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PCM-4822

486-Based Single Board Computer with Ethernet Interface

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Packing list

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

- 1 PCM-4822 All-in-One Single Board Computer
- 1 utility disk with utility programs and Ethernet drivers
- 1 3.5" IDE flat cable
- 1 keyboard/mouse cable
- 1 secondary serial port cable (RS-232/422/485)
- 1 10-pin pigtail DIO cable (optional)

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

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Contents

Chapter 1 General Information 1

Introduction 2
Features 3
Specifications 4
Standard SBC functions 4
Mechanical and environmental 5
Board layout and dimensions 6

Chapter 2 Installation 7

Jumpers and connectors 8
Locating jumpers 10
Locating connectors 11
Setting jumpers 12
Safety precautions 13
Installing the CPU 13
Removing a CPU 13
Installing a CPU 14
CPU type select (J1-J9) 15
CPU power supply select (J6, J8) 17
CPU clock select (J2, J3, J4) 17
CMOS setup (J11) 17
Installing DRAM (SIMMs) 18
Installing SIMMs 18
IDE hard drive connector (CN2) 19
Connecting the hard drive 19
Keyboard and PS/2 connector (CN8) 20
Power connectors (J13) 20
Serial ports (CN7, CN3) 20
COM1 RS-232 port (CN7) 20
COM2 RS-232/422/485 selection (CN3) 20
COM2 Selection (J10) 21

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Chapter 3 Ethernet Interface Connection 23

Introduction 24
Utility Disk 24
10Base-2/10Base-5 AUI Connector (CN1) 25
10Base-T RJ-45 Connector (CN4).....25
Network Boot 25
Ethernet Interface Configuration 27

Chapter 4 Award BIOS Setup 29

System test and initialization 30
System configuration verification 30
AWARD BIOS setup 31
Entering setup 31
Standard CMOS setup 32
BIOS features setup 33
CHIPSET features setup 34
Power management setup 35
Load BIOS defaults 36
Change password 37
Auto detect hard disk 38
Save & exit setup 38

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Exit without saving 38

Appendix A The Expansion Bus 39

PCM-4822 Expansion Bus 40

Appendix B Pin Assignments 41

10 Base-2/5 (AUI) connector (CN1) 42
Ethernet RJ-45 connector (CN4) 42
Expansion bus connector (CN6) 43
COM2 RS-232/422/485 serial port (CN3) 44
Keyboard and mouse connector (CN8) 44
Main power connector (J13) 45
IDE hard drive connector (CN2) 45
COM1 RS-232 serial port (CN7) 46

Appendix C Digital Input and Output Operation ... 47

Digital input and output operation 48
PCM-4822 Digital I/O Interface Specifications 49

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CHAPTER 1

General Information

This chapter gives background information on the PCM-4822.

Sections include:

- Card specifications
- Card layout and dimensions

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Introduction

The PCM-4822 is the ultimate cost-effective solution for limited space applications. It offers all the functions of an AT-compatible industrial computer on a single board, taking no more space than a 3 1/2" hard drive. An integrated 16-bit Ethernet interface and 4-channel TTL level compatible digital I/O makes the PCM-4822 a complete processing system. High-performance 486 processors from 486DX up to 486DX4-120 CPUs and 5x86 CPUs are supported. For maximum performance, the PCM-4822 also supports an EDO/ Normal DRAM SIMM socket that can take up to 32MB memory.

On-board features include support for VL-Bus Enhanced IDE interface with up to Mode 3 transfer protocol, two serial ports (RS-232 and RS-232/422/485) with DB-9 connector as COM1, a mini-DIN PS/2 keyboard/mouse interface.

The PCM-4822 complies with the "Green Function" standard and supports five types of power saving features: Normal, Conserve, Doze, Sleep, and Suspend modes.

If you need any additional functions, the PCM-4822 has an on-board expansion bus connector for future upgrades.

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Features

- Ultra-compact size single board computer as small as a 3 1/2" hard disk drive (145 mm x 102 mm)
- Supports 486 CPUs up to DX4-120, and 5x86 CPUs
- Up to 32 MB on-board EDO DRAM
- On-board 16-bit Ethernet interface, Novell NE2000 compatible
- Built-in VL-Bus enhanced IDE (AT bus) hard disk drive interface
- On-board mini-DIN PS/2 keyboard/mouse connector
- Two serial ports: one RS-232, one RS-232/422/485 selectable (uses 16C550 UARTs with 16 byte FIFO)
- Upgradable through PC/104 carrier module
- 4-channel digital I/O, TTL level compatible
- Green engine with sleep mode and low power consumption
- Expansion bus connector for future upgrades
- Single +5 V power supply

