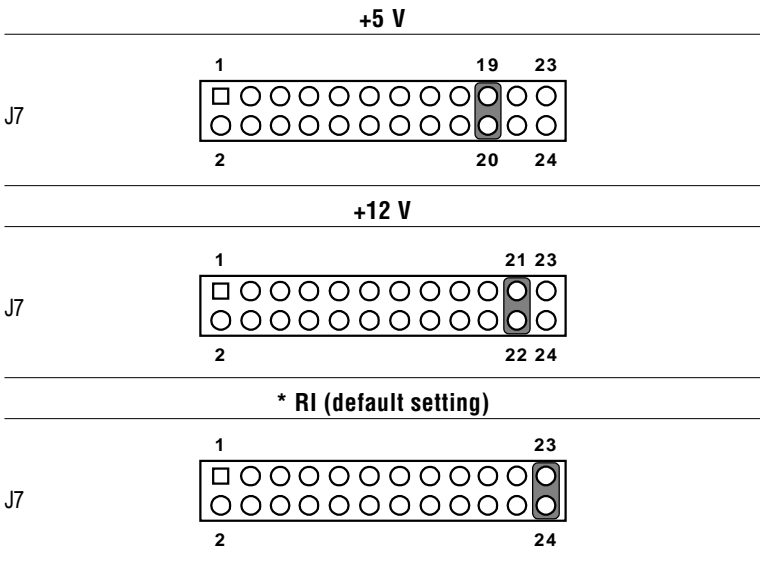


Table 2-11: COM4 RI pin setting (J7) (optional)



2.18 VGA interface connections (optional)

The PCM-9576F's PCI SVGA interface can drive conventional CRT displays and is capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays. The board has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

2.18.1 CRT display connector (CN17)

CN15 is a 16-pin, dual-in-line header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN15 to a standard 15-pin D-SUB connector commonly used for VGA.

Pin assignments for CRT display connector CN15 are detailed in Appendix C.

2.18.2 Flat panel display connector (CN18)

CN18 is a 40-pin connector which can support a 24-bit TFT LCD. It is Hirose's product no. DF13A-40DP-1.25V.

The PCM-9576F provides a bias control signal on CN18 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 PCM-9576F's power is applied, the control signal is low until just after the relevant flat panel signals are present.

2.18.3 Ext. flat panel display connector (CN19)

CN19 consists of a 20-pin header, which is Hirose's product no. DF13A-20DP-1.25V. The PCM-9576F supports a 36-bit LCD panel with connections to both CN18 and CN19. For details of pin assignments, refer to Appendix C.

2.18.4 LCD Panel type select (SW2)

SW2 is a 7-pin dip switch for LCD Panel type select

SW2: Panel type select (optional)

SW 2-1			
SW 2-1 status		TFT/DSTN select	
ON		TFT*	
OFF		DSTN	
SW 2-2			
SW 2-2 status		FPCLK select	
ON		FPCLK Normal*	
OFF		FPCLK Inverted	
SW 2 - 3, 4			
SW 2 - 3, 4 status		Resolution select	
SW 2 - 3	SW 2 - 4	Result	
ON	ON	640 x 480	
OFF*	ON	800 x 600*	
ON	OFF	1024 x 768	
OFF	OFF	1280 x 1024	
SW 2 - 5, 6, 7			
SW 2 - 5, 6, 7 status		TFT Type Select	
SW 2 - 5	SW 2 - 6	SW 2 - 7	Type of TFT
ON	ON	ON	9-bit TFT
OFF	ON	ON	12-bit TFT
OFF	OFF	ON	18 bit/24-bit TFT*
ON	ON	OFF	12 x 2 bit TFT
OFF	ON	OFF	Analog TFT
ON	OFF	OFF	18 x 2 bit TFT
SW 2- 8			
SW 2-8 status		Type of DSTN	
ON		16-bit DSTN	
OFF		24-bit DSTN	

*default setting

2.19 Optional Video Out interfaces (CN26)

The PCM-9576F board provides Video-out (TV-out) (CN26). They consist of a 5-pin wafer box header header respectively. Output supports compiosite video and S-video connectors via an optional cable kit. Its Video-out generators use both NTSC and PAL format.

To set up your video interface:

1. Run the appropriate installation software program, located in the utility disk.

2.20 Ethernet configuration

The PCM-9576F is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

2.20.1 100Base-T connector (CN1, CN4, CN5)

The PCM-9576F has three Ethernet interfaces: CN1 (1st lan), CN4 (2nd lan) and CN5 (3rd lan). When users only use one ethernet interface, they have to use the 1st lan interface (CN1).

100Base-T connects to the PCM-9576F via an adapter cable to a 10-pin polarized header (CN1, CN4, CN5). For 10/100Base-T RJ-45 operation, an adapter cable converting CN1, CN4, CN5 into a standard RJ-45 jack is required.

2.20.2 Network boot (Optional for Used RTL8139 or Intel 82559 Ethernet chip)

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 on the included utility disk.

2.20.3 LAN controller power select(J12)

Table 2-12 LAN controller power select (J12)

+5 V*	standby 5 V

* default setting

Note: *PCM-9576F supports wake-on on LAN. For wake-on LAN, J12 has to select standby 5 V (2-3 position)*



2.21 Watchdog timer configuration

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

2.21.1 Watchdog timer action (J2)

When the watchdog timer activates (CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ11. This can be set via setting J2 as shown below:

Table 2-13: Watchdog timer action (J2)

* System reset	IRQ11
----------------	-------

J2

* default setting

2.22 USB connectors (CN21)

The PCM-9576F board provides two USB (Universal Serial Bus) interfaces which gives complete plug and play, hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification rev. 1.0 and are fuse protected.

The USB interfaces are accessed through a 5 x 2 -pin flat-cable connectors, CN21. You will need an adapter cable if you use a standard USB connector. The adapter cable has a 5 x 2 -pin connector on one end and an USB connector on the other.

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

2.23 GPIO (CN6)

The PCM-9576F supports general purpose out; CN6. The 3 digital outputs can control output devices by programming.

CHAPTER
3

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

3.1 System test and initialization

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

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

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

3.1.1 System configuration verification

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

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

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

The PCM-9576F's CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

3.2 Award BIOS setup

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

3.2.1 Entering setup

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

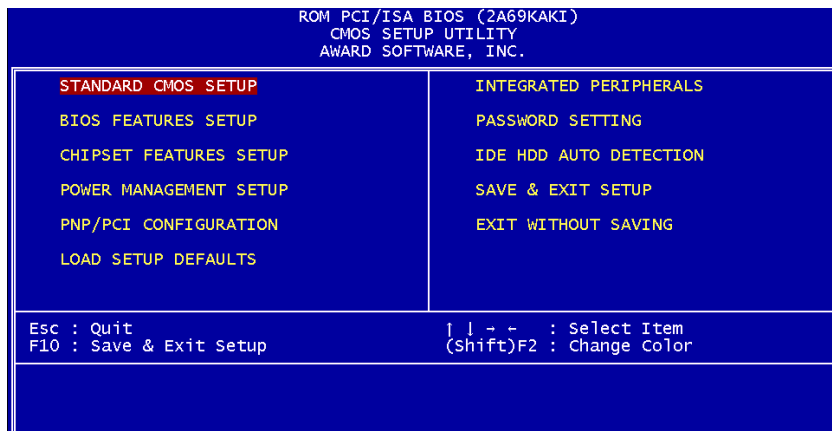


Figure 3-1: Setup program initial screen

3.2.2 Standard CMOS setup

When you choose the STANDARD CMOS SETUP option from the INITIAL SETUP SCREEN menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

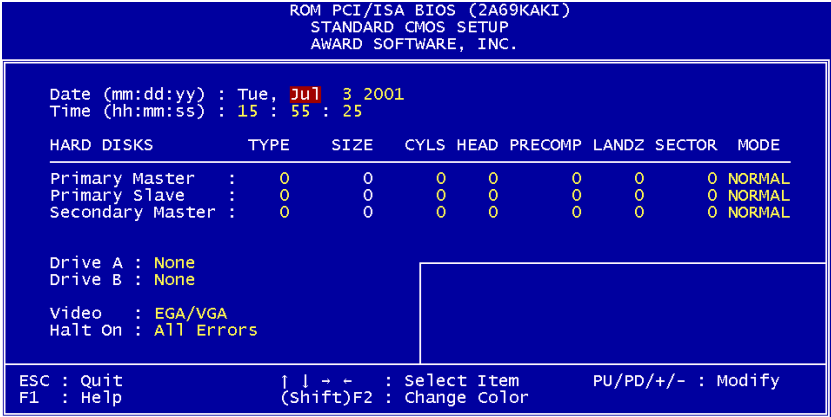


Figure 3-2: CMOS setup screen

3.2.3 BIOS features setup

By choosing the BIOS 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 PCM-9576F.

