

RADIO SHACK TRS-80TM
SOFTWARE LIBRARY

Advanced Programming Aids

Suggested retail prices may vary at individual stores and dealers

26-2001 T-Bug System Monitor (Suggested for advanced programmers only)

TBUG is a powerful, machine-language monitor designed to give you direct access to the Z-80 CPU, which is the heart of the Radio Shack TRS-80 Microcomputer. TBUG provides the capability to:

- 1. Create and modify machine-language programs.** The "M" command (followed by a hex address) causes the contents of that memory location to be displayed on the screen. If a new hex value is typed, that memory location is modified; if ENTER is pressed, the next memory location is automatically displayed.
- 2. Debug machine-language programs through the use of breakpoints.** The "B" command sets a breakpoint at a specified address. When a program is executed via a Jump instruction, execution continues until the breakpoint address is reached, control is returned to TBUG and registers or memory may be examined. The "F" or FIX command restores the original code to the breakpoint address.
- 3. Examine and modify the contents Z-80 registers.** The "R" command displays both sets of Z-80 registers. The contents of these registers can be altered by modifying a specific area of RAM. If this is done at a breakpoint, you can FIX the breakpoint, set a new one, and continue execution with the altered registers.
- 4. Save and load machine-language programs using cassette tape.** The "P" or Punch command will write any contiguous block of memory to tape. This is the only way to save programs under TBUG. The "L" load command will load memory from tape exactly as it was punched.
- 5. Execute machine-language programs created using TBUG** (if you have a LEVEL II TRS-80, you can also execute programs created with the Editor/Assembler program via TBUG). The "J" or Jump instruction performs an absolute jump into memory. The only way to return to TBUG is through a breakpoint or another jump to TBUG's reentry point.

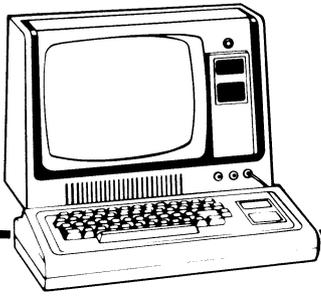
An extensive manual comes with the program. Subjects covered include TBUG commands, the Z-80 instruction set, Level I to Level II conversion instructions, a memory map for Level II, and many I/O calls to ROM for both Level I and Level II. TBUG is an invaluable aid to owners of the TRS-80 Editor Assembler. Level I or II with 4K RAM (minimum) required. **\$14.95**

26-2004 Level II Line Renumber

Renum is a programming aid for use with Level II BASIC, permitting the user to renumber all or part of his basic program. All references to line numbers contained within the program are updated to reflect the new numbers. Old starting line, new starting line number and new increment between lines may be specified. Renum is supplied on cassette tape for use in 4K, 16K, 32K or 48K Level II machines. **\$9.95**

Radio Shack

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26-2002 Editor/Assembler (Suggested for advanced programmers only)

The Radio Shack TRS-80 Editor Assembler brings assembly language programming to the TRS-80, offering the speed and efficiency of machine language combined with the convenience of a text editor and assembler. The text editor is similar to that found with Level II Basic but with many powerful additions. You can search for a particular string of characters anywhere in the text, renumber lines, scroll up or down and print to the line printer with or without line numbers! This text can be written to tape in its present "source" format or it can be assembled into executable or "object" format and then loaded under the SYSTEM command in BASIC.

The assembler has a set of switches which provide complete control over the assembler's operation. No List, No Object code, No Symbol table, Route to line printer, and Wait on errors may be used in any combination. Labels may be up to 5 characters and can be used with EQUates. The assembler resolves both arithmetic (+ or -) and logical expressions containing any combination of hex, octal, or decimal constants. Error messages are displayed in complete phrases, not some obscure code. The program is easiest to use with Level II, but a special "SYSTEM" tape makes Level I execution possible. Standard Zilog numeronics are used throughout. Macros and conditional assembly are not supported.

The Editor-Assembler comes with a 132 page manual divided into 5 basic sections. The first describes the commands available to the programmer. They are summarized on the first few pages and explained in detail with examples on the following pages. The next section explains the assembly language syntax. Labels, operands, flags, and pseudo-ops are detailed. The complete instruction set is presented in Zilog format, grouped according to function. Since assembly language is so closely tied to the architecture of the microprocessor, the Z80 configuration is outlined in the fourth section. The final chapter is a series of appendices which include numeric and alphabetic instruction lists, error messages, I/O calls to Level I and Level II ROM, and a Level II memory map. This complete package offers the best in tape based development software, and while it is not recommended for beginning programmers, it can open a new world for those who have mastered Level I or Level II BASIC. 16K RAM (minimum) required. **\$29.95**

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