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Specifications

Standard SBC functions

- **CPU**: Supports Intel, AMD and Cyrix up to 80486DX/DX2/DX4-25/33/40/66/80/100/120 and 5x86 CPUs
- **BIOS**: AWARD 128 KB Flash memory
- **Chipset**: VIA VT82C496G
- **RAM memory**: 1 MB to 32 MB. One 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 enhanced IDE (VL-bus) devices. BIOS auto-detect and Mode 3 transfer protocol
- **Serial ports**: One serial RS-232 port, one serial RS-232/422/485 port. Two 16550 serial UARTs
- **Keyboard/mouse connector**: Mini-DIN connector supports standard PC/AT keyboard and a PS/2 mouse
- **Power management**: Supports power saving modes including Normal/Conserve/Doze/Standby/Suspend modes. APM 1.1 compliant

Ethernet interface

- **Chipset**: Realtek RTL8019
- **Type**: 16-bit Ethernet, Novell NE2000 compatible
- **Connector**: On-board RJ-45 connector and AUI connector for transceiver (MAU) such as 10Base-5 or 10Base-FOIRL (fiber optic)

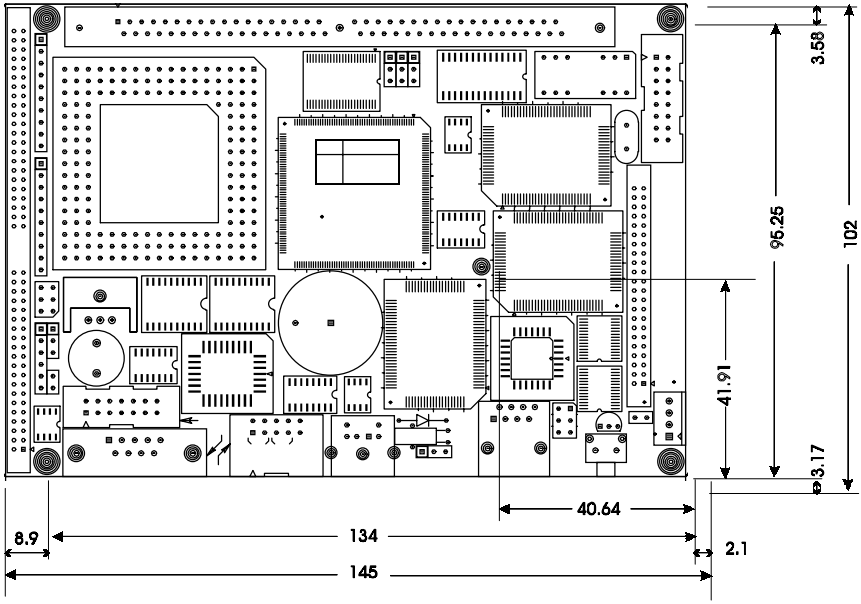
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Mechanical and environmental specifications

- **Dimension (W x H)**: 145 mm x 102 mm (5.9" x 4.2")
- **Power supply voltage**: +5 V (4.75 V ~ 5.25 V)
- **Max. power requirements**: +5 V @ 2A (typical)
- **Operating temperature**: (0° ~ 60° C (32° ~ 140° F)
- **Weight**: 0.2 kg

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Board layout and dimensions



PCM-4824 dimensions

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CHAPTER 2

Installation

This chapter tells how to set up the PCM-4822 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.

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Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard or an expansion bus connector. 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 Type Select
J2	System clock setting
J3	System clock setting
J4	System clock setting
J5	CPU type select
J6	CPU power supply
J7	CPU type select
J8	CPU power supply
J9	CPU clock select (Cyrix only)
J10	COM2 RS-232/422/485 select
J11	DIO port select
J12	Reset switch
J13	Power connector
J14	CMOS setup

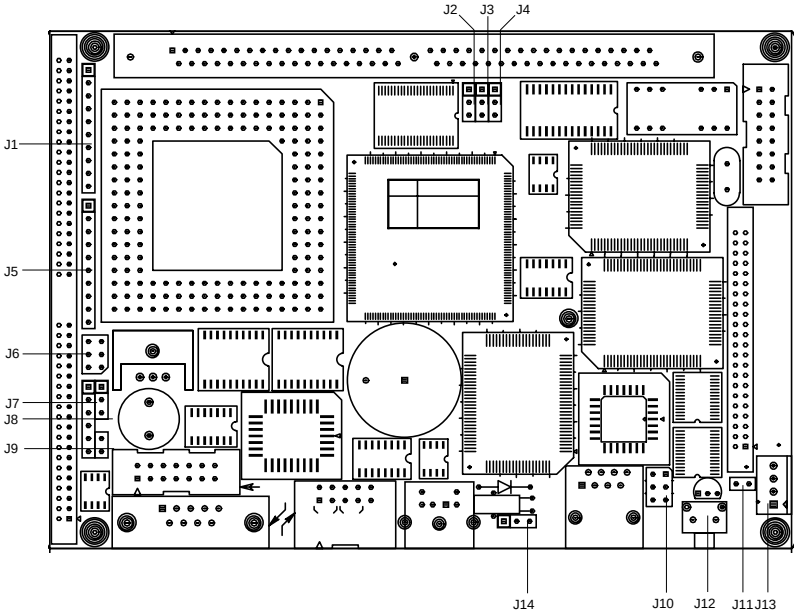
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Connectors

