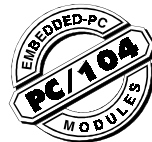


# PCM-3810 PC/104 Solid-state Disk Module



## Introduction

The PCM-3810 Solid State Disk Module uses Flash, EPROM, or SRAM chips inserted into its standard 32-pin sockets to emulate one or two floppy disk drives. The PCM-3810's two banks of chips provide from 360 KB to 2.88 MB of disk storage space each, depending on the size and number of memory devices. It is possible to emulate one drive of up to 6 MB with two banks and two modules linked together.

The PCM-3810's banks are assigned drive labels (1st, 2nd, 3rd or 4th) or can be individually disabled. One PCM-3810 drive can be set as the boot drive by setting its jumpers for drive "1st" and copying the necessary boot files to it. The drive designation set by the PCM-3810's jumpers is purely internal to the module, you do not need to make any changes to the BIOS setup. DOS will determine the final drive designation.

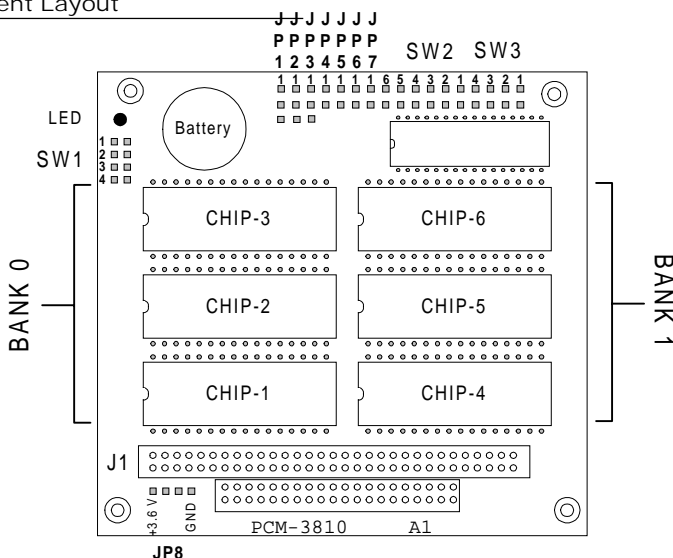
## Specifications

- Board size: 3.82" (L) x 3.58" (W) (97 mm x 91 mm)
- Power:  
+5 V @ 1 A maximum for normal applications
- Battery: 3.6 V (360 mAhR) lithium back-up battery
- Operating temperature: 32 to 140°F (0 to 60°C)

## Features

- Emulates up to two floppy disk drives (1st, 2nd, 3rd or 4th)
- Disk sizes: 360 KB to 6 MB (both banks and modules linked together)
- Drive designation: DOS drive
- 6 individual 32-pin memory sockets, divided into two banks one bank for each emulated drive.
- Up to two PCM-3810's can be installed in one PC
- Power-on auto-boot feature
- On-board FLASH programming circuitry with easy-to-use menu driven programming utility software
- Lithium back-up battery (3.6 V, 360 mAhR) for 4 years of data retention (depending on memory configuration)
- On-board LED signals low battery voltage (< 2.6 V)
- Connector for external battery
- Battery status displayed when booting
- Each card occupies only 16 KB of system memory space

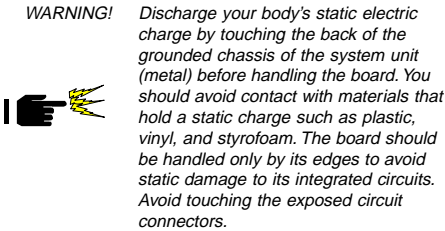
## Component Layout



## Initial Inspection

In addition to this user's manual, your shipping box should contain the following items:

- PCM-3810 Dual Flash/RAM/ROM disk card
- A software utility diskette



## Installation

### Jumpers, switches and connectors

This section describes most of the PCM-3810's jumper and switch configurations. Exceptions are memory and I/O address and drive configuration (i.e. 1st or 2nd), discussed in the next section. On the PCM-3810 where reference is made to a switch i.e. SW1, this is actually a jumper. Configuring these jumpers will allow you to choose the options available and will ensure the correct operation of this card in your system. Many options can also be set using the utility program, described in the utility section. The various switches and jumpers are briefly described below;

### PCM-3810 Switches and Jumpers

Designation	Description
SW1	Memory device type, Bank 0
SW2	Memory address, I/O address and Drive number
SW3	Memory device type, Bank 1
JP1	Program +12 V FLASH ( $V_{pp}$ ) Bank 0
JP2	Program +12 V FLASH ( $V_{pp}$ ) Bank 1
JP3	SRAM internal battery Enable/Disable
JP4	Not Used
JP5	Not Used
JP6	Master/slave selection
JP7	Card write protection
JP8	External battery connections (+3.6 V, GND)

Please take the time now to familiarize yourself with the PCM-3810's layout, illustrated the diagram on the previous page.

