

PCM-4890

All-in-One 486 Single Board
Computer with SVGA, Ether-
net, and 4 Serial Ports

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Packing list

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

- 1 PCM-4890 All-in-One Single Board Computer
- 1 utility disk with system BIOS, VGA BIOS, and Ethernet utility programs
- 1 utility disk with SVGA utility programs and drivers for Windows 3.1 and Windows 95
- 1 utility disk with Ethernet drivers

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

FCC STATEMENT

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

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

Contents

| | |
|---|-----------|
| Chapter 1 General Information | 1 |
| Introduction | 2 |
| Features | 3 |
| Specifications | 3 |
| Standard SBC functions | 3 |
| Local-bus flat panel/VGA interface | 4 |
| Ethernet controller function | 5 |
| Solid state disk function | 5 |
| PC/104 bus expansion | 5 |
| Mechanical and environmental | 5 |
| Board layout and dimensions | 6 |
| Chapter 2 Installation | 7 |
| Jumpers and connectors | 8 |
| Locating jumpers | 9 |
| Locating connectors | 10 |
| Setting jumpers | 11 |
| Safety precautions | 12 |
| Installing the CPU | 12 |
| Removing a CPU | 12 |
| Installing a CPU | 13 |
| CPU type select (J3-J5, J7, J9-J11) | 14 |
| CPU power supply select (J1, J2) | 16 |
| CPU clock select (J16, J17, J18) | 16 |
| CMOS setup (J8) | 16 |
| Buzzer enabled/disabled (J21) | 16 |
| Installing DRAM (SIMMs) | 17 |
| Installing SIMMs | 17 |
| IDE hard drive connector (CN9) | 18 |
| Connecting the hard drive | 18 |

| | |
|---|-----------|
| Floppy drive connector (CN15) | 19 |
| Connecting the floppy drive | 19 |
| Parallel port connector (CN12) | 20 |
| Parallel port IRQ | 20 |
| Keyboard and PS/2 connector (CN8) | 20 |
| Front panel connector (CN5) | 21 |
| Power connectors (CN7, CN10, CN3) | 21 |
| Peripheral power connector, -5V, -12V (CN7) | 21 |
| Main power connector, +5V, +12V (CN10) | 21 |
| Fan power supply connector (CN3) | 21 |
| Serial ports (CN14) | 22 |
| COM1, COM 3 and COM 4 RS-232 ports (CN14) | 22 |
| COM2 RS-232/422/485 selection (CN14) | 22 |
| VGA interface connections | 23 |
| CRT display connector (CN1) | 23 |
| Flat panel display connector (CN2) | 23 |
| Ethernet configuration | 25 |
| 10BASE-2/10BASE-5 AUI connector (CN11) | 25 |
| 10BASE-T connector (CN13) | 26 |
| Network boot | 26 |
| Watchdog timer configuration | 27 |
| Watchdog timer enable/disable | 27 |
| Watchdog timer action (J19, J20) | 27 |

Chapter 3 Software Configuration

| | |
|--|-----------|
| Introduction | 30 |
| Utility disk | 30 |
| VGA display software configuration | 32 |
| Connections for four standard LCDs | 34 |
| Connections to Sharp LM64183P (640 x 480 DSTN MONO LCD) | 34 |
| Connections to Sharp 64C35P (640 x 480 AD4 EL) | 35 |

| | |
|---|-----------|
| Connections to NEC NL8060AC26 (800 x 600 TFT Color LCD) | 36 |
| Connections to Sharp LM64C142 (640 x 480 DSTN Color LCD) | 37 |
| Ethernet software configuration | 38 |
| Chapter 4 Award BIOS Setup | 39 |
| System test and initialization | 40 |
| System configuration verification | 40 |
| AWARD BIOS setup | 41 |
| Entering setup | 41 |
| Standard CMOS setup | 42 |
| BIOS features setup | 43 |
| CHIPSET features setup | 44 |
| Power management setup | 45 |
| Load BIOS Defaults / Load SETUP Defaults | 46 |
| Change password | 47 |
| Auto detect hard disk | 48 |
| Save & exit setup | 48 |
| Exit without saving | 48 |
| Chapter 5 SVGA Setup | 49 |
| Simultaneous display mode | 50 |
| Sleep mode | 50 |
| Software support | 51 |
| Driver installation | 52 |
| Windows setup | 53 |
| AutoCAD R12 | 56 |
| Lotus 1-2-3 and Lotus Symphony | 58 |
| VESA | 60 |
| Word | 61 |
| WordPerfect | 62 |

| | |
|--|-----------|
| Appendix A Programming the Watchdog Timer ... | 65 |
| Appendix B Installing PC/104 Modules | 67 |
| Installing PC/104 modules | 68 |
| Appendix C Pin Assignments | 71 |
| CRT display connector (CN1) | 72 |
| Flat panel display connector (CN2) | 72 |
| PC/104 connectors (CN4, CN6) | 73 |
| Front panel connector (CN5) | 74 |
| Peripheral power connector (CN7) | 74 |
| 10BASE-2/10BASE-5 AUI connector (CN11) | 74 |
| COM2 RS-232/422/485 serial port (CN14) | 75 |
| Keyboard and mouse connector (CN8) | 75 |
| Ethernet 10BASE-T connector (CN13) | 76 |
| Main power connector (CN10) | 76 |
| IDE hard drive connector (CN9) | 76 |
| Fan power connector (CN3) | 77 |
| Floppy drive connector (CN15) | 78 |
| Parallel port connector (CN12) | 79 |
| Appendix D Optional Extras | 81 |
| PCM-10489-1 Cable kit for PCM-4890/5890 | 82 |
| PCM-20486-1 Boot ROM binary files for | 82 |
| PCM-4890 | 82 |

General Information

This chapter gives background information on the PCM-4890.

Sections include:

- Card specifications
- Card layout and dimensions

Introduction

The PCM-4890 is an enhanced, all-in-one single board 486 computer with an on-board Ethernet interface, local-bus SVGA controller. The PCM-4890 offers all the functions of an AT-compatible industrial computer on a single board, but it fits in the space of a 5¼" floppy drive (only 5.75" x 8"). For maximum performance, the PCM-4890 also supports 2nd level cache sizes from 128 KB to 512 KB (32 KB x 8, 64 KB x 8, or 128 KB x 8).

On-board features include four serial ports (RS-232 and RS-232/422/485), one parallel port, an enhanced IDE hard-drive controller (for up to two drives), a floppy-drive controller and a keyboard/PS/2 mouse interface. The board's watchdog timer can automatically reset the system or generate an interrupt if it stops due to a program bug or EMI problem.

The PCM-4890 also complies with the "Green Function" standard and supports three types of power saving features: Doze mode, Standby mode, and Suspend mode.

All display and Ethernet configuration is done through software. A single Flash chip holds the system BIOS, VGA BIOS and the network boot ROM function. This minimizes the number of chips and eases configuration. You can change the display BIOS or install a boot ROM simply by programming the Flash chip.

If you need any additional functions, you can add up to six industry-standard PC/104 expansion modules, or use ISA peripheral cards via the on-board ISA expansion slot.

Features

- Accepts DX2/DX4 and 5x86 CPUs
- Award Flash BIOS, Flat-panel configured by programming Flash chip
- 2nd level cache: supports up to 512 KB cache memory
- 32-bit VL-bus SVGA controller, display both CRT and LCD simultaneously
- 16-bit Ethernet interface, Novell NE2000 compatible
- One ISA expansion slot
- Built-in VL bus-master IDE controller supports two IDE devices (large hard disk, CD ROM, tape backup, etc.)
- Supports both normal and EDO type DRAM from 1 to 64 MB
- One enhanced multi-mode SPP/EPP/ECP parallel port. Four serial ports; three RS-232 and one RS232/422/485 selectable
- Watchdog timer, time interval 1.6 seconds
- Green function: supports doze, standby and suspend modes
- ISA-bus expansion with PC/104 modules
- Dimensions: 5.75" x 8" (146 mm x 203 mm)
- Single +5 V power supply
- Weight: 0.3 Kg.

