



## CTR-80

We have specially prepared this CTR-80 Cassette Recorder for use with your TRS-80 Microcomputer System. Used properly, the Recorder will give excellent results in the storage of programs and data on tape. In general, you should follow the instructions regarding cassette storage and retrieval as described in your LEVEL I USER'S MANUAL or LEVEL II Reference Manual.

However, the CTR-80 differs in some respects from the CTR-41 which is referenced in the manuals. Therefore, you will have to connect and operate the Recorder as follows:

### CONNECTION

1. Connect the short cable supplied with your TRS-80 (DIN plug on one end and three plugs on the other) to the TAPE jack on the back of the Keyboard. Be sure you get the plug to mate correctly.
2. The three plugs on the other end of the cable are for connecting the CTR-80.
  - A. Connect the black plug into the EAR jack on the side of the CTR-80. This connection allows data flow from the Recorder to the Computer.
  - B. Connect the larger gray plug into the AUX jack on the CTR-80. This connection allows data flow from the Computer to the Recorder. This connection must be kept in at all times.
  - C. Connect the smaller gray plug into the smaller of the two jacks labeled MIC. This connection allows the Computer to turn the Recorder on and off.
  - D. Leave the larger MIC jack un-connected. **Do NOT place a "dummy plug" in this jack** (the CTR-41 needs one, the CTR-80 does not).

### OPERATION

The CTR-80 incorporates an excellent Automatic Level Control so that you do not have to worry about getting the correct record level when storing programs or data on tape. The record level is automatically set.

For playback, (CLOADing or INPUT#ing) you must use the volume thumb wheel control to set the volume **very precisely**. The settings for the CTR-80 are not the same as the CTR-41 as listed in the manuals, or the "HINTS AND TIPS" supplied with TRS-80 Cassette software.

The correct volume ranges for loading cassette tapes are:

	USER GENERATED	PRERECORDED RADIO SHACK
LEVEL I	6.5 to 7.5	7.0 to 8.0
LEVEL II	3.5 to 4.5	4.0 to 5.0

If the program or data loads okay, but errors are produced (mistaken letters, etc.), you usually need to increase the volume. Turn the control clockwise.

If, on the other hand, the program/data does not load at all (no flashing asterisks), the volume is probably too high. Adjust it slightly in a counter clockwise direction

Once you have found the correct levels, you should not have to change the volume setting, assuming you stay with the same type of recording tape.

There is no tone control on the CTR-80; the frequency response of the recorder is already balanced for good data transmission.

For further information regarding recorder operation and maintenance, see the LEVEL I USER'S MANUAL, LEVEL II Reference Manual, or the CTR-80 Owner's Manual.

The CTR-80 also incorporates a special feature not found on the CTR-41. The FAST FORWARD and REWIND controls can be used at any time, even when the small gray plug is in the MIC jack. Thus, there is no reason to have to disconnect any plugs in normal use.



## Hints & Tips on TRS-80 Cassette Programs

The cassette tape system of the Radio Shack TRS-80 is a fast, accurate method of saving both data and programs. This ability allows you to store information for future use with the assurance that each time the program or data is used, it is the same.

There are many factors which will affect the performance of a cassette system. The most significant one is volume. Too low a volume may cause some of the information to be missed. Too high a volume may cause distortion and result in the transfer of background noise as valid information. Both of these situations will cause errors when loading from a tape. However, with a little care and some precautions, you should enjoy trouble-free use of your cassette system.

The cassette deck supplied with the TRS-80 is very compatible with the system and will perform its duties with great success. To keep the cassette deck in top condition and thus minimize your problems, you should periodically perform some routine maintenance on it. Dirty heads can cause as much as a 50% loss in volume. Also, heads become magnetized with use and may cause distortion. We recommend that you clean the head capstan and pinch rollers after every 4 hours of operation. Heads on new recorders should always be cleaned before use. If you use a different recorder, you should remove the AUXiliary (grey) plug when loading and remove the EARphone (black) plug when saving on tape. This will minimize extra noise.

NOTE: Cassette cleaning and demagnetizing accessories are available from your local Radio Shack store.

The volume ranges for LEVEL I and LEVEL II are different. This is because the rate at which information is transferred is faster in LEVEL II (250 BAUD for LEVEL I, 500 BAUD for LEVEL II). The recommended volume settings for loading from cassette tape are:

	USER GENERATED	PRE-RECORDED RADIO SHACK
LEVEL I	7-8	7½-8½
LEVEL II	5-6	5½-6½

Note that software programs purchased from Radio Shack should be loaded at slightly higher volumes. This is because these tapes are produced under high speed conditions using commercial audio equipment and the recorded volumes are slightly lower than tapes you produce.

When information is being loaded from the cassette tape, two asterisks will appear on the screen. The one on the right will flash, (on or off) each time a new line of data or program is read in. If the asterisks do not appear, or the one on the right does not flash, then the information is not loading properly.

This is almost always due to an improper volume setting. If the asterisks do not appear, try lowering the volume. It is also a good idea to unplug the EARphone (black) plug and listen for the start of the program. This will tell you exactly where the program starts. If the asterisks appear, but one is not flashing, try increasing the volume setting. If higher volume setting doesn't solve the problem, clean the head. Use the reset button to stop the cassette and return control to you if loading problems occur.

Radio Shack programs are recorded at least twice on the same tape (usually on the reverse side). You should do the same when you record programs on tape. This will give you a back-up if one does not load properly or if it becomes damaged.

## **ERRORS**

**LEVEL I** – Sometimes you will get an error message when a program is loaded from tape. This means that either some information was not transferred or that noise was read in as data. In either case, adjust the volume accordingly and try again.

**LEVEL II** – There is a very rare case in which only a minor error may occur in loading a program and no error message will be printed. The best way to check for this, is to list the program. If the program looks OK, use the CLOAD? command to compare the tape version with the one you loaded. If they are not exactly the same, a "BAD" message will be printed. Such a case normally can be remedied with a minor adjustment in the volume setting (usually a slight increase).

Radio Shack Programs are recorded on a very high quality tape. It would be to your advantage to record your programs on very good tapes. The time you spend on your programs will make it well worth the additional expense. If you have tried all the suggestions we have given you, then the problem might be the tape itself.

Computer data and programs stored on cassette tape are high fidelity recordings and should be treated with care. They should be stored in a relatively dust-free area (a cassette case is recommended) and protected from high temperatures. Magnetic and electrical fields may alter recorded information, so avoid them (i.e. household appliances, power sources such as transformers and television sets, etc.).

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