

MODEL III  
HARD DISK  
INSTRUCTIONS

Radio Shack®



TERMS AND CONDITIONS OF SALE AND LICENSE OF RADIO SHACK COMPUTER EQUIPMENT AND  
SOFTWARE PURCHASED FROM A RADIO SHACK COMPANY-OWNED COMPUTER CENTER, RETAIL  
STORE OR FROM A RADIO SHACK FRANCHISEE OR DEALER AT ITS AUTHORIZED LOCATION

**LIMITED WARRANTY**

**I. CUSTOMER OBLIGATIONS**

- A. CUSTOMER assumes full responsibility that this Radio Shack computer hardware purchased (the "Equipment"), and any copies of Radio Shack software included with the Equipment or licensed separately (the "Software") meets the specifications, capacity, capabilities, versatility, and other requirements of CUSTOMER.
- B. CUSTOMER assumes full responsibility for the condition and effectiveness of the operating environment in which the Equipment and Software are to function, and for its installation.

**II. RADIO SHACK LIMITED WARRANTIES AND CONDITIONS OF SALE**

- A. For a period of ninety (90) calendar days from the date of the Radio Shack sales document received upon purchase of the Equipment, RADIO SHACK warrants to the original CUSTOMER that the Equipment and the medium upon which the Software is stored is free from manufacturing defects. THIS WARRANTY IS ONLY APPLICABLE TO PURCHASES OF RADIO SHACK EQUIPMENT BY THE ORIGINAL CUSTOMER FROM RADIO SHACK COMPANY-OWNED COMPUTER CENTERS, RETAIL STORES AND FROM RADIO SHACK FRANCHISEES AND DEALERS AT ITS AUTHORIZED LOCATION. The warranty is void if the Equipment's case or cabinet has been opened, or if the Equipment or Software has been subjected to improper or abnormal use. If a manufacturing defect is discovered during the stated warranty period, the defective Equipment must be returned to a Radio Shack Computer Center, a Radio Shack retail store, participating Radio Shack franchisee or Radio Shack dealer for repair, along with a copy of the sales document or lease agreement. The original CUSTOMER's sole and exclusive remedy in the event of a defect is limited to the correction of the defect by repair, replacement, or refund of the purchase price, at RADIO SHACK'S election and sole expense. RADIO SHACK has no obligation to replace or repair expendable items.
- B. RADIO SHACK makes no warranty as to the design, capability, capacity, or suitability for use of the Software, except as provided in this paragraph. Software is licensed on an "AS IS" basis, without warranty. The original CUSTOMER'S exclusive remedy, in the event of a Software manufacturing defect, is its repair or replacement within thirty (30) calendar days of the date of the Radio Shack sales document received upon license of the Software. The defective Software shall be returned to a Radio Shack Computer Center, a Radio Shack retail store, participating Radio Shack franchisee or Radio Shack dealer along with the sales document.
- C. Except as provided herein, no employee, agent, franchisee, dealer or other person is authorized to give any warranties of any nature on behalf of RADIO SHACK.
- D. EXCEPT AS PROVIDED HEREIN, RADIO SHACK MAKES NO EXPRESS WARRANTIES, AND ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS LIMITED IN ITS DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES SET FORTH HEREIN.
- E. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation(s) may not apply to CUSTOMER.

**III. LIMITATION OF LIABILITY**

- A. EXCEPT AS PROVIDED HEREIN, RADIO SHACK SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO CUSTOMER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED OR ALLEGED TO BE CAUSED DIRECTLY OR INDIRECTLY BY "EQUIPMENT" OR "SOFTWARE" SOLD, LEASED, LICENSED OR FURNISHED BY RADIO SHACK, INCLUDING, BUT NOT LIMITED TO, ANY INTERRUPTION OF SERVICE, LOSS OF BUSINESS OR ANTICIPATORY PROFITS OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OR OPERATION OF THE "EQUIPMENT" OR "SOFTWARE". IN NO EVENT SHALL RADIO SHACK BE LIABLE FOR LOSS OF PROFITS, OR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY BREACH OF THIS WARRANTY OR IN ANY MANNER ARISING OUT OF OR CONNECTED WITH THE SALE, LEASE, LICENSE, USE OR ANTICIPATED USE OF THE "EQUIPMENT" OR "SOFTWARE". NOTWITHSTANDING THE ABOVE LIMITATIONS AND WARRANTIES, RADIO SHACK'S LIABILITY HEREUNDER FOR DAMAGES INCURRED BY CUSTOMER OR OTHERS SHALL NOT EXCEED THE AMOUNT PAID BY CUSTOMER FOR THE PARTICULAR "EQUIPMENT" OR "SOFTWARE" INVOLVED.
- B. RADIO SHACK shall not be liable for any damages caused by delay in delivering or furnishing Equipment and/or Software.
- C. No action arising out of any claimed breach of this Warranty or transactions under this Warranty may be brought more than two (2) years after the cause of action has accrued or more than four (4) years after the date of the Radio Shack sales document for the Equipment or Software, whichever first occurs.
- D. Some states do not allow the limitation or exclusion of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to CUSTOMER.

