

Remove the card from its protective packaging by grasping the rear metal panel. Keep the anti-vibration packing. Whenever you remove the card from the PC, it should be stored in this package for protection.

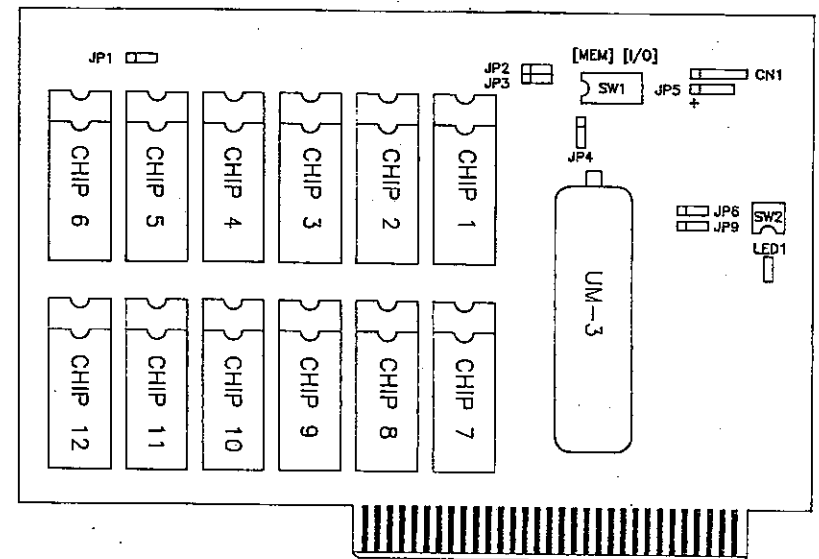
WARNING! Discharge your body's static electric charge by touching the back of the grounded chassis of the system unit (metal) before handling the board. You should avoid contact with materials that hold a static charge such as plastic, vinyl, and styrofoam. The board should be handled only by its edges to avoid static damage to its integrated circuits. Avoid touching the exposed circuit connectors.

PCD-892

CHAPTER 2. BASIC CONFIGURATION

Before installing the PCD-892, you'll need to set its switches and jumpers to configure Master/Slave relationship or the PCD-892s in your system, the card's memory and I/O addresses, battery back-up, watchdog timer, etc. In addition to these physical board settings, you must also use the PCD-892's 892.EXE utility program to configure the sizes and type of your memory devices. See Chapter 5 for detail information about 892.EXE Utility.

Before proceeding any further, please take time to familiarize yourself with the PCD-892's layout, illustrated in the figure shown below.



PCD-892 Board Layout

2.1. Memory Address Selection (SW1)

When installing the PCD-892, you must set its memory address so that it doesn't conflict with your system's setup, and other plug-in cards. DIP switch SW1(marked [MEM][I/O] on the board) is used to select the memory address used by the PCD-892. Select the PCD-892's memory address from the following table, setting Positions 1, 2, and 3 on SW1 accordingly. The default is D0000 - D3FFF.

NOTE: If you're going to install two PCD-892s, make sure that they are both set to the same memory address.

[MEM] switch

POSITION 1	POSITION 2	POSITION 3	MEMORY ADDRESS (HEX)
ON	ON	ON	C0000 - C3FFF
ON	ON	OFF	C4000 - C7FFF
ON	OFF	ON	C8000 - CBFFF
ON	OFF	OFF	CC000 - CFFFF
OFF	ON	ON	*D0000 - D3FFF
OFF	ON	OFF	D4000 - D7FFF
OFF	OFF	ON	D8000 - DBFFF
OFF	OFF	OFF	DC000 - DFFFF

* Factory setting

2.2. I/O Address Selection (SW1)

Switches, 4, 5, and 6 on SW1 also allows you to select the PCD-892's I/O address so that it doesn't conflict with your system's setup, and other plug-in cards.

If you are installing two PCD-892s at one time, it's important that you set the second PCD-892 to an I/O address that is different from the first or else one card will conflict with the other. For example, if you set the first card to I/O address 240 - 247, then you should set the second one to a different address. Select an I/O address for the PCD-892 from the table below. The default is 240 - 247.