### Default Jumper Settings

Most of the cards jumpers are already configured for the most popular of configurations. This simplifies and reduces setting up time. The table below shows the PCM-3810's factory shipped defaults:

### PCM-3810 Defaults

Name	Jumper	Default
Memory address	SW2	D0000-D3FFF
I/O address	SW2	2DC-2DD
Bank 0 drive designation	SW2	1st
Bank 1 drive designation	SW2	2nd
Memory type	SW1, SW3	SRAM 128kx8
Bank 0 +12 $V_{pp}$	JP1	Disabled
Bank 1 +12 $V_{pp}$	JP2	Disabled
Battery source	JP3	External
Master/slave selection	JP6	Master
Card protect	JP7	Disabled

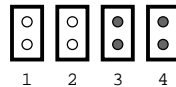
### Card Configuration

Most of the configuration for your PCM-3810 is done by shorting or removing jumper blocks on jumper pins. In the following paragraphs the state and operation of each jumper is discussed. Each jumper is a small link which slides down and shorts a set of pins. For the purpose of this card jumpers are "closed" when the pins are shorted and "open" when the link is absent. A pair of small long-nosed pliers are ideal for the removal and insertion of the links.

### Memory Device Type (SW1, SW3)

The PCM-3810 has two banks for Flash/RAM/ROM chips, designated as Bank 0 or Bank 1 (see diagram). Each bank consists of 3 x 32-pin sockets. A bank must be filled with chips of the same type (i.e. all RAM chips, etc.), but the two banks may be different (e.g. Bank 0 can hold RAM chips while Bank 1 holds Flash memory chips). This also applies when two banks (2.88 MB) or two modules (6 MB) are linked together to form one larger capacity drive, all six/twelve chips must be the same. Selection of the type of chip installed in each bank is done via SW1 (Bank 0) and SW3 (Bank 1) as shown below:

Memory device type SW1, SW3



### Memory Device Type selection (SW1/SW3)

Memory type	1	2	3	4
Bank disable	-	●	●	●
SRAM 128kx8	-	○	●	●
ROM 128kx8	-	●	○	●
FLASH 128kx8	-	○	○	●
SRAM 512kx8	-	○	●	○
ROM 512kx8	-	●	○	○
FLASH 512kx8	-	○	○	○

●: Jumper pin closed    ○: Jumper pin open

### Battery Enable/Disable (SW1, SW3)

The PCM-3810 is equipped with a 3.6 V, 360 mAHr Lithium battery that supplies power to SRAM chips for data retention when you turn off your system's power. You can enable/disable the backup supply for each Bank independently via jumpers on SW1 (Bank 0) and SW3 (Bank 1) as shown in the diagram above and the table

below:

### PCM-3810 Battery Backup Selection SW1/SW3

Battery status	1	2	3	4
Battery on	●	-	-	-
Battery off	○	-	-	-

●: Jumper pin closed    ○: Jumper pin open

The battery has a life expectancy of at least 4 years, depending on the number of SRAMs installed. The battery life expectancy calculation is shown below:

Battery Life Expectancy (BLE) = Battery capacity (in amp-hours) / maximum SRAM consumption.

Battery capacity: 360 mAh = 360 x 1000 μAH

SRAM consumption: 1 μA/chip

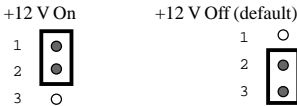
BLE = (360 x 1000) μAH/10 μA = 36,000 hours

= 1500 days

= 4 years

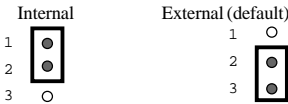
### Flash Memory Programing Enable (JP1, JP2)

A +12 V supply is required to enable the on-board programming of Flash memory. This is done by shorting the appropriate jumper which places a +12 V<sub>pp</sub> supply to Bank 0 (JP1) and Bank 1 (JP2). Remember to remove this link when programming has been completed.