**IV. RADIO SHACK SOFTWARE LICENSE**

- RADIO SHACK grants to CUSTOMER a non-exclusive, paid-up license to use the RADIO SHACK Software on one computer, subject to the following provisions:
- A. Except as otherwise provided in this Software License, applicable copyright laws shall apply to the Software.
- B. Title to the medium on which the Software is recorded (cassette and/or diskette) or stored (ROM) is transferred to CUSTOMER, but not title to the Software.
- C. CUSTOMER may use Software on one host computer and access that Software through one or more terminals if the Software permits this function.
- D. CUSTOMER shall not use, make, manufacture, or reproduce copies of Software except for use on one computer and as is specifically provided in this Software License. Customer is expressly prohibited from disassembling the Software.
- E. CUSTOMER is permitted to make additional copies of the Software only for backup or archival purposes or if additional copies are required in the operation of one computer with the Software, but only to the extent the Software allows a backup copy to be made. However, for TRSDOS Software, CUSTOMER is permitted to make a limited number of additional copies for CUSTOMER'S own use.
- F. CUSTOMER may resell or distribute unmodified copies of the Software provided CUSTOMER has purchased one copy of the Software for each one sold or distributed. The provisions of this Software License shall also be applicable to third parties receiving copies of the Software from CUSTOMER.
- G. All copyright notices shall be retained on all copies of the Software.

**V. APPLICABILITY OF WARRANTY**

- A. The terms and conditions of this Warranty are applicable as between RADIO SHACK and CUSTOMER to either a sale of the Equipment and/or Software License to CUSTOMER or to a transaction whereby RADIO SHACK sells or conveys such Equipment to a third party for lease to CUSTOMER.
- B. The limitations of liability and Warranty provisions herein shall inure to the benefit of RADIO SHACK, the author, owner and/or licensor of the Software and any manufacturer of the Equipment sold by RADIO SHACK.

**VI. STATE LAW RIGHTS**

- The warranties granted herein give the original CUSTOMER specific legal rights, and the original CUSTOMER may have other rights which vary from state to state.



# HARD DISK INSTRUCTIONS

**Radio Shack®**

A DIVISION OF TANDY CORPORATION  
FORT WORTH, TEXAS 76102

LDOS™ Operating System:  
©1981, 1982 Logical Systems, Inc.  
Licensed to Tandy Corporation  
All Rights Reserved.

TRSDOS® Operating System:  
©1980 Tandy Corporation  
All Rights Reserved.

Hard Disk Instructions Manual:  
©1983 Tandy Corporation  
All Rights Reserved.

Reproduction or use, without express written permission from Tandy Corporation, of any portion of this manual is prohibited. While reasonable efforts have been taken in the preparation of this manual to assure its accuracy, Tandy Corporation assumes no liability resulting from any errors or omissions in this manual, or from the use of the information contained herein.

## Introduction

This document is for hard disk owners only. Part I explains how to move Radio Shack® applications to your hard disk. Part II explains the backup procedures you should use to preserve the data on your hard disk.

Before continuing, do the following:

1. Read your *Hard Disk System Start-up Manual*.
2. Make backups of your two LDOS™ diskettes: the HARD DISK OPERATING SYSTEM diskette and the INITIALIZATION diskette.
3. Initialize your hard disk system.

**Note:** No LDOS disk and device drivers or filters may be used with the COBOL Accounting Series. For detailed information concerning these drivers, please refer to your *Hard Disk Operating System Reference Manual*.

4. Make backups of your application diskettes under TRSDOS®.  
(Follow the instructions in your application manual.)

Now you are ready to continue.





