

## HP Forum Archive 15

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### Long live Sharp ! :-)

Message #1 Posted by [Vincent Weber](#) on 2 Mar 2006, 11:31 a.m.

Hi all,

Just to say that Valentin is not the only one to support Sharp's past glory - I now got converted ! :-)

I purchased from Ebay various Sharp Basic machines. I especially fell in love for the PC-1262. Why? It is not a super-powerful machine, but it has the best ratio power/volume (or weight) that I have ever seen, and is soooo cute. Its characteristics are quite amazing:

- Beautiful, shiny metal, horizontal design, with very small yet useable keys (full qwerty keyboard). They don't do things like this anymore! Nothing to envy to the design of the HP-15C, and ever more compact. To me this makes this device the most relevant today: we tend to prefer a laptop to a bulky pocket device, but a \*truly\* pocket device is still most valuable.
- Full I/O with a comprehensive docking station, a printer and inexpensive tape to load/save programs. Out of the tens of pocket machines HP released, very few had full I/O, i.e. the ability to enter programs in another way than your fingers: namely, the 65, the 67, the 41 series, the 71B, the 48 and 49 series and the 95/100/200LX palmtops. That's all folks! And none of these machine even comes close to the PC-1262 in terms of pocketability. The 15C and 42S would come closer, but do not have this I/O functionality.
- 10Kb of memory, with an efficient way of tokenizing keywords. That is to say, more than \*any\* pre-RPL HP calc... Enough to store fairly large programs, all the more that you got I/O for 'mass' storage.
- 2-line display of 24 characters. Enough to review programs comfortably.
- A nice equation feature, with long variable names. Regretably not integrated with a solver feature a la 27S, which would be really great, but still quite useful.
- Comprehensive help menus.
- program labelling (18 choices, with overlay), a bit similar to the 41 series 'user mode', with the ability to assign any character string to a key. This is somehow more elegant than the Casio way of doing things (10 independant program spaces, with no naming), even though it can be cumbersome to have a global numbering space for BASIC lines. Best would be to have the ability to define new functions into the system. The HP-71B does this well, but with single-letter names only, and is bulky with a ridiculously small screen. The best machines to do that, if you want BASIC, are actually... The TI-89 and the TI Voyage 200 ! Maybe I will do another 'long live TI' topic :))
- Fast and powerful BASIC otherwise, and entry recall convenience.

In short, a wonderful little machine.

I also purchased a PC-1360, with a nice 4-line graphical display. I thought that Casio invented the graphic calculator in 1985, but I was wrong. The very first machine with graphical capabilities was indeed the PC-1350 (my 1360's little brother) as early as 1984!

HP still has a major strength, though. If you look at the Sharp PC-1475 with matrix capabilities, you will see that this functionality is only available in interactive mode, not as a 'toolkit' to use in your own programs; how unlike the HP-41 with Advantage Pac, the HP-15C, the HP-42S, the HP-71B with Math rom, and the 48 & 49 series, which all feature seamless integration of matrices in the programming system, with the ability to define new functions...

But overall, Sharp produced wonderful machines, especially the PC-1262 which can fit in the smallest programmable casio (fx-400Op) case, and yet deliver such power.

Sharp is dead today, as far as nice machines are concerned - but let's honor its past glory...

Cheers,

Vincent

### Re: Long live Sharp ! :-)

Message #2 Posted by [Marcus von Cube, Germany](#) on 2 Mar 2006, 12:28 p.m.,  
in response to message #1 by [Vincent Weber](#)

I bought the predecessor of the PC-1262, the PC-1260 with less RAM (4KB), when it was still in the shops. The main reasons were the luxury display and the small size.

But there is a drawback to pocketability: You need tiny fingers for the alpha keys which measure just 3.5mm x 3.5mm with 4.5mm spacing between them. You really do not want to edit large programs on the machine.

Performance is in the same league as the Casio pocket computers of the same era, but less then the home computers existing at the time.

With some recent developments you can even interface a PC to these little cuties, just connect the cassette interface to the sound card and use software from [The Pocket Computer Museum](#). I've recently made some additions to wav2bin to make it read data files, too (not yet on the museum pages but you can ask me directly.) What's still missing is a BASIC tokenizer to create wave files from ASCII program text.