### Internal/external Backup Battery Selection (JP3)

As mentioned above the PCM-3810 is equipped with a backup battery. The PCM-3810 also provides a connection (via JP8) for an optional external battery input. JP3 is used to select the PCM-3810's backup battery, as shown in the diagram below.



**Warning!:** The battery must be disabled when both banks are using EPROM or Flash memory devices, or when using an external battery, otherwise, the battery may explode or be completely discharged. To do this, remove the shorting link from the jumper (JP3)

### Master/Slave Selection (JP6)

You can install up to two PCM-3810s in your system at one time, allowing you to emulate up to four floppy drives. If you are installing two cards, set Jumper JP6 to the Slave position on the second card. JP6 on the first card should remain in the default (Master) position.

You can also link two PCM-3810s together to form one 6 MB disk. As above, each card must be designated as master or slave prior to installing. This is done via the Master/slave jumper JP6. Refer to the "Working with two PCM-3810s" section for memory address and I/O address configuration.



### Card Write Protection (JP7)

Hardware write protection for both banks is set with jumper JP7. This prevents data stored on the PCM-3810 from being changed. The jumper settings are as below:

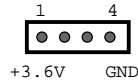
Protect enable      Protect disable (default)



### External Battery (JP8)

An option exists to connect an external battery for longer memory storage or if you suspect or remove the battery located on the PCM-3810. This can be done via connector JP8, pins are marked +3.6 V and GND. You must also change JP3 to show that an external battery is in use.

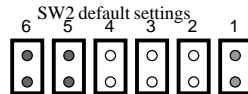
External battery connections



## Memory and I/O Address Selec-

### Working with two PCM-3810's (JP6)

Should you decide to install two PCM-3810s in your system for either a Single 6 MB drive or four smaller drives some setting up is required. To avoid firmware conflicts it is important that you give the second PCM-3810 an I/O address different from that of the first. For example, if you set the first PCM-3810 to I/O address 22E~22D (hex), then set the second PCM-3810 to the next available I/O address, 26C~26D (hex). These should be different from other cards installed in your system to avoid system conflicts. However, both PCM-3810s must occupy the same memory address (see the memory address section). Memory address and I/O address are selected via SW2, a 6-position jumper as shown below.



### Memory Address Selection (SW2)

You should set the PCM-3810's memory address to avoid conflicts with your system board's memory addresses. To set the PCM-3810's memory address, locate jumper SW2 and set the first two switches according to the specifications outlined in the table below (\* indicates the default setting). If you are installing two PCM-3810's, they must occupy the same memory address. Set their jumper switch banks identically.

#### Memory address selection (SW2)

Position 1	Position 2	Memory Address
●	●	Disable (memory decode)
●	○	D0000 ~ D3FFF
○	●	D4000 ~ D7FFF

<input type="radio"/>	<input type="radio"/>	D8000 ~ DBFFF
●: Jumper pin closed	○: Jumper pin open	

### I/O Address (SW2)

Positions 3 and 4 on SW2 set the PCM-3810's I/O address to avoid conflicts with other installed boards. To set these switches, see the table below.

I/O Address Setting (SW2)		
Position 3	Position 4	I/O Port Address
●	●	22C ~ 22D
●	○	26C ~ 26D
○	●	2AC ~ 2AD
○	○	2DC ~ 2DD
●: Jumper pin closed	○: Jumper pin open	

## Drive Configuration

### Bank Drive Designation

The PCM-3810's banks can be assigned drive labels using jumpers (SW2) as either 1st, 2nd, 3rd or 4th drive. This

Linked Mode	Bank 0 Driver #	Bank 1 Driver #	SW2 Position 5	SW2 Position 6
1st	1st	2nd	Closed	Closed
2nd	3rd	1st	Open	Closed
3rd	1st	3rd	Closed	Open
4th	3rd	4th	Open	Open

assignment is purely internal to the PCM-3810, how drives are designated by DOS depends on the current system configuration (i.e. how many floppy drives, how many hard drives).