## Table of Contents

### Part I:

Moving Radio Shack Application Programs to Hard Disk .....	1
--	---

### Part II:

Hard Disk Backup Procedures .....	3
Using BACKUP .....	4
Using HARDCOPY .....	6
Copying a Large Hard Disk File .....	6
Restoring a HARDCOPY File .....	8
HARDCOPY Errors .....	10



## PART I: MOVING RADIO SHACK APPLICATION PROGRAMS TO HARD DISK

1. Start-up or reset the Hard Disk System (with the START-UP diskette in floppy Drive 0). The computer then assigns your drives logical numbers.

When the LDOS Ready prompt appears, remove the START-UP diskette.

2. Place the application diskette in what is now logical Drive 4 (floppy Drive 0).
3. Type the CONVerT command:

**CONV :4 :d (Q=N) (ENTER)**

where *d* is the number of the drive the diskette is normally in when using a floppy disk system. (Q=N tells LDOS to move all files without prompting.)

Examples:

If the diskette is labeled PROGRAM or DRIVE 0, type  
**CONV :4 :0 (Q=N) (ENTER)**.

If the diskette is labeled DATA or DRIVE 1, type **CONV :4 :1 (Q=N) (ENTER)**.

If the diskette is labeled DRIVE 2, type **CONV :4 :2 (Q=N) (ENTER)**.

The CONVerT utility moves the disk files from logical Drive 4 to the hard drive you specified, showing each file name.

4. When the files have been moved, LDOS Ready re-appears. Remove the application diskette and store it in a safe place.
5. Repeat Steps 1-4 for all your application diskettes.
6. Your hard disk drive now contains the application program(s). To patch COBOL so that it runs properly under hard disk, type **DO COBHD/FIX (ENTER)**.

You must run this program or your COBOL application program(s) won't run properly.

**Note:** If you get an **ERROR 20** when attempting to use your application program, move RUNCOBOL to your hard disk and then repeat Step 6, above. (To move RUNCOBOL to your hard disk, insert the PROGRAM or DRIVE 0 application diskette in logical Drive 4 — floppy Drive 0. Type **CONV RUNCOBOL/CMD:4 :0 (Q=N) (ENTER).**)

## PART II: HARD DISK BACKUP PROCEDURES

You can protect the data and programs stored on your hard disk by creating and maintaining a "backup library." A backup library is a group of diskettes that contain all the data you have entered.

Your application program manual suggests backup library requirements tailored to your application program. You might find another method more suited to your needs, but it is essential that you have some kind of backup library. Be sure to back up your hard disk at least every other day, more often if your application program or heavy usage requires it. An up-to-date backup library ensures that you'll be able to retrieve most of your data if an accident (such as a misplaced report, equipment malfunction, or power failure) should happen.

You can make copies of the programs and data on your hard disk in two ways:

- **BACKUP** — copies all or some of the files on your hard disk onto floppy LDOS-formatted floppy diskettes. BACKUP cannot copy files that are larger than 174K bytes.
- **HARDCOPY** — copies individual files of any size onto LDOS-formatted floppy diskettes. The files cannot be used while on floppy diskettes. To use them, restore them to their original form on hard disk with the **HARDCOPY** read option.

## USING BACKUP

To safeguard the information you have stored on hard disk, periodically make a backup copy on floppy diskettes:

1. Start-up or reset the computer with the START-UP diskette.
2. Determine how many LDOS-formatted floppy diskettes you need. (You may need up to 28 diskettes.) To do this, display the directory for the hard disk by typing the DIR command with the allocation (A) parameter.

Examples:

To show the total space consumed by the files on hard Drive 1, type **DIR :1 (A, I, S) (ENTER)**.

To show the total space consumed by data files on hard Drive 1, type **DIR \$/DTA:1 (A) (ENTER)**.

To show the total space consumed by the COBOL program files on hard Drive 0, type **DIR \$/COB:0 (A) (ENTER)**.

The column labeled Space indicates the amount of space that the files on that disk use. Add the space requirements of all the files listed. (If the directory shows that an individual file exceeds 174K bytes, do not include the space used by that file in the total. You need to use **HARDCOPY** to copy that file. See "Using **HARDCOPY**." ) There is no limit to the total amount of space.

Divide the total by 174. (A newly formatted floppy diskette can hold approximately 174K or 178,176 bytes.) Round up the result to the next whole number. For example, if the directory allocation table shows the total space to be 435K, you need three floppy diskettes:

$$435 / 174 = 2.5 \text{ (rounded up = 3)}$$

3. Format the number of floppy diskettes you need. (It is a good idea to format one extra in case of a problem.) To format a diskette, place a blank or old diskette in what is now Drive 4 (floppy Drive 0). Be sure the write-protect notch is **not** covered. Type **FORMAT :4 (Q=N) (ENTER)**.