Specifications

Standard SBC functions

- **CPU:** 80486SX/DX/DX2/DX4/5x86-25/33/40/66/80/100/120/133
- **BIOS:** AWARD 128 KB Flash memory
- **Chipset:** VIA VT82C496G
- **2nd level cache:** On-board 128 KB, up to 512 KB (SOJ package)
- **RAM memory:** 1 MB to 64 MB. Two 72-pin SIMM sockets (accepts 1 MB, 2 MB, 4 MB, 8 MB, 16 MB and 32 MB)
- **Enhanced IDE hard disk drive interface:** Supports up to two IDE (VL-bus) hard disks. BIOS auto-detect
- **Floppy disk drive interface:** Supports up to two floppy disk drives, 3½" (720 KB, 1.44 and 2.88 MB) and/or 5¼" (360 KB and 1.2 MB)
- **Multi-mode parallel port:** Configured to LPT1, LPT2, LPT3 or disabled. Supports SPP/ECP/EPP
- **Serial ports:** Three serial RS-232 port, one serial RS-232/422/485 port. Ports can be configured as COM1, COM2, COM3, COM4 or disabled individually. Four 16550 serial UARTs
- **Battery:** 3.6 V @ 600 mAh lithium battery for up to 10 years of data retention
- **Watchdog timer:** Can generate a system reset or IRQ15. Software enabled/disabled. Time interval is 1.6 seconds
- **DMA channels:** 7
- **Interrupt levels:** 15
- **Keyboard/mouse connector:** 8-pin connector supports standard PC/AT keyboard and a PS/2 mouse
- **Power management:** I/O peripheral devices support power saving and doze/standby/suspend modes. AMP 1.1 compliant

Local-bus flat panel/VGA interface

- **Chipset:** C&T 65545
- **Display memory:** 512 KB DRAM (standard), 1 MB DRAM (optional)
- **Display type:** Supports CRT and flat panel (EL, LCD and gas plasma flat panel) display. Can display CRT and flat panel simultaneously
- **CRT display mode:** Supports resolutions up to 1024 x 768. Non-interlaced CRT monitors resolutions up to 1024 x 768 @ 256 colors. True-color and Hi-color display capability with flat panels and CRT monitors at 640 x 480 resolution.
- **Panel display modes:** Supports resolutions up to 800 x 600 @ 256 colors (1 MB VRAM)

Ethernet controller function

- **Chipset:** Realtek RTL8019
- **Type:** 16-bit Ethernet, Novell NE 2000 compatible
- **Connector:** 10BASE-T and AUI connector on-board

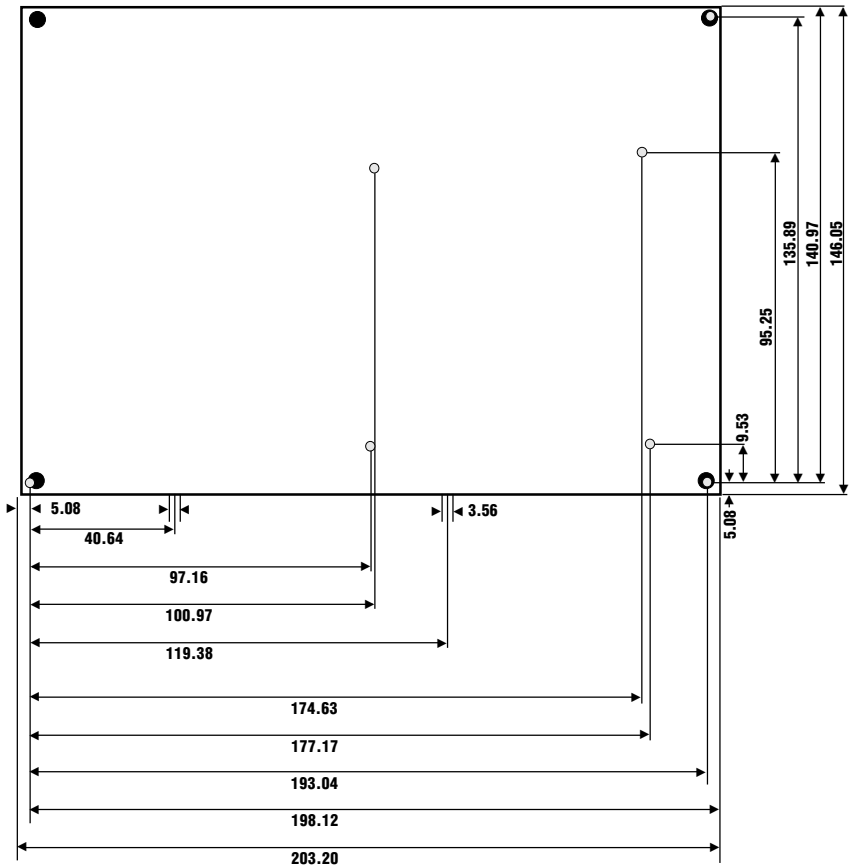
PC/104 bus expansion

- **PC/104:** 104-pin connector for a 16-bit bus
- **Driving capacity:** Six PC/104 modules
- **ISA Expansion slot:** One ISA slot

Mechanical and environmental

- **Power supply voltage:** +5 V (4.75 V to 5.25 V)
- **Max. power requirements:** +5 V @ 4 A (typical)
- **Operating temperature:** 32 to 140°F (0 to 60°C)
- **Board size:** 8" (L) x 5.75" (W) (203 mm x 146 mm)
- **Weight:** 0.3 kg

Board layout and dimensions



Dimensions in mm

PCM-4890 dimensions

CHAPTER 2

Installation

This chapter tells how to set up the PCM-4890 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.

Jumpers and connectors

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

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

| Jumpers | |
|--------------|--|
| Label | Function |
| J1 | CPU voltage type selection |
| J2 | 3V CPU voltage setting |
| J3 | CPU type setting |
| J4 | CPU type setting |
| J5 | CPU type setting |
| J6 | ECP control |
| J7 | Cyrix CPU or other CPU selection |
| J8 | RTC clear |
| J9 | CPU type jumper settings |
| J10 | CPU type jumper settings |
| J11 | CPU type jumper settings |
| J12 | WT/WB control |
| J13 | CLKMUL control |
| J14 | Clock mode selection |
| J15 | Watchdog timer reset Enable/Disable |
| J16 | Clock Selection |
| J17 | Clock Selection |
| J18 | Clock Selection |
| J19 | Watchdog timer interrupt setting |
| J20 | Watchdog timer Enable/Disable |
| J21 | Buzzer control |
| J22 | ECP control |
| J23 | Printer port interrupt channel selection |
| J24 | COM3 IRQ channel control |
| J25 | COM4 IRQ channel control |
| J26 | Ethernet LED (CRSL) |

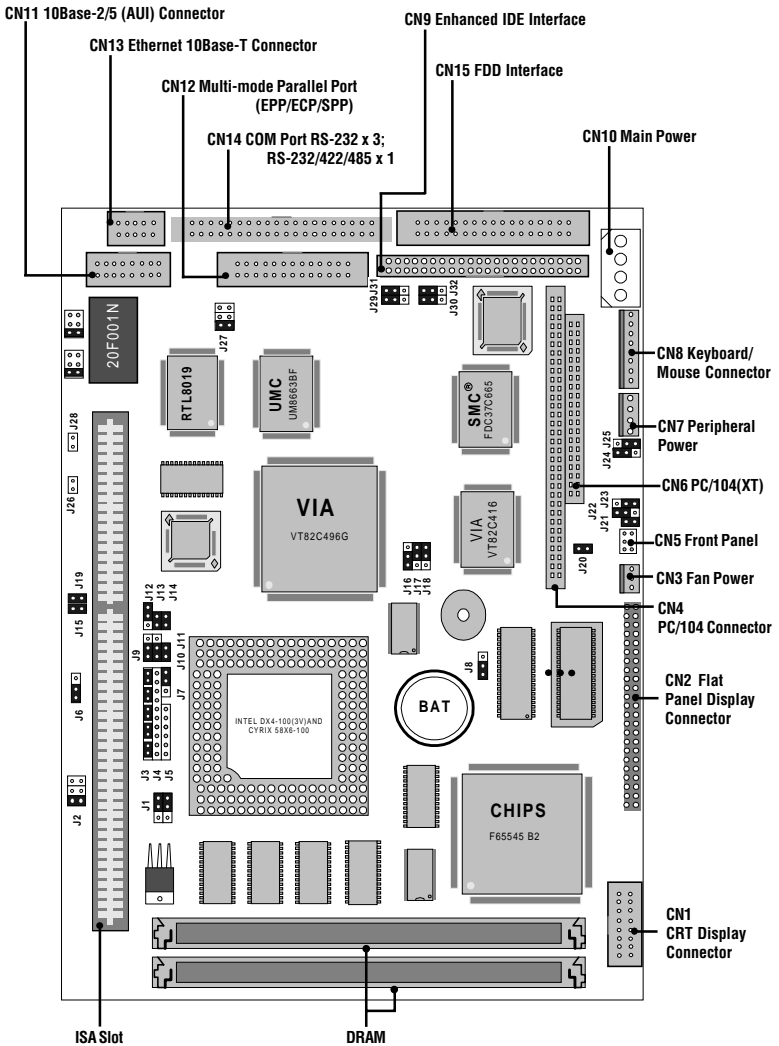
Jumpers, cont.