ROM PCI/ISA BIOS (2A69KAKI)			
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
CPU L2 Cache ECC Checking	: Enabled	D0000-D3FFF Shadow	: Disabled
Processor Number Feature	: Enabled	D4000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot From LAN First	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Sequence	: C,A,SCSI		
Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Enabled		
Boot Up NumLock Status	: On		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PS/2 mouse function control	: Enabled	ESC : Quit	-- : Select Item
PCI/VGA Palette Snoop	: Disabled	F1 : Help	PU/PD/+/- : Modify
OS Select For DRAM > 64MB	: Non-OS2	F5 : Old Values	(Shift)F2 : Color
Report No FDD For WIN 95	: Yes	F7 : Load Setup Defaults	

Figure 3-3: BIOS features setup

3.2.4 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 PCM-9576F.

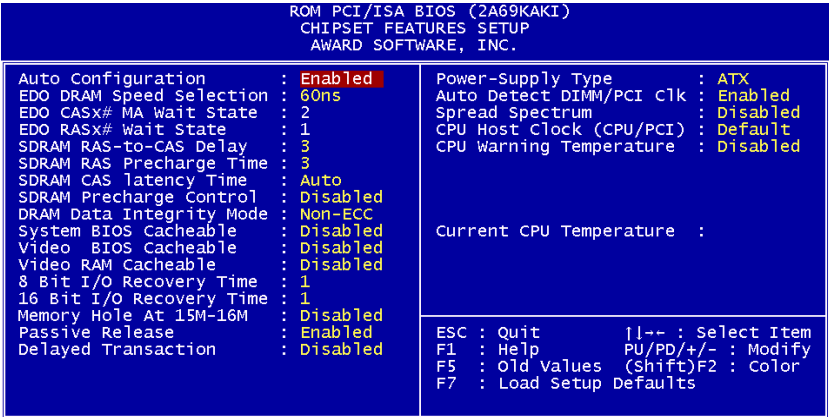


Figure 3-4: Chipset features setup

3.2.5 Power management setup

By choosing the POWER MANAGEMENT SETUP option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9576F.

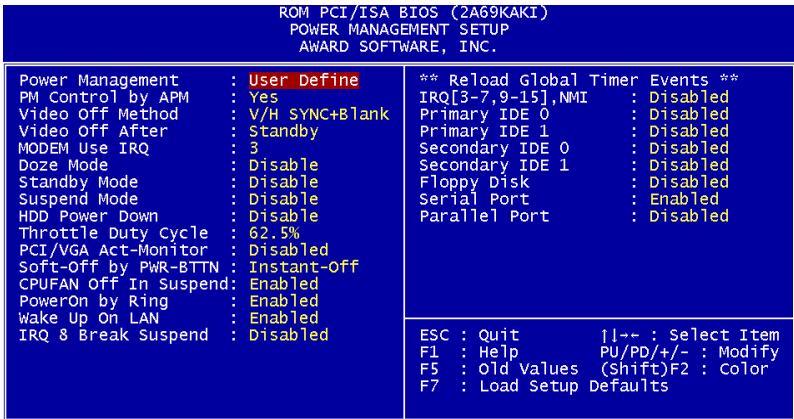


Figure 3-5: Power management setup

3.2.6 PnP/PCI configuration

By choosing the PnP/PCI CONFIGURATION option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9576F.

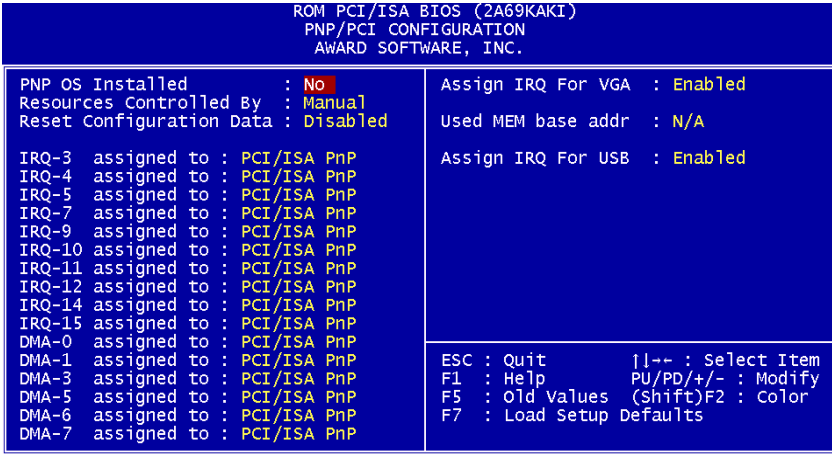


Figure 3-6: PnP/PCI configuration

3.2.7 Integrated peripherals

By choosing the INTEGRATED PERIPHERALS option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-9576F. The PANEL TYPE by default supports an 18-bit 640 x 480 TFT LCD panel display.

ROM PCI/ISA BIOS (2A69KAKI)	
INTEGRATED PERIPHERALS	
AWARD SOFTWARE, INC.	
IDE HDD Block Mode	: Enabled
IDE Primary Master PIO	: Auto
IDE Primary Slave PIO	: Auto
IDE Secondary Master PIO	: Auto
IDE Secondary Slave PIO	: Auto
IDE Primary Master UDMA	: Auto
IDE Primary Slave UDMA	: Auto
IDE Secondary Master UDMA	: Auto
IDE Secondary Slave UDMA	: Auto
On-Chip Primary PCI IDE	: Enabled
On-Chip Secondary PCI IDE	: Enabled
Onboard PCI Lan3 Chip	: Enabled
Onboard PCI Lan2 Chip	: Enabled
Onboard PCI Lan1 Chip	: Enabled
USB Keyboard Support	: Disabled
KBC input clock	: 8 MHz
Onboard FDC Controller	: Enabled
Onboard Serial Port 1	:
Onboard Serial Port 1 IRQ	: 4
Onboard Serial Port 2	:
Onboard Serial Port 2 IRQ	: 3
UART Mode Select	:
RxD , TxD Active	: Hi,Lo
IR Transmittion delay	: Enabled
Onboard Parallel Port	:
Onboard Parallel Port IRQ	: 7
Parallel Port Mode	:
ECP Mode Use DMA	: 3
EPP Mode Select	: EPP1,7

Figure 3-7: Integrated peripherals

3.2.8 Load BIOS defaults

LOAD BIOS DEFAULTS loads the default system values directly from ROM. If the stored record created by the Setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-9576F on.

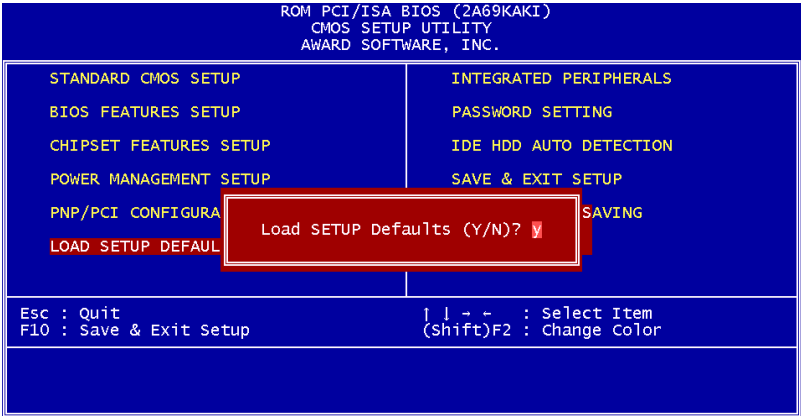


Figure 3-8: Load BIOS defaults

3.2.9 Change password

To change the password, choose the PASSWORD SETTING option from the Setup main menu and press <Enter>.

