

Micro-Minutes

NEWSLETTER OF THE HEWLETT-PACKARD MICRO-COMPUTER INTEREST GROUP

J ENGELHARDT

Building 28A

Oct 1981

THE PROMISE

The hardware committee would like to go out on a limb and state as a goal that by the end of 1981 we plan to have the chassis, front panel, CPU and motherboard working and in the hands of the builders. This comprises the 'guts' of our computer system. However, a complete system will still require the input/output, memory and CRT boards (and optionally, a mass storage device, disk or tape).

HARDWARE UPDATE

Front Panel Boards - Final loading party for the last few parts missing from board (LED's, pots and switches) has occurred by the time this newsletter reaches you.

Power Supply Wiring - Phil Grey, who recently joined our club, has drawn up a schematic for the power supply and is working on the wiring diagram. There is some missing hardware (lugs, nuts and bolts) from the p.s. kit. The club will indicate which parts and make recommendations as to where to obtain them. If the demand exists, the club can schedule an after hours 'wiring party' with a completed unit for those wishing to work together on the power supply wiring. Contact Nic Lyons at ext. 2015 if interested.

CPU Board - The 6 MHz Z-80 has been running at greater than 7.9 MHz! Mostek is apparently having trouble manufacturing the 6 MHz part but has the 4 MHz part now. On our board the CPU will be socketed so the board will probably come out without the Z-80. You can then put your own in our wait for the club's part order to arrive later. All other parts are now available.

EPROM Board - Erwin Littau has reworked our old design to work at 6 MHz and several boards are now working.

Video Board - As mentioned in a previous newsletter, we are evaluating the commercially available CAT-100 video board from Digital Research for use in our microcomputer. This is an effort to save the time required to go through the design cycle. The unloaded board will be purchased (with control PROMs) for \$140. Full cost with required ICs will be approximately \$250. For comparison, Digital Research sells the fully loaded board for \$1700.

RAM Board - The club has 3000 16K dynamic RAMs. The RAM team is evaluating commercial bare boards in order to speed availability to club members.

Input/Output Board - Our wirewrapped prototype works. The design is now in PC layout. The next step is to fabricate some sample boards and test them.

HP Microcomputer Interest Group

Moderator	Rick Pinger, 5U, x2035
Treasurer	Barry Lewis, 90, x2601
Hardware Committee Chairperson	Steve Hessel, 29A, x5514
Software Committee Chairperson	Ed Birss, 48N, x3021
Meeting Coordinator	Derrick Kikuchi, 5M, x2015
Newsletter Editor	Nic Lyons, 5M, x2015

ORDER CARD CAGES AND PRE-ORDER I/O BOARD

Because HP is removing some NCR machines for which we have tapes already made to fabricate the microcomputer's card cage, we are now ordering these parts. Material and construction costs are \$50.

The I/O board is in PC layout now. Although the testing and debugging stage is yet to begin, we are accepting orders for the boards because funds are needed to improve the club's cash flow (we have a large parts inventory). This is the first call for ordering the I/O board --- you can help out the club by ordering now. The complete price is \$85.

Make checks payable to HP Micro Computer Interest Group or HPMICIG.

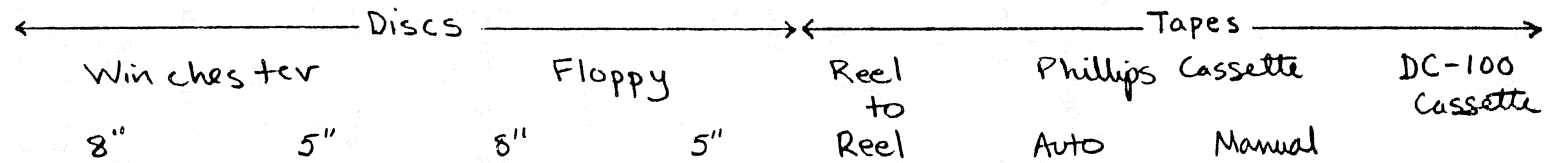
Send this form with check to Barry Lewis, Bldg. 90.

___ Card Cage @ \$50
___ I/O Board @ \$85
Total _____

Name _____

Building/Address _____

Mass Storage Options for HPMCI6



	8"	5"	8" Double density + sided	5" Single density + sided	Reel to Reel	Auto	Manual	
(1) Controller Cost, \$	200	200	400	150	30	25	30	25
(2) Drive Cost, \$	5500	3000	780	540	500	240	40	150
(3) Media Cost, \$	media not removable		5.00	3.00	10.00	1.80	1.80	3.20
(4) Auto. or Manual	A	A	A	A	M	A	M	A
(5) Capacity, bytes	20M	5M	1M	75K	25M	520K	520K	220K
(6) Xfer Rate, bytes/sec.	75K	75K	64K	16K	600	600	300	600
(7) Access Time, sec.	.08	.08	.35	.6	120	15	45	10

Summary:

(8) Hardware Cost, \$	5700	3200	1200	690	530	270	70	180
(9) Cost for 5M bytes, \$	5700	3200	1200	890	540	290	90	250
(10) Optimum Time 10K bytes, sec	.22	.22	.5	1.2	17	17	33	17
(11) Average Time 40K bytes, sec	.61	.61	1.1	3.7	187	82	178	77

↑ see notes on following page

NOTES

- (1) The controller usually is on an S-100 card. It fits within the computer and usually will support more than one drive.
- (2) The drive includes power supply, interface electronics and cabinet.
- (3) The media (tape or disk) cost reflects prudent shopping. Note that disks may be purchased through HP (9141-0141, 0121, etc.) The media of a Winchester is not removable. Therefore it is necessary to have another media for program transfer. If backup storage is desired note that floppy disks are really too small in capacity.
- (4) A manual unit requires user action to locate a file.
- (5) The capacity of a single medium is given.
- (6) Software overhead may reduce the effective data transfer rates for the fastest units.
- (7) Access time is spent before the desired information is located. While little can be done to reduce the average access time for disks, care in locating files on tape and using only the first part of a tape (tapes are cheap) can effectively reduce the average access time for tapes.
- (8) The hardware cost is nearly the sum of items 1 + 2 above. It reflects the cost of a single drive system with no information on it.
- (9) This item is the sum of item 8 and the cost of the media to store 5 Mbytes of information. 5 Mbytes was chosen because it is the size of a moderately large personal computing library. This figure is a good indicator of the financial cost to the user.
- 10) The optimum time to access and transfer 10 Kbytes is about the average time a user will wait to retrieve an average file. It assumes that tape units have been organized such that the desired data is prepositioned correctly.
- (11) The average time to access and transfer 40 Kbytes is an indication of the time a user will want to retrieve a large file with random medium positioning. Since it is these long transfers which a user will be most aware of, this item is a good measure of the 'pain' to the user.