Marcus

### Re: Long live Sharp ! :-)

Message #3 Posted by [Massimo Gnerucci \(Italy\)](#) on 2 Mar 2006, 1:27 p.m.,  
in response to message #1 by Vincent Weber

Hello Vincent,  
just to say that we must have similar taste... :-)

I, too, recently bought a couple of 1262 and, some months back, a 1360. These machines are amazing: well built, quite fast and really pocketable (at least the 1262).

As Marcus wrote the 1360 is a better choice when typing and reviewing programs.

I'm glad you posted your impressions.

Greetings,  
Massimo

### Re: Long live Sharp ! :-)

Message #4 Posted by [Nelson M. Sicuro \(Brazil\)](#) on 2 Mar 2006, 6:17 p.m.,  
in response to message #1 by Vincent Weber

I love my PC-1260 too, and I "upgraded" it from it's 4KB SRAM to 10KB (actually 16KB) SRAM (a 32K chip, what a waste...). If I can find my hand written annotations of how I did the modification I could post... I used the same original CMOS glue-logic chip, besides the new 32K chip, added some tiny wiring and some tracks cut... Now I can program it in assembler on the "extra" 6KB! A very nice machine, indeed!

Best regards,

Nelson

P.S. My PC-1260 (with cassette/printer CE125) came from Germany, Berlin - what a long trip to Brazil, about 3 months!!

*Edited: 2 Mar 2006, 6:19 p.m.*

### Re: Long live Sharp ! :-)

Message #5 Posted by [Bill \(Smithville, NJ\)](#) on 3 Mar 2006, 6:00 a.m.,  
in response to message #1 by Vincent Weber

Hi Vincent,

I totally agree with you. The Sharp Pocket computers are really amazing for their size, power and capabilities. My second PC was a Sharp 1500 with the 4-pen color plotter/printer (My first PC was the TRS-80 Model I). It's quite a bit bigger than the small Sharps that you have, but had a lot of power.

I have just started collecting a few of the 1500A this year, mainly because several came up on e-bay that had HVAC Loads/sales/economics modules. I am now the proud owner of the Lennox Logic Residential Savings and Loads modules plus a module by Rheem. I just this last weekend obtained some working pens and had the great joy to see and hear the little plotter in action. Love that clickty-clack sound.

Does anybody know how to revive dried-out plotter pens?

Also, does anybody know how to do a dump of the modules? They seem to be protected so I can't list them out. When I hit the break key, I get the standard message Break in Line XXXX, so I'm assuming that the modules are programed in Basic - so they could be listable.

Thanks,

Bill

**Re: Long live Sharp ! :-)**

Message #6 Posted by **Klaus** on 3 Mar 2006, 7:44 a.m.,  
in response to message #5 by Bill (Smithville, NJ)

Hi Bill,

to refill the pens, I drill a small hole in the back (0.8 mm or smaller) and use an injection+needle to fill it with standard ink. Close the hole with some adhesive. Dried pens are harder to revive, but it's not impossible. I also have a PC-1500A with a 20k? memory module (total amount: 28K). I am looking forward to acquire a working PC-1600 with plotter in the future, mostly because of the analog input and the big plotter.

BTW. refill the pens over the kitchen sink. It can make a lot of mess. I also made some gears for the plotter, because mine did not transport the paper (broken gear).

Have fun! Klaus

**Re: Long live Sharp ! :-)**

Message #7 Posted by **Bill (Smithville, NJ)** on 3 Mar 2006, 10:43 p.m.,  
in response to message #6 by Klaus

Hi Klaus,

I would've never thought of trying to refill them. I'll have to give it a try. I guess a standard inkjet cartridge refill kit could be used. I think some of them are syringe/needle style.

I don't think I'll use the sink. Don't think the wife would appreciate the mess. But an old bucket would do fine.

I'm thinking of trying an ink removable solution to see if the dried out pens can be revived.