Designate as 1st, 2nd, 3rd or 4th FDD (SW2)

If a PCM-3810 bank is assigned to "1st" or "2nd" drive, DOS will reassign its DOS drive to the PCM-3810 bank to replace the floppy. The floppy drive is not reassigned to another DOS drive. One of the PCM-3810 drives can be set as the boot drive A or B by setting its jumpers for drive "1st" and copying to it the necessary boot files. If the PCM-3810's drives are assigned as 3rd or 4th then DOS will assign a drive label after that of the systems hard drive (if present). Boot drive setup is described in the utility section. To select the drive designations refer to the table above and then configure SW2 with the appropriate jumpers.

### Setting Up an Auto-boot Drive

When designating one of the PCM-3810's banks as an auto-boot drive,

you will need to temporarily switch the drive designation of the bank from which you will boot to a letter different from "1st" to keep the computer from booting until it has been prepared and/or to allow you to use the floppy disk to load it with files. The drive letter you choose should be different from the other emulated drive designations.

You will need to add whatever DOS system files which will boot up and configure your system to the source diskette or hard disk directory, as described above. These files include COMMAND.COM and the two hidden system files (transferred using the SYS command). AUTOEXEC.BAT and CONFIG.SYS files may also be copied, as well as any DOS files required by your applications (ANSI.SYS, etc.).

When you are finished setting up the bank, simply change the bank's drive designation to "1st", and reboot.

### Configuration for both banks linked

When using both banks linked together, i.e. for a single drive of 2.88 MB, you must configure the PCM-3810 as follows:

- Step 1. Set Bank 0 to enable and appropriate memory type (SW1), set Bank 1 to disable (SW3)
- Step 2. Use the same type and size of memory chips for all 6 memory sockets

### Configuration for both modules linked

When using both modules linked together, i.e. for a single 6 MB drive, you must configure the PCM-3810 as follows:

- Step 1. Set 1st module as Master using JP6
- Step 2. Set 2nd module as Slave using JP6
- Step 3. Set both modules to the same memory address (SW2)
- Step 4. Set Bank 0 to enable, set Bank 1 to disable (SW2/3)
- Step 5. Set the Slave module to the next available I/O address from that of the Master
- Step 6. Use the same type and size of memory chips for all 12 (if used) memory sockets
- Step 7. Set both Bank 0's memory device jumpers (SW1) to appropriate type

## MEMORY DEVICE SELECTION

Device Code	Manufacturer	Single-chip size (KB)	360 KB	720 KB	1.2 MB	1.44 MB	2.88 MB	6 MB
27C010	ATMEL and AMD	128	x 3	x 6	x 10	x 12	-	-
27C040	ATMEL and AMD	512	x 1	x 2	x 3	x 3	x 6	x 12
581000P SRAM	Sony	128	x 3	x 6	x 10	x 12	-	-
584000 SRAM	Sony	512	x 1	x 2	x 3	x 3	x 6	x 12
29C010 Flash (+5 V)	ATMEL	128	x 3	x 6	x 10	x 12	-	-
28F010 Flash (+12 V)	Intel/AMD	128	x 3	x 6	x 10	x 12	-	-
29C040	ATMEL	512	x 1	x 2	x 3	x 3	x 6	x 12

## Memory Devices and Disk Sizes

The table below gives the number of chips required to emulate common floppy disk sizes. The Flash memory chips listed in the table below, may be programmed on board.

## Installing Memory Devices

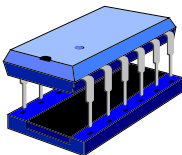
After you've configured the PCM-3810, you should install your SRAMs, EPROMs, or Flash memories. These procedures are only intended as a supplement to the information your chip manufacturer has given you. If you are inexperienced in installing chips, you may want to read a good hardware reference book before you begin. One recommendation is by Winn L. Rosch, *The Winn Rosch Hardware Bible* (New York; Brady), 1989.

**Warning!** *Ground yourself when handling memory devices and insert them with as little force as possible!*

Make sure that you are properly grounded before handling memory devices or the board. You can discharge any static electricity you may have built up by touching the case (metal) of your computer before you begin installation. You should also avoid contact with materials that hold a static charge such as plastic, vinyl, and styrofoam. Avoid touching the exposed circuit connectors.

### ❖ Treat connectors gently

The legs of integrated circuits are delicate, and may bend before reaching the bases of sockets. Inspect each leg before you begin, test-fit it gently into the socket, and straighten any bent legs before you insert.