When finished formatting the diskette in Drive 4, LDOS displays:

Formatting Complete

Note: Real time clock no longer accurate

LDOS Ready

4. With one of the formatted diskettes in Drive 4, type the **BACKUP** command.

Examples:

To copy each file on hard Drive 1 to the floppy diskette in Drive 4, type **BACKUP :1 :4** **(ENTER)**.

If you have the COBOL Accounts Receivable program on hard disk and you wish to copy your Accounts Receivable data from Drive 1 to a floppy diskette in Drive 4, type **BACKUP AR\$/DTA:1 :4** **(ENTER)**. "AR\$" tells LDOS to copy files that start with the letters "AR." "DTA" tells LDOS to copy data files only. (If you want to use this method to copy the data files of a different program, find out what letters the files of the program start with by entering the **DIR** command as instructed in Step 2.)

If you have the COBOL General Ledger program on hard disk and you wish to copy the program from Drive 0 to a floppy diskette in Drive 4, type **BACKUP GL\$/COB:0 :4** **(ENTER)**. "GL\$" tells LDOS to copy files that start with the letters "GL." "COB" tells LDOS to copy program files written in COBOL.

After you enter the **BACKUP** command, the message Backup Reconstruct Invoked appears on the screen. Then, the screen shows the name of each file as it is being copied.

5. When the floppy diskette becomes full, LDOS prompts you to insert a newly formatted diskette. Remove the diskette currently in Drive 4, insert a newly formatted diskette, and press **(ENTER)**. (It is not unusual for a file to take up less space on a floppy diskette than on a hard disk.)

When **LDOS Ready** appears, the **BACKUP** is complete.

You can also use the **BACKUP** command to copy programs and/or data from an LDOS formatted floppy diskette to hard disk. For example, to copy the programs and data from a floppy diskette in Drive 4 to Hard Drive 0, type **BACKUP :4 :0** **(ENTER)**.



## USING HARDCOPY

HARDCOPY/BAS is an LDOS utility that copies individual files from hard disk to floppy diskettes. HARDCOPY can copy files that are too large for BACKUP to copy. The files that HARDCOPY copies onto floppy diskettes are for backup purposes only — before trying to use these files, restore them to their original form on hard disk with the HARDCOPY read option.

### Copying a Large Hard Disk File

1. Start-up or reset the computer with the START-UP diskette.
2. Determine how many LDOS-formatted floppy diskettes you need. To do this, display the directory "allocation table" by typing the DIR command followed by the hard drive number and (A). For example, to show the total space consumed by the files on hard Drive 1, type **DIR :1 (A) (ENTER)**.

The column labeled Space indicates the amount of space that the given file uses on that disk. Divide this number by 174. (A newly formatted floppy diskette can hold approximately 174K or 178,176 bytes.) Round up the result to the next whole number. For example, if the directory allocation table shows the total space to be 435K, you need three floppy diskettes:

$$435 / 174 = 2.5 \text{ (rounded up = 3)}$$

3. Format the number of floppy diskettes you need. (It is a good idea to format one extra in case of a problem.) To format a diskette, place a blank or old diskette in logical Drive 4 (floppy Drive 0). Be sure the write-protect notch is **not** covered. Type **FORMAT :4 (Q=N) (ENTER)**.

When finished formatting the diskette in Drive 4, LDOS displays:

```
Formatting Complete
Note: Real time clock no longer accurate
LDOS Ready
```



4. Run the HARDCOPY utility (actually an LBASIC program) by typing **LBASIC (F=2, B=N) RUN"HARDCOPY/BAS"** **(ENTER)**.

5. HARDCOPY displays the following main menu:

HARDCOPY - Disk file Backup Utility - Ver. X  
Copyright (C) 1982 by Logical Systems, Inc.

<C> Create Backup copy  
<R> Read in Backup copy  
<@> to Exit

Your Selection ?

Type **C (ENTER)**.

6. The screen shows:

HARDCOPY - Disk file Backup Utility - Ver. X  
Copyright (C) 1982 by Logical Systems, Inc.

CREATING Backup files

Enter SOURCE drive ?

Enter the source drive. For example, if the disk file you want to copy is on hard Drive 1, type **1 (ENTER)**.

7. LDOS asks:

Enter DESTINATION drive ?