| Label | Function |
|--------------|-------------------------------|
| J27 | COM2 RS-232/422/485 selection |
| J28 | Ethernet LED (BNCL) |
| J29 | RS-232/485 setting |
| J30 | RS-232/485 setting |
| J31 | RS-232/485 setting |
| J32 | RS-232/485 setting |
| J33 | COM 4 Voltage Selection |
| J34 | COM 3 Voltage Selection |

Connectors

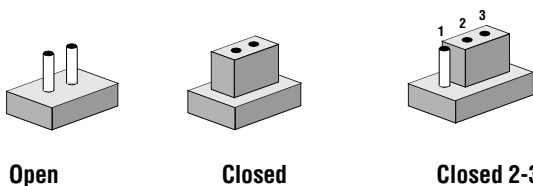
| Label | Function |
|--------------|------------------------------|
| CN1 | VGA connector |
| CN2 | Flat panel display connector |
| CN3 | Fan power |
| CN4 | PC/104 connector (AT) |
| CN5 | Front panel connector |
| CN6 | PC/104 (XT) |
| CN7 | Peripheral power control |
| CN8 | Keyboard and mouse connector |
| CN9 | IDE connector |
| CN10 | Main power connector |
| CN11 | AUI connector |
| CN12 | Printer connector |
| CN13 | 10BaseT connector |
| CN14 | RS-232 connector |
| CN15 | Floppy drive connector |

Locating jumpers



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 jumper to make most connections.

Safety precautions

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



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



Installing the CPU

The PCM-4890 all-in-one CPU module supports most 486 CPUs. The system's performance depends on the CPU you choose. You can install or upgrade the CPU in the board's PGA socket by following the procedures outlined below. If your system has an existing CPU, you need to remove it before installing the new CPU.

Removing a CPU

1. Disconnect power from the chassis, and unplug all connections to the CPU card. Then, remove the CPU card from the chassis by following the instructions in the user's manual for your chassis.
2. Lift the CPU out of the PGA socket. The old chip may be difficult to remove. You may find spray chip lubricant, designed for pin-grid-array (PGA) devices, and a chip puller helpful. These are available at electronics hobbyists' supply stores.

Installing a CPU

To install the CPU, follow the instructions that came with it. If no documentation was provided, the general procedures for installing a CPU are outlined below:

1. Lubricate the pins on the CPU with lubricant for PGA devices. This makes the CPU slide in much easier and greatly reduces the chance of damaging the pins and other components.
2. Carefully align the CPU so that it is parallel to the socket. Make sure that the notch on the corner of the CPU matches the notch on the inside of the socket.
3. Gently push the CPU into the socket. There will probably be a small gap between the CPU and the socket even when it is fully seated. **DO NOT USE EXCESSIVE FORCE!**








When you install a new CPU, you may have to adjust other settings on the board, such as CPU type, CPU clock, and PCI speed, to accommodate it. Make sure that the settings are correct for your CPU. **Improper settings may damage the CPU.**

CPU type select (J3, J4, J5, J7, J9, J10, J11)


The following charts show jumper settings for their respective CPUs.

AMD DX2-66 and DX4-100

AMD DX2-66 (clock 33MHz)



J3 ○○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○○ J10 ○ J13 ○
J5 ○○○○○ J7 ○ J11 ○ J14 ○

AMD DX4-100 (clock 33MHz)


J3 ○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○

AMD 5x86-133 and DX4-120

AMD 5x86-133 (clock 33MHz)

J3 ○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○○ J10 ○ J13 ○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○

AMD DX4-120 (clock 40MHz)

J3 ○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○

Cyrix DX2-66 and DX2-80

Cyrix DX2-66 (clock 33MHz)







J3 ○○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○


Cyrix DX2-80 (clock 40MHz)

J3 ○○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○

Cyrix 5x86-120GP and Intel DX2-66







Cyrix 5x86-120GP (clock 40MHz) Intel DX2-66 (clock P33Mhz)

J3 ○○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○







J3 ○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○

Intel DX4-100 and Cyrix DX4-100

Intel DX4-100 (clock 33MHz)

J3 ○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○

Cyrix DX4-100 (clock 33MHz)

J3 ○○○○○○○○○ J9 ○ J12 ○○
J4 ○○○○○○○○○○ J10 ○ J13 ○○
J5 ○○○○○○ J7 ○ J11 ○ J14 ○

CPU power supply select (J1, J2)

J1 and J2 must be set to match the CPU type. The chart below shows the proper jumper settings for their respective V_{CC} .

CPU power supply select

| | 3 V | 5 V | |
|----|-----|-----|--|
| J1 | | | |
| J2 | | | |

CPU clock select (J16, J17, J18)

J16, J17, and J18 are used to synchronize the CPU clock with the CPU type. Set the CPU clock according to the base CPU speed.

CPU clock select

| | 25 MHz | *33 MHz | 40 MHz |
|-----|--------|---------|--------|
| J16 | | | |
| J17 | | | |
| J18 | | | |

CMOS setup (J8)

CMOS setup

| | *3.6V Battery On | Clear CMOS |
|----|------------------|------------|
| J8 | | |

Buzzer enabled/disabled (J21)



Buzzer enabled/disabled

| | Enable | Disable |
|-----|--------|---------|
| J21 | | |


* default setting

CPU frequency ratio (J13, J14)


CLKMUL Control

| | 2x system frequency | 1x system frequency |
|-----|---|---------------------|
| J13 |  | 00 1 2 |
| J14 |  | 00 1 2 |

Cache Mode WB/WT (J12)

| | WT | WB |
|-----|---|-----------|
| J12 |  | 00 1 2 |

Watchdog timer reset Enable/Disable (J15)

| | Enable | Disable |
|-----|---|-----------|
| J15 |  | 00 1 2 |

Installing DRAM (SIMMs)

You can install anywhere from 1 MB to 32 MB of on-board DRAM memory using 1, 2, 4, 8 or 16 MB 72-pin SIMMs (Single In-Line Memory Modules). Access time should be 70 nsec. or less.

Memory installs in two banks composed of one SIMM socket each. The banks are designated as Bank0 and Bank1. See the figure on page 10 for help identifying the banks. You must fill Bank0 first. If you fill both banks, the memory capacity of both SIMMs should be the same.

Installing SIMMs

NOTE: The modules can only fit into a socket one way. Their chips must face the CPU, and their gold pins must point down into the SIMM socket.

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

1. Ensure that all power supplies to the system are switched Off.
2. Locate the board's memory banks, shown in the figure on page 9.
3. Install the SIMM cards. Install each SIMM so that its chips face away from the CPU and its gold pins point down into the SIMM socket.
4. Slip each SIMM into a socket at a 45 degree angle and carefully fit the bottom of the card against the connectors.
5. Gently push the SIMM into a perpendicular position until the clips on the ends of the SIMM sockets snap into place.
6. Check to ensure that each SIMM is correctly seated and all connector contacts touch. The SIMM should not move around in its socket.

IDE hard drive connector (CN9)

The built-in Enhanced IDE (Integrated Device Electronics) controller supports up to two IDE devices, including CD-ROM drives, tape backup drives, a large hard disk drive and other IDE devices. It also supports faster data transfer rates and allows the IDE hard disk drive to exceed 528 MB.

Connecting the hard drive

Connecting drives is done in a daisy-chain fashion and requires one of two cables, 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 CN9. 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.

Floppy drive connector (CN15)

You can attach up to two floppy disks to the PCM-4890's on-board controller. You can use any combination of 5¼" (360 KB and 1.2 MB) and/or 3½" (720 KB, 1.44 MB, and 2.88 MB) drives.

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 3½" drives) and a printed-circuit board connector (usually used for 5¼" drives).

Connecting the floppy drive

1. Plug the 34-pin flat-cable connector into CN15. 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. Also, 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 card's connector in Appendix C.



Parallel port connector (CN12)

Normally the parallel port is used to connect the card to a printer. The PCM-4890 includes an on-board parallel port, accessed through CN12, a 26-pin flat-cable connector. You will need an adapter cable if you use a DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other.

Parallel port IRQ





The PCM-4890 supports one parallel port. The port is designated as LPT1 and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

Parallel port IRQ selection

| | IRQ5 | *IRQ7 |
|-----|---|---|
| J23 |  <input type="radio"/> | <input type="radio"/>  |

You can select ECP/EPP DMA channel by setting J15 and J16.

ECP/EPP DMA channel

| | *DMA1 | DMA3 |
|-----|--|--|
| J6 |  <input type="radio"/> | <input type="radio"/>  |
| J22 |  <input type="radio"/> | <input type="radio"/>  |

* default setting

Keyboard and PS/2 connector (CN8)

The PCM-4890 board provides a keyboard connector which supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. 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-4890'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).