### ❖ Install memory chips with the correct orientation

Memory chips must be installed the correct way around. If this is not done the chip will be damaged. Each chip and it's corresponding socket will have a small ident (or spot) at it's top end. These must be aligned when the chip is inserted into the socket.

### ❖ Don't mix chips of different capacities

You should only install one type of chip (Flash, RAM, or ROM) in a single bank, and you should also install only chips of the same size.

## Static Random Access Memory (SRAM)

Memory chips are either volatile or nonvolatile. Volatile memories require a constant application of current in order to retain memory, provided by the PC or a backup battery, while nonvolatile memories require current only for write operations. SRAMs are volatile and don't require any external devices for programming or erasing. Instead, they can be formatted, read, and written to as if they were DOS-compatible mechanical drives.

## Erasable Programmable Read-Only Memory (EPROM)

Unlike SRAMs, EPROM devices are nonvolatile. They don't require battery backups, and a power loss will never harm the data they store. They're the least expensive of the three types of memory your PCM-3810 will accept. However, they require use of the utility program for writing

and formatting. In addition, whereas flash memories may be erased while installed in the PCM-3810, EPROMs must be removed for use with an external UV EPROM eraser.

## Flash Memory

Flash memory, the newest memory type and was developed to eliminate the disadvantages of both SRAMs and EPROMs, and offer greater flexibility than either. They are nonvolatile, requiring no battery backup, and in some cases can be erased and reprogrammed while on the PCM-3810 board.

The PCM-3810 supports two different kinds of Flash memories, the ATME1 29C010, 29C040 (both +5 V) memory, and the AMD/INTEL 28F010 (+12 V) memory. Advantages and disadvantages of each are summarized below.

### ATME1 29C010/29C040 (+5 V)

**Advantages:** Can be read, written to, and formatted with normal DOS commands while still within their sockets. Offers greater reliability than SRAMs

**Disadvantages:** Slower to format and write data to than SRAMs. More expensive than SRAMs

### AMD/INTEL 28F010 (+12 V)

**Advantages:** Does not need to be removed for erasing or reprogramming. Low cost

**Disadvantages:** Can only be erased and reprogrammed with the PCM-3810 utility program

## THE UTILITY PROGRAM

This section shows how to use the PCM-3810's utility program to setup and program the Flash/RAM/ROM disk drives. Before you continue, make sure that you have correctly configured the jumpers and that the PCM-3810 is fully installed in your system chassis and all external connections made. Prepare a source diskette or a directory on your hard disk to contain the application programs or data that you will write to the emulated drives.

The PCM-3810's utility program is where you select and configure devices. Other functions allow you to select programs and data files and transform them into binary files which can then be loaded into EPROM or Flash memory chips using an external programmer (Make ROM, F2). You can also write programs and data to on-board Flash memory chips (RomCopy, F3).

## Configuration

Turn on and boot up your computer. To run the utility program, insert the utility disk in drive A (or go to the directory on your hard disk that contains the utility program files), type "ut3810" and press the **Enter** key. The utility program's main screen will appear, as shown below.





### Utility program main screen

The main screen is used to configure the PCM-3810. Use the arrow keys to select a particular configuration option and press the **Enter** key until the setting is correct. Options are explained below:

### Device type

Selects the memory device type and size installed in the sockets for each enabled emulated drive. The following choices are available: 128 KB SRAM, 128 KB EPROM/FLASH, 512 KB SRAM, and 512 KB EPROM. The utility program will scan the system when initiated. Any floppy disks present will be labeled PHYSICAL DISK. If no drive is installed, it will read NOT INSTALLED.

### Disk size

Selects the storage capacity of the resulting emulated disk, depending on the size and number of memory devices inserted in the PCM-3810's banks. The following disk sizes may be emulated: 360 KB, 1.2 MB DISK, 720 KB, 1.44 MB, 2.88 MB and 6 MB (6 MB only with two PCM-3810s linked together). To exit the program, hit the **ESC** key.

The main screen also provides access to the other utility program functions through the function keys. If you wish to use these functions and have made any configuration changes, you must exit the utility program and reboot the computer to enter the changes into the PCM-3810 before proceeding. Functions are described in the following subsections.

