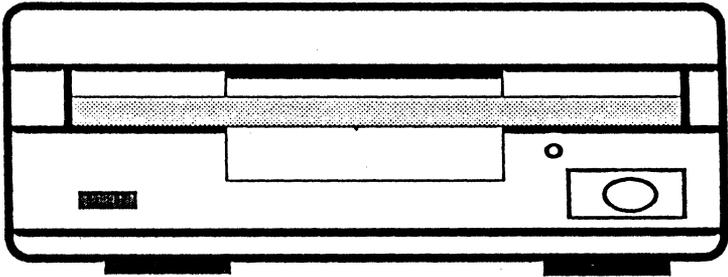


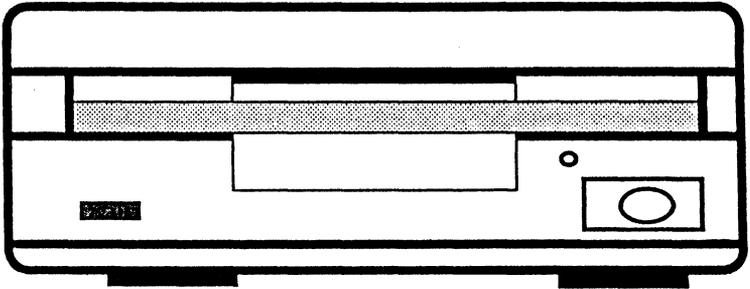
SD-320  
Owner's Guide



800K  
3 1/2" Format

100%  
Apple IIGS®,  
Apple IIc+®  
&  
Macintosh® Compatible

SD-320  
Owner's Guide



800K  
3 1/2" Format

100%  
Apple IIGS®,  
Apple IIc+®  
&  
Macintosh® Compatible

## Warranty

One Year(365 days) from the date of original Retail Purchase  
of this Product.

Proof of purchase required.

SPRITE, Inc warranties this product against defects in material and workmanship for a period of one year (365days) from the date of original retail purchase.

During the warranty period SPRITE, Inc. will repair or at its option replace at no charge the SPRITE, Inc. product that proves to be defective, provided that the SPRITE, Inc. product is returned to the SPRITE, Inc authorized Service Center.

In order to obtain warranty service contact :

SPRITE, Inc.

Customer Service Dept. Rep.

1120 Stewart Court Suite G

Sunnyvale, Ca.94086

(408) 773-8888 During normal business hours, Pacific Standard Time.

FAX:(408)773-8892

for a RETURN AUTHORIZATION NUMBER.

Attach to the SPRITE, Inc. product your name, address, telephone number (to be reached during business hours), a description of the problem and proof of date of retail purchase (Dated bill of sale or cancelled check), and the RETURN AUTHORIZATION NUMBER. Return via prepaid transportation with the RETURN AUTHORIZATION NUMBER prominently posted in the lower left corner of the shipping container.

**NOTE: Items sent without the RETURN AUTHORIZATION NUMBER prominently posted will be refused.**

Continued next page.

**Warranty Limitations:**

**SPRITE, Inc. warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication, has been modified without written permission from SPRITE, Inc. or if any SPRITE, Inc. serial number has been removed or defaced.**

***Warning:*** The yellow shipping protector, that Apple, Inc. supplies with their "800K Drive", was designed to work only with their 800K drives. Its use on the SD-320 drive will cause **damage that is not covered under warranty.**

**Warning:**

This equipment has been certified to comply to the limits of Class "B" computing device, pursuant to sub part "B" of part 15 of the FCC Rules.

See instructions if interference to Video or Radio reception is suspected.

Apple, , Apple IIGS, Apple IIc+, Disk II, ProDOS, GSOS, DuoDisk 5.25, 5.25 Drive, UniDrive 3.5, 3.5 Drive and Macintosh are registered trademarks of Apple Computer, Inc.