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

Enter Password:

Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

Confirm Password:

Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most eight (8) characters long.

Remember - to enable this feature, you must first select either Setup or System in the BIOS FEATURES SETUP.

3.2.10 Auto detect hard disk

The IDE HDD AUTO DETECTION utility can automatically detect the IDE hard disk installed in your system. You can use it to self-detect and/or correct the hard disk type configuration.

```
ROM PCI/ISA BIOS (2A5IHAKA)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.
```

HARD DISK TYPE	SIZE	CYLS.	HEADS	PRECOMP	LANDZ	SECTORS	MODE
Drive C	: (MB)	790	15	65535	789	57	

SELECT SECONDARY SLAVE OPTION (N=Skip): N

ESC = SKIP

Figure 3-9: IDE HDD auto detection screen

3.2.11 Save & exit setup

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

3.2.12 Exit without saving

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

PCI SVGA Setup (Optional)

- Introduction
- Installation of SVGA Driver
 - for Windows 95/98/ME
 - for Windows NT/2000
- Further Information

4.1 Introduction

The PCM-9576F has an onboard AGP flat panel/VGA interface. The specifications and features are described as follows:

4.1.1 Chipset

The PCM-9576F uses a LynxEM SMI 710/721 chipset from Silicon Motion Inc. for its AGP/SVGA controller. It supports many popular LCD, EL, and gas plasma flat panel displays and conventional analog CRT monitors. The SMI 710 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 4/8 MB display memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 16 M colors.

4.1.3 Display types

CRT and panel displays can be used simultaneously. The PCM-9576F 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. If you want to enable the CRT display only or the flat panel display only, please contact Silicon Motion Inc. or our sales representative for detailed information.

4.1.4 Dual/simultaneous display

The PCM-9576F uses a SMI Lynx 710/721 LCD controller that is capable of providing multiple views and simultaneous display with mixed video and graphics on a flat panel and CRT.

To set up dual display under Windows 98, Windows ME, Windows NT, follow these steps:

1. Select “Windows98”, “Control panel”, “Display”, “Settings”.
2. Select “1” for current display, or “2” for second display.
3. Enable “Extend my Windows desktop onto this monitor”.
4. Click “OK”.

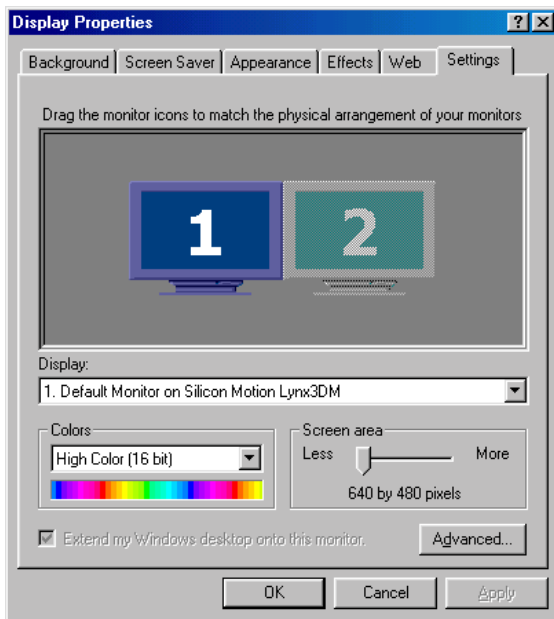


Figure 4-1: Selecting display settings

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 PCM-9576F.

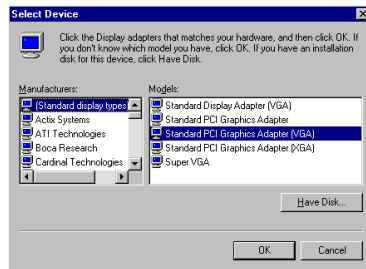
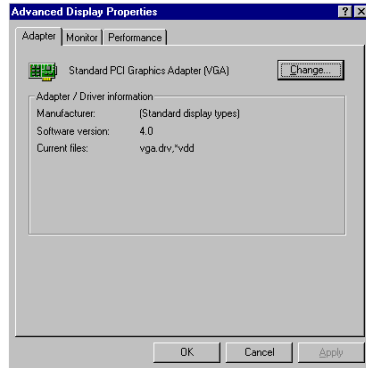
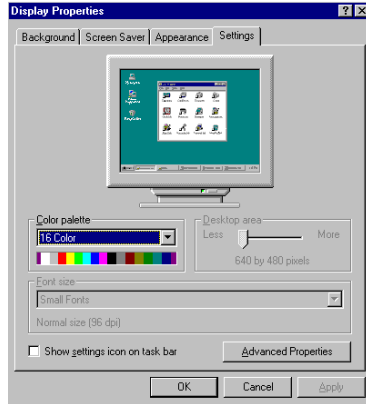
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

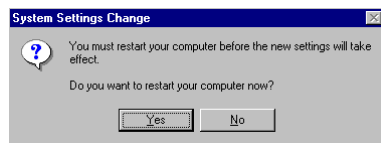
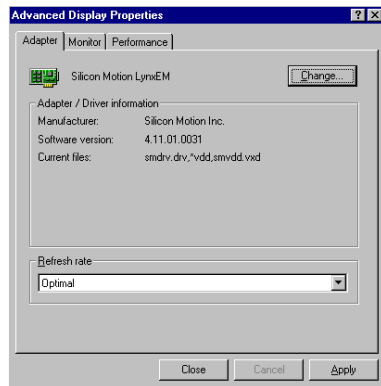
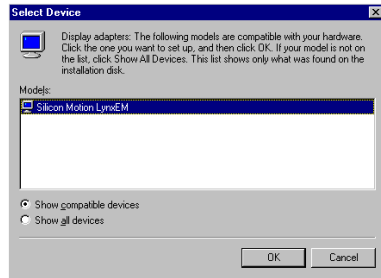
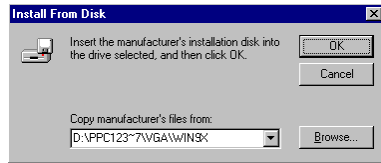
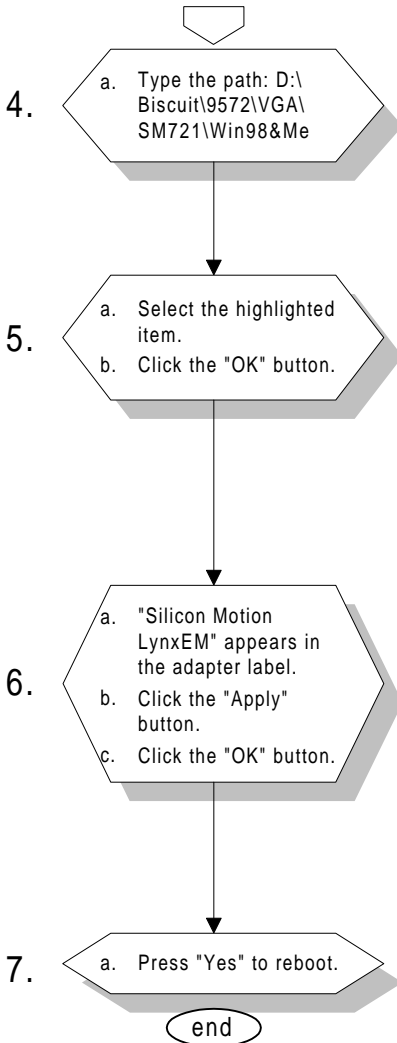
Note 1: The CD-ROM drive is designated as "D" throughout this chapter.