[I/O] switch

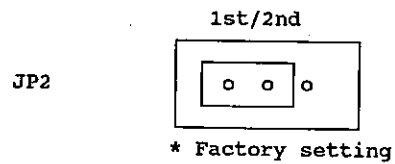
POSITION 4	POSITION 5	POSITION 6	ADDRESS (HEX)
ON	ON	ON	200 - 207
ON	ON	OFF	*240 - 247
ON	OFF	ON	280 - 287
ON	OFF	OFF	2C0 - 2C7
OFF	ON	ON	300 - 307
OFF	ON	OFF	340 - 347
OFF	OFF	ON	380 - 387
OFF	OFF	OFF	3C0 - 3C7

* Factory setting

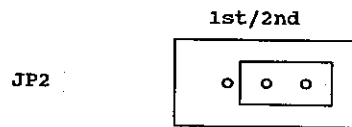
2.3. Master and Slave Card Setting (JP2)

When installing two PCD-892s, one card must be designated as the master, and the other as the slave. Use JP2 to set this feature. If you're only using one card, then set it as the master. The following illustration shows how to set JP2 as either the master or slave:

Master Card setting (JP2)



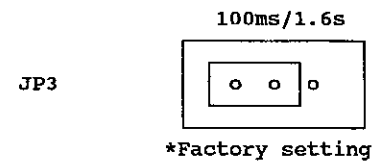
Slave Card setting (JP2)



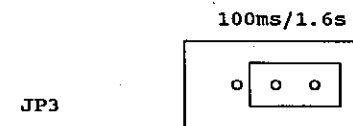
2.4. Watchdog Timer Interval (JP3)

The PCD-892 is equipped with a built-in watchdog timer with interval settings of 100 ms or 1.6 seconds. This device's WDO goes low if it has not been refreshed within the time interval you selected. Programming the watchdog timer is explained in Chapter 6. Select the watchdog's interval by setting JP3 according to the following illustrations.

100 ms Interval setting (JP3)



1.6 sec. Interval setting (JP3)

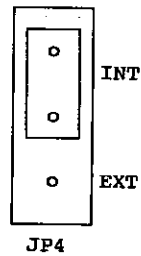


2.5. Selecting an Internal or External Battery Backup (JP4)

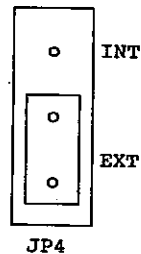
The PCD-892A is equipped with a 3.6V Lithium battery that's used for SRAM data retention when your PC's power is turned off. It has a life span of ten years. An external 3.6V battery backup can also be connected to the card, and used for data retention (see the following section for details).

Set JP4 according to the type of battery you'll use. The following illustrations show the proper jumper settings for both types of batteries. The internal battery should be disconnected when using non-volatile memory devices such as flash memories and EPROMs.

Internal Battery setting(JP4)



External 3.6V Battery setting (JP4)



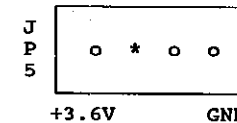
NOTE:

Factory setting is set to use external battery to save energy of the on-board Lithium battery. Be care to set the JP4 to use internal battery if you are using the SRAM.

2.5.1. External Battery Connector (JP5)

When using an external 3.6V battery for SRAM data retention, connect it to JP5's positive and negative pins (see the illustration shown below).

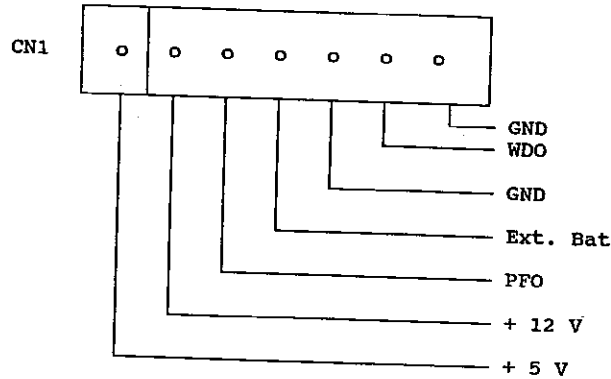
External Battery Connector (JP5)



2.6. The CN1 Connector

The PCD-892's CN1 connector provides convenient connection points for a +5V or +12V power output, and battery power failure output (P.F.O.) and watchdog timer output (W.D.O.) with monitor your system's operational status.

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Power Failure Output (PFO)

CN1's PFO pin outputs a TTL high signal. If the PCD-892's on-board Lithium battery's voltage falls below 2.6V, then the PFO signal will be output as TTL low.

Watchdog Timer Output (WDO)

The PCD-892's watchdog timer outputs a TTL low signal to WDO if it hasn't been refreshed within its time interval.

Information about refreshing the watchdog timer is given in Chapter 6.

External Battery

If you want to use CN1 to connect an external 3.6V battery backup, then connect it to the connector's Ext. Bat. (+3.6V) and GND pins.