Note: This manual is meant to supplement not replace the *Apple Owner's Manual* supplied with your computer. While every precaution has been taken in the preparation of this book SPRITE, Inc. assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

## **Performance Specification:**

Formatted Data Capacity: 819.2 Kbytes  
Data Transfer Rate: 486.6 Kbits  
Disk Rational Speed: 394 to 590 rpm  
Number of Cylinders: 80  
Number of Tracks: 40  
Seek Time [track to track]: 3ms  
Track Density: 135TPI

## **Reliability Specifications:**

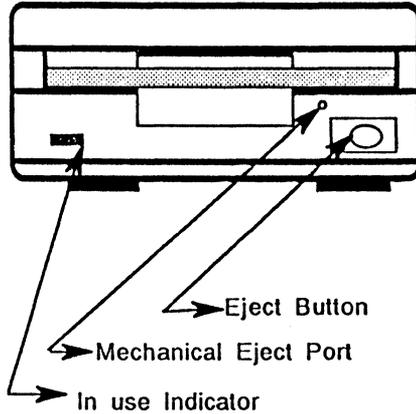
MTBF: 12,000 POH  
[under standard conditions]  
Design Life: 15,000 POH or 5 years  
MTTR: 30 minutes  
Soft Errors:  $10^{-9}$  bits/times  
[not including 2 or less retry  
attempts]  
Hard Errors:  $10^{-12}$  bits/times  
Seek Error Ratio:  $10^{-6}$  seeks/times

## **Physical Specifications:**

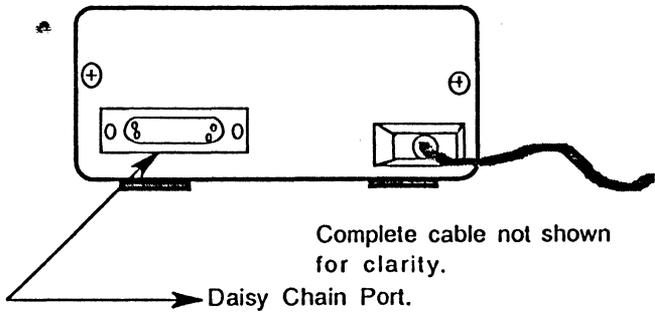
Operating Environment Conditions  
Temperature: 4-48°C  
Relative Humidity: 20-80 %RH  
Maximum wet-bulb Temperature: 29.0°C  
[noncondensing]

**Mechanical Dimensions:**

High =52 MM  
Width =113 MM  
Depth =220 MM  
Weight =900G



Please Note: The front panel eject button is disabled in Mac operation.



# Contents.

## Chapter 1:

<b>Sprite on the GS</b>	<b>Page:</b>
Setting up	8
Installing a second drive	9
Daisy-Chain Drive Combo	10
Chart	11

## Chapter 2:

<b>Sprite on the IIc+</b>	
Installing a second drive	12
Daisy-Chain Drive Combo	13
Chart	15

## Chapter 3:

<b>Sprite on the Macintosh.</b>	<b>16</b>
Mac +	17
SE	17
SE30	17
II	17
IIx	17
IIfx & cx	17
Portable	17

## Chapter 4:

<b>Care and Feeding</b>	
Inserting a Disk	18
Ejecting a disk	
GS	18
IIc+	19
Macintosh	19
Mechanically	19

## Appendixes:

<b>Trouble shooting</b>	<b>Page:</b>
Questions	20
ProDOS Problems	20
<b>Radio &amp; Video Interference</b>	<b>21</b>

## Preface

Your Sprite SD-320 drive gives you the best quality for a most affordable price. Pass on the good words.

The Sprite SD-320 works with the following Apple Computer Systems.

- 🍏 Apple IIc+
- 🍏 Apple IIGS
- 🍏 Macintosh Plus
- 🍏 Macintosh SE
- 🍏 Macintosh SE30
- 🍏 Macintosh IIx
- 🍏 Macintosh IIfx
- 🍏 Portable
- 🍏 Macintosh 512K Enhanced

note: There are no external disk drive ports on the Mac II or IIfx.

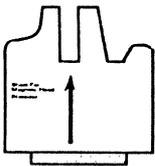
## Chapter 1

### SPRITE on the GS:

This chapter will explain how to set up your Apple GS with a SPRITE SD-320 drive as either your first or second drive.

#### Setting Up

1. Insure the power is off to your computer.
2. Discharge any static electricity that may have been on your body by touching one of the metal connectors on the back of the computer.
3. Plug the SPRITE SD-320 Drive cable into the disk drive port on the back of the computer and tighten the jack screws finger tight.  
[ SEE APPLE GS Manual if you are unsure where the Drive port is].



4. If you haven't done so already, remove the paper MAGNETIC HEAD PROTECTION sheet that was shipped in the drive.  
NOTE: retain for use when transporting your drive.