Label	Function
CN1	10Base 2/5 (AUI) connector
CN2	IDE hard disk connector
CN3	Serial port COM2 (RS-232/422/485)
CN4	Ethernet 10Base-T (RJ-45) connector
CN5	Digital I/O connector
CN6	Expansion bus connector
CN7	Serial port COM1 (RS-232)
CN8	Keyboard and PS/2 mouse connector
LED1	Power on LED (Yellow) Hard disk active LED (Green)
LED2	Ethernet BNC LED (Yellow) Ethernet CRS LED (Green)

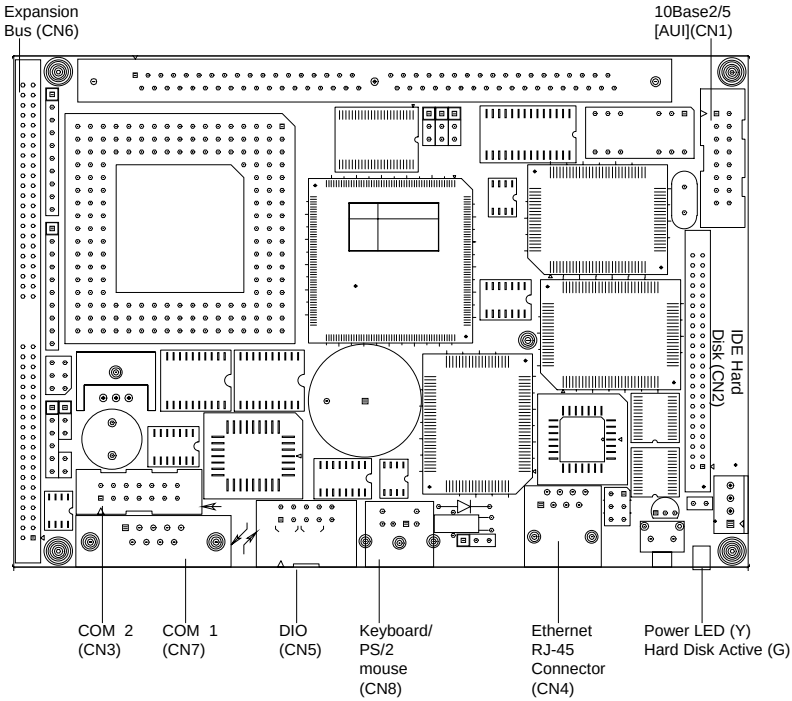
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Locating jumpers



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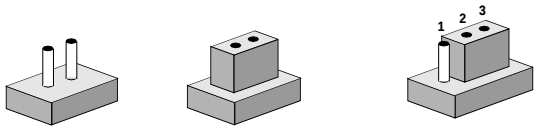
Locating connectors



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Setting jumpers

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



Open **Closed** **Closed 2-3**

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



Open **Closed** **Closed 2-3**

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

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

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

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Safety precautions

Warning! *Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on because sensitive electronic components can be damaged by the sudden rush of power.*

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

Installing the CPU

The PCM-4822 all-in-one SBC 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 and unplug all connections to the board.
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.

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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 and CPU clock to accommodate it. Make sure that the settings are correct for your CPU. **Improper settings may damage the CPU.**

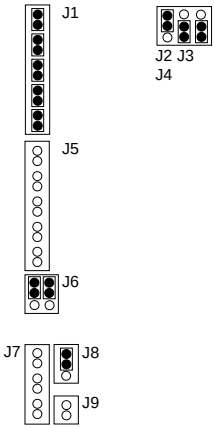
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CPU type select (J1-J9)

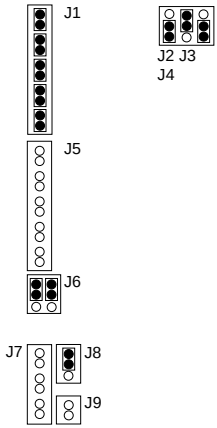
The following chart shows the proper jumper settings for their respective CPUs.

CPU type select

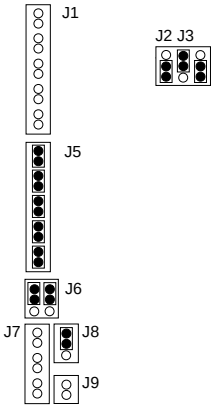
Intel 486DX-25 (5V)
Intel 486DX2-50



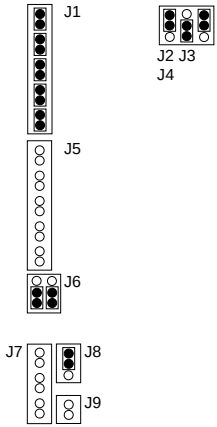
Intel 486DX-33 (5V)
Intel 486DX2-66 (5V)



Cyrix 486DX2-66 (5V)
SGS 486DX2-66 (5V)

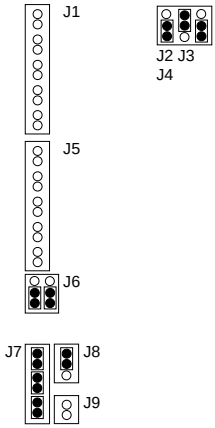


Cyrix 486DX2-V80GP(4.0V)