Front panel connector (CN5)

Next you may want to install external switches to monitor and control the PCM-4890. These features are completely optional — install them only if you need them. The front panel connector (CN5) is an 8-pin male, dual in-line header and provides connections for a speaker, hard disk access indicator and an input switch for resetting the card.

Speaker

The PCM-4890 can drive an 8 W speaker at 0.5 watts. Ensure that alternatives to this specification do not overload the card.

LED interface

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

Reset switch

If you install a reset switch, it should be a 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 card's connector in Appendix C.

Power connectors (CN7, CN10, CN3)

Peripheral power connector, -5V, -12V (CN7)

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

Main power connector, +5V, +12V (CN10)

Supplies main power to the PCM-4890 (+5 V) and devices that require +12 V.

Fan power supply connector (CN3)

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

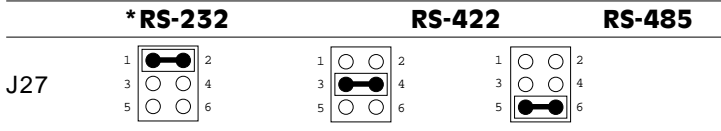
Serial ports (CN14)

The PCM-4890 offers four serial ports: three RS-232 and one RS-232/422/485. These ports let you connect to serial devices (a mouse, printers, etc.) or a communication network.

COM1, COM3, COM4 RS-232 ports (CN14)

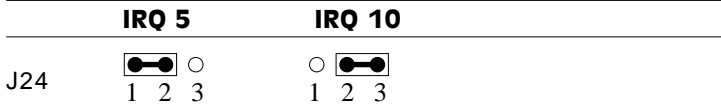
The serial port connectors are mounted on the right hand side of the card. The 40-pin, dual-in-line, male header to the right of the card is the RS-232/422/485 port.

COM2 selection (J27)

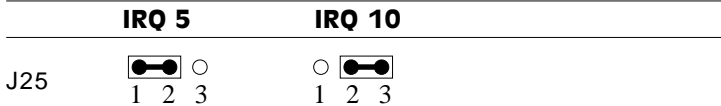


* default setting

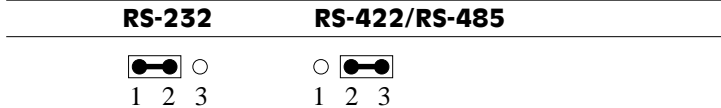
COM3 IRQ channel control (J24)



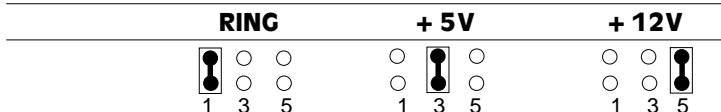
COM4 IRQ channel control (J25)



RS-232/RS-422/RS-485 setting (29, J30, J31, J32)



COM 3,4 Voltage selection



The IRQ and address range for both ports are fixed. However if you wish to disable the port or change these parameters later you can do this in the system BIOS setup. The table below shows the settings for the PCM-4890's ports.

| PCM-4890 Serial port default settings | | | |
|---------------------------------------|---------------|-----------|---------|
| Port | Address Range | Interrupt | Default |
| COM1 | 2E8~3F8 | IRQ4 | 3F8 |
| COM2 | 2E8~3F8 | IRQ3 | 2F8 |
| COM3 | | IRQ5/10 | 2EF |
| COM4 | | IRQ5/10 | 2E8 |

VGA interface connections

The PCM-4890's 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 card has two connectors to support these displays, one for standard CRT VGA monitors and one for flat panel displays.

CRT display connector (CN1)

CN1 is a 16-pin, dual-in-line header used for conventional CRT displays. A simple one-to-one adapter can be used to match CN1 to a standard 15-pin D-SUB connector commonly used for VGA.

Pin assignments for CRT display connector CN1 are detailed in Appendix C.

Flat panel display connector (CN2)

CN2 consists of a 44-pin, dual-in-line header. Power supplies (+12 V, -12 V) present on CN2 depend the supply connected to the board. Ensure that both CN7 and CN10 are connected for ± 12 V power supply.

The PCM-4890 provides a bias control signal on CN2 which 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) and panel video signals are stable. Under normal operation the control signal (ENAVEE) is active high. When the PCM-4890's power is applied, the control signal is low until just after the relevant flat panel signals are present.

Configuration of the VGA interface is done completely via the software utility. You don't have to set any jumpers. Refer to Chapter 3 for software setup details.

Refer to Chapter 3 for details on connecting the four standard LCD's: Sharp LM64183P, Toshiba LTM09C016, Sharp 64C142, and Planor EL Display.

Ethernet configuration

The PCM-4890 is equipped with a high performance 16-bit Ethernet interface which is fully compliant with IEEE 802.3 10Mbps CSMA/CD standards. It is supported by all major network operating systems and is 100% Novell NE-2000 compatible.

Configuration of the Ethernet is very easy and can be done via the RSET8019.EXE program included on the utility disk. This program enables you to: view the current Ethernet configuration, to reconfigure the Ethernet interface (IRQ, I/O address, etc.), and to execute useful diagnostic functions. (See Chapter 3 for detailed information)

The RSET8019.EXE program provides two ways to configure the Ethernet interface. Configuration can be done automatically when you choose PNP (plug and play) option; or, when you choose the Jumperless option, the following IRQ and I/O address settings are available.

PCM-4890 Ethernet settings

| range | IRQ option | I/O address |
|--------------------------|-------------------------------|--------------------|
| Jumperless Configuration | 2, 3, 4, 5, 10, 11, 12, 15 | 200 - 300 EFH |

Default Settings: IRQ = 3 ; I/O Address = 300H

Note:

- 1. You can select an IRQ from the options shown above, but make sure your selection does not conflict with other I/O devices.*
- 2. When Boot ROM is installed, the RSET8019.EXE program does not support PNP mode configuration.*

10BASE-2/10BASE-5 AUI connector (CN11)

10BASE-2 and 10BASE-5 coax connections are made via an attachment unit interface or AUI (CN11). This consists of a 16-pin, dual-in-line male header.

10BASE-T connector (CN13)

10BASE-T connects to the PCM-4890 via an adapter cable to a 10-pin polarized header (CN13). For 10BASE-T RJ-45 operation, an adapter cable converting CN13 into a standard RJ-45 jack is required.

Network boot

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 available from your supplier. They can be programmed into the BIOS, similar to the VGA BIOS file, using the AWDFLASH.EXE program detailed in Chapter 3.

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 two jumpers and running the control software (refer to Appendix A).



Watchdog timer enable/disable

You can enable or disable the watchdog timer by reading the I/O ports with your program. Read address 443 hex to enable and refresh the watchdog or address 043 to disable the watchdog. For information on programming the watchdog timer see Appendix A.

Watchdog timer action (J19, J20)

When the watchdog timer activates (CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ15. This can be set via two 2-pin jumpers (J19, J20) as shown below:

| Watchdog timer system reset/IRQ15 | | |
|-----------------------------------|---|---|
| | *System reset | IRQ15 |
| J19 |  |  |
| * default setting | | |

| Watchdog timer enable/disable | | |
|-------------------------------|---|---|
| | Enable | Disable |
| J20 |  |  |

CHAPTER 3

Software Configuration

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

Sections include:

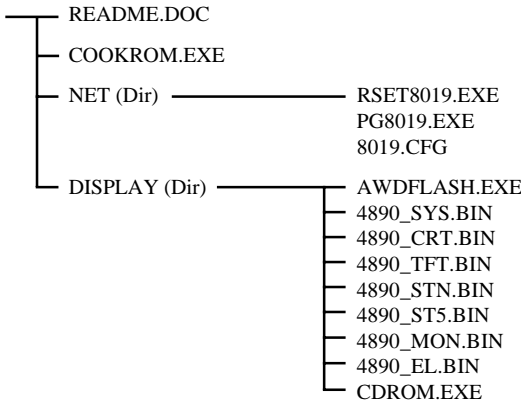
- LCD display configuration
- Connections for four standard LCDs
- Ethernet interface configuration

Introduction

The PCM-4890 system BIOS and custom drivers are located in a 128 Kbyte, 32-pin (JEDEC spec.) Flash ROM device, designated U27. A single Flash chip holds the system BIOS, VGA BIOS, and network Boot ROM image. The display can be configured via software. This method minimizes the number of chips and eases configuration. You can change the display BIOS simply by reprogramming the Flash chip.

Utility disk

The PCM-4890 is supplied with a software utility disk. This disk contains the necessary file for setting up the VGA display and Ethernet controller. Directories and files on the disk are as follows:



COOKROM.EXE

A program that converts application files into binary files (files with a .BIN extension). These are then written into the SSD Flash ROM devices.

RSET8019.EXE

This program enables you to view the current Ethernet configuration, reconfigure the Ethernet interface (medium type, etc.), and execute useful diagnostic functions.