You are now ready to use your system.  
If you haven't read your *Apple GS Owner's Manual*, please do so now.  
Refer to the *Apple GSOS User's Manual* for copying instructions.

**Warning:** The yellow shipping protector, that Apple, Inc. supplies with their "800K Drive", was designed to work only with their 3.5 drive. Its use on the SD-320 drive will cause damage that is not covered under warranty.

## **Adding a second Drive and Daisy-Chain Drive Combinations:**

When you connect another disk drive to your GS, be it another SPRITE Drive or an APPLE Product, you connect it to the first drive in what is called DAISY-CHAIN fashion. Please refer to your *Apple GS Owner's Manual* for slot assignments on the smart port or see the *Apple GSOS User's Manual* for details.

Any of the following will work:

SPRITE SD-320 (800K)

Apple 3.5 Drive (800K)

UniDisk 3.5 Drive (800K) See note 1

Apple 5.25 Drive (143K)

UniDisk 5.25 Drive (143K)

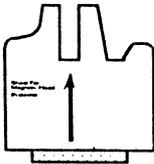
DuoDisk Drive ( Two 143K Drives in one box) See Note 2

Note1: The UniDisk 3.5 will work, but will blink its drive active light while using GSOS. This is normal. It will also only format at the 4:1 ratio and is slower than the SD-320.

Note 2: The DuoDisk 5.25 Drive from Apple **may** need a modification to work properly on the GS Daisy-Chain port. SEE YOUR AUTHORIZED APPLE DEALER for this free modification.

To connect a second drive follow these few steps:

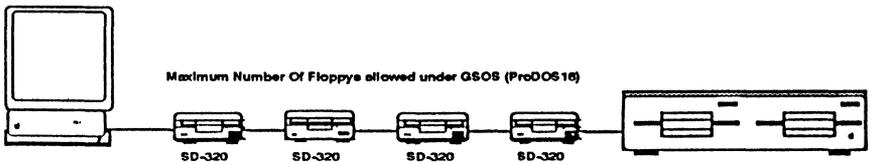
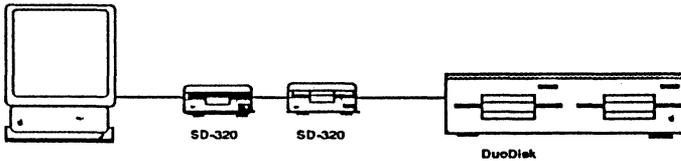
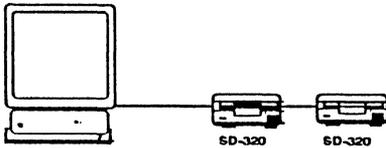
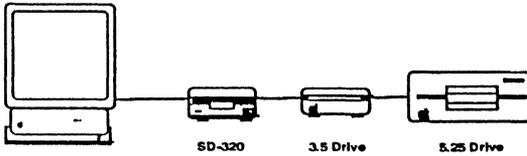
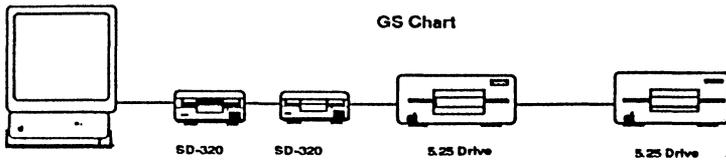
1. Insure the power is off to your computer.
2. Discharge any static electricity that may have been on your body by touching one of the metal connectors on the back of the computer.
3. Plug the second drive's cable into the back of the SPRITE SD-320 Daisy-Chain port and tighten the jack screws finger tight.



4. If you haven't done so already, remove the paper MAGNETIC HEAD PROTECTION sheet that was shipped in the drive.  
NOTE: retain for use when transporting your drive.

**Warning:** The yellow shipping protector that Apple, Inc. supplies with their "800K Drive" was designed to work only with their 800K drive. Its use on the SD-320 drive will cause damage that is not covered under warranty.

See daisy-chain drive hookup chart next page.



The rule to remember is " first comes the 800k drives, then the 5.25 drives".

Daisy Chain chart.

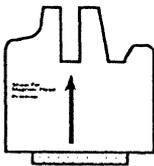
## Chapter 2

### SPRITE on the APPLE IIc+

This chapter will explain how to set up your Apple IIc+ with a SPRITE SD-320 drive as your second 800K drive.

