EduCALC TECHNICAL NOTES
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ADDING MORE MEMORY TO MY HP-71
Should I Put All I Can Internally?

The HP-71 microporcessor will address up to 512K bytes of memory. This includes both ROM, Read Only Memory, and RAM, Random Access Memory. The internal operating system (ROM) uses 64K. The HP-IL module actually needs 16K, but 32K should be allocated because the HP-71 often configures the system as 32K for HP-IL.

Many HP-71 users want to install as much memory as possible. If you subtract the operating system, HP-IL, and the 16K RAM installed, you have 400K of ROM or RAM address space remaining. RAM memory may be added as 32K modules in ports 1-4 (front ports, 128K maximum), 32K modules hardwired inside the machine (256K maximum), or a single module plugged into port 5 (card reader port, 128K available). Table 1 compares the cost of these options. In addition to on-line memory, it is possible to add off-line storage in the form of magnetic cards, cassette tape, floppy disc, or RAM in the form of an HP-IL RAM Disc. Table 1 includes the HP-IL Ram Disc for comparison. The front port solution 'numbers' are given beyond four increments for perspective.

Table 1: Cost of HP-71 Memory (CAT 37)

Solution:		Front Port			Hard Wired		Port 5		HP RAM Disc	
32K Incr.	TOT RAM K	Port 1-4 Module 71-656	Cost per K	Instal. 71-673 71-674	Module plus Instal.	Cost per K	Port 5 Module 71-845	Cost per K	HP-IL RAM Disc	Cost per K
1	32	$149.95	$4.69	$39.95	$189.90	$5.93	$149.95	$4.69	N/A	N/A
2	64	299.90	4.69	69.90	369.80	5.78	269.95	4.22	N/A	N/A
3	96	449.85	4.69	99.85	549.70	5.73	359.95	3.75	N/A	N/A
4	128	599.80	4.69	129.80	729.60	5.70	445.95	3.48	$325.95	$2.55
5	160	$749.95	$4.69	$157.95	$909.50	$5.68	N/A	N/A	N/A	N/A
6	192	899.70	4.69	189.70	1,089.40	5.67	N/A	N/A	N/A	N/A
7	224	1,049.65	4.69	219.65	1,269.30	5.67	N/A	N/A	N/A	N/A
8	265	1,199.60	4.69	249.60	1,449.20	5.66	N/A	N/A	$449.95	$1.76
9	288	$1,349.55	$4.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	320	1,499.50	4.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11	352	1,649.45	4.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	84	1,799.40	4.69	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	512	$2,399.20	$4.69	N/A	N/A	N/A	N/A	N/A	$705.95	$1.38

How much memory should I hard wire into my HP-71? If you hard wire too much memory into your HP-71, you may be restricted in the future on how you use your machine. The trend is toward larger RAM and ROM modules, and wiring RAM modules inside the machine leaves the ports free for EPROM, ROM, and RAM modules. What good does it do if all the address space is used by modules that cannot conveniently be removed? The ports are available but can't be used. If the 400K is portioned between ports 1-4 and hard wired modules, there would be 256K reserved for the front ports (maximum capacity of 64K each) and 144K for hard wiring. Here is how the 512K might be allocated:

Table 2: Typical HP-71 Memory Allocation

Operating system	64K
HP-IL module(s)	32K
As purchased RAM	16K
Front Ports	256K
Hard wired	128K
Port 5	16K

Table 2 will help in organizing your system to meet your needs. Up to 256K may be hard wired in the machine and 128K in 32K incrememnts may be added in Port 5. A good compromise is to add no more than 160K in an inconvenient removal location such as hard wiring or port 5. Use the form below to tally your system.

HP-71 Memory Allocation

Operating system	64K	Fixed, not user adjustable
HP-IL module	32K	Always allow for HP-IL
As purchased RAM	16K	Total thus far = 112K bytes
Front ports	_____	
ROM internally wired	_____	
RAM internally wired	_____	
Front port allocation	_____	64K ROM or RAM maximum/port
Port 5 (card reader port)	_____	
Total	_____	Must not exceed 512K

Update note: CMT announced a front port 65K memory module in January, 1988. See cat #71-656B with a price of $294.95 pr $4.61 per k. This module also includes a battery rated to maintain memory outside the machine for six months. If the 64K module is hardwired, the installation costs are reduced and the hard wired numbers would also be slightly reduced. It is even more important to tally your system because the 64K modules allow hardwiring more memory than the system can address—8 64K memory modules plus 64K ROM.