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

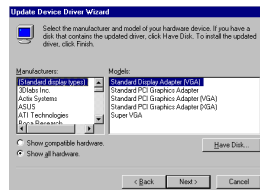
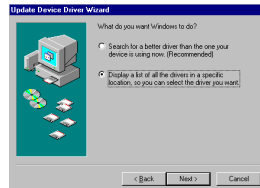
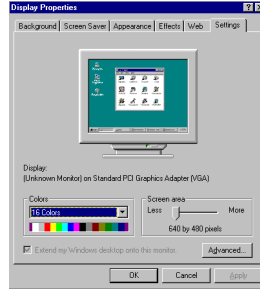
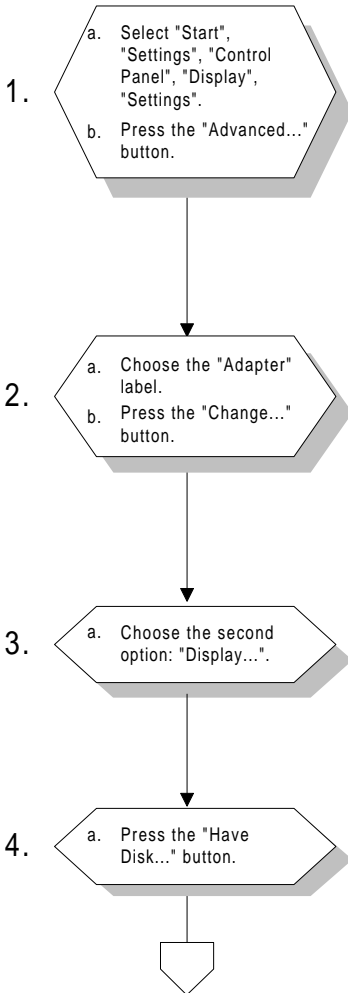
4.2.1 Installation for Windows 95

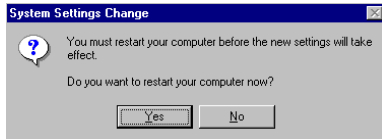
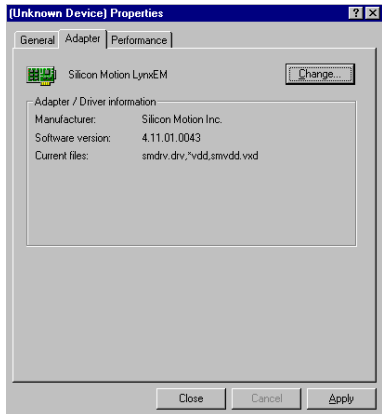
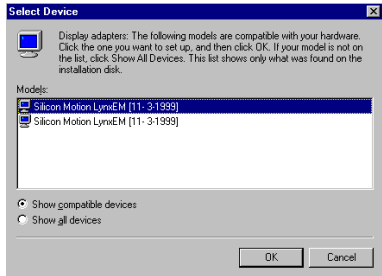
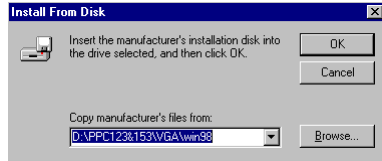
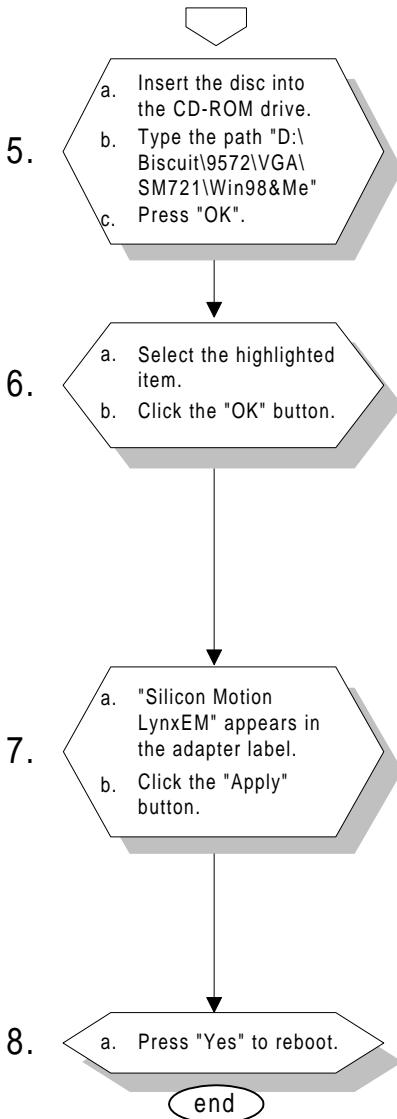
1.
 - a. Select "Start", "Settings", "Control Panel", "Display", "Settings".
 - b. Press the "Advanced Properties".
2.
 - a. Choose the "Adapter" label.
 - b. Press the "Change..." button.
3.
 - a. Press the "Have Disk" button.





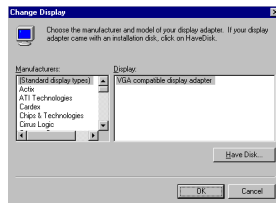
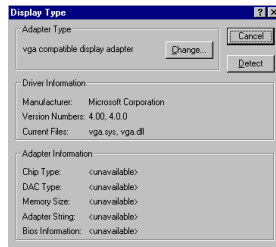
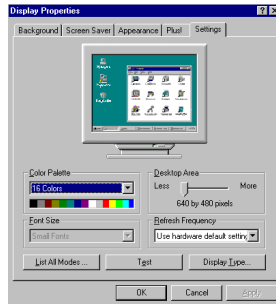
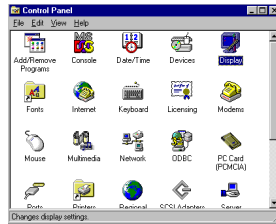
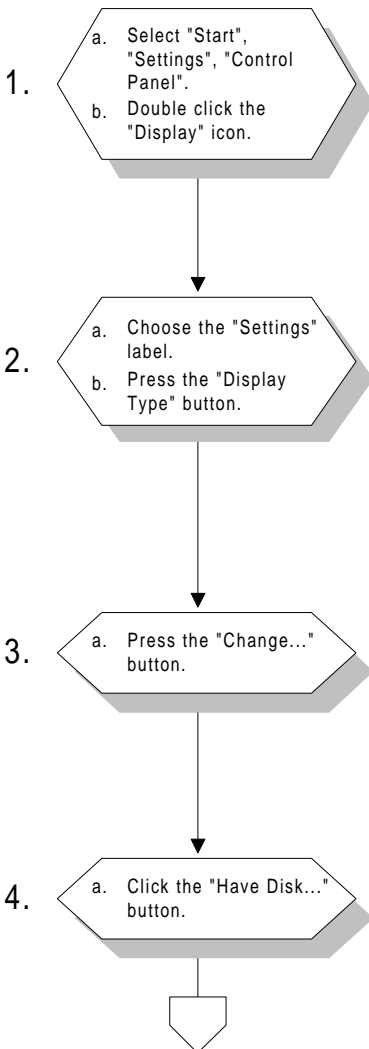
4.2.2 Installation for Windows 98/ME