Marcus - thanks for the contact on the Pens. I've entered in my book for future reference. I just received a package today - another PC-1500A from e-bay that came with three sets of color pens and two sets of black pens - all still sealed in original packaging. Tested one set out and they work great. So I'm stocked up on pens at the present. Unit also came with a very interesting 16K CE-161 memory module. It's battery backed up (battery is dead) but has a switch so that it can become read only once it's programmed. In its standard configuration, adds 16K to the base memory of the unit.

Bill

**Re: Long live Sharp ! :-)**

Message #8 Posted by **Marcus von Cube, Germany** on 3 Mar 2006, 9:35 a.m.,  
in response to message #5 by Bill (Smithville, NJ)

Bill,

Quote:

Does anybody know how to revive dried-out plotter pens?

You can even buy new pens in Germany. A small company, dealing with medical equipment, has replacement pens. These plotters seem to be used in some expensive devices, so it does pay off.

Here is the contact:

Name: Peter Laß Email: [christiane.lass@t-online.de](mailto:christiane.lass@t-online.de)

Marcus

**Re: Long live Sharp ! :-)**

Message #9 Posted by **Tom Lake** on 5 Mar 2006, 2:29 a.m.,  
in response to message #8 by Marcus von Cube, Germany

There's a guy in Italy who sells replacement pens for Sharp. He advertises on eBay all the time. Search for his ads for color pens. They're \$13.00 USD but if you're ordering from Europe, he can probably give you a better deal.

**Re: Long live Sharp ! :-)**

Message #10 Posted by **Bill (Smithville, NJ)** on 8 Mar 2006, 7:05 a.m.,  
in response to message #9 by Tom Lake

Hi Tom,

I just received yesterday two sets of pens from the gentleman in Italy. While not in the original Sharp Packaging, they are in the standard plastic tube and work fine. They were sent by regular certified Italian Mail and took three weeks to get.

I had already ordered the two sets from him before I was successful on obtaining several sets off e-bay. So I am now well stocked up on both color and black pens.

Bill

**Re: Long live Sharp ! :-)**

Message #11 Posted by **Valentin Albillo** on 3 Mar 2006, 9:13 a.m.,  
in response to message #1 by Vincent Weber

Hi, Vincent:

Vincent posted:

*"Just to say that Valentin is not the only one to support Sharp's past glory - I now got converted ! :-)"*

Congratulations for your recent acquisitions and thanks for posting your first impressions. I have a hunch that many people who love classical, vintage HP calcs do also love vintage SHARP handhelds, and even more, many more HP-calc lovers would also love SHARPs if only they would get to know them.

Why do I say this ? First of all, most times I've posted something mentioning SHARP models, a number of people stated that they also had and loved them or would like to get them.

Secondly, whenever I've shown some of my SHARPs to HP-lover and -collector friends and friends of friends, they've been impressed with their quality to the point of starting their own collections in many cases.

*"I especially fell in love for the PC-1262 [...] Its characteristics are quite amazing: [...] In short, a wonderful little machine."*

Indeed, the **SHARP PC-1262** is one of the very best small handhelds existing, very powerful and nice to use, a real collectable and a hacker's dream too, what with machine language accessible (PEEK, POKE, CALL) and **full I/O !**

*"HP still has a major strength, though. If you look at the Sharp PC-1475 with matrix capabilities, you will see that this functionality is only available in interactive mode, not as a 'toolkit' to use in your own programs;"*

It's far simpler for most users. Not everyone is a 'power user' which feels comfortable writing programs for its machine, and the full-fledged, stand-alone program or operation is much easier to use than the toolkit, keyword approach, which mostly requires you to write some program using the provided keywords to get the work done.

Even myself, at times, find it less tiring to simply use the convenient and comfortable prompting applications provided than to, say, having to manually specify the option base (OPTION BASE 1), dimension the matrices (DIM A(10,10),B(10,10),C(10,10), input the data (MAT INPUT A,B), and then solve the systems (MAT C=SYS(A,B)) and output the results (ENG 5 @ DELAY 1,1 @ MAT DISP C). Not to mention you must remember proper syntax and try and interpret any error messages you might get ! :-)

Also, the **SHARP PC-1475 matrix capabilities** are *fully machine-language programs*, not BASIC code in ROM. This means they work extremely fast and reliably, using internal extended precision. The corresponding applications in, say, the original HP-41C Math ROM were user-code, RPN programs, not machine language. The Advantage ROM provided both user-code RPN programs for normal users, as well as 'toolkit' machine language keywords to be used by power users in their own user-code RPN programs.