PG8019.EXE

The PCM-4890 is initially setup at the factory using this program. When you receive your card, use RSET8019.EXE to configure for the working environment. If by chance the EEPROM is corrupted, the PG8019.EXE program allows you to reconfigure the card.

8019.CFG

When you run PG8019.EXE, it will read the configuration parameters stored in this file.

AWDFLASH.EXE

This program allows you to write the VGA BIOS files to the BIOS Flash ROM. The VGA files all come ready formatted for the PCM-4890 with .BIN extensions. See README.DOC. These files support various CRT and flat panel displays. They are custom written and can be made available upon request.

4890_SYS.BIN

This binary file contains the system BIOS.

4890_CRT.BIN

Supports CRT only.

4890_TFT.BIN (default)

Supports 640 x 480 color TFT
(Sharp LQ9D011, Toshiba LTM09C015A/016).

4890_STN.BIN (1 MB VRAM)

Supports 640 x 480 color STN DD 8/16-bit displays
(Sharp LM64C142).

4890_ST5.BIN (512 KB VRAM)

Supports 640 x 480 color STN DD 8/16-bit displays
(Sharp LM64C142).

NOTE: *This BIOS does not support simultaneous CRT and flat panel display with 512 KB VRAM*

4890_MON.BIN

Supports 640 x 480 dual scan monochrome displays
(Sharp LM64P8X/837).

4890_EL.BIN

Supports 640 x 480 EL displays (PLANAR EL640480 - A Series).

CBROM.EXE

This program allows you to combine your own VGA BIOS with system BIOS (4890_SYS.BIN).

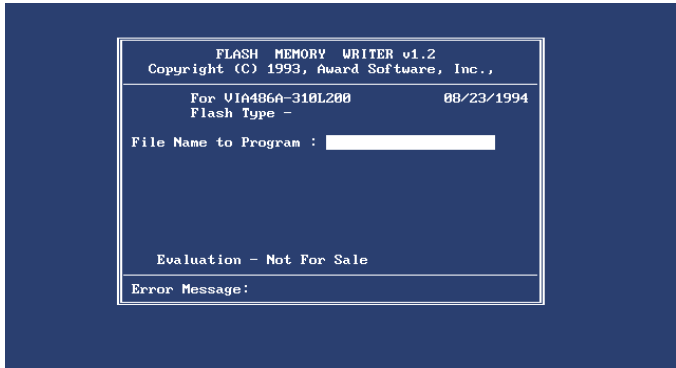
VGA display software configuration

The PCM-4890's on-board VGA interface supports a wide range of popular LCD, EL, gas plasma flat panel displays and traditional analog CRT monitors. The interface can drive CRT displays with resolutions up to 1024 x 768 in 256 colors. It is also capable of driving color panel displays with resolutions of 640 x 480 in 64K colors. The VGA interface is configured completely via the software utility, so you don't have to set any jumpers. Configure the VGA display as follows:

1. Apply power to the PCM-4890 with a color TFT display attached. This is the default setting for the PCM-4890. Ensure that the AWDFLASH.EXE and *.BIN files are located in the working drive.

NOTE: Ensure that you do not run AWDFLASH.EXE while your system is operating in EMM386 mode.

2. At the prompt, type AWDFLASH.EXE and press <Enter>. The VGA configuration program will then display the following:



VGA Setup screen

3. At the prompt, type in the BIN file which supports your display. When you are sure that you have entered the file name correctly press <Enter>. The screen will ask “Do you want to save?” If you wish to continue press Y. If you change your mind or have made a mistake press N to abort and end the setup procedure.
4. If you decide to continue, the program will create a BIOS.OLD file which contains the existing BIOS configuration. The prompt will then ask “Are you sure you want to save new configuration?” Press Y if you want the new file to be written into the BIOS. Press N to exit the program.

The new VGA configuration will then write to the ROM BIOS chip. This configuration will remain the same until you run the AWDFLASH.EXE program and change the settings.

Connections for four standard LCDs

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

| Sharp LM64P83 | | PCM-4890 CN-2 | |
|---------------|----------|---------------|------------------------|
| Pin | Pin name | Pin | Pin name |
| CN1-1 | S | 36 | FLM |
| CN1-2 | CP1 | 38 | LP |
| CN1-3 | CP2 | 35 | SHFCLK |
| CN1-4 | DISP | 5 | +5 V |
| CN1-5 | VDD | 6 | +5 V |
| CN1-6 | VSS | 3 | GND |
| CN1-7 | VEE | - | -17 V (external power) |
| CN1-8 | DU0 | 12 | P3 |
| CN1-9 | DU1 | 11 | P2 |
| CN1-10 | DU2 | 10 | P1 |
| CN1-11 | DU3 | 9 | P0 |
| CN1-12 | DL0 | 16 | P7 |
| CN1-13 | DL1 | 15 | P6 |
| CN1-14 | DL2 | 14 | P5 |
| CN1-15 | DL3 | 13 | P4 |

Connections to SHARP LM64C35P (640 x 480 Stn Color)

| SHARP LM64C35P | | PCM-4890 CN-2 | |
|----------------|----------|---------------|-----------------|
| Pin no. | Pin name | Pin no. | Pin name |
| CN1-1 | DL4 | 16 | P7 |
| CN1-2 | Vss | 3 | GND |
| CN1-3 | DL5 | 15 | P6 |
| CN1-4 | YD | 36 | FLM |
| CN1-5 | DL6 | 14 | P5 |
| CN1-6 | LP | 38 | LP |
| CN1-7 | DL7 | 13 | P4 |
| CN1-8 | Vss | 4 | GND |
| CN1-9 | Vss | 8 | GND |
| CN1-10 | XCK | 35 | SLFCHK |
| CN1-11 | DL0 | 24 | P15 |
| CN1-12 | Vcon | — | Contrast Adjust |
| CN1-13 | DL1 | 23 | P14 |
| CN1-14 | Vdd | 5 | +5V |
| CN1-15 | Vss | 33 | GND |
| CN1-16 | Vdd | 6 | +5V |
| CN1-17 | DL2 | 22 | P13 |
| CN1-18 | DISP | 6 | +5V |
| CN1-19 | DL3 | 21 | p12 |
| CN1-20 | NC | — | — |
| CN1-21 | Vss | 34 | GND |
| CN1-22 | DU3 | 17 | P8 |
| CN1-23 | DU4 | 12 | P3 |
| CN1-24 | DU2 | 18 | P9 |
| CN1-25 | DU5 | 11 | P2 |
| CN1-26 | DU1 | 19 | P10 |
| CN1-27 | Vss | 39 | GND |
| CN1-28 | DU0 | 20 | P11 |
| CN1-29 | DU6 | 10 | P1 |
| CN1-30 | Vss | 39 | GND |
| CN1-31 | DU7 | 9 | P0 |

Connections to NEC NL8060AC26 (800 x 600 TFT Color)

| NEC NL88060AC26 | | PCM-4890 CN-2 | |
|-----------------|-----------|---------------|----------|
| Pin | Pin name | Pin | Pin name |
| CN1-1 | GND | 3 | GND |
| CN1-2 | Dot Clock | 35 | SHFCLK |
| CN1-3 | GND | 4 | GND |
| CN1-4 | Hsync | 38 | LP |
| CN1-5 | Vsync | 36 | FLM |
| CN1-6 | GND | 8 | GND |
| CN1-7 | GND | 8 | GND |
| CN1-8 | GND | 8 | GND |
| CN1-9 | R0 | 27 | P18 |
| CN1-10 | R1 | 28 | P19 |
| CN1-11 | R2 | 29 | P20 |
| CN1-12 | GND | 8 | GND |
| CN1-13 | R3 | 30 | P21 |
| CN1-14 | R4 | 31 | P22 |
| CN1-15 | R5 | 32 | P23 |
| CN1-16 | GND | 39 | GND |
| CN1-17 | GND | 39 | GND |
| CN1-18 | GND | 39 | GND |
| CN1-19 | G0 | 19 | P10 |
| CN1-20 | G1 | 20 | P11 |
| CN1-21 | G2 | 21 | P12 |
| CN1-22 | GND | 39 | GND |
| CN1-23 | G3 | 22 | P13 |
| CN1-24 | G4 | 23 | P14 |
| CN1-25 | G5 | 24 | P15 |
| CN1-26 | GND | 41 | GND |
| CN1-27 | GND | 41 | GND |
| CN1-28 | GND | 41 | GND |
| CN1-29 | B0 | 11 | P2 |
| CN1-30 | B1 | 12 | P3 |
| CN1-31 | B2 | 13 | P4 |
| CN1-32 | GND | 41 | GND |
| CN1-33 | B3 | 14 | P5 |
| CN1-34 | B4 | 15 | P6 |
| CN1-35 | B5 | 16 | P7 |
| CN1-36 | GND | 41 | GND |
| CN1-37 | DE | 37 | M |
| CN1-38 | VCC | 43 | VCC |
| CN1-39 | VCC | 44 | VCC |
| CN1-40 | VCC | 5 | VCC |
| CN1-41 | MODE | -- | -- |