#### Setting Up

1. Insure the power is off to your computer.
2. Discharge any static electricity that may have been on your body by touching one of the metal connectors on the back of the computer.
3. Plug the SPRITE SD-320 Drive cable into the disk drive port on the back of the computer and tighten the jack screws finger tight.  
SEE your Apple Owner's Manual if you are unsure where the Drive port is.



4. If you haven't done so already, remove the paper sheet for MAGNETIC HEAD PROTECTION that was shipped in the drive.  
NOTE: retain for use when transporting your drive.

You are now ready to use your system.  
If you haven't read your APPLE's IIc+ manual,  
please do so now.

**Warning:** The yellow shipping protector, that Apple, Inc. supplies with their "800K Drive", was designed to work only with their 800K drive. Its use on the SD-320 drive will cause damage that is not covered under warranty.

## Daisy-Chain Drive Combinations:

When you connect another disk drive to your IIc+, be it another SPRITE Drive or an APPLE Product, you must connect it to the disk drive port in the back of the unit [it has a disk icon above it] to what is called a DAISY-CHAIN port. Please refer to your *Apple IIc+ Owner's Manual* for drive slot assignment.

Any of the following will work:

SPRITE SD-320 (800K)

Apple 3.5 Drive (800K)

UniDisk 3.5 Drive (800K)

Apple 5.25 Drive (143K)

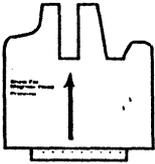
UniDisk 5.25 Drive (143K)

DuoDisk Drive ( Two 143K Drives in one box) See Note

Note: DuoDisk 5.25 Drive from Apple may need a modification to work properly on the Daisy-Chain port SEE YOUR AUTHORIZED APPLE DEALER for this free modification.

To connect an additional SD-320 or a 3.5 Drive, UniDisk, UniDrive or DuoDrive follow these few steps:

1. Insure the power is off to your computer.
2. Discharge any static electricity that may have been on your body by touching one of the metal connectors on the back of the computer.
3. Plug the drive's cable into the SPRITE SD-320 Daisy-Chain port and tighten the jack screws finger tight.



4. If you haven't done so already, remove the paper sheet for MAGNETIC HEAD PROTECTION that was shipped in the drive. NOTE: retain for use when transporting your drive.

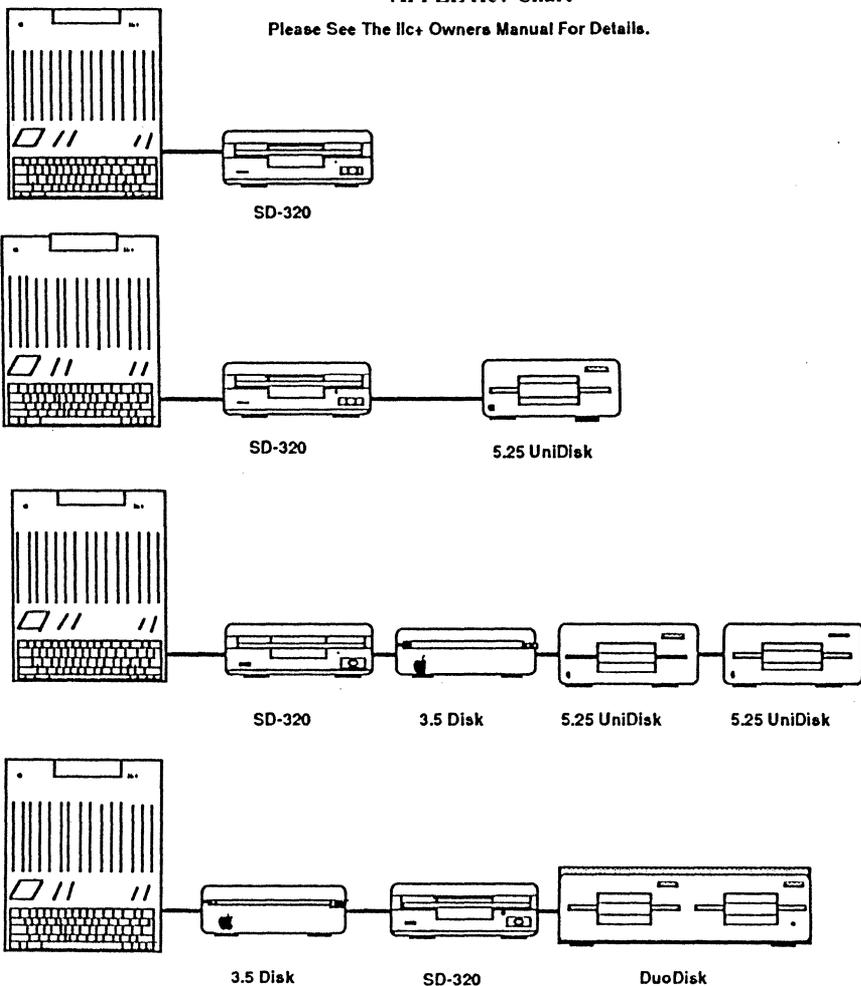
**Warning:** The yellow shipping protector that Apple, Inc. supplies with their "800K Drive" was designed to work only with their 800K drive. Its use on the SD-320 drive will cause damage that is not covered under warranty.