Thanks (and congratulations) again and

Best regards from V.

**Re: Long live Sharp ! :-)**

Message #12 Posted by **Nelson M. Sicuro (Brazil)** on 3 Mar 2006, 1:03 p.m.,  
in response to message #11 by Valentin Albillo

Speaking of Sharp calculators (computers?) and assembly language, has anyone tried to program an RPN "operating system" on them? My PC-1260 has a "spare" 6KB (6800h~7FFFh) after I made the modifications on its memory module, and I need some help

on doing that. Volunteers?

Best regards to all,

Nelson

### Re: Long live Sharp ! :-)

Message #13 Posted by [HrastProgrammer](#) on 4 Mar 2006, 1:44 a.m.,  
in response to message #12 by Nelson M. Sicuro (Brazil)

I have done this on PC-1251 (very simple version) and PC-1403 (advanced version with ALPHA, comparable to HP-41C).

These are (names are based on the year I developed them):

HP-87C for PC-1251

HP-88C for PC-1403 (like HP-87C but for PC-1403)

HP-91C for PC-1403

HP-91C has ALPHA mode, multiple programs ability, ASN keyboard assignments, 126 flags, 208 bytes free for programs/data (with SIZE), 27 separate ALPHA-addressed registers (A..Z) and many advanced instructions like FOR, TO, STEP, NEXT, START, LOOP, SKIP, READ, DATA, RETRY, PULL (!?!), CLR, INC, DEC, DSTO, DRCL, DEXC, ... Its size is about 6.5K and it uses almost all PC-1403 memory leaving just 100-200 bytes free for a simple BASIC program. It was developed and entered using POKE.

HP-87C/88C source code exists only on paper but I think I have the HP-91C source code somewhere in my archive ...

I also manually disassembled the whole PC-1251 24K ROM (8K internal CPU ROM + 16K external ROM): a little BASIC program displays the 8 successive bytes and I disassembled them by hand (two weeks of work if I remember correctly). I had all SC-61860A instruction codes in my head these days (I even remember a few of them today) ...

*Edited: 4 Mar 2006, 7:46 a.m.*

### Re: Sharp RPN (was: Long live Sharp ! :-)

Message #14 Posted by [Nelson M. Sicuro \(Brazil\)](#) on 4 Mar 2006, 11:47 a.m.,  
in response to message #13 by HrastProgrammer

Hi!

Good to hear that, it appears to be very interesting. I have a spare 6KB to play with! I know the 61860 asm a little and I have some descriptions of the opcodes and Sharp internals. Can you share this programs? This is really a very good add-on to these little marvel machines... Did you made any keyboard overlay?

Best regards,

Nelson

### Re: Sharp RPN (was: Long live Sharp ! :-)

Message #15 Posted by [HrastProgrammer](#) on 5 Mar 2006, 1:55 a.m.,  
in response to message #14 by Nelson M. Sicuro (Brazil)

Hi Nelson,

Yes, I can send a source and hex dump of the program to you but there are a few problems:

(\*) I don't have any other docs about HP-91C program in electronic form - I documented it on paper only. I haven't had a computer these days so everything had to be done on paper, in head and directly on the calculator using PEEK/POKE/CALL. I have a lot of info about these calcs in paper form but I really don't have time to retype it.

(\*) The source code is not commented. It is disassembled using standard SC mnemonics of these days with the inclusion of a few instructions which I discovered by myself (CASE, TABLE, ELSE, ...). A few years ago I found these instructions documented on some Web page (with different names, of course) but they didn't exist in the SC docs I had in the end of '80s.

(\*) I am not sure if this source is 100% correct. It was disassembled after I got my first 286 PC and wrote a SC disassembler for it. As I didn't own an interface I had to retype the hex dump from the calculator into PC and there is a chance for errors. That was in '91 and then I called it HP-91C although it was developed in 1989.