2.7. Battery Low Indicator (LED 1)

LED 1 is a indicator to monitor the PCD-892's backup battery power level, if the battery is detected empty or power level lower than 2.6 Volt, then the LED 1 will turn on to warning.

CHAPTER 3. SETTING UP A Flash/RAM/ROM DISK DRIVE

After you've completed setting up the PCD-892's basic configuration, you can then set it up as either a Flash, RAM or ROM disk drive. This chapter includes instructions for configuring the card as an SRAM, EPROM, or Flash memory drive, selecting an appropriate disk drive to emulate, enabling/disabling its write-protect feature, and setting its hardware enable/disable functions.

The PCD-892 support SRAM, EPROM, or Flash memory devices for storing data and executing application programs. However, when using SRAMs, a battery is necessary to maintain data when the system is shut down. The PCD-892A provides an on-board battery for this purpose, with an estimated life of 10 years; the PCD-892B has no internal battery so an external battery must be connected when using volatile memory devices (see Chap.2 for details).

3.1. SRAMs, EPROMs, or Flash Memories

The following sections have been written so that you may gain a better understanding of these devices, and to help you determine which type of device you'll want to use with your application.

3.1.1. SRAMs

Static random access memory (SRAM) devices are volatile, that is they require a battery backup in order for them to retain data when the system is turned off. However, unlike EPROMs, they do not need to be externally programmed. In use they are DOS command compatible, i.e. SRAMs are formatted, and have data read and written to them transparently as though they were a physical floppy drive.

SRAMs have the following advantages:

- They do not have to be programmed like EPROMs.
- These devices are formatted, and have data read and written to them as though they were a disk drive, accepting any DOS commands as if they were a physical floppy drive.

Their disadvantages include:

- They are volatile, and they must use a battery backup in order to retain data.

3.1.2. EPROMs

Unlike SRAMs, electrically programmable read-only memory (EPROM) devices are non-volatile. It is not necessary to use a battery backup for retaining data. When your system is not powered on, the EPROMs' data will not be lost. However, EPROMs must be externally programmed before you install them into the PCD-892. They cannot be reprogrammed unless you erase them with a UV EPROM eraser.

Advantages to using EPROMs include:

- Non-volatile devices; data retention is not dependent upon a battery backup.
- Less expensive than SRAMs or Flash memories.

Disadvantages include:

- Cannot be reprogrammed unless you erase them first.
- Each EPROM must be pulled out of its socket before you can erase and reprogram it.

3.1.3. Flash Memory

Flash memory is the most recent innovation in memory device technology. These state-of-the-art devices offer greater flexibility than SRAMs or EPROMs. They are nonvolatile (they do not require a battery backup) and can be erased and reprogrammed on-board.

The PCD-892 supports two different kinds of FLASH memories, described below:

The ATMEL 29C010 +5V 128Kx8 Flash memory has the following advantages:

- It is non-volatile, requiring no battery backup for data retention.
- They can be read, written to, and formatted with normal DOS commands, while remaining in their sockets, with greater reliability than SRAMs or EPROMs.

Disadvantages include:

- Flash memories are somewhat slower to format and write data to than SRAMs.
- They are more expensive than SRAMs.

The AMD/INTEL 28F010 +12V 128Kx8 Flash memory has the following advantages:

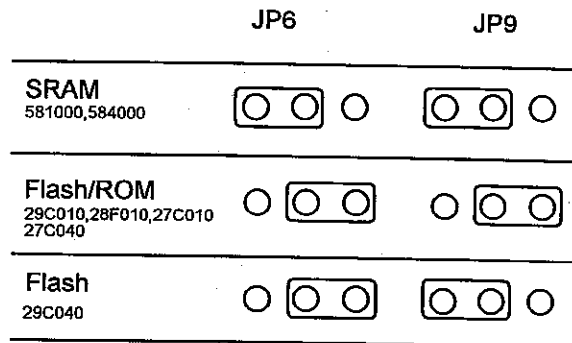
- The device is non-volatile, requiring no battery backup.
- Does not need to be removed for erase and reprogramming.
- The low-cost Flash memory

The disadvantage include:

- It need to use the PCD-892 utility program to erase and reprogram the device.
- The PC's +12V voltage level must be held accurately between +11.5V and +12.5V to ensure nominally programming.

3.2. Flash/RAM/ROM Drive Selection (JP6 and JP9)

The PCD-892 must be configured depending on the type of chips used. Two different jumpers (JP6 and JP9) need to be switched. For SRAMs memories, switches JP6 and JP9 should be connected in the RAM position as shown below.

