Upper/Lower Case

Driver Programs

ULCBAS ULCDVR/CMD

Catalog Number 26-1104
(Lower Case Modification Kit)

Radio Shack

TRS-80 (TM)
MICROCOMPUTER SYSTEM

MANUFACTURED IN THE USA BY RADIO SHACK TC A DIVISION OF TANDY CORPORATION

Important Note

TRS-80 owners who have had the lower case modification kit installed should take note of three important points:

(1) Non-Radio Shack software may not operate correctly once the modification has been installed. This holds even if the program in question runs properly on a TRS-80 which has had a modification kit installed that is not of Radio Shack origin. Radio Shack can assume no liability for software from non-Radio Shack vendors.

(2) Early versions of two Radio Shack programs will not operate on a TRS-80 that has had the lower case modification kit installed. These programs and their catalog numbers are:

Accounts Receivable (26-1555)
Level II Cassette Payroll (26-1504)

If you own either of these two programs, new disks or cassettes are available free from Customer Services.

(3) The upper/lower case driver programs, ULCBAS and ULCDVR/CMD, **are intended to be used with programs that you write yourself.** ULCBAS and ULCDVR/CMD are not supported by existing Radio Shack software. Though Radio Shack programs other than the two listed above will work properly on a modified TRS-80, **you should not attempt to use ULCBAS and ULCDVR/CMD along with existing Radio Shack software.**

Introduction

The upper/lower case driver is a machine-language program which is supplied on cassette. It is to be used with Level II computers which have had the Radio Shack lower case modification.

One side of the cassette contains two copies of the Level II version of the program, file name ULCBAS. The other side contains two copies of the disk version of the program, file name ULCDVR/CMD. One program or the other must be loaded every time the computer is turned on if you require lower case capability.

ULCBAS and ULCDVR/CMD, when loaded, allow you to use your computer keyboard like a normal upper/lower case typewriter. (Of course, the upper/lower case modification kit must have been installed first.) When a letter key is pressed, a lower case letter will be printed on the display; when a letter key is pressed at the same time as the SHIFT key, an upper case letter is printed. On double-character keys, e.g.:

the character at the bottom of the key will be printed when the key is pressed. When SHIFT is pressed at the same time as the double-character key, the character at the top of the key will be printed.

In addition, the program has an all-capitals mode which makes the keyboard operate just as it does on a normal (unmodified) TRS-80.

Upper and lower case characters can be written to and read from disk and tape. If you have a printer which is equipped with lower case, you can LPRINT lower case characters on your printer.

Transferring to Disk

If you have a disk-based system, you will want to have a disk copy of the upper/lower case driver. ULCDVR/CMD is supplied on your cassette for this purpose. You can make a disk copy of ULCDVR/CMD with TAPEDISK/CMD, a utility which is included with TRSDOS. Here's how:

1. Load TAPEDISK/CMD. When TAPEDISK has finished loading, it will display the prompt:

   ?

2. Place the tape copy of ULCDVR/CMD in the cassette recorder and prepare the recorder to be played. Now type:

   C ENTER

This will cause ULCDVR/CMD to load into memory. When the file has completely loaded, the ? will appear on the screen again.

3. Type:

   F ULCDVR/CMD:0 7000 7270 7000 ENTER

ULCDVR/CMD will now be dumped to the disk in drive 0. (You can change the filespec to a more convenient drive, of course.) Hexadecimal 7000 is the program's starting address and entry point; 7270 is its ending address.

4. When the dump is complete, the ? prompt will appear once again. Type:

   E ENTER

to return to TRSDOS.

Consult your **TRSDOS Reference Manual** for further details on TAPEDISK/CMD.

If you will need lower case capability often, we suggest you use the TRSDOS command

AUTO ULCDVR/CMD

to force the program to load automatically each time TRSDOS is started up.

Loading Procedure: Level II

1. Place ULCBAS in the cassette recorder and ready the recorder for operation. Type:
   SYSTEM ENTER

2. When the prompt appears, type:
   ULCBAS ENTER

3. When the program has finished loading, type:
   / ENTER

and you'll be returned to BASIC, with the driver program operational.

Loading Procedure: Disk

First create a disk copy of ULCDVR using the TAPEDISK utility (see above).

When TRSDOS displays the message DOS READY, type:
ULCDVR ENTER
When the program has finished loading, you'll be returned to TRSDOS, with the driver program operational.

All Caps

Initially, the keyboard is in the upper/lower case mode. Pressing the SHIFT and Ø keys at the same time puts the keyboard into its ordinary all-caps mode; it now prints as if the upper/lower case driver were not loaded. Pressing SHIFT and Ø again will put it back in the upper/lower case mode.

Protected Memory

ULCBAS and ULCDVR/CMD are self-relocating programs. They determine the amount of memory you have in your computer, move themselves to the top of memory, and protect that portion of memory. You should make sure that your own machine-language programs do not disturb this protected area. For 16K computers, ULCBAS and ULCDVR/CMD use the area 7DD0-7FFF (decimal 32208-32767); 32K computers, BDD0-BFFF (decimal 48592-49151); 48K computers, FDD0-FFFF (decimal 64976-65535).

Using the Upper/Lower Case Keyboard

If you're writing a BASIC program, you can type the program in using upper case characters or lower case, at your discretion. However, when you press **ENTER** at the end of a line, BASIC, as it stores the line, automatically converts all lower case letters to upper case, unless they are enclosed in quotation marks or are part of a REM statement.

Now that the upper/lower case modification kit is installed, your computer has a full eight bits of memory for every address in the video RAM (3C00-3FFF) instead of seven as before. Now video RAM will operate just like any other RAM.

Previously, if a number smaller than decimal 32 or greater than 191 were POKEd into any video RAM location, it would be read back via PEEK as the number plus 64 (POKE value smaller than 32) or the number minus 64 (POKE value larger than 191). For instance, if you POKEd 192 into video memory location 15653 (hexadecimal 3D25), you could PEEK at this location and see that the contents would be 128.

But now that you've had the modification made, any number between 0 and decimal 255 can be POKEd into the video RAM and read back as the same number with PEEK.

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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.

Refer to User's Manual for warranties. Failure to adhere to procedures set forth in User's Manual may result in the loss of warranties.

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