### Formatting and Writing Data

#### 1. SRAM and Atmel 29C010/29C040 (+5 V) Flash Devices

Emulated drives which use SRAM or Atmel 29C010/29C040 (+5 V) Flash memory devices may be formatted, read from and written to exactly as though they were normal floppy disk drives. Simply use the DOS FORMAT command on the corresponding drives, the DOS COPY command to load files onto the emulated drives, DELETE to remove them, the MD command to make directories, etc. The drive can now be made bootable by setting jumper SW2 to designate it as the 1st drive. Make sure that each emulated drive has a unique drive jumper setting.

*Note: SRAM devices require use of a backup battery for data retention.*

#### 2. EPROMs and AMD/Intel 28F010 (+12 V) Flash Devices

ROM disks using EPROMs or AMD/Intel 28F010 (+12 V) Flash devices are different from SRAMs or ATMEL 29C010/29C040 (+5 V) Flash devices. Instead of being formatted and written to using DOS commands, they must be programmed, either on board, or using an external programmer.

### On-board Programming



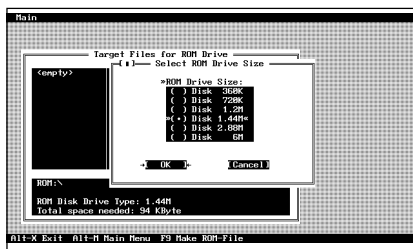
### RomCopy front screen

The PCM-3810's on-board programming circuitry can program the AMD/Intel 28F010 (+12 V) Flash memory. First, make sure that the PCM-3810 is completely configured using the utility program (according to the section above), and that the configuration has been saved to the PCM-3810 (by rebooting). Next, hit **F3**, (RomCopy), and the front screen will appear (see above screen) showing two options: Filecopy and Diskcopy.

Filecopy [1], discussed in depth in the following sections, allows you to select files to be individually copied to your on-board chips. You will be asked to specify the emulated drive to which the files will be copied.

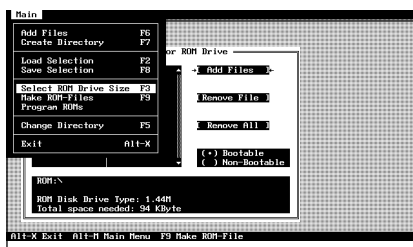
Diskcopy [2] copies the entire contents of a floppy drive at once. You will first be prompted to enter the source drive (the floppy) and the target drive (the PCM-3810 bank to be copied to).

### Selecting files



### Filecopy: Main screen

The Filecopy function begins with the main Filecopy screen. (Shown above). Before selecting the files to be copied, it is necessary to specify the size of the emulated disk. This is done using "Select ROM Drive Size" (shown below) in the Main Menu. The Main Menu (also shown below), is reached by pressing **Alt-M** (press and hold the "Alt" key, then press the "M" key).



## Filecopy: Main screen

Pressing F3 will bring up the options list (shown below) for the ROM disk drive size. Tab through to the required size i.e 1.44 MB and press OK to save your selection.



## Filecopy: Select ROM drive size

The files you wish to copy to the PCM-3810 can be selected via the Add Files option (F6) from the main menu. Now, select the files you wish to copy to the PCM-3810. Files are added to the selection list, on the left side of screen above, by bringing up the Source Files window via the F6 Add Files already detailed above.



## Filecopy: Source Files

The Source Files window (above) allows you to select files from a directory and add them to the selection list. The path is given at the bottom of the window. It can be changed by hitting the **Tab** key. Highlight the files you want to copy using the arrow keys and select them by pressing the spacebar. The total space required by the selected files is shown at the bottom of the screen. Commands for this screen are:

- Alt-S: Select files field. To display only specific files. Type in the files to be displayed using wildcards (\* and ?).
- Selecting a subdirectory selects all the files in that subdirectory.
- Alt-K: To quit selecting and send the selected files to the selection list
- Alt-C: To quit this window without selecting files
- Alt-R: To remove files from the selection list
- Alt-E: To remove all files from the file selection list
- Alt-B: To make the emulated drive bootable. System files required for booting must be copied to the directory containing the utility program
- Alt-X: To exit this screen (or hit ESC)

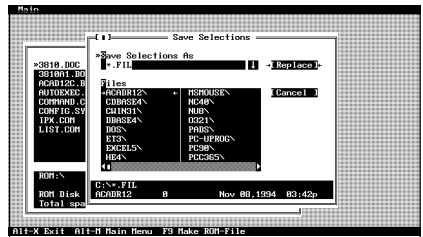
The directory from which files are selected can also be changed from the Main Menu by hitting **F5**. This brings up the Change Directory window, shown below.