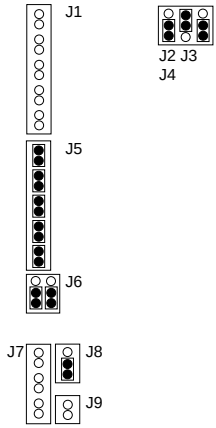


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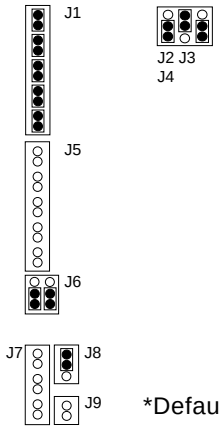
AMD 486DX2-66 (3V)
AMD 486DX4-100 (NV8B)



Cyrix 486DX4-100

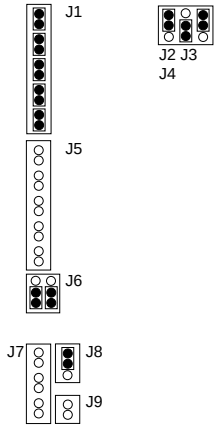


*Intel 486DX4-100
TI 486DX2-66
Cyrix 5x86-100GP(3.3V)
IBM486DX4-100
AMD 486DX4-100(SV8B)
AMD 5x86-P75



*Default Setting

AMD 486DX4-120
Cyrix 5x86-120



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CPU power supply select (J6, J8)

J6 and J8 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			
	***3.3V**	**3.45V**	**5V**
J6	1-3 2-4	1-3 2-4	3-5 4-6
J8	1-2	2-3	-----

CPU clock select (J2, J3, J4)

J2, J3 and J4 are used to synchronize the CPU clock with the CPU type. Set the CPU clock according to the base CPU speed.

CPU clock select			
	25Mhz	***33Mhz**	**40Mhz**
J2	1-2	2-3	1-2
J3	2-3	1-2	2-3
J4	2-3	2-3	1-2

CMOS setup (J14)

CMOS setup		
	***3.6V battery ON**	**Clear CMOS**
J14	2-3	1-2

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DIO port select (J11)

DIO port select		
	***340H**	**240H**
J11		

* default setting

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.

Installing SIMMs

NOTE: The modules can only fit into a socket one way 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. Install the SIMM card. Install the SIMM so that its gold pins point down into the SIMM socket.
3. Slip the SIMM into the socket at a 45 degree angle and carefully fit the bottom of the card against the connectors.
4. Gently push the SIMM into a perpendicular position until the clips on the ends of the SIMM sockets snap into place.
5. Check to ensure that the SIMM is correctly seated and all connector contacts touch. The SIMM should not move around in its socket.

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IDE hard drive connector (CN2)

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 CN2. 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.

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Keyboard and PS/2 connector (CN8)

The PCM-4822 board provides a mini-DIN 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-4822 board'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).

Power connector (J13)

Main power connector, +5V, +12V (J13)

Supplies main power to the PCM-4822 (+5 V) and devices that require +12 V.

Serial ports (CN7, CN3)

The PCM-4822 offers two serial ports: one 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 RS-232 port (CN7)

The serial port connectors are mounted on the bottom edge of the card. The 9-pin, D-SUB connector to the left of the card is the RS-232 port.

COM2 RS-232/422/485 selection (CN3)

The secondary port located above COM1, consists of a 14-pin, dual-in-line, male header and can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via J10.

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COM2 selection (J10)

	*RS-232	RS-422	RS-485
J10			

*** default setting**

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-4822 board's ports.

PCM-4822 Serial port default settings

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

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CHAPTER 3

Ethernet Interface Connection

This chapter provides information on Ethernet configuration.

Sections include:

- Network Boot
- Ethernet Interface Configuration

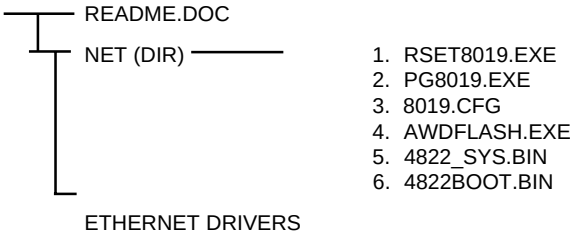
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Introduction

The PCM-4822 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.

Utility disk

The PCM-4822 is supplied with a software utility disk. This disk contains the files necessary for setting up the Ethernet controller. Directories and files on the disk are as follows:



1. RSET8019.EXE
This program enables you to view the current Ethernet configuration, reconfigure the Ethernet interface (medium type, etc.), and execute useful diagnostic functions.

2. PG8019.EXE
The PCM-4822 is initially set up at the factory using this program. When you receive your card, use RSET8019.EXE to configure it for the working environment. If by chance the EEPROM becomes corrupted, the PG8019.EXE program allows you to reconfigure the card.

3. 8019.CFG
When you run PG8019.EXE, it will read the configuration parameters stored in this file.