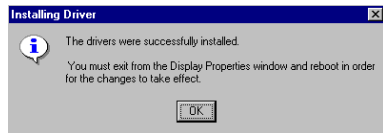
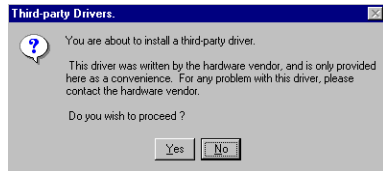
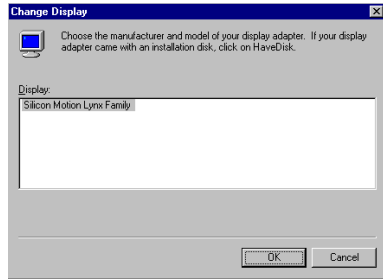
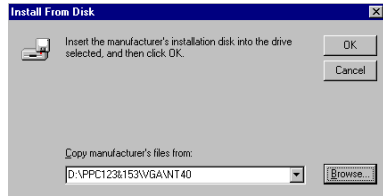
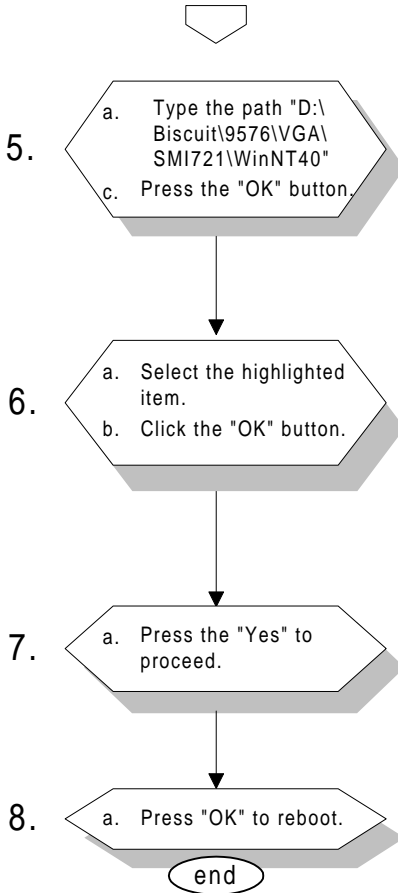




4.2.3 Installation for Windows NT/2000

Note: Service Pack X (X = 3, 4, 5, 6, ...) must be installed first before you install the Windows NT VGA driver.





4.3 Further Information

For further information about the AGP/SVGA installation in your PCM-9576F, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Silicon Motion Website: **www.siliconmotion.com**

Advantech websites: **www.advantech.com**

www.advantech.com.tw

PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

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

5.1 Introduction

The PCM-9576F 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 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 PCM-9576F, 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 1: 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. Since PCM-9576 supports 3LAN, Users have to install the Ethernet driver 3 times

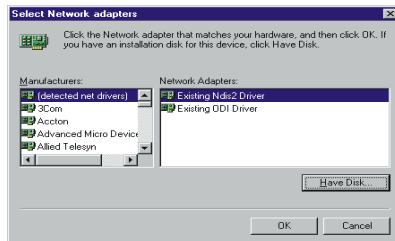
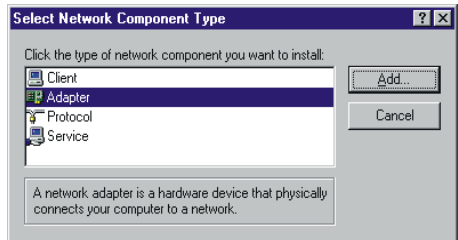
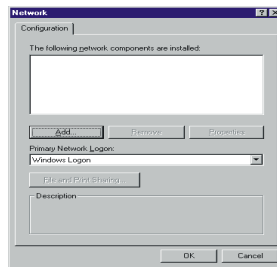
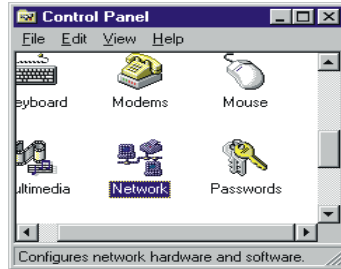
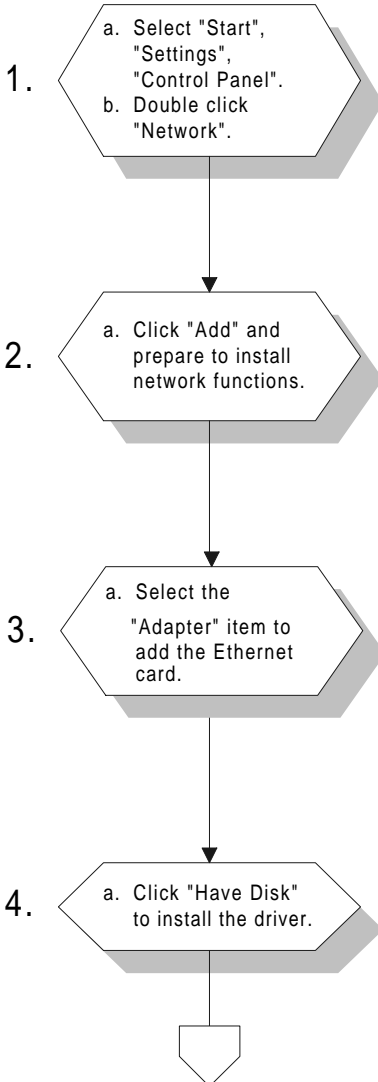
5.2.1 Installation for MS-DOS and Windows 3.1

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.

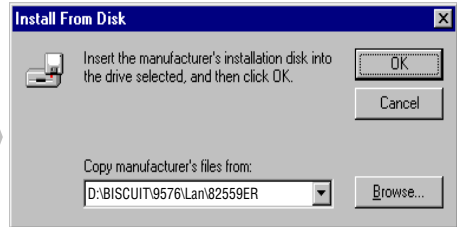
The installation procedures for various servers can be found in the directory path "LAN/TXT/*" of the drivers and utilities disks, where * is your server model.

5.2.2 Installation for Windows 95/98 & Windows 2000

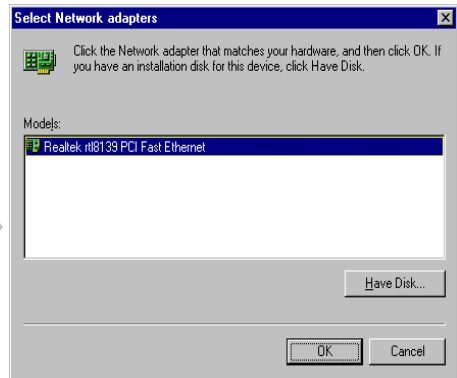


5.2.3 Installation for Windows NT

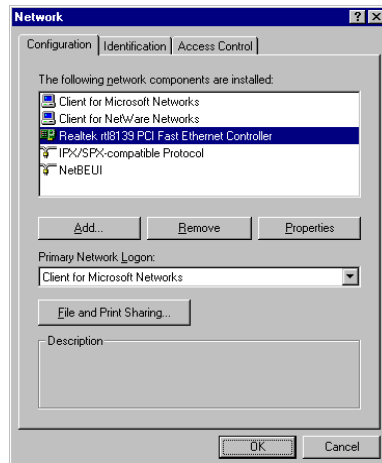
- 5.
- Insert the utility disc into the CD-ROM drive.
 - Type: D:\BISCUIT\9576\Lan\82559ER
 - Click "OK".



