



Commodore P-128

by Fred Hambrecht

Editors Note:

Notification received just prior to printing revealed that Commodore has pulled the P-128 from the market and replaced it with the C-128 (to be released after the B series, see page 76). Due to the similarities between the B series and the P series we chose to run the following article in an effort to provide you with as much information as possible concerning the Commodore market.



Christmas in March! That's the way I felt unpacking the new Commodore 128 computer. A quick check of the reference manual. . . . Whoops! no manual. Oh well, it's more fun without the book, besides I know Commodore inside and out, what could be different? Plug it in, turn it on, and the monitor comes up (yes, monitor—no rf modulator included) with the Commodore Basic message. They even redid the color combination, white background with blue characters. Let's push a few keys and see what happens. Push F1 on the top left and it printed "PRINT#"; each of the other keys had such goodies as "directory", "dload", "list" etc. Hm! Have to spend more time looking at that later. The keyboard has a really nice layout, with a typewriter style return key in the main array. The numeric pad contains a separate enter key, along with a "?" key. In addition a CE key is provided to clear entries to the last arithmetic operator entered or to the beginning of the line. A single as well as a double ZERO key should make any "bean counter" happy. The feel of the keyboard, in my opinion, is the

best on the market today. The back of the unit has a few more surprises: Two joystick ports, IEEE 488 interface, users port, and a real honest to goodness RS-232 connector.

Enough of the outside, let's look and see if the basic is the same. We entered a program in BASIC to look at the parse table in the ROMS and found a few more surprises. First of all the basic appears to be standard 4.0 with the following additions.

BANK—Sets the bank number (16 banks of 64k) for peeks, pokes, and bank save/load commands.

BLOAD/BSAVE—Used to load and save binary files from memory. I can't be sure but it appears that you can specify high and low addresses within the bank.

DISPOSE—Used with the TRAP instruction to purge unwanted NEXT and RETURNS.

IF...THEN...ELSE—A new one for COMMODORE

PRINT USING—Both PRINT and PRINT# are supported.

PUDEF—This redefines the symbols used in PRINT USING.

RESUME—Used with TRAP to

RESUME after error handling.

TRAP—Uses user supplied error routines in place of the COMMODORE routines.

ERR\$—Reserved string for error messages.

EL—Reserved variable for error line.

ER—Reserved for error #.

INSTR—Search for and return the position of substring with a given target string.

TI\$—Returns time in the format HHMMSSJ where J is a 1/10 of a second. TI NO LONGER EXISTS!!

KEY—Allows programming of the 20 function keys and takes the form KEY n, "expression" where n is the key number and the expression is what is to be printed to the screen. Or input as a string.

The screen now resides at locations 53248 to 54247 followed by the color memory at locations 54272 to 55271. The screen has many of the features of the 8032. I have discovered ESCAPE sequences that set windowing, insert line, delete line, erase to end of line, erase to start of line, etc. Now I wish I had the manual. Next, spend two hours on the



phone calling the folks at COM-MODORE; NO ONE knows about the 128! Inside sources said the unit had been engineered "over seas" and they were as much in the dark as I was. Manuals are supposed to be available in the next month or so, and this unit was a dealer demo only. The units are not supposed to be sold until FCC and UL approval is obtained.

I can't stand it any longer, get out the screwdriver and tear it apart. When the cover is removed it reveals that the ROMS are prototypes; 28 pin ROMS have been JERRY RIGGED on to 24 pin sockets. Several nice features... The power supply is a switching regulator type made by someone other than COMMODORE and is easily removed for service. The internal 128K RAM is located in the lower left and upper right. Note the sockets for an additional 128K already exist. Wonder if they plan to drill holes in the boards ala the old 16K PET? The processor is a 6509, functionally the same as the 6510 used in the Commodore 64. It has in addition to the 6510 features a bank select register that allows the selection of 16 banks of 64K. The addressing appears to be that the operating system, SID chip, etc. resides in bank \$F and the internal memory is in banks 0, 1, and 2. Only bank 0 is used in an unexpanded 128. A feature that appears to exist is a CO-PROCESSOR function. Interrupt, processor granted and refused signals lead me to think that we will probably see a multiuser system in the future. In spite of the fact this is a prototype, a lack of wire jumpers, etc. indicates the hardware is pretty solid, and the one remaining "cat to skin" is the firmware. The model I am playing with has no tape handling routines. In fact a "LOAD" will result in a "DEVICE NOT PRESENT ERROR". Speaking of error messages, a new one exists, if you overflow the subroutine stack the message is "OUT OF STACK"

rather than the old ambiguous "OUT OF MEMORY".

(Note: to Jim Butterfield, I stayed awake nights to try, just once, to generate a memory map before seeing yours in COMPUTE!)

The memory may be viewed as 16 pages of 64K each. Page 15 or \$F is fixed in hardware as the operating system and hardware laid out as follows:

\$FFFF	-----	KERNAL ROM	-----
\$FE000	-----	PORT 2 6525	-----
\$FDF00	-----	PORT 1 6525	-----
\$FDE00	-----	ACIA 6551	-----
\$FDD00	-----	CIA 6581	-----
\$FDC00	-----	CO PROCESSOR EXT PORT	-----
\$FDB00	-----	SID 6581	-----
\$FDA00	-----	DISK PORT (internal)	-----
\$FD900	-----	VIC 2 6567	-----
\$FD800	-----	COLOR MEMORY 1K	-----
\$FD400	-----	SCREEN RAM 1K	-----
\$FD000	-----	CHARACTER DOT ROM 4K	-----
\$FC000	-----	BASIC HI ROM	-----
\$FA000	-----	BASIC LO ROM	-----
\$F8000	-----	EXTERNAL ROM	-----
\$F4000	-----	CARTRIDGE SLOT	-----
\$F2000	-----	DISK ROM	-----
\$F1000	-----	EXT BUFFER RAM	-----
\$F0800	-----	2K BUFFER RAM	-----
\$F0003	-----	INTERRUPT REGISTER	-----
\$F0001	-----	EXECUTE REGISTER	-----
\$F0000	-----		-----

A further breakdown of the \$FD800 to \$FE000 will let you see that the only difference between the P-SERIES and the B-SERIES is probably jumpers or land cuts. I suspect that changing a P128 to a B256 is no harder than changing a FAT 40 to an 8032. The addresses appear to be as follows:

\$FE000	-----	6525 (KEYBOARD)	-----
\$FDF00	-----	6525 (IEEE-488)	-----
\$FDE00	-----	6551 (RS-232 PORT)	-----
\$FDD00	-----	6526 (IEEE & USER PORT)	-----
\$FDC00	-----	EXTERNAL PROCESSOR	-----
\$FDB00	-----	6581 (SID CHIP SOUND)	-----
\$FDA00	-----	DISK UNITS (INTERNAL)	-----
\$FD900	-----	6545 (CRT CONTROLLER)	-----
\$FD800	-----	2K SCREEN RAM	-----
\$FD000	-----	NOT USED FOR P-128 HMM!	-----
\$FC000	-----		-----

A few general comments: The 128 should be a great machine, especially with the new low profile disks installed. I am presently running this one with an 8250 drive and the 8300P printer and am really pleased with it. I have been able to load most of the programs I have in basic and am in the process of converting some machining language routines. The only negative comment I have is that it is slower than the 64 and the 4032. The reason lies in the fact that all 20 function keys appear to be processed by CHRGET in the run mode. I will reserve judgement on this until I see a final ROM set. Aside from that, it's the neatest COMMODORE yet! □