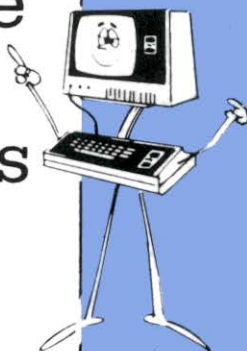


# Radio Shack®

## Information Guide For New Computer Owners



Things you should know about:

- Capabilities of a Microcomputer
- Expanded Systems
- Choosing a Location
- Environmental Considerations
- Handling Cassettes & Diskettes
- Our Software Library
- Trouble-Shooting
- Warranty

# Introduction

This booklet has been prepared to give you some information about Radio Shack's unique product . . . the TRS-80<sup>®</sup> microcomputer.

Personal computers are still a relatively new idea, and people do not have a basic understanding of them like they do of CB radios, hi-fi or calculators. For example, you probably know that CB's in cars are subject to motor noise. But by comparison, you may not know that static electricity can affect computers. This is the basis on which we present this booklet. Chances are excellent that you will never experience any of the problems discussed here, and you can make problems even more unlikely by being aware of them. Then, should they come up, you'll have a better understanding of why they've happened and how to deal with them.

You'll find that owning a microcomputer can be very advantageous in business or education. And after you've seen what a computer can do for you, you may even consider it essential to your work. If you're curious or intrigued, or if you're a computer hobbyist, you may well find it one of the most fascinating and challenging activities you've ever experienced.

We at Radio Shack sincerely appreciate your choice of our TRS-80. We're confident that as you become familiar with personal computing and personal computers, you will find that the TRS-80 is the better choice from the standpoint of computing power, investment, and service (should you need it).

# Capabilities

Microcomputers such as Radio Shack's TRS-80 are small computers. They differ from their larger counterparts primarily in speed and the amount of "on-line" data they can store at one time.

While a very large computer system could perform inventory management for the largest corporations, a microcomputer would be limited in its practical ability to go beyond an inventory of one to three thousand items. The actual limits depend on several factors, such as the amount of information to be stored on each item and the way the program itself is written. In some applications, only the programmer can determine just how much memory or how many mini-disk drives will be required to do a particular job. Radio Shack's programs will normally have specified limits which you can relate directly to your needs without any questions.

Many large businesses will find that, even though they have a large in-house computer, a TRS-80 might be just the right size for a specific small job within their organization.

## Expanded Systems

### General

The philosophy behind Radio Shack's TRS-80 is to provide a computer which offers the most effective balance between computing power and cost. Level I BASIC offers an easy-to-learn, yet moderately powerful programming language. It's an excellent language for the novice to use when learning how to program in BASIC. Level II is one of the most powerful versions of BASIC available, and it has much more appeal to the accomplished programmer. It is sufficiently "upwards compatible" to allow easy transition for the novice who has learned and become comfortable with Level I.

In balancing cost with performance, some compromises were required . . . for example the lack of lower-case letters. Some

specific uses will not lend themselves to a particular computer system for this reason. You should define your intended use before choosing a system. No computer system can be "all things to all people".

## Printers

Radio Shack offers a variety of printers. Some produce plain-paper copy and even print on pre-printed checks, invoices or mailing labels. Others use special electro-sensitive aluminum-coated paper, but produce printed copy at a much lower hardware cost. Again, the choice should be made based on your intended uses. If you are going to use your system for business, one of the TRS-80 line printers (26-1150 or 26-1152) is highly recommended. For continuous printed forms such as invoices or checks, you must use the 26-1152.

## Mini Disk Drives

Large computers use very expensive magnetic "hard disk" drives for data and program storage. Floppy disk drives are only a very small fraction of the cost of the big hard disk drives. They, too, are intended for data and program storage, but with some limitations. Hard disks are read by "heads" which float above the disks on a cushion of air. The head is never actually in contact with the disk, so no wear occurs. Floppy disks, both standard size and mini-floppy, operate with the head and the diskette in direct contact, and minimal wear does occur. Therefore, floppy disks are not intended for continuous operation in the same sense that large drives are. For example, sorting your list of inventory items into alphanumeric order can be done directly on a hard disk, but is done best on a floppy disk system by loading the items (or a portion of them) into memory, doing an in-memory sort, and then storing them back out on disk. Again, you should understand the capabilities of microcomputer systems and their peripherals.

# Choosing a Location

Large computer systems require temperature and humidity-controlled environments with air filtration systems to



eliminate dust and other contaminants, and they must never be used in carpeted rooms if they are to operate reliably. Fortunately, the TRS-80 is not so demanding.