(\* If you want to use it on PC-126x then you will have a lot of problems because I used PC-1403 ROM calls very much in order to save space. And giving the fact that PC-1403 has bank-switched external (outside CPU) ROMs (4x 16K banks) it makes it even more complicated.

So, if this is OK then send me a mail and I will send a source to you. BTW, I haven't made any overlays because I got used to it and I knew the keyboard layout in my head. This is the case with all my emulators, as well :-)

Best regards.

*Edited: 5 Mar 2006, 12:29 p.m.*

### Re: Long live Sharp ! :-)

Message #16 Posted by **Chris Roccati** on 5 Mar 2006, 7:28 a.m.,  
in response to message #12 by Nelson M. Sicuro (Brazil)

Quote:

My PC-1260 has a "spare" 6KB (6800h~7FFFh) after I made the modifications on its memory module

Is there any kind of documentation regarding this modification?

I'm sure I read about that and about a similar modification involving a 32Kbytes chip covering all the available memory space including the "hole" inside the video ram (2080h~27ff)...

### Re: Long live Sharp ! :-)

Message #17 Posted by **Nelson M. Sicuro (Brazil)** on 6 Mar 2006, 1:08 p.m.,  
in response to message #16 by Chris Roccati

I have some hand written boolean equations I have used to convert the addressing of the original SRAM chips to the 32KB chip (using only 16KB) - and they can't use the "hole" in the display RAM, it requires an internal modification - I only modified the SRAM/ROM card of the PC-126x.

I'll search my documentation and I'll post for shure when I find it, but it is "buried" on my paper piles... this can take a while...

The original PC-126x internal memory card addresses SRAM from \$4000 to \$67FF, a "hole" from \$6800 to \$7FFF, and ROM from \$8000 to \$FFFF. My adaptation enabled the SRAM from \$4000 to \$7FFF, but the BASIC only "see" up to \$6800, using only 10KB. I have scanned pictures of this modification. The last 6KB can be used in assembler programs.

Best regards,

Nelson

### Re: Long live Sharp ! :-)

Message #18 Posted by **Nenad (Croatia)** on 3 Mar 2006, 3:51 p.m.,  
in response to message #1 by Vincent Weber

Fully agree, Vincent!

Just to add a little bit of information about SHARP PC-1262, with respect to its PC connection. A year ago I obtained Transfile PC Plus (DOS application) with an interface cable to connect a SHARP to the parallel port on the PC. It came just as an addition to my SHARP 1403H (that I always wanted to have).

Now, in addition to connecting a SHARP to PC by a CE-124 interface via PC sound card, Transfile performs data transfer in ASCII form without any conversion to WAV format. You just select your SHARP computer type and select upload/download. It works perfectly for 1401, 1403H and for 1262! I have not tried it yet for a SHARP PC-E500, though it might work (at least it can be connected)!

Next issue: the manual in English. I have never found one in a downloadable form, but the one for PC-1251 can be used without a problem. As I understand, the basic (maybe the only) practical difference between the 1251 and 1262 (neglecting the amount of RAM) is a single vs. two-line display.

Yes, the form factor of 1262 is very convenient. I would have never noticed this, unless Valentin (big thanks) have pointed this out, before I grabbed one on German eBay. They are still rather inexpensive there.

The issue that I do not like wrt 1262 is that you have to type: eg. <S><I><N><4><5> instead of <SIN><4><5> on a 1401/1403H. In addition to this it does not separate thousands eg. 1234556.27 instead of 1.234.556,27 - but who cares.

All in all it is a very nice machine. I find it very useful. When my son challenged me how to print out a series of Fibonacci numbers, before he shows off with his program in C++ (he is sixteen), I grabbed 1262 and did it in exactly three simple lines of code. Yes, yes, Fibonacci numbers are not a big issue at all, but my 1262 is in my shirt pocket and his C++ works on his 3,5 kg notebook PC-this is the difference.

Sorry Dave, to write this much about Sharps, but they are just beautiful

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