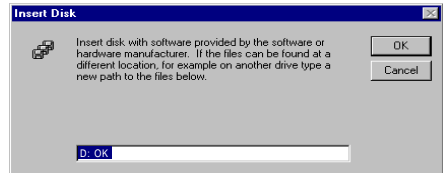
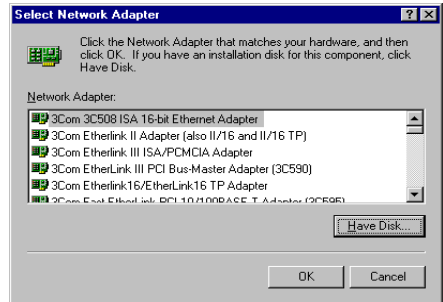
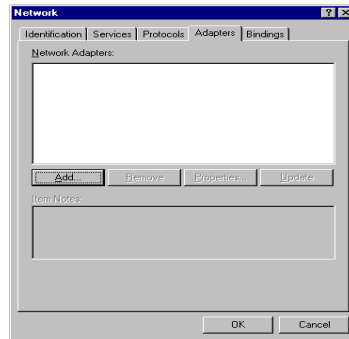
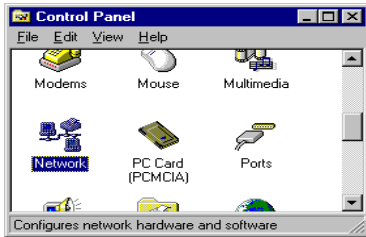
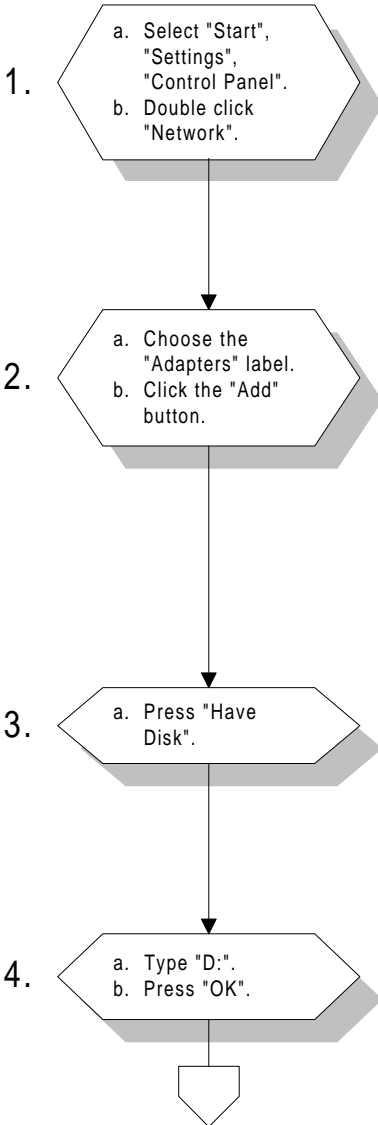
- 6.
- Choose the "82559ER" item.
 - Click "OK".



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

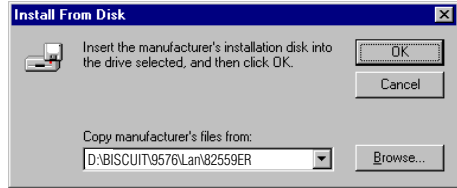


END



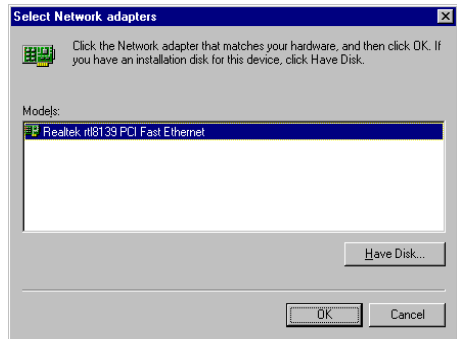
5.

- a. Insert the utility disc into the CD-ROM drive.
- b. Type: D:\BISCUIT\9576\Lan\82559ER
- c. Click "OK".



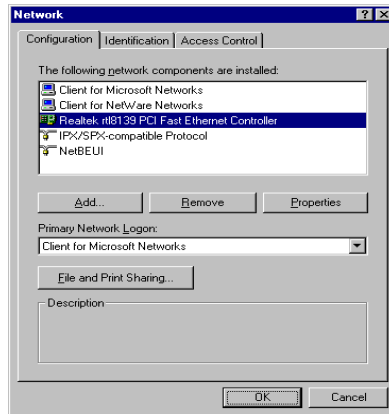
6.

- a. Choose the "82559ER" item.
- b. Click "OK".



7.

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



END

5.3 Further information

Intel® website: www.intel.com

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

Programming the Watchdog Timer

The PCM-9576F is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason. This feature ensures system reliability in industrial standalone, or unmanned, environments.

A.1 Programming the watchdog timer

In order 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 3E(hex), and the related time interval is 1 sec. to 62 sec.