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4. AWDFLASH.EXE
This program allows you to replace the existing BIOS with a new BIOS file (.ex. 4822_SYS.BIN)

5. 4822_SYS.BIN
This binary file contains the system BIOS which does not incorporate a Boot ROM image file.

6. 4822BOOT.BIN (default)
This binary file contains the system BIOS which incorporates a Boot ROM image file.

10Base-2/10Base-5 AUI Connector (CN1)

10Base-2 and 10Base-5 coax connections are made via an attachment unit interface or AUI (CN1). This consists of a 16-pin, dual-in-line male header.

10Base-T RJ-45 Connector (CN4)

10Base-T connections are made via the on-board RJ-45 connector.

Network Boot

The PCM-4822 is shipped with remote boot function capability. By combining the boot ROM image and the system BIOS this function is enabled. If, by chance, you do not require the remote boot capability, you can update the BIOS (with boot function) using AWDFLASH.EXE.

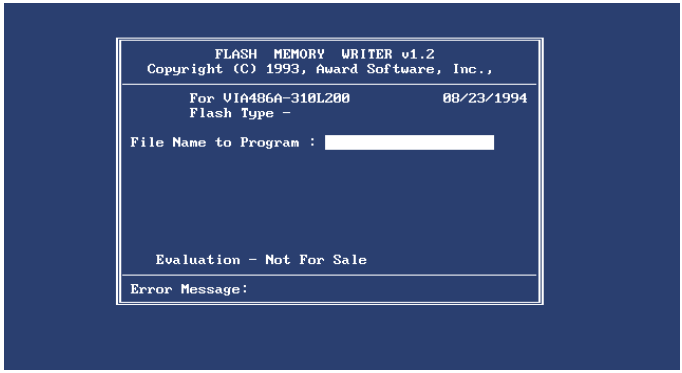
Follow the steps below to update the system BIOS:

1. Apply power to the PCM-4822. Ensure that the 4822_SYS.EXE and AWDFLASH.EXE are located in the working drive.

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

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



BIOS Setup screen

3. At the prompt, type in 4822_SYS.EXE. 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 screen will issue a prompt which will then ask “Are you sure to program (Y/N)?” If you wish to continue, press Y. Press N to exit the program.

The new BIOS which does not include the boot image will be written to the ROM BIOS chip. This configuration will remain the same until you run the AWDFLASH.EXE program to change the settings.

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Ethernet Interface Configuration

The PCM-4822's on-board Ethernet interface supports all major network operating systems. I/O adress and interrupts are easily configured via the RSET8019.EXE program included on the utility disk.

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

PCM-4822 Ethernet Settings

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

Default Settings: IRQ=5; Address=300H

Note: *1. You can select an IRQ from the Options shown above, but be certain that 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.

To execute the configuration, to view the current configuration, or to run diagnostics do the following:

1. Power the PCM-4822 on. Ensure that the RSET8019.EXE file is
   located in the working directory.
2. At the prompt type RSET8019.exe and press <Enter>. The

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Ethernet configuration program will then be displayed.

3. A simple screen displays the available options for the Ethernet interface. Highlight the option which you wish to change using the Up and Down keys. To change a selected item press <Enter>, and a window will appear with the available options. Highlight your selection 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.

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CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

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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 nonfatal. The system can usually continue the boot up sequence with nonfatal errors. Nonfatal 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 boot-up 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.

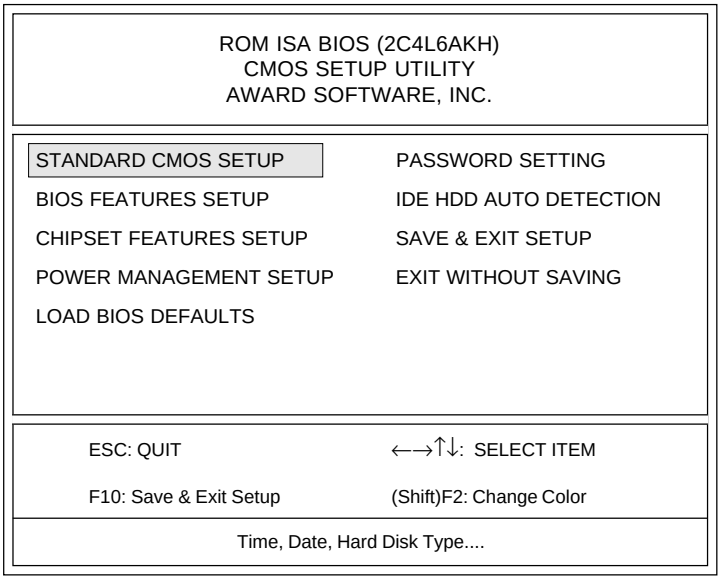
There are three situations in which you will need to change the CMOS settings:

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-4822 board's CMOS memory has an integrated 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 entire unit.

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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.