Place an LDOS-formatted diskette in Drive 4 and type **4 (ENTER)**.

8. LDOS asks:

Enter filespec ?

Enter the file name, including any extension or password of the file to be copied. Do not enter the drive number. For example, type **EXAMPLE/BAS (ENTER)**.

9. LDOS then copies the file, showing the number of records it is copying. When the floppy diskette is full, LDOS shows:

Destination disk is full - insert new disk and hit <ENTER>

If a SOURCE disk I/O error (explained in "HARDCOPY Errors") has occurred, LDOS also shows:

### SOURCE errors detected and marked

Remove the floppy diskette and insert a new one. Press (ENTER) and LDOS continues until all the records are copied.

10. Each time you insert a floppy diskette, HARDCOPY checks it for any problems. If it finds one, it shows an error.

When finished, LDOS lets you know if it found any defective records. It then returns you to the main menu. Press (@) to return to LBASIC, then type CMD"S" (ENTER) to return to LDOS Ready.

You now have a backup of your hard disk file. Number and label each floppy diskette with the date and the name of the file.

The file cannot be used while it is on floppy diskettes. To use the file, restore it to the hard disk, using the HARDCOPY read option.

## Restoring a HARDCOPY File

To restore a "hardcopy" file backup to its original state on a hard disk, follow these steps:

1. Start-up or reset the computer with the START-UP diskette.
2. Run the HARDCOPY utility (actually an LBASIC program) by typing LBASIC (F=2,B=N) RUN"HARDCOPY/BAS" (ENTER).

3. HARDCOPY displays the following main menu:

HARDCOPY - Disk file Backup Utility - Ver. X  
Copyright (C) 1982 by Logical Systems, Inc.

<C> Create Backup copy  
<R> Read in Backup copy  
<@> to Exit

Your Selection ?

Type **R** **(ENTER)**.

4. The screen shows:

Reading Backup files

Enter SOURCE drive ?

Insert the first diskette of the backup file into a drive and enter the drive number.

5. HARDCOPY asks:

Enter DESTINATION drive ?

Enter the hard disk drive number where you want to store the file.

6. HARDCOPY asks:

Enter filespec ?

Enter backup file's name. This must be the same name you used to create it.

7. HARDCOPY then begins moving each record in the file, checking each record as it moves it. After copying the first diskette, HARDCOPY prompts you to insert the second diskette.

Insert another diskette containing part of the file. (You can copy the diskettes in any order — HARDCOPY places all the records in their proper location.)

8. When finished restoring the file, **HARDCOPY** returns to the main menu. Press **(@)** to return to **LBASIC**, then type **CMD"S"** **(ENTER)** to return to **LDOS Ready**.

## **HARDCOPY Errors**

These are error messages you might get while using **HARDCOPY**:

**DESTINATION disk I/O error** — the record number shown on the screen contains an error. You can continue the copy by pressing **(ENTER)**. However, **LDOS** will not copy the record with the error. To abort the copy, press **(@)**.

**DESTINATION disk is flawed - Copy suspended** — **Hardcopy** cannot use the destination diskette. Remove it and insert a new one. Press **(ENTER)** and the copy re-starts at the current block of records. To abort the copy, press **(@)**.

**File not on SOURCE drive - <ENTER> to continue** — the source drive does not have the file you specified. Perhaps it has a password or extension that you didn't enter. To return to the main menu, press **(ENTER)**.

**SOURCE disk I/O error** — the record number shown on the screen contains an error. You can continue the copy by pressing **(ENTER)**. However, **LDOS** will not copy the record with the error and will mark it as not copied in the destination file. To abort the copy, press **(@)**.

**SOURCE file is empty - <ENTER> to continue** — the file exists but contains no records. Press **(ENTER)** to return to the main menu.

**Unacceptable File Name** — you entered a file name which included a drive number. **Hardcopy** prompts you to enter the filespec again, without the drive number.



**RADIO SHACK, A DIVISION OF TANDY CORPORATION**

**U.S.A.: FORT WORTH, TEXAS 76102  
CANADA: BARRIE, ONTARIO L4M 4W5**

---

**TANDY CORPORATION**

AUSTRALIA	BELGIUM	U. K.
91 KURRAJONG ROAD MOUNT DRUITT, N.S.W. 2770	PARC INDUSTRIEL DE NANINNE 5140 NANINNE	BILSTON ROAD WEDNESBURY WEST MIDLANDS WS10 7JN