Data	Time Interval
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
	.
	.
	.
3E	62 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, you application task
      .
      .
      .
1070    RETURN
2000    REM Subroutine #2, you application task
      .
      .
      .
2090    RETURN
```


APPENDIX

B

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

B.1 Installing PC/104 modules

The PCM-9576's PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCM-9576 is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCM-9576 from your system paying particular attention to the safety instructions already mentioned above.
2. Make any jumper or link changes required to the CPU card now. Once the PC/104 module is mounted you may have difficulty in accessing these.
3. Normal PC/104 modules have male connectors and mount directly onto the main card. (Refer to the diagram on the following page.)
4. Mount the PC/104 module onto the CPU card by pressing the module firmly but carefully onto the mounting connectors.
5. Secure the PC/104 module onto the CPU card using the four mounting spacers and screws.

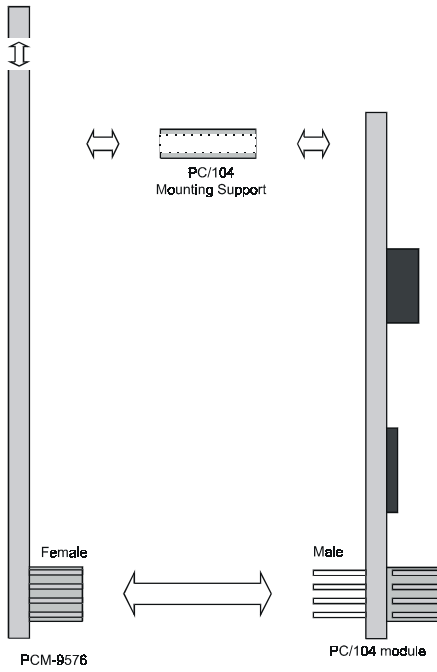


Figure B-1: PC/104 module mounting diagram

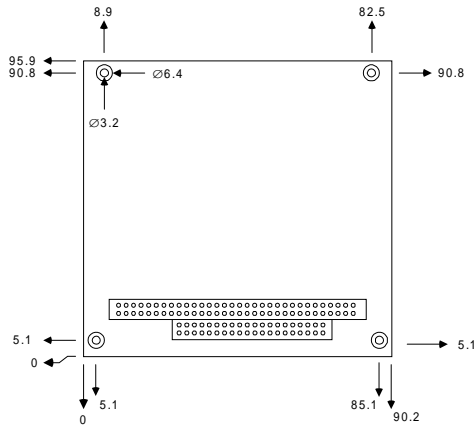


Figure B-2: PC/104 module dimensions (mm) (± 0.1)

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

Pin Number	Signal		Signal	
	Row A	Row B	Row C	Row D
0	—	—	0 V	0 V
1	IOCHCHK*	0 V	SBHE*	MEMCS16*
2	SD7	RESETDRV	LA23	IOCS16*
3	SD6	+5 V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5 V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12 V	LA18	IRQ14
8	SD1	ENDXFR*	LA17	DACK0*
9	SD0	+12 V	MEMR*	DRQ0
10	IOCHRDY	N/C	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5 V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	0 V
19	SA12	REFRESH*	KEY	0 V
20	SA11	SYSCLK	—	—
21	SA10	IRQ7	—	—
22	SA9	IRQ6	—	—
23	SA8	IRQ5	—	—
24	SA7	IRQ4	—	—
25	SA6	IRQ3	—	—
26	SA5	DACK2*	—	—
27	SA4	TC	—	—
28	SA3	BALE	—	—
29	SA2	+5 V	—	—
30	SA1	OSC	—	—
31	SA0	0 V	—	—
32	0 V	0 V	—	—

* active low

Pin Assignments

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

- Ethernet 10/100Base-T connector (CN 1,4,5)
- ATX power feature connector (CN 2)
- Keyboard and PS/2 mouse connector (CN 7)
- Main power connector (CN 9)
- IR connector (CN10)
- Floppy drive connector (CN 11)
- IDE hard drive connector (CN 13)
- Parallel port connector (CN 14)
- Backlight connector (CN 25)
- Peripheral power connector (CN 16)
- CRT display connector (CN 17)
- 24-bit LCD display connector (1st) (CN 18)
- Ext. LCD display connector (2nd) (CN 19)
- LCD signal mapping
- Front panel connector (CN 20)
- USB connectors (CN 21)
- COM port connector (CN 22)
- CompactFlash™ card connector (CN 24)
- Fan power connector (FAN 1)

C.1 Ethernet 10/100Base-T connector (CN4, CN5)

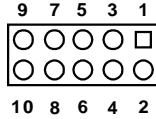


Table C-1: Ethernet 10Base-T connector (CN4, CN5)

Pin	Signal
1	V_{CC}
2	CRS LED
3	RCV+
4	RCV-
5	BNC LED
6	GND
7	N/C
8	GND
9	XMT+
10	XMT-

C.2 ATX power feature connector (CN2)

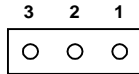


Table C-2: ATX power feature connector (CN2)

Pin	Signal
1	5 V SB (Stand-by voltage)
2	NC
3	5 V SB (VPSON)

C.3 Keyboard and PS/2 mouse connector (CN7)

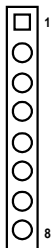


Table C-3: Keyboard and mouse connector (CN7)

Pin	Signal
1	GND
2	MS VCC
3	MS DATA
4	MS CLOCK
5	GND
6	KB VCC
7	KB DATA
8	KB CLOCK

C.4 Main power connector (CN9)

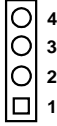


Table C-4: Main power connector (CN9)

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

C.5 IR connector (CN10)

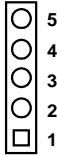


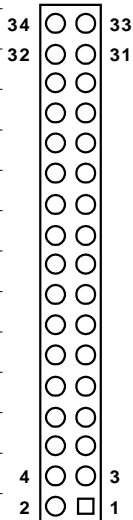
Table C-5: IR connector (CN10)

Pin	Signal
1	V_{cc}
2	NC
3	IR IN
4	GND
5	IR OUT

C.6 Floppy drive connector (CN11)

Table C-6: Floppy drive connector (CN11)

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT*
3	GND	4	N/C
5	GND	6	DRIVE TYPE
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

C.8 Parallel port connector (CN14)

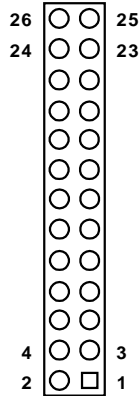


Table C-8: Parallel port connector (CN14)

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

* low active

C.9 Backlight connector (CN25) optional

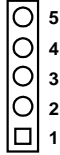


Table C-9: Backlight connector (CN25)

Pin	Signal
1	+12 V
2	GND
3	Enable
4	Reserved
5	N.C.

C.10 Peripheral power connector (CN16)

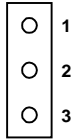


Table C-10: Peripheral power connector (CN16)

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

C.11 CRT display connector (CN17)

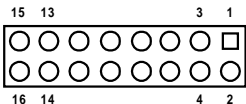


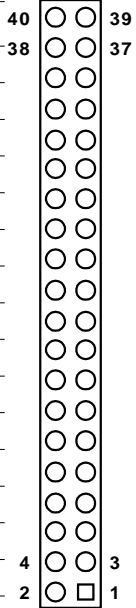
Table C-11: CRT display connector (CN17)

Pin	Signal	Pin	Signal
1	RED	9	SIGNAL GND
2	DDC power	10	H-SYNC
3	GREEN	11	Signal GND
4	SIGNAL GND	12	V-SYNC
5	BLUE	13	Signal GND
6	N/C	14	N/C
7	N/C	15	Signal GND
8	DDC_DAT	16	Chassis GND

C.12 24-bit LCD display connector (CN18) optional

Table C-12: 24-bit LCD display connector (CN18)

Pin	Signal	Pin	Signal
1	VDD 5 V	2	VDD 5 V
3	GND	4	GND
5	VDD 3.3 V	6	VDD 3.3 V
7	Vcon	8	GND
9	PD23 (BØ)	10	PD22 (B1)
11	PD17 (B2)	12	PD16 (B3)
13	PD11 (B4)	14	PD10 (B5)
15	PD9 (B6)	16	PD8 (B7)
17	PD21 (GØ)	18	PD20 (G1)
19	PD15 (G2)	20	PD14 (G3)
21	PD7 (G4)	22	PD6 (G5)
23	PD5 (G6)	24	PD4 (G7)
25	PD19 (RØ)	26	PD18 (R1)
27	PD13 (R2)	28	PD12 (R3)
29	PD3 (R4)	30	PD2 (R5)
31	PD1 (R6)	32	PD0 (R7)
33	GND	34	GND
35	SHIFT CLOCK	36	FLM
37	M	38	LP
39	DCLK (reserved)	40	ENAVEE



Note 1: The model number of the CN16 connector is DF13A-40DP-1.25V (Hirose Electric Co., Ltd.)

Note 2: The signals shown in parentheses are for 24-bit TFT color bits.

C.13 Ext. LCD display connector (CN19) optional

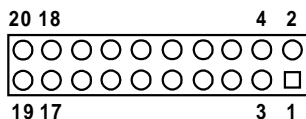


Table C-13: Ext. LCD display connector (CN19)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	PD24	4	PD25
5	PD26	6	PD27
7	PD28	8	PD29
9	PD30	10	PD31
11	PD32	12	PD33
13	PD34	14	PD35
15	GND	16	GND
17	N/C	18	N/C
19	N/C	20	N/C

Note 1: The model number of the CN17 connector is DF13A-20DP-1.25V (Hirose Electric Co., Ltd.).