## Filecopy: Change Directory

The Change Directory window allows you to select the directory from which to take the files by typing its name from the Directory name entry (Alt-n) or from the directory tree displayed below (Alt-t). The current directory is highlighted. Alt-C changes the directory, Alt-R moves one directory back towards the root. Press Alt-K when you are finished.

Directories can also be created on the PCM-3810's ROM disks. This is done by bringing up the Create Directory dialogue box from the Main Menu, shown below. Type the name of the directory to be created on the PCM-3810's drive into the dialogue box.



## Filecopy: Create Directory

A selection list of files can be saved for later use or recalled using the Save Selection (F8) and Load Selection (F2) functions (shown below), respectively, from the Main Menu. Select the file to be loaded by typing its path in the box provided, or use the cursor keys to highlight it from the list below and select it using the spacebar. Saving a file is done in the same way, just select the save path.



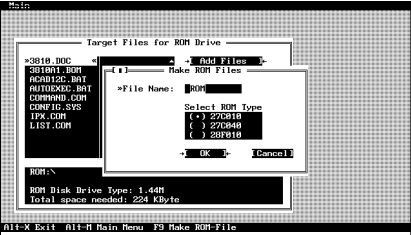
## Save Selection List

This concludes the selection of disk size, directory name and files to be copied.

## Programming

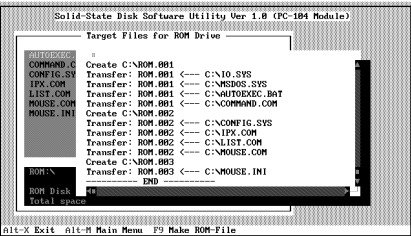
When you are satisfied with the list of files, go to the Main Menu and select either Program ROMs (P), to program the supported devices on-board, or select Make ROM-Files (F9), to transform the selected files into a series of binary files which will then be used by an external programmer to load each memory device.

Select Program ROMs and a window will appear (shown below) requesting the specific memory device to be programmed. Hit the **TAB** key to select the correct device. The files will then be copied to the drive selected when you entered the Filecopy function.



Filecopy: Programming ROMs

Select Make ROM-Files (F9) and a window will appear (shown below) allowing you to specify the names which will be given to the sequence of binary files and the size of the memory devices to be programmed. Up to six characters may be entered for the filename, the last two digits will automatically numbered as the files are created (i.e. ROM.001, ROM.002, etc.)



Make ROM Files



Make ROM Function

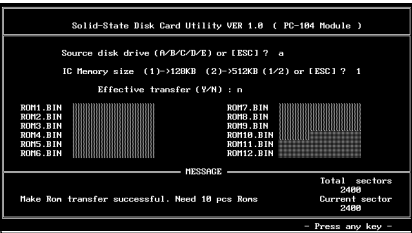
Prepare an EPROM programmer that will support your EPROM or Flash device according to your programmer's specific instructions.

Load the data file for each device into your programmer. Then program each device in sequence (device #1 for socket #1 gets the file ROM.001, etc.) until all the files have been transferred.

Once you have programmed all of your memory devices, insert them into the PCM-3810 as described in the following section. Make sure to get the devices in the proper sockets, otherwise the data or programs will be scrambled.

The Make ROM Function

An alternative method for producing binary files for an external programmer is to copy the required files a floppy disk and use the Make ROM function (F2) from the main utility screen. This brings you to the screen shown below.



Main Utility Screen

This screen asks for the drive letter for the source files and the size of the ROM devices. Next it asks if you want to effect the transfer (Shown below). You must ensure that the data on the source disk is in continuous sectors (run a utility such as Norton Speedisk ect. to format the data in to one continuous block of data) if your not sure about the source data press **N** and check it.



Transfer Screen

This now means all files have been transferred to the storage devices. If the files should be too big for the memory capacity of the PCM-3810 the transfer will halt. When a halt occurs a prompt will appear stating the transfer was unsuccessful. It will also state the required amount of memory required to make an effective transfer.



## Pin Assignments

All PC/104 modules follow the same pin assignments as shown in the table below:

PC/104 Bus signal assignments				
Pin	J1/P1 Row A	J1/P1 Row B	J2/P2 Row C	J2/P2 Row D
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	+12V	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	--	--