

**////LASER™**

PERSONAL COMPUTER

**UDC CARD**

Copy II Plus is a registered trademark of Central Point Software, Inc.

LASER 128, LASER 128EX are registered trademarks of Laser Computer, Inc.

LASER 128EX/2 is a trademark of Laser Computer, Inc.

APPLE, APPLE IIe, APPLE IIgs and ProDOS are registered trademarks of Apple Computer, Inc.

91-2104-25

Printed in Hong Kong

**USER'S GUIDE**



## WHAT IS INSIDE ?

Before you start to work with your UDC Card, check that you've got the following items :

- UDC card
- Copy II Plus® bundle
- Owner's registration card
- 90-day limited warranty card
- This user's manual

If any of the above is missing, please consult your dealer.

## WHAT IS THE UDC CARD ?

The UDC (for Universal Disk Controller) card is a versatile floppy disk controller that works with the following computers :

- LASER 128®
- LASER 128EX®
- LASER 128EX/2™
- APPLE® II+
- APPLE IIe®
- APPLE IIGS®

If you are using your UDC card with the LASER 128 series computers, you will also need an expansion box which can provide extra power and shielding for your peripheral cards. Consult your dealer for availability of the expansion box.

Besides traditional 5.25" drives (143K), the UDC card also supports the larger capacity 3.5" drives (800K). Up to a maximum of four disk drives (two 5.25" drives + two 3.5" drives) can be hooked up with the UDC card. The types of disk drives supported by the UDC card include :

- LASER FD-100c 5.25" drive
- LASER FD-356 3.5" drive
- LASER FD-356DC 3.5" daisy-chain drive
- APPLE 5.25 daisy-chain drive
- APPLE 3.5 daisy-chain drive

The UDC card is automatically recognized by ProDOS® as a block storage device and hence requires no special disk-based software drivers.

## INSTALLING THE UDC CARD

Installation of the UDC card is simple and should take only a few minutes. Read the following paragraphs carefully and follow the instructions step by step.

- First of all, turn OFF your computer (and the expansion box if you are using the LASER 128 series computers).

*WARNING: Do not plug or unplug any peripheral card while your computer is on, Otherwise, your computer and/or the peripheral card may be damaged.*

- If you are using the LASER 128 series computers, plug the expansion box into the 50-way expansion connector on the left side of your computer, following the instructions in the user's manual that comes with the expansion box.

Then plug the UDC card into the slot inside the expansion box which corresponds to port 5 of the computer. Set the "INTERNAL/EXTERNAL PORT 5" switch inside the ROM door on the bottom of the computer to "EXTERNAL" (refer to computer's user's manual for more information on this switch).

*Note: The built-in expansion RAM interface at port 5 of the computer must be disabled when the UDC card is in use. This is necessary because each I/O port can only support one device at a time.*

If you are using an APPLE II+ /IIe/IIGS, just plug the UDC card into any of the peripheral expansion slots (preferably slot 5) located at the rear end of the motherboard. The card will only fit in one direction and so you don't have to worry about inserting the card in the wrong orientation.