The model number of the CN16 connector is DF13A-40DP-1.25V (Hirose Electric Co., Ltd.).

Note 2: To support a 36-bit, 48-bit TFT LCD, connection must be made to both CN17 and CN16.

C.14 LCD signal mapping

Table C-14: LCD signal mapping

Pin Name	LCD			
	16-bit DSTN	18-bit TFT	24-bit TFT	36-bit TFT
PD0	LD0	R5	R7	Ro5
PD1	LD1	R4	R6	Ro4
PD2	LD2	R3	R5	Ro3
PD3	LD3	R2	R4	Ro2
PD4	LD4	G5	G7	Go5
PD5	LD5	G4	G6	Go4
PD6	LD6	G3	G5	Go3
PD7	LD7	G2	G4	Go2
PD8	UD0	B5	B7	Bo5
PD9	UD1	B4	B6	Bo4
PD10	UD2	B3	B5	Bo3
PD11	UD3	B2	B4	Bo2
PD12	UD4	R1	R3	Re5
PD13	UD5	R0	R2	Re4
PD14	UD6	G1	G3	Re3
PD15	UD7	G0	G2	Re2
PD16		B1	B3	Ge5
PD17		B0	B2	Ge4
PD18			R1	Ge3
PD19			R0	Ge2
PD20			G1	Be5
PD21			G0	Be4
PD22			B1	Be3
PD23			B0	Be2
PD24				Ro1
PD25				Ro0
PD26				Go1
PD27				Go0
PD28				Bo1
PD29				Bo0
PD30				Re1
PD31				Re0
PD32				Ge1
PD33				Ge0
PD34				Be1
PD35				Be0

C.15 Front panel connector (CN20)

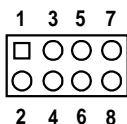


Table C-15: Front panel connector (CN20)

Pin	Signal
1	HDD LED- (HARD DISK ACTIVE)
2	HDD LED+ (V_{cc})
3	SPEAKER+
4	SPEAKER- (GND)
5	GND
6	WATCHDOG OUTPUT*
7	RESET SWITCH- (GND)
8	RESET SWITCH+

* low active

C.16 USB connectors (CN21)

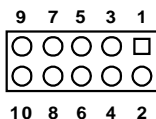


Table C-16: USB connectors (CN21)

Pin	Signal	Pin	Signal
1	+5 V	2	+5 V
3	UV0-	4	UV1-
5	UV0+	6	UV1+
7	GND	8	GND
9	Chassis GND	10	NC

C.17 COM PORT connector for 4COM port (CN22)

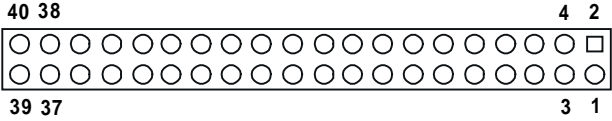


Table C-17: COM port connector (CN22)

Pin	Signal	Pin	Signal
1	DCD1	2	DSR1
3	RX1	4	RTS1
5	TX1	6	CTS1
7	DTR1	8	RI1
9	GND	10	NC
11	DCD2	12	DSR2
13	RX2	14	RTS2
15	TX2	16	CTS2
17	DTR2	18	RI2
19	GND	20	NC
21	DCD3	22	DSR3
23	RX3	24	RTS3
25	TX3	26	CTS3
27	DTR3	28	RI3
29	GND	30	NC
31	DCD4	32	DSR4
33	RX4	34	RTS4
35	TX4	36	CTS4
37	DTR4	38	RI4
39	GND	40	NC

Note1 : The cable of serial port (CN22) comes with four DSUB-9 male connectors. The pin assignments of each DSUB-9 connector are listed below for your reference:

*Note2 : PCM-9576 standard configuration is 2 RS-232 ports (CN22 is pin1-p20).
1 additional RS/232/422/485 and 1 RS-232 port, CN22 is pin1-pin40 (optional).*

Table C-18: COM2 port for RS-232, RS-422 and RS-485 (CN22)

Pin	Signal		
	RS-232	RS-422	RS-485
11	DCD2	TX-	DATA-
13	RxD2	TX+	DATA+
15	TxD2	RX+	NC
17	DTR2	RX-	NC
19	GND	GND	GND
12	DSR2	DSR2 (not used)	DSR2 (not used)
14	RTS2	RTS2 (not used)	DSR2 (not used)
16	CTS2	CTS2 (not used)	DSR2 (not used)
18	RI2	RI2 (not used)	DSR2 (not used)
19	DDC/SDA (reserved)	20	DDC/SCL (reserved)

C.18 CompactFlash™ card connector (CN24)

Table C-19: CompactFlash card connector (CN24)

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

C.19 Fan power connector (FAN1)

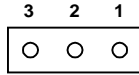


Table C-20: Fan power connector (FAN1)

Pin	Signal
1	NC
2	+12 V
3	GND

APPENDIX **D**

System Assignments

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

D.1 System I/O ports

Table D-1: System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register,
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Reserved (Game I/O)
278-27F	Reserved
2E8-2EF	Serial port 4
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter(LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8-3EF	Serial port 3
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1
443	Watchdog timer

* MPU-401 select from 300 ~ 330H (2 bytes)

* PNP Audio I/O map range from 220-250 H (16 bytes)

D.2 1st MB memory map

Table D-2: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
D000h - EFFFh	Unused
*CC00h - CFFFh	Ethernet ROM
C000h - CBFFh	Expansion ROM
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

* If Ethernet boot ROM is enabled. For the optional RTL 8139 and Intel 82559 Ethernet chip only

D.3 DMA channel assignments

Table D-3: DMA channel assignments

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

* Audio DMA select 1,3,or 5

** Parallel port DMA select 1 or 3

D.4 IRQ mapping chart

Table D-4: IRQ mapping chart

0	Interval timer
1	Keyboard
2	Interrupt from Controller 2
3	COM2
4	COM1
5	(Reserved) (COM4)
6	FDD
7	LPT1
8	RTC
9	Reserved
10	(Reserved) COM3
11	Reserved (watchdog timer)
12	PS/2 mouse
13	INT from co-processor
14	Primary IDE
15	Secondary IDE (reserved for CompactFlash)

* Ethernet interface IRQ select: 5, 9, 10, 11, 12, 15

* PnP USB IRQ select: 5, 9, 10, 11, 12, 15

APPENDIX

E

Optional Extras

E.1 PCM-10586- 4E cable kit for PCM-9576

The PCM-9576F requires several cables for normal operation. You can make them yourself or purchase an optional cable kit assembly, which includes the following:

Part No.	Cable description	PCM-9574 connector	Terminating connector
1701440350	2.5" and 1.8" IDE, IDC44P/IDC44P, IDC44P	CN11	44-pin, 2 mm, female IDC (350 mm)
1701440500	3.5 IDE (40P), IDC40P/IDC40P/ Housing 44P	CN11	40-pin, 2.54 mm, female IDC (500 mm)
1701340603	Dual floppy, 3.5" and 5.25" (34P)	CN9	34-pin dual floppy (2.0 mm)
1700260250	Parallel port	CN12	25-pin female D-SUB (2.0 mm)
1701100202	Network, 10Base-T	CN1, CN4, CN5	RJ-45 8-pin modular jack (2.0 mm)
1700160150	VGA CRT	CN15	15-pin D-SUB (2.0 mm)
1700060200	Keyboard and PS/2 mouse	CN5	5-pin circular DIN, 6-pin circular DIN
1703030300	Peripheral power (-5 V and -12 V)	CN14	(3p - 3p) (300 mm)
1701080300	Front Panel	CN18	(8-conductor pigtail)
1701200180	COM 1-2 cable	CN22	20-pin, 9-pin male D-SUB x 2

E.2 4COM Cable and VGA Cable

The 4COM cable part no. is 1700400000. VGA Cable part no. is 1700160150

E.3 USB cable

Optional USB cable, part no: 1703100260

E.4 24-bit LCD cable adapter

This converts from the Hirose “DF20A” type connector transfer to a 20 x 2-pin header. It supports 3.3 V or 5 V LCDs via pins 5 and 6.

Part no: 9681000040 (3.3 V LCD)
9681000041 (5 V LCD)

APPENDIX

F

Mechanical Drawings

F.1 Component side

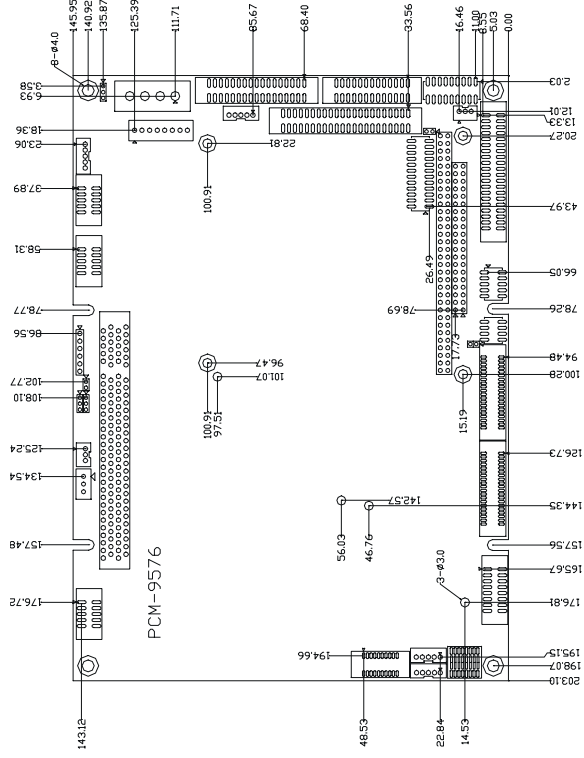


Figure F-1: PCM-9576F mechanical drawing - component side

F.2 Solder side

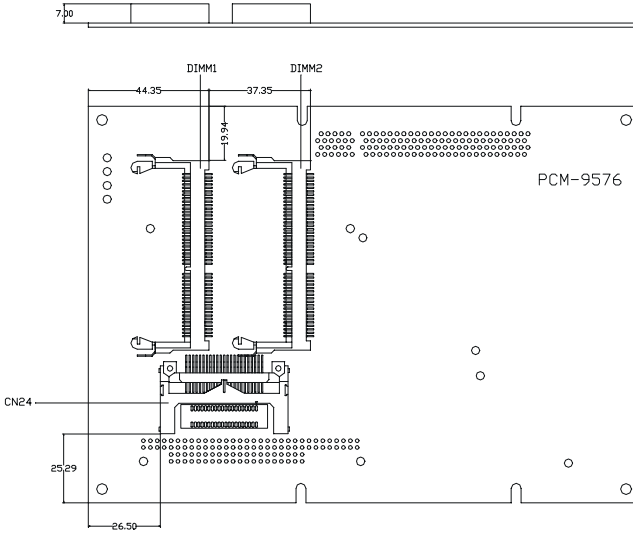


Figure F-2: PCM-9576F mechanical drawing - solder side