Connections to Sharp LM64C142 (640 x 480 DSTN Color LCD)

| Sharp LM64C142 | | PCM-4890 CN-2 | |
|----------------|----------|---------------|------------------------|
| Pin | Pin name | Pin | Pin name |
| CN1-1 | YD | 36 | FLM |
| CN1-2 | LP | 38 | LP |
| CN1-3 | XCX | 35 | SHFCLK |
| CN1-4 | DISP | 5 | +5 V |
| CN1-5 | VDD | 6 | +5 V |
| CN1-6 | VSS | 3 | GND |
| CN1-7 | VEE | - | +27 V (external power) |
| CN1-8 | DU0 | 20 | P11 |
| CN1-9 | DU1 | 19 | P10 |
| CN1-10 | DU2 | 18 | P9 |
| CN1-11 | DU3 | 17 | P8 |
| CN1-12 | DU4 | 12 | P3 |
| CN1-13 | DU5 | 11 | P2 |
| CN1-14 | DU6 | 10 | P1 |
| CN1-15 | DU7 | 9 | P0 |
| CN2-1 | VSS | 4 | GND |
| CN2-2 | DL0 | 24 | P15 |
| CN2-3 | DL1 | 23 | P14 |
| CN2-4 | DL2 | 22 | P13 |
| CN2-5 | DL3 | 21 | P12 |
| CN2-6 | DL4 | 16 | P7 |
| CN2-7 | DL5 | 15 | P6 |
| CN2-8 | DL6 | 14 | P5 |
| CN2-9 | DL7 | 13 | P4 |
| CN2-10 | VSS | 8 | GND |

Ethernet software configuration

The PCM-4890's on-board Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the RSET8019.EXE program (either by jumperless mode or PNP mode). To execute the configuration, to view the current configuration, or to run diagnostics, do the following:

1. Power the PCM-4890 on. Ensure that the RSET8019.EXE file is located in the working drive.
2. At the prompt type RSET8019.EXE and press <Enter>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and Down keys. To change a selected item, press <Enter>, and a screen will appear with the available options. Highlight your option and press <Enter>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional information.
4. After you have made your selections and you are sure that this is the configuration you want, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

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

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

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

CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

System test and initialization

These routines test and initialize board hardware. If the routines encounter an error in 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.

System configuration verification

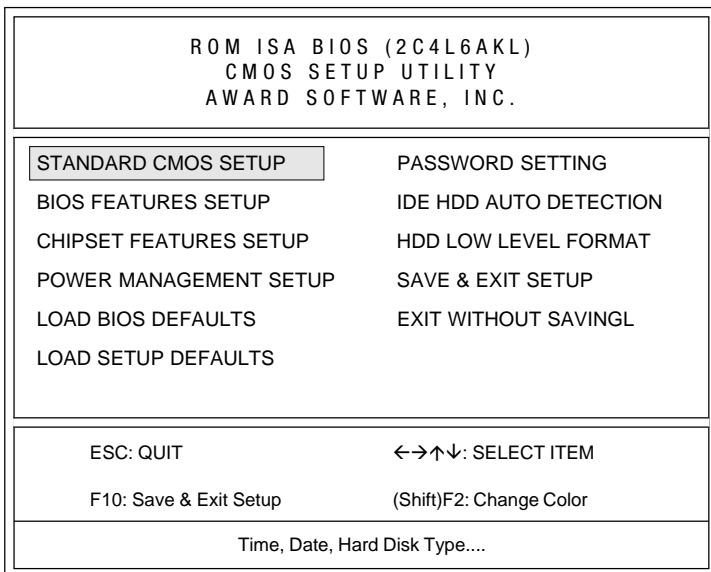
These routines check the current system configuration against the values stored in the card's CMOS memory. If they don't match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

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-4890'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.

AWARD BIOS setup



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

Entering setup

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

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, display, and memory. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

| | | | | | | | | | |
|--|------|--------------------------|------|-------|-------------------------|--------------------------|----------|---------|------|
| ROM ISA BIOS (2C4L6AKL) STANDARD CMOS SETUP AWARD SOFTWARE, INC. | | | | | | | | | |
| Date (mm:dd:yy) : | | Wed, Jan 17 1996 | | | | | | | |
| Time (hh:mm:ss) : | | 12 : 19 : 58 | | | | | | | |
| | | TYPE | SIZE | CYLS. | HEADS | PRECOMP | LANDZONE | SECTORS | MODE |
| Drive C : | Auto | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Auto |
| Drive D : | Auto | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Auto |
| Drive A : 1.44M, 3.5in | | | | | Base Memory : 640K | | | | |
| Drive B : None | | | | | Extended Memory : 3072K | | | | |
| Video : EGA/VGA | | | | | Other Memory : 384K | | | | |
| Halt On : All Errors | | | | | Total Memory : 4096K | | | | |
| ESC : Quit | | ←→↑↓ : Select Item | | | | PU / PD / + / - : Modify | | | |
| F1 : Help | | (Shift)F2 : Change Color | | | | | | | |

CMOS setup screen

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 system configurations based on BIOS DEFAULT settings for the PCM-4890.

| ROM ISA BIOS (2C4L6AKL) 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 |
| Quick Power On Self Test | : | Disabled | D0000-D3FFF Shadow | : | Disabled |
| Boot Sequence | : | A,C | D4000-D7FFF Shadow | : | Disabled |
| Swap Floppy Drive | : | Disabled | D8000-DBFFF Shadow | : | Disabled |
| Boot Up Floppy Seek | : | Enabled | DC000-DFFFF Shadow | : | Disabled |
| Boot Up NumLock Status | : | On | | | |
| Boot Up System Speed | : | High | | | |
| IDE HDD Block Mode | : | Disabled | | | |
| Gate A20 Option | : | Normal | | | |
| Memory Parity Check | : | Disabled | | | |
| Typematic Rate Setting | : | Disabled | Esc : Quit | | ←→↑↓: Select Item |
| Typematic Rate (Chars/Sec) | : | 6 | F1 : Help | | PU/PD/+/- : Modify |
| Typematic Delay (Msec) | : | 250 | F5 : Old Values | | (Shift)F2 : Color |
| Security Option | : | Setup | F6 : Load BIOS Defaults | | |
| OS Select For DRAM>64MB | : | Non-OS2 | F7 : Load Setup Defaults | | |

BIOS features setup

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 system configurations based on BIOS DEFAULT settings for the PCM-4890.

| ROM ISA BIOS (2C4L6AKL) CMOS SETUP UTILITY CHIPSET FEATURES SETUP | |
|---|---|
| Auto Configuration | <input checked="" type="checkbox"/> Enabled |
| Decoupled Refresh | : Disabled |
| Relocate 256K/384K | : Disabled |
| Video BIOS Cacheable | : Disabled |
| System BIOS Cacheable | : Disabled |
| External Cache Scheme | : Write Back |
| Combine Alter & Tag Bits | : Disabled |
| CHRDY for ISA Master | : Enabled |
| Memory Hole At 15 MB Addr. | : Disabled |
| Cache Timing Control | : Fast |
| DRAM Timing Control | : Normal |
| Fast DRAM | : Disabled |
| Burst Write | : Disabled |
| CPU Write Back Cache | : Disabled |
| Set Turbo Pin Function | : Suspend |
| Set Mouse Lock | : Disabled |
| On-Board Local-Bus IDE | : Enabled |
| IDE Primary Master PIO | : Auto |
| IDE Primary Slave PIO | : Auto |
| On-Board FDC Controller | : Enabled |
| On-Board Serial Port 1 | : 3F8H |
| On-Board Serial Port 2 | : 2F8H |
| COM3 & COM4 Address | : 3E8H,2E8H |
| On-Board Parallel Port | : 378H |
| Parallel Extended Mode | : Normal |
| Esc | : Quit |
| F1 | : Help |
| F5 | : Old Values |
| F6 | : Load BIOS Defaults |
| ←→↑↓ | : Select Item |
| PU/PD/+/- | : Modify |
| (Shift)F2 | : Color |

CHIPSET features setup

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 system configurations based on BIOS DEFAULT settings for the PCM-4890.