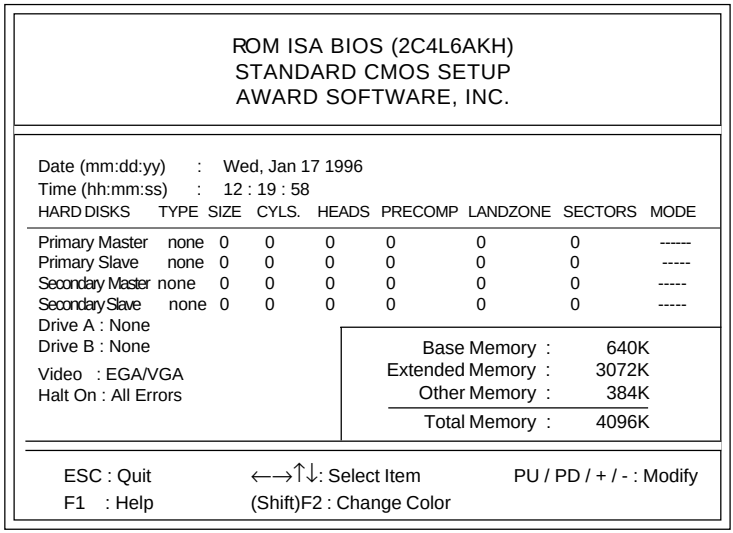
Entering setup

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

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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.

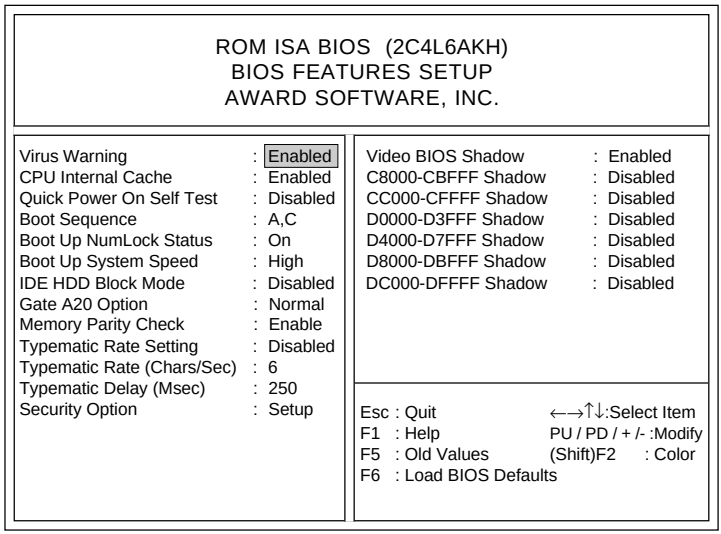


CMOS setup screen

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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-4822**.**

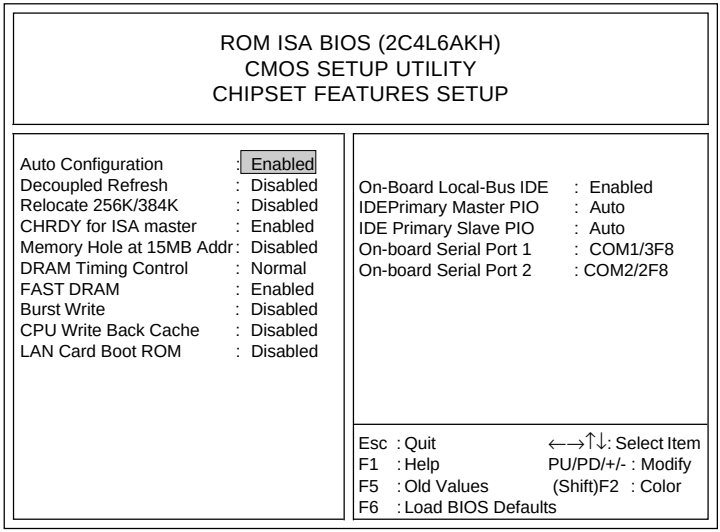


BIOS features setup

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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-4822.

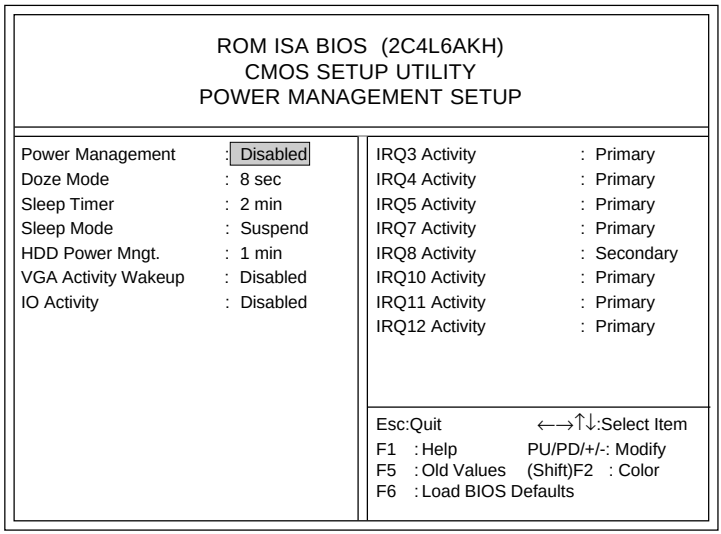


CHIPSET features setup

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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-4822.