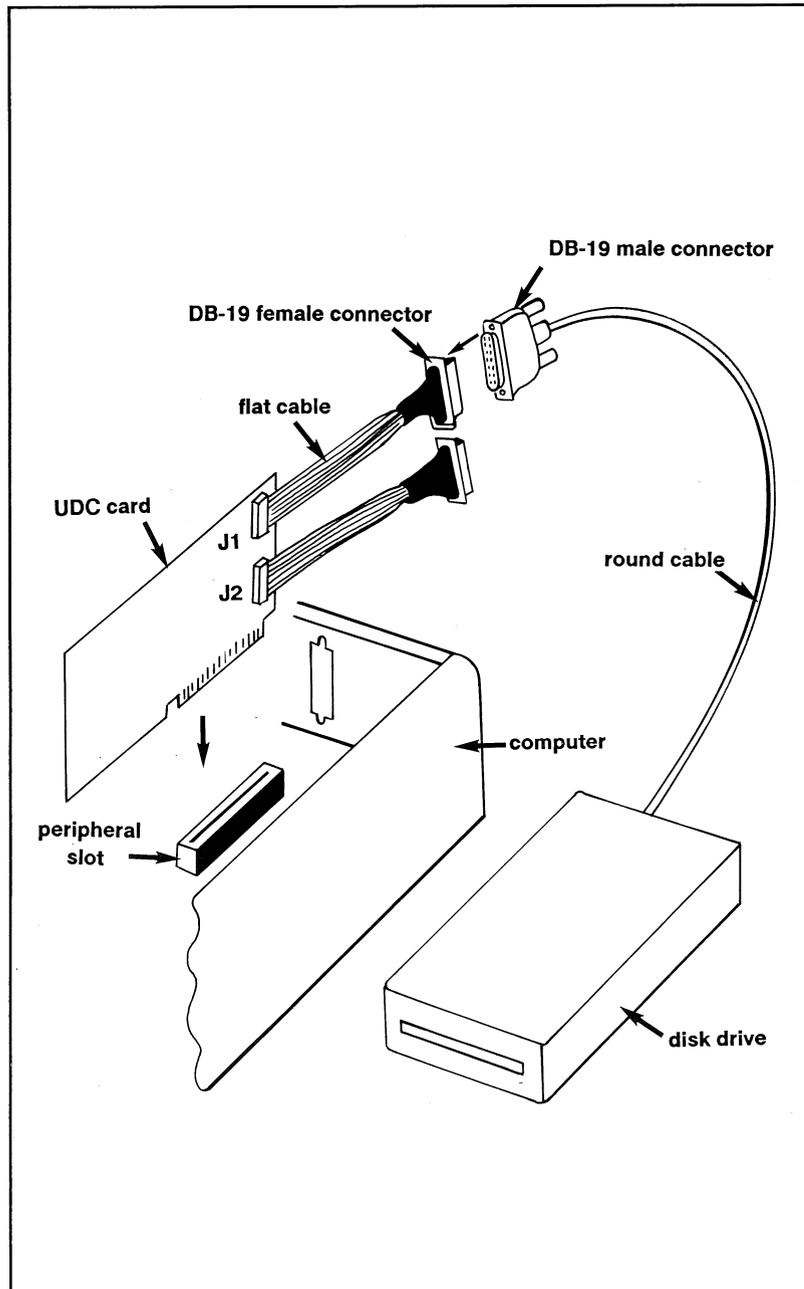


Fig. 1 Installing the UDC card in Apple II+ /IIc /IIGS

- The UDC card comes with two DB-19 female connectors which are connected to the main PCB by 20-way flat cables. They are labelled with J1 (upper) and J2 (lower) on the PCB. On the other hand, your disk drive should have a round cable that terminates with a DB-19 male connector. Connect your drives to J1, J2 or the connector at the back of a daisy-chain drive connected to J1. The allowable drive configurations are shown in the following table:

	J1	J2
(1)	3.5	-
(2)	5.25	-
(3)	3.5	3.5
(4)	3.5	5.25
(5)	5.25	3.5
(6)	5.25	5.25
(7)	3.5/3.5	-
(8)	3.5/5.25	-
(9)	5.25/5.25	-
(10)	3.5/5.25	5.25
(11)	3.5/5.25/5.25	-
(12)	3.5/3.5/5.25	-
(13)	3.5/3.5/5.25/5.25	-

*Note: The "/" sign represents a daisy-chain connection*

The UDC card firmware uses a special sequence to search for devices connected to it. As a result, the logical slot and drive number assigned to a particular physical device will depend on your drive configuration as well as the location of the boot-up device.

For configurations (1) to (6), the device connected to J1 will always be assigned as drive 1 while the device (if any) connected to J2 will be assigned as drive 2.

For configurations (7) to (9), the daisy-chain drive connected to J1 will be assigned as drive 1 while the device connected to the back of the daisy-chain drive will be assigned as drive 2.

Configurations (10) to (13) require the UDC card to be installed in slot 5 in order to work properly. If it is installed in any other slot, then only two of the devices can be recognized and the rest will be ignored. Also note that 3.5" drives must come before 5.25" drives in a chain of devices connected to J1.

For configuration (10), the 5.25" drive connected to J2 will always be assigned as slot 5, drive 2 and cannot be used as the boot-up device. On the other hand, both the 3.5" drive and 5.25" drive connected to J1 are bootable. The boot-up device will always be assigned as slot 5, drive 1 while the other will be assigned as slot 2, drive 1.

Configuration (11) is very similar to (10). The first two devices in the chain will be assigned as either slot 5, drive 1 or slot 2, drive 1 depending on which one is used as the boot-up device. The last device in the chain will always be assigned as slot 5, drive 2.

For configuration (12), the second device in the chain will always be assigned as slot 5, drive 2 and is not bootable. Again, depending on which one is used as the boot-up device, the first and last device will be assigned as either slot 5, drive 1 or slot 2, drive 1.

Finally for configuration (13), the four devices can be classified into two types: 5.25" drive and 3.5" drive. Within each type of device, the one that comes earlier in the chain will be assigned as drive 1 while the other will be assigned as drive 2 and is not bootable. The same type of device will always be assigned to the same slot (either 2 or 5). If you boot from the first 3.5" drive in the chain, then the 3.5" drives will be mapped to slot 5 while the 5.25" drives will be mapped to slot 2. If you boot from the first 5.25" drive in the chain, then the 3.5" drives will be mapped to slot 2 while the 5.25" drives will be mapped to slot 5.

**IMPORTANT:** *Although the electronics of the UDC card is designed to support up to four daisy-chain drives at connector J1, such a configuration is not recommended because signal degradation and electrical noise pick-up along the connection cables will affect reliability adversely. As a result, we suggest you to limit the length of the chain to not more than two.*

Now your UDC card is ready to work!

Turn on your computer. Insert an application program diskette with ProDOS (e.g. the Copy II Plus diskette included) into the appropriate boot-up drive and close the drive door. The program will be loaded into memory and executed automatically.