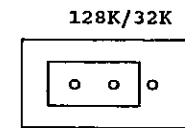


3.3. 512K/128K/32K Memory Size Selection (hardware) (JP1)

The PCD-892 accommodates three different sizes of memories 32Kx8, 128Kx8, and 512Kx8. (See Section 1.2 and Appendix A for more information about the kinds of devices you may use with the PCD-892) . JP1 is used to select the device's size according to your application's requirements. The memory size must also be set, along with other configuration options, through the 892.EXE utility program.

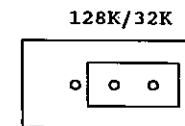
Set JP1 according to the illustrations given below:

512K or 128K configuration (JP1)



*Factory setting

32K configuration (JP1)



3.4. Emulated Drive Designation (SW2)

The PCD-892 emulates only one disk drive when it is installed in your system. With two card's, you can emulate up to two drives - one for each card. In order to designate which drive is to be emulated, you must set Positions 1 and 2 on SW2 for each card according to the following table:

SW2 POSITION 1	SW2 POSITION 2	DRIVE
ON	ON	1st
ON	OFF	2nd
OFF	ON	3rd
OFF	OFF	4th

3.5. Write-Protect Enable/Disable (SW2)

The PCD-892 is equipped with a write-protect feature which is used when the card is emulating an SRAM or Flash memory disk. It protects the data written to the card's SRAMs or Flash memory from being accidentally overwritten. To enable or disable this feature, set Position 3 on SW2 to the appropriate setting given in the following table:

SW2 POSITION 3	ENABLE/DISABLE
ON	Write-protection disabled
OFF	Write-protection enabled

3.6. Hardware Enable/Disable Feature (SW2)

The PCD-892 can be hardware enabled or disabled via Position 4 on SW2. This feature allows you to enable or disable the card when you want to use your conventional disk drive instead of an emulated drive. You can also enable or disable the PCD-892 from your keyboard by using the card's utility program (see Chapter 5). To enable or disable the PCD-892, set SW2 according to the selections given in the following table:

SW2 POSITION 4	ENABLE/DISABLE
ON	PCD-892 enabled
OFF	PCD-892 disabled

3.7. Inserting Your Memory Devices

After you've set all the jumpers and switches on the PCD-892, insert the appropriate memory devices into the card's socket banks. The following Memory Device Configuration Table specifies the type, size, and number of devices it takes to support the PCD-892's various disk capacities.

Remember, EPROMs must be programmed first before insertion.

WARNING!

Do not attempt to mix different memory devices in the PCD-892's memory socket. Doing so could cause serious damage to the card, the devices, and/or your system's hardware. All devices should only be inserted with the notch up. Maintain proper static protection procedures to avoid damage to devices.

Memory Device Configuration Table

DEVICE	360 KB	720 KB	1.2 MB	1.44 MB	2.88 MB (may requires two cards)
SONY CXK58256 32Kx8 SRAM	12 pcs	N/A	N/A	N/A	N/A
SONY CXK581000P 128Kx8 SRAM	3 pcs	6 pcs	10 pcs	12 pcs	24 pcs
SONY CXK584000P 512Kx8 SRAM	1 pcs	2 pcs	3 pcs	3 pcs	6 pcs
27C010 128Kx8 EPROM	3 pcs	6 pcs	10 pcs	12 pcs	N/A
27C040 512Kx8 EPROM	1 pcs	2 pcs	3 pcs	3 pcs	6 pcs
29C010 128Kx8 +5V Flash Memory (ATMEL only)	3 pcs	6 pcs	10 pcs	12 pcs	24 pcs
28F010 128Kx8 +12V Flash Memory (AMD/INTEL)	3 pcs	6 pcs	10 pcs	12 pcs	N/A

3.8. Emulation of 2.88 MB Disk Drive with 2 Cards

To Emulate a 2.88 MB disk with 128KB SRAM or Flash memory devices, two PCD-892 cards are required. See the following instruction for configuration.

1. First, configure one card as MASTER (JP2) and the second card as SLAVE.
2. The MASTER card's size should be configure as 2.88 MB (using the 892.exe program)
3. The SLAVE card should be set as disable (SW2-4)
4. The MASTER and SLAVE cards should both be set to the same memory location(SW1).
5. The MASTER and SLAVE cards should have consecutive I/O address (SW1) with the master lower.

ie, If MASTER is set as (HEX) 200-207
 SLAVE should be set as (HEX) 240-247

NOTE: The same type of memory device must be used on each cards.