At the same time, certain considerations in the location you choose for your microcomputer will have a direct effect on its operation and reliability. For best results, you should keep them in mind when choosing the location.

## Power Line Interference

Any complex electronic equipment is sensitive to power line conditions affecting the voltage and current coming out of your wall socket. Computers are probably more sensitive than other electronics because even the loss of one bit (one tiny electrical charge) of information can cause a program to "bomb out" or a data file to be lost. This is rarely a problem unless you are operating in an environment where heavy electrical machinery is in operation. Yet you might experience trouble if a home appliance or office machine has a defective switch which arcs when turned on or off. If this happens you will have to 1) fix the appliance or isolate the power going to the computer either by 2) installing a separate power line or 3) a line filter. In a severe case, both 2 and 3 may be required. If you are in an area where power is lost completely on a regular basis, good programming practice dictates that you periodically save your program during development so that you don't lose it all if power fails. Your computer's memory is "volatile", and it disappears if power is lost even for very short periods. "Brownouts", periodic drops in line voltage to unusually low levels, or power line "spikes", transient surges of very large voltage levels lasting only a fraction of a second, may require the addition to your system of a "constant voltage transformer".

Power line problems are rare and many times can be solved before they occur by proper choice of installation location for your computer system. The more complex the system, the more consideration you should give to your installation.

## Static Electricity

In dry climates and certain seasons, you can walk across a carpet and feel a static discharge when you touch a metal

object. Under some climatic conditions, even your clothing can build up this kind of charge, too small for you to normally feel. These static charges can damage magnetically-stored computer data. Larger charges can even wipe out your computer's memory or cause it to appear to "lock up". If you're in a part of the country where humidity is lower than about 40%, be wary! Ideal humidity level for the operation of a computer is 50% or above. The safest bet is to use a non-carpeted room for your computer, and if you find a really stubborn problem, a humidifier should do the trick. An anti-static floor mat at the computer operator's position can also help.

This also is a rather infrequent problem in actual practice, so rest assured we're not trying to infer that you will have this or any of the other problems discussed. We're simply explaining why choice of your installation location should be given consideration and what to do just in case you do encounter a problem.

## Cassettes and Diskettes

Radio Shack's TRS-80 uses magnetic storage media for permanent and semi-permanent storage of programs and data files. The media used is either cassette tapes or "mini-floppy" diskettes.

Cassettes used in audio applications don't have to be as good as those used for digital computer data. A small "hole" in the magnetic coating of an audio tape causes no discernible "drop-out" of the sound, but since 500 bits of data are recorded on tape each second, you can see that a small "hole" passing the head for only 1/500th of a second could cause loss on that bit. If one bit is lost, that tape file is no good. Certified digital cassette tapes, such as Radio Shack's 26-301, have been individually tested and are certified not to have any such problems.

You can imagine also (with the new knowledge you have just gained), that it doesn't take too large a speck of dust, cigarette ash or other contaminant to cause a problem. So keep your recorder and its recording head clean, and store tapes in their plastic box, preferably in a clean environment.

Since the tapes are magnetic, they should be kept away from electric or magnetic fields. This includes motors, magnetic tools, static electricity, excessive heat, etc. Be careful not to lay them on top of your cassette recorder. (It contains a motor.)

Diskettes are much like cassette tapes, but in a different form. They are round mylar disks, magnetically coated, and housed in a protective paper jacket. The jacket is specially coated on the inside with a material which cleans the disk as it rotates in the drive. Diskettes are subject to the same rules stated above for cassettes, with these additions:

1. When not in use, store diskettes in an upright position in their storage envelope.
2. Never touch exposed portions of the mylar disk.
3. Be careful not to bend or crimp a diskette.
4. Don't write on the label with a ballpoint pen. Use a felt-tip marker and write gently.
5. Insert the diskette into the drive carefully, and close the door g-e-n-t-l-y. Don't ever force it to close!
6. It isn't a bad idea to visually align the center hole of the mylar disk in the center hole in its protective black jacket before inserting it into the drive unit. Do this by inserting your fingers into the center hole in the mylar disk. Don't touch the surface of the disk through the long slot in the jacket.
7. Remove diskettes from the drive units before turning your system on or off.

When using mini-disks, remember the suggestions given earlier in this booklet about minimizing the amount of actual "on time" by the way you write your programs.

## Software

Radio Shack is constantly adding to the TRS-80 software library. We may have some pre-recorded cassette or diskette programs which will fill your exact needs. Even if you have to hire a local programmer to do a little revising, you will still be



ahead to start with an existing program when one is available. (See warranty information in the back of this booklet.)