Note: Four additional drives may be connected to the Apple IIc+. Two external 800k 3.5 drive and two 147k 5.25 inch disk drives.

See daisy-chain drive hookup chart next page.

## APPLE IIc+ Chart

Please See The IIc+ Owners Manual For Details.



Rule to remember: First comes the 3.5 drives then the 5.25 drives.

Drive Chart.

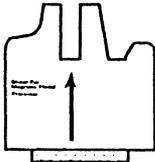
## Chapter 3

### SPRITE on the Macintosh

This chapter will explain how to set up your Macintosh with a SPRITE SD-320 drive.

#### Setting Up

1. Insure the power is off to your computer.
2. Discharge any static electricity that may have been on your body by touching one of the metal connectors on the back of the computer.
3. Plug the SPRITE SD-320 Drive cable into the disk drive port on the back of the computer and tighten the jack screws finger tight.  
SEE your *Macintosh Owner's Manual* if you are unsure where the Drive port is.



4. If you haven't done so already, remove the paper sheet for MAGNETIC HEAD PROTECTION that was shipped in the drive. Retain it for use when transporting your drive.

You are now ready to use your system.

If you haven't read your *Apple Macintosh Owner's Manual* do so now.

**Please Note:** The front panel eject button is disabled in Mac operation.

**Warning:** The yellow shipping protector that Apple, Inc. supplies with their "800K Drive" was designed to work only with their 800K drive. Its use on the SD-320 drive will cause damage that is not covered under warranty.

The SPRITE SD-320 has been tested on the following Macintosh computer systems and found to be compatible.

**512ke:** Connect as in chapter #3. The {Command-shift -@2} keys sequence will eject the disk. NOTE: Place drive on the right side of computer to avoid the electromagnetic field interference [EMI] of the Mac power supply.

**Plus:** Connect as in chapter #3.

**SE:** Note: The {Command-shift-#3} will eject the disk.

*II and IIx: Do not have an external disk drive port. Adapter Cable required.*

**IIcx and Ci:** Connect as in chapter #3.

**Portable:** Connect as in chapter #3.

As in all Macintosh computer systems the front panel eject button and DAISY chain port are nonfunctional.

## Chapter 4

## CARE and FEEDING:

This chapter will explain how to use your SPRITE SD-320 Drive.

### Inserting a Disk:

To insert a 3.5 disk

1. Slide the disk metal end first with the label side up into the slot.

2. Gently push the disk in until the drive's mechanical locking mechanism automatically locks on to the disk [the disk will drop just below the slot but will still be visible].

Your disk is now at the mercy of your computer's operating system. Please refer to the Owner's Manual that came with the computer for details on the operating systems.

### Removing a disk

#### Apple IIGS->

Using the operating system GSOS :

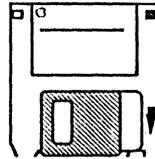
1. Highlight the disk and choose "Eject" from the file menu.
2. Drag the Highlighted disk to the trash can.

Note: Choosing "Shut Down" from the Special menu close all open files before ejecting the disk. This is the recommend method when turning off your GS.

3. Use the eject button.( some data may be lost if files are open.)

Note: Disk will not eject if the *in use indicator* is active.

Apple IIGS-> continued



Using the operating system ProDOS 8:

Use the eject button.

Note:Disk will not eject if the *in use indicator* is active.

**Apple IIc+** -> Use the eject button.

Note:Disk will not eject if the *in use indicator* is active.