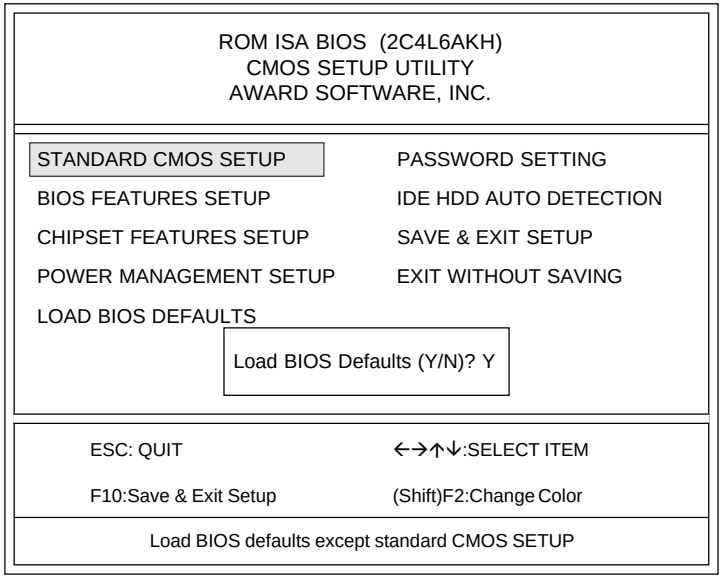


Power management setup

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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-4822 on.



Load BIOS defaults screen

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Change password

To change the password, choose the PASSWORD SETTING option form 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>.

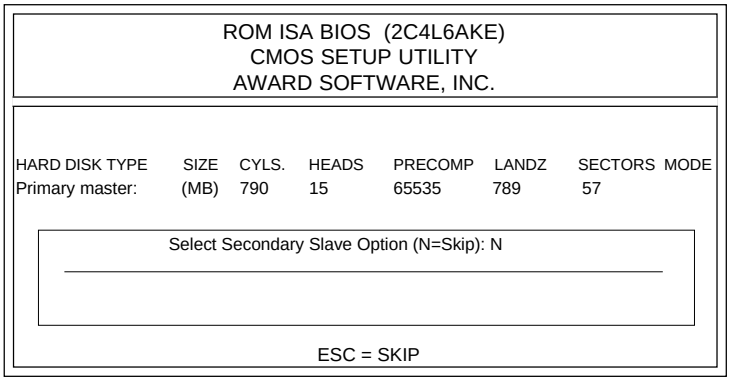
3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most 8 characters long.

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

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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.



IDE HDD auto detection screen

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.

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APPENDIX A

The Expansion Bus

This appendix provides the basic information on the PCM-4822 expansion bus.

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PCM-4822 Expansion Bus

The PCM-4822 board's expansion bus interface gives you the flexibility to attach other customized hardware or industry-standard PC/104 carrier modules. These modules perform the functions of traditional plug-in expansion cards, but save space and valuable slots. Several modules are available for expansion purposes. Please contact your sales representative for more information.

Below is the expansion bus pin assignment table for your reference:

Expansion Bus Connector (CN6)

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	GND	2	+5V	41	GND	42	GND
3	DRQ0	4	DRQ1	43	SMEMRY*	44	IOW*
5	DRQ2	6	DRQ3	45	MEMCS16*		46IDR*
7	DRQ5	8	DACK0*	47	MEMR*	48	IOCS16*
9	+5V	10	DACK2*	49	TC	50	AEN
11	DACK1*	12	DACK5*	51	SMEMW*	52	IOCHRDY
13	DACK3*	14	IRQ7	53	REFRESH*	54	MEMW*
15	IRQ9	16	IRQ10	55	+5V	56	GND
17	IRQ11	18	IRQ15	57	GND	58	N/C
19	LA23	20	LA22	59	BALE	60	SBHE*
21	LA21	22	LA20	61	LA19	62	LA18
23	IRQ5	24	IRQ6	63	LA17	64	SA16
25	SD7	26	SD6	65	SA15	66	SA14
27	SD5	28	SD4	67	SA13	68	SA12
29	SD3	30	SD2	69	SA11	70	SA10
31	SD1	32	SD0	71	SA9	72	SA8
33	SD8	34	SD9	73	SA7	74	SA6
35	SD10	36	SD11	75	SA5	76	SA4
37	SD12	38	SD13	77	SA3	78	SA2
39	SD14	40	SD15	79	SA1	80	SA0
				81	SYSCLK	82	RESET
				83	+5V	84	GND

***: Active low**

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APPENDIX B

Pin Assignments

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

- 10Base-2/5 AUI connector
- Ethernet RJ-45 connector
- Expansion Bus connector
- DIO connector
- RS-232/422/485 serial port connector
- Keyboard and mouse connector
- Main power connector
- IDE connector
- RS-232 serial port connector

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10Base-2/10Base-5 AUI connector (CN1)