| ROM ISA BIOS (2C4L6AKL) CMOS SETUP UTILITY POWER MANAGEMENT SETUP | | | |
|---|----------------|----------------|--------------------------------|
| Power Management | : Disabled | IRQ3 Activity | : Primary |
| Doze Mode | : 32 sec | IRQ4 Activity | : Primary |
| Sleep Timer | : 2 min | IRQ5 Activity | : Primary |
| Sleep Mode | : Suspend | IRQ7 Activity | : Primary |
| HDD Power Management | : Disabled | IRQ8 Activity | : Secondary |
| VGA Activity Wakeup | : Disabled | IRQ10 Activity | : Primary |
| IO Activity | : Disabled | IRQ11 Activity | : Primary |
| Video Off Method | : Blank Screen | IRQ12 Activity | : Primary |
| | | Esc | : Quit |
| | | ←→↑↓ | : Select Item |
| | | F1 | : Help |
| | | PU/PD/+/- | : Modify |
| | | F5 | : Old Values (Shift)F2 : Color |
| | | F6 | : Load BIOS Defaults |

Power management setup

Load BIOS Defaults/Load SETUP Defaults

LOAD BIOS DEFAULTS loads the default system values directly from ROM. The BIOS DEFAULTS provides the most stable settings, though they do not provide optimal performance. LOAD SETUP DEFAULTS, on the other hand, provides for maximum system performance. If the stored record created by the Setup program becomes corrupted (and therefore unusable), BIOS defaults will load automatically when you turn the PCM-4890 on.

| | |
|---|------------------------|
| ROM ISA BIOS (2C4L6AKL) CMOS SETUP UTILITY AWARD SOFTWARE, INC. | |
| STANDARD CMOS SETUP | PASSWORD SETTING |
| BIOS FEATURES SETUP | IDE HDD AUTO DETECTION |
| CHIPSET FEATURES SETUP | SAVE & EXIT SETUP |
| POWER MANAGEMENT SETUP | EXIT WITHOUT SAVING |
| LOAD BIOS DEFAULTS | |
| LOAD SETUP DEFAULTS | |
| Load BIOS Defaults (Y/N)? Y | |
| ESC: QUIT | ←→↑↓:SELECT ITEM |
| F10:Save & Exit Setup | (Shift)F2:Change Color |
| Load BIOS defaults except standard CMOS SETUP | |

Load BIOS defaults screen

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, there is default password which 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 8 characters long.

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

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 ISA BIOS (2C4L6AKL) CMOS SETUP UTILITY AWARD SOFTWARE, INC. | | | | | | |
| | SIZE | CYLS. | HEADS | PRECOMP | LANDZONE | SECTORS MODE |
| Drive C : | (Mb) | 790 | 15 | 65535 | 789 | 57 |
| Select Drive C Option (N=Skip) : N | | | | | | |
| _____ | | | | | | |
| ESC = SKIP | | | | | | |

IDE HDD auto detection screen

HDD Low Level Format

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your hard disk. The Utility automatically looks for the necessary information of the drive you selected. The Utility also searches for bad tracks and lists them for your reference.

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.

Exit without saving

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

CHAPTER 5

SVGA Setup

The PCM-4890 features an on-board flat panel/VGA interface. This chapter provides instructions for installing and operating the software drivers on the included display driver diskette.

Simultaneous display mode

The 65545 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. It also supports interlaced and non-interlaced analog monitors (VGA color and VGA monochrome) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multi-sync) monitors are supported as analog monitors.

Both CRT and panel displays can be used simultaneously. The PCM-4890 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. In the utility diskette, there are three .COM files which can be used to select the display. Simply type the filename at the DOS prompt:

CT.COM Enables CRT display only

FP.COM Enables panel display only

SM.COM Enables both displays at the same time.

Sleep mode

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

ON.COM switches to normal display mode.

OFF.COM switches to sleep mode.

Software support

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

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

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

Driver installation

Necessary prerequisites

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

Before you begin

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

Windows setup

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

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

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

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

Changing Display Drivers in Windows

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

Changing Color Schemes

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

DOS Setup

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

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

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

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

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

Changing Display Drivers in DOS

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

| | |
|-----------|--------------------|
| VGA | 640x480, 16 colors |
| Super VGA | 800x600, 16 colors |

Panning Drivers

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

Linear Acceleration Drivers

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

AutoCAD R12

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

Driver installation

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

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

Configuring TurboDL D

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

Basic Configuration Menu

This menu allows you to modify:

Number of AutoCAD Command Lines

Font Size 6x8/8x8/8x14/8x16/12x20/12x24

Dual Screen Enable/Disable

User Interface Configuration

Double Click Interval Time

BP Button

BP Highlight Patt Line/Xor Rect/Both

BP Refresh Enable/Disable

BP Cache Enable/Disable

Expert Configuration Menu

This menu allows you to modify:

Display List Enable/Disable

Drawing Cache Enable/Disable

Use Acad 31 bit space? Yes/No

Internal Command Echo Enable/Disable

BP Zoom Mode Freeze/Float

Regen Mode Incremental/Fast

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

Lotus 1-2-3 and Lotus Symphony

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

Driver installation

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

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

```
C: <ENTER>  
INSTALL <ENTER>
```

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

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

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

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

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

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

123 132X25.SET <ENTER>

VESA

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

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

Driver installation

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

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

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

Word

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

Driver installation

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

Step 1: Install Word as normal.

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

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

WordPerfect

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

Driver installation

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

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

Configuring WordPerfect 5.0 for 132 columns

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

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

```
SETCOL 132, 25 <ENTER>
```

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

```
WP /SS=25,132 <ENTER>
```

Configuring WordPerfect 5.1 for 132 columns

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

Programming the Watchdog Timer

The PCM-4890 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.

Jumpers J19 and J20 control the watchdog settings. The default configuration of the timer is enabled with system reset.

To enable the watchdog timer, you must write a program which reads I/O port address 443 (hex) at regular intervals. The first time your program reads the port, it enables the watchdog timer. After that, your program must read the port at time interval of less than 1.6 seconds, otherwise the watchdog timer will activate and reset the CPU or generate an interrupt on IRQ15. When you want to disable the watchdog timer, your program should read I/O port 043 (hex).

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

You must write your program so that it reads I/O port address 443 at an interval shorter than the timer's preset interval. The timer's intervals have a tolerance of $\pm 30\%$, so you should program an instruction that will refresh the timer about every second.

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

```
10      REM Watchdog timer example program
20      X=INP (&H443) REM Enable and refresh the watchdog
30      GOSUB 1000 REM Task #1, takes 1 second to complete
40      X=INP (&H443) REM Refresh the watchdog
50      GOSUB 2000 REM Task #2, takes 1 second to complete
60      X=INP (&H043) REM Disable the watchdog
70      END
1000    REM Subroutine #1, takes 1 second to complete
      .
      .
      .
1070    RETURN
2000    REM Subroutine #2, takes 1 second to complete
      .
      .
      .
2090    RETURN
```

APPENDIX B

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

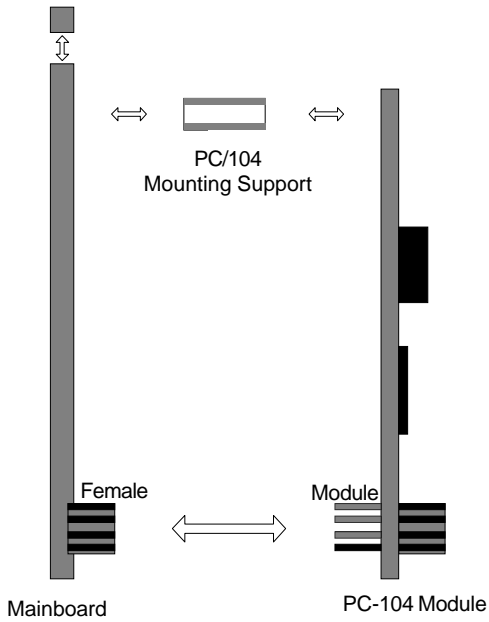
Installing PC/104 modules

The PCM-4890's PC/104 connectors give you the flexibility to attach PC/104 expansion modules. These modules perform the functions of traditional plug-in expansion cards, but save space and valuable slots. Modules include:

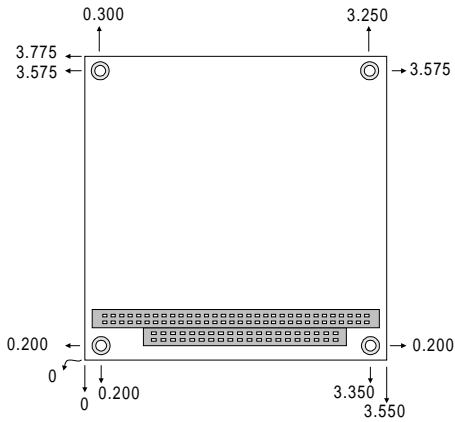
- **PCM-3290** GPS Module
- **PCM-3810** Solid State Disk Module
- **PCM-3820** High Density Flash Disk Module
- **PCM-3110** PCMCIA Module
- **PCM-3111** Secondary PCMCIA Module
- **PCM-3610** Isolated RS-232 and RS-422/485 Module
- **PCM-3660** Ethernet Module
- **PCM-3718** 30 KHz A/D Module
- **PCM-3724** 48-Channel DIO Module
- **PCM-3640** 4-Port RS-232 Module
- **PCM-3680** Dual Port CAN Module

Installing these modules on the PCM-4890 is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCM-4890 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. However, to ensure better bus matching, the connectors on the PCM-4890 and the PC/104 module are both female. For this reason, you may need to use the "male-male" adapter included with the PCM-4890 in order to properly connect your PC/104 module. (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.