**Macintosh.-> Use the operating system by:**

1. Highlight the disk and choose "Eject" from the file menu. or
2. Drag the Highlighted disk to the trash can.

Note: Choosing "Shut Down" from the Special menu close all open files before ejecting the disk, this is the recommended method when turning off your Mac.

3. Press Command-Shift-2.or on a SE Command-Shift-3 [you may lose any unsaved data with this method]

**Note: The front panel eject button is automatically deactivated when the drive is plugged into a Macintosh. The eject button works only on the Apple GS and IIc+ computers.**

**When the power is off:**



Mechanical  
Eject Hole.

In the event you have a disk in the drive and power is not available the disk can be manually ejected by using a straightened-out paper clip or similar object inserted in to the small hole just above the eject button. Using moderate force push on the paper clip until the mechanical eject mechanism releases the disk.

The SD-320 is designed to easily eject the disk. **DO NOT FORCE IT!**

**The above method should never be used while the computer is on!**

## Trouble Shooting:

This chapter will try to cover general questions that are most asked by new users.

» Drive doesn't work?

Check:

Plugged the cable from the drive into the computer.

Did you remove the shipping Head guard.

Is the computer turned on.

Is the drive too close to electromagnetic interference [EMI] source.

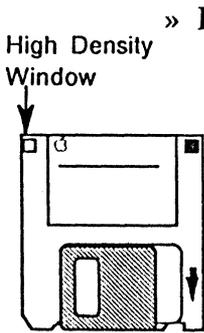
Is the disk a formatted disk, are you using appropriate program instructions to write data to or read data from the drive.

Did you insert the disk properly.

[GS only] check the control panel settings by pressing the  $\text{C}$ -control-esc keys.

If your DS-230 drive still doesn't work contact your dealer.

**DO NOT TRY TO MECHANICALLY  
DISASSEMBLE THE DRIVE, DOING SO  
WILL VOID THE WARRANTY.**



» **Drive gets errors:**

Check:

Is the drive too close to the monitor [Some third party Monitors radiate electromagnetic interference, the left side of Mac's does too].

Are you using the wrong type disks [disks with two write protect style windows are for use on 1.4 m HIGH DENSITY].

Try the same disks on a different computer.

» **I get disk full message in ProDOS but when I view the file with system utilities it said there was more room left. Why?**

Do you have more than 51 files in your first [root] directory, 52 is the maxim allowable under ProDOS rules.

## Radio And Video Interference:

This equipment generates and uses radio frequency energy and if not used properly, that is, in accordance with the manufacturer's instructions, may cause interference to radio and television reception. This equipment has been tested and complies with the limits for Class "B" computing devices in accordance with the specification in Sub part "B", Part 15, of the FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation. If you suspect that this equipment is causing interference, it can be determined by turning your computer off. If the interference stops, it was probably caused by the computer or its peripherals. To determine if it is the SPRITE, Inc. product disconnect the peripheral and test again for interference. If your computer does cause interference you can try the following:

Turn the radio or TV antenna until the interference stops.

Move the computer farther away from the radio or TV.

Use a different power outlet [making sure that the computer and radio/ TV are on different circuits].

If necessary, you should consult the dealer or an experienced radio/ TV technician for additional suggestions.

The FCC offers a booklet that may be of interest: "How to Identify and Resolve Radio-TV Interference Problems" available from the U.S. Government Printing Office, Washington, DC. 20402. ask for Stock No. 004-000-00345-4

**Notes:**

From: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Affix Postage  
Here  
Unstamped Mail  
Cannot Be  
Delivered

*Sprite, Inc.*

**1120 Stewart Court Suite "G"  
Sunnyvale, Ca. 94086**

***Attn: Warranty Manager:***

## **Warranty Registration Card**

**By filling out and sending in this Warranty Registration Card, you will be placed on our mailing list, and will receive information regarding product upgrades, and new Sprite, Inc. products.**

**Product**

**Purchased:** \_\_\_\_\_

**Serial No.:** \_\_\_\_\_

**Company Name:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City:** \_\_\_\_\_

**State:** \_\_\_\_\_

**Zip Code:** \_\_\_\_\_

**Place & Date of Purchase:** \_\_\_\_\_

This Warranty Card must be filled out and sent within 10 days of purchase. Important: Retain your receipts as proof of purchase date.

**Place of Purchase Address:** \_\_\_\_\_

**What computer related publications do you read?** \_\_\_\_\_

**What other products would you like in the future?** \_\_\_\_\_