If your application is specialized, you can either have the program you need written by a professional programmer or you can try writing it yourself. Many of our customers have written their own after becoming familiar with the computer.

Please understand that Radio Shack's software department is *not* equipped to write custom programs or to do custom modifications to existing programs. If we don't have what you need in a stock program, you will have to make arrangements to have the program written yourself.

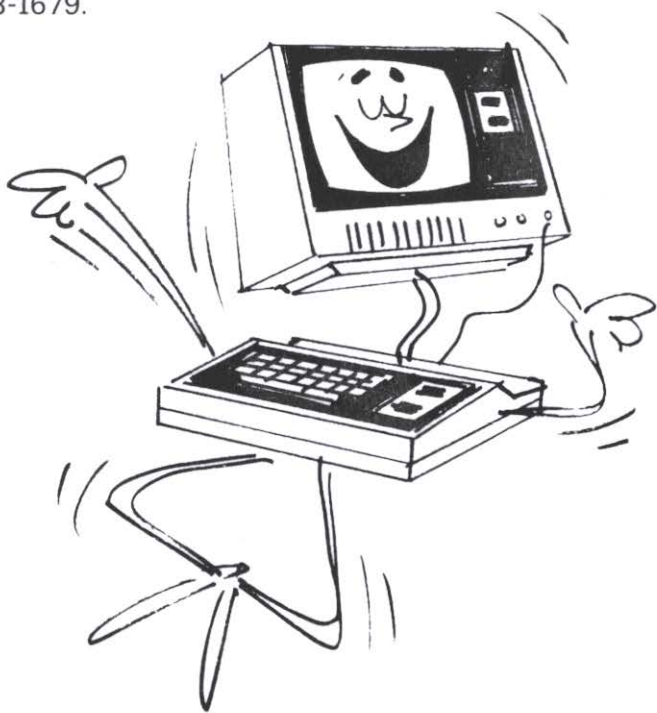
Professional programmers often approach one of our stores and express an interest in doing custom programming for our customers. Your local Radio Shack store manager may be able to give you the names and addresses of a few such people. You must understand, however, that company policy is to refer you to some local interested people. We do *not* recommend them, as we have no effective way to verify their capabilities. The one you choose, if any, is strictly up to you, and Radio Shack can assume no responsibility for the success or failure of the arrangement, regardless of any statements made by anyone which might lead you to believe otherwise. Be sure the programmer you choose understands proper mini-disk programming practices. Hard-disk methods don't produce reliable mini-disk programs. Nor, obviously, can we be responsible for compatibility of our equipment with peripherals we do not sell for use with the TRS-80.



# If You Have Trouble

Your local Radio Shack store or dealer can usually help. Equipment repair is done by one of our own centers. All you do is deliver the defective unit to your nearest Radio Shack store or dealer. We also have repair facilities in Radio Shack Computer Centers if you happen to be near one. Computer specialists there can answer questions beyond the scope of some store personnel. The Computer Centers also offer classes in programming which might be most helpful to you.

Radio Shack Computer Services in Fort Worth, Texas, can answer many of your questions, should satisfactory answers not be available locally. Their phone number is (817) 390-3583 or 1-800-433-1679.



Treat your computer as you would a loyal friend. Take care of it, and it will serve you well.

# LIMITED WARRANTIES

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## Hardware

For a period of 90 days from the date of delivery, Radio Shack warrants to the original purchaser that the computer hardware described herein shall be free from defects in material and workmanship under normal use and service. This warranty is only applicable to purchases from Radio Shack company-owned retail outlets and through duly authorized franchisees and dealers. The warranty shall be void if this unit's case or cabinet is opened or if the unit is altered or modified. During this period, if a defect should occur, the product must be returned to a Radio Shack store or dealer for repair, and proof of purchase must be presented. Purchaser's sole and exclusive remedy in the event of defect is expressly limited to the correction of the defect by adjustment, repair or replacement at Radio Shack's election and sole expense, except there shall be no obligation to replace or repair items which by their nature are expendable. No representation or other affirmation of fact, including, but not limited to, statements regarding capacity, suitability for use, or performance of the equipment, shall be or be deemed to be a warranty or representation by Radio Shack, for any purpose, nor give rise to any liability or obligation of Radio Shack whatsoever.

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## Software

### IMPORTANT NOTICE

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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 computer equipment or programs sold 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 such computer or computer programs.

NOTE: Good data processing procedure dictates that the user test the program, run and test sample sets of data, and run the system in parallel with the system previously in use for a period of time adequate to insure that results of operation of the computer or program are satisfactory.

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