PC/104 Module Mounting Diagram



PC/104 module dimensions (inches $\pm 5\%$)

APPENDIX C

Pin Assignments

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

- CRT display connector
- Flat panel display connector
- PC/104 connector
- Front panel connector
- Main power connector
- 10BASE-2/10BASE-5 AUI connector
- Keyboard and mouse connector
- 10BASE-T connector
- Peripheral power connector
- IDE connector
- RS-232 serial port connector
- CPU fan power connector
- Floppy drive connector
- Printer/parallel port connector

CRT display connector (CN1)

PCM-4890 CRT display connector

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

Flat panel display connector (CN2)

PCM-4890 Flat panel display connector

| Pin | Function | Pin | Function |
|-----|----------|-----|----------|
| 1 | +12 V | 2 | +12 V |
| 3 | GND | 4 | GND |
| 5 | Vcc | 6 | Vcc |
| 7 | ENAVE E• | 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 | 36 | FLM |
| 37 | M | 38 | LP |
| 39 | GND | 40 | ENABKL |
| 41 | GND | 42 | ASHFCLK |
| 43 | Vcc | 44 | Vcc |

PC/104 connectors (CN6, CN4)

| PCM-4890 PC/104 connectors | | | | |
|----------------------------|--------------|----------|--------------|---------|
| Pin Number | Signal (CN6) | | Signal (CN4) | |
| | RowA | RowB | RowA | RowB |
| 0 | — | — | 0V | 0V |
| 1 | IOCHCHK | 0V | SBHE | MEMCS16 |
| 2 | SD7 | RESETDRV | LA23 | IOCS16 |
| 3 | SD6 | +5V | LA22 | IRQ10 |
| 4 | SD5 | IRQ9 | LA21 | IRQ11 |
| 5 | SD4 | -5V | LA20 | IRQ12 |
| 6 | SD3 | DRQ2 | LA19 | IRQ15 |
| 7 | SD2 | -12V | LA18 | IRQ14 |
| 8 | SD1 | ENDXFR | LA17 | DACK0 |
| 9 | SD0 | +12 | MEMR | DRQ0 |
| 10 | IOCHRDY | (KEY) | 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 | +5V |
| 17 | SA14 | DACK1 | SD14 | MASTER |
| 18 | SA13 | DRQ1 | SD15 | 0V |
| 19 | SA12 | REFRESH | (KEY) | 0V |
| 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 | +5V | — | — |
| 30 | SA1 | OSC | — | — |
| 31 | SA0 | 0V | — | — |
| 32 | 0V | 0V | — | — |

Front panel connector (CN5)

PCM-4890 Front panel connector

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

Peripheral power connector (CN7)

PCM-4890 Peripheral power connector

| Pin | Function |
|-----|----------|
| 1 | GND |
| 2 | -5 V |
| 3 | GND |
| 4 | -12 V |

10BASE-2/10BASE-5 AUI connector (CN11)

PCM-4890 Ethernet 10BASE-2/10BASE-5 AUI connector

| Pin | Signal |
|-----|--------|
| 1 | GND |
| 2 | CD- |
| 3 | CD+ |
| 4 | Tx- |
| 5 | Tx+ |
| 6 | GND |
| 7 | GND |
| 8 | Rx- |
| 9 | Rx+ |
| 10 | +12 V |
| 11 | GND |
| 12 | GND |

PCM-4890 Ethernet 10BASE-2/10BASE-5 AUI connector

| Pin | Signal |
|-----|--------|
| 13 | N/C |
| 14 | N/C |
| 15 | N/C |
| 16 | +5 V |

COM 1-4 RS-232/422/485 serial ports (CN14)

PCM-4890 COM1, COM2, COM3, COM4 RS-232/422/485 serial port

| | PIN | SIGNAL | PIN | SIGNAL |
|-------------|-----|----------------------------|-----|---------------|
| COM1 | 1 | DCDA | 2 | DSRA |
| | 3 | RXDA | 4 | RTSA |
| | 5 | TXDA | 6 | CTSA |
| | 7 | DTRA | 8 | RIA |
| | 9 | GND | 10 | N.C. |
| COM2 | 11 | DCDB (422TXD-/485DATA-) | 12 | DSRB(422RXD+) |
| | 13 | RXDB (422TXD+/485DATA+) | 14 | RTSB(422RXD-) |
| | 15 | TXDB | 16 | CTSB |
| | 17 | DTRB | 18 | RIB |
| | 19 | GND | 20 | N.C. |
| COM3 | 21 | DCDC | 22 | DSRC |
| | 23 | RXDC | 24 | RTSC |
| | 25 | TXDC | 26 | CTSC |
| | 27 | DTRC | 28 | RIC/+5V/+12V |
| | 29 | GND | 30 | N.C. |
| COM4 | 31 | DCDD | 32 | RSRD |
| | 33 | RXDD | 34 | RTSD |
| | 35 | TXDD | 36 | CTSD |
| | 37 | DTRD | 38 | RID/+5V/+12V |

Keyboard and mouse connector (CN8)

PCM-4890 Keyboard and mouse connector

| Pin | Signal |
|-----|-------------|
| 1 | GND |
| 2 | MS V_{cc} |
| 3 | MS DATA |
| 4 | MS CLOCK |
| 5 | GND |
| 6 | KB V_{cc} |
| 7 | KB DATA |
| 8 | KB CLOCK |

Ethernet 10BASE-T connector (CN13)

PCM-4890 Ethernet 10BASE-T connector

| 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- |

Main power connector (CN10)

PCM-4890 Main power connector

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

IDE hard drive connector (CN9)

PCM-4890 IDE hard drive connector

| 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 | N/C | 22 | GND |
| 23 | IO WRITE | 24 | GND |
| 25 | IO READ | 26 | GND |
| 27 | IO CHANNEL READY | 28 | N/C |
| 29 | N/C | 30 | GND |
| 31 | IRQ14 | 32 | IOCS16 |
| 33 | ADDR 1 | 34 | N/C |
| 35 | ADDR 0 | 36 | ADDR 2 |
| 37 | HARD DISK SELECT 0 | 38 | HARD DISK SELECT 1 |
| 39 | IDE ACTIVE | 40 | MGND |
| 41 | VCC | 42 | MVCC |
| 43 | GND | 44 | N/C |

Fan power connector (CN3)

PCM-4890 Fan power connector

| Pin | Signal |
|-----|--------|
| 1 | +5 V |
| 2 | GND |

Floppy drive connector (CN15)

PCM-4890 Floppy drive connector

| 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 2 |
| 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 |

Parallel port connector (CN12)

| PCM-4890 Parallel port connector | |
|----------------------------------|----------|
| 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 |

APPENDIX
D

Optional Extras

PCM-10489-1 Cable kit for PCM-4890/5890

The PCM-4890 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-4890 connector | Termination connector |
|------------|-----------------------------------|--------------------|--|
| 1701440350 | 2.5" and 1.8" IDE | CN9 | 44-pin, 2 mm, female IDC (350 mm) |
| 1701440500 | 3.5" IDE (40P) | CN9 | 40-pin, 2.54 mm, female IDC (500 mm) |
| 1701340700 | Dual floppy, 3.5" and 5.25" (34P) | CN15 | 34-pin dual floppy |
| 1701260301 | Parallel port | CN12 | 25-pin female DSUB |
| 1701100201 | Network 10/100BASE-T | CN13 | RJ-45 8-pin modular jack |
| 1701150150 | VGA CRT | CN1 | 15-pin DSUB |
| 1700060200 | Keyboard and PS/2 mouse | CN8 | 5-pin circular DIN 6-pin circular DIN |
| 1703040301 | Peripheral power (-5 V, -12 V) | CN7 | 4-conductor type |
| 1701080300 | Front panel | CN5 | 8-conductor pigtail |
| 1701400220 | RS-232 Serial Port, 4 COM Port | CN14 | 40 pin, 2.54 mm |

PCM-20486-1 Boot ROM binary files and ISA riser card for PCM-4890

Boot ROM binary files required for remote network boot-up and ISA riser card for ISA interface expansion slot are available. Please contact your sales rep for detailed information.