PCM-4822 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	+12V
11	GND
12	GND
13	N/C
14	N/C
15	N/C
16	+5V

Ethernet 10Base-T connector (CN4)

PCM-4822 Ethernet 10Base-T connector

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

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Expansion Bus Connector (CN6)

PCM-4822 Expansion Bus connector

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	GND	2	+5V	41	GND	42	GND
3	DRQ0	4	DRQ1	43	SMEMRY*	44	IOW*
5	DRQ2	6	DRQ3	45	MEMCS16*		46 IDR*
7	DRQ5	8	DACK0*	47	MEMR*	48	IOCS16*
9	+5V	10	DACK2*	49	TC	50	AEN
11	DACK1*	12	DACK5*	51	SMEMW*	52	IOCHRDY
13	DACK3*	14	IRQ7	53	REFRESH*		54 MEMW*
15	IRQ9	16	IRQ10	55	+5V	56	GND
17	IRQ11	18	IRQ15	57	GND	58	N/C
19	LA23	20	LA22	59	BALE	60	SBHE*
21	LA21	22	LA20	61	LA19	62	LA18
23	IRQ5	24	IRQ6	63	LA17	64	SA16
25	SD7	26	SD6	65	SA15	66	SA14
27	SD5	28	SD4	67	SA13	68	SA12
29	SD3	30	SD2	69	SA11	70	SA10
31	SD1	32	SD0	71	SA9	72	SA8
33	SD8	34	SD9	73	SA7	74	SA6
35	SD10	36	SD11	75	SA5	76	SA4
37	SD12	38	SD13	77	SA3	78	SA2
39	SD14	40	SD15	79	SA1	80	SA0
				81	SYSCLK	82	RESET
				83	+5V	84	GND

***: Active low**

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DIO connector (CN5)

PCM-4822 DIO connector

Pin	Signal
1	GND
2	Vcc
3	DO3
4	DO2
5	DO1
6	DO0
7	DI3
8	DI2
9	DI1
10	DI0

COM2 RS-232/422/485 serial port (CN3)

PCM-4822 COM2 RS-232/422/485 serial port

Pin	Signal
1	DCD
2	DSR
3	RxD
4	RTS
5	TxD
6	CTS
7	DTR
8	RI
9	GND
10	N/C
11	485 TxD+
12	485 TxD-
13	485 RxD+
14	485 RxD-

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Keyboard and mouse connector (CN8)

PCM-4822 Keyboard and mouse connector

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

Main power connector (J13)

PCM-4822 Main power connector

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

IDE hard drive connector (CN2)

PCM-4822 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

***: Active low**

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IDE hard drive connector (CN2) continued:

Pin	Signal	Pin	Signal
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

COM1 RS-232 serial port (CN7)

PCM-4822 COM1 RS-232 serial port

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

***: Active low**

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APPENDIX C

Digital Input and Output Operations

This appendix contains some basic information on the Digital Input and Output operation of the PCM-4822 board.

- Digital input and output operation
- Digital I/O Interface Specification

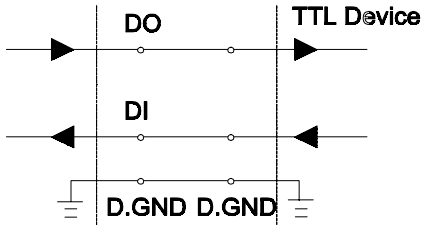
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Digital Input and Output Operation

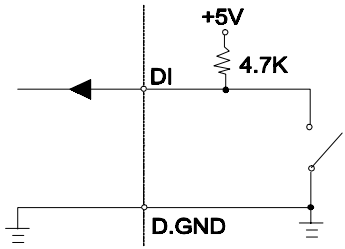
Digital Input and Output are a group of control signals that are utilized to control external devices requiring ON/OFF circuitry. The PCM-4822 supports 4-channel digital input and 4-channel digital output. These digital input and output levels are TTL compatible.

You can use the I/O read or write command to access the digital I/O port. An output register has been designed to latch the output data. However, this cannot be read back for checking purposes.

The following figure shows the design of a proposed circuit when connected with other TTL devices.



When receiving an OPEN/SHORT input signal from a switch or relay, you are advised to add a pull-up resistor to your system that will keep the input signal at a high level setting when the circuit is set to OPEN.



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PCM-4822 Digital I/O Interface Specifications

Digital Input

Input channels: 4 bits
Level: TTL compatible
Input Voltage:
High: 2.0V min
Low: 0.8V max
Input Load:
High: 0.05mA max. at 2.7V
Low: 0.4mA max at 0.5V
Register Address: 340H (or 240H) (Read)
Register Format:

BIT	D3	D2	D1	D0
Value	DI3	DI2	DI1	DI0

Digital Output

Output channels: 4 bits
Level: TTL compatible
Output Voltage:
High: Source -0.4mA at 2.4V min
Low: Sink 8mA at 0.5V max
Register Address: 340H (or 240H) (Write)
Register Format:

BIT	D3	D2	D1	D0
Value	DO3	DO2	DO1	DO0

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