

DECIPHER (TM) & DECIPHER/HI (TM)

Version tl.30

Compatible with TRSDOS 2.0 and 2.0a

Version cpl.30

Compatible with P+T CPM

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In order to understand and become familiar with the numerous capabilities of DECIPHER, the following paragraphs will lead the new user through the various modes available.

Note: When entering hexadecimal values it is best to enter an even number of characters. Some prompts require this .

Note: When using Version cpl.30 the Pickels + Trout system must be the "64K" version. This is specified on the CRT after a cold boot.

Chances are good that a programmer who is familiar with assembly language will be able to proceed with only the menu (press H) and the prompts. If any confusion results, return to the manual.

DECIPHER and the high memory version, DECHI, are machine code programs which are entered directly after the system prompt TRSDOS READY or CPM's A>.

OP CODES

The display points out that pressing the key H will list the commands. This is a convenient feature. You will see displayed a series of one letter commands starting with M for "Enter code address". This will display the op code at the address entered. (In future use, when only an approximate address is known, enter the address minus about 8 to allow DECIPHER to normalize).

To begin, enter the following commands: first press S then enter the letters - 46 5F AF B8; next enter 0000 <cr> when prompted then enter F000 <cr> when prompted again. DECIPHER will then display several addresses in the first column followed by copies of 465FAFB8. With a pencil or pen, make a notation in the margin of this guide of the top address as shown. This will later be referred to as the MARGIN ADDRESS. To view the code at the marginal address, press M then enter the marginal address. This will display the beginning of the print routine.

Now press N (next) for succeeding instructions until the code "CALL Z, nnnn" appears. If you wish to view the called routine, press C and enter the HEX value for "nnnn". The 1 in the far right column states that you are one call from the main routine. Hit N's until the RET code appears. Having seen the called routine, press R to return to the main (in this case) routine. Notice that the right column 1 has now disappeared. Press a few more N keys until the op code "DJNZ, nn" appears. Assuming you wish to make this relative jump; press D, then enter the value for "nn". The op code next displayed is the correct location for the relative jump.

In further use, you will see displayed four special op codes which are different than the standard Z80 mnemonics. The reasoning behind these variations is simple. DECIPHER puts all mnemonics in one column and all numerics in the next column. This has proved to be a blessing, especially when looking through a long printout in search of a particular instruction structure. The four variations are listed in the appendix.

INSERT MODE

To use the Insert Mode, press I. Enter A000 as the address where hexadecimal code is to be inserted. Now enter 3E55C9 as the insert code. These 3 bytes now reside starting at A000 with the third byte (C9) being a RET code.

To illustrate the forgiving nature of DECIPHER, hit the I key once more. Enter the address A000 as before. Now you realize that you do not wish to change the code at that address. Simply enter the key Q and the Insert command will be void. This will work in all cases, but sometimes you have to wait for the last prompt. To check the code inserted at A000, use the M and N commands.

JUMP MODE

Now press J to use the Jump Mode. Enter Y to signal that you wish to preload the registers. When entering AF through IY, use a four character hex code to avoid confusion. If you do not care about a particular register, just press ENTER. When the jump address request appears, enter A000 and then check the register map on return and you will see that 55 is loaded in the A register by the routine entered with the Insert mode.

Return now to Insert Mode and replace the C9 you entered with D7, which is the breakpoint code. Jump once again to A000. You will notice that the ST is no longer 0000. ST does not display the top of the stack. If so it would display A003 due to the the break point D7. Instead the second entry in the stack is displayed. This shows from where the routine was called (in most cases). If you use this address (subtracting 8) with the M and N commands you will see the routine within DECIPHER which actually called your A000 routine. WARNING - never trust the first few op codes when entering a blind address.

SEARCH MODE

Assume that you have encountered the routine at A000 and you wish to determine from where it is called. Press S to enter Search Mode and enter CD00A0 (the call code in Z80 form). Enter 0000 for the start address and F000 for the end address. Two matches appear; one of which is DECIPHER's own data handling and one is the actual call code. Search mode is very useful for finding your way through an unfamiliar program.

PORT READ & WRITE

The Read Port and Write Port commands operate according to the rules outlined for DECIPHER's other commands. Say, for example, that you wish to read the status of the FDC board; press F1 and enter E4 for port #E4. The result is displayed as "byte=?". In this case ?? will usually be 80. Reading the Model 2 technical reference will explain the meaning.

Write Port functions with the same ease as does Read Port, due to the simple prompts.

MISC COMMANDS

The P key activates the hard copy printer.

The V key de-activates the hard copy printer.

The T key brings the printer to Top of Form. (TRSDOS)

The L key is used in the CPM version of DECHI to load programs.

APPENDIX

DECIPHER

ST A, XXXX

LD HL,m XXXX

OUT A, XX

IN A, XX

Z80

LD (XXXX),A

LD HL,(XXXX)

OUT (XX),A

IN A,(XX)