

Bridging the Divide

By Ken Owen, 26 September 2012

Heath Computers were a forerunner of stability and dependability. That, coupled with the satisfaction of having built it yourself, fosters the allegiance seen across the SEBHC group. We are a group of collectors of Heath Computer equipment. One distinguishing characteristic of this collection is that it must work or you may as well just collect photographs of the machines.

Keeping an old machine working can be a challenge. Many of the parts are now in short supply or no longer available. Often we must substitute a current production component for a part that is no longer available or improvise some other solution. This has produced two factions within the group – the purists who want the machine in “as designed by Heath” condition and those who want a machine that is essentially “Heath” while being useful and fun to use.

The Heath Computers were designed before there was a 'standard architecture' or even many standardized bus structures. Even so, the customer base was sufficient for third party companies to offer add-on cards for extending the usefulness of the base computer. This, too, is part of the Heath Collection.

For instance, the first real computer was the H-8 running with the Intel 8080 CPU. Advances in hardware required a bit more processor capability, so many have upgraded the CPU card with Les Bird's Z-80 CPU board with the PAM37 monitor ROM. These enhancements are required to be able to run CP/M or use a hard disk with the H-8.

Today, we have Norberto Collado helping us keep the old machines alive. He has reverse engineered several components needed for the base computer so we can add capability or replace a board that cannot be repaired. The H-37 and Z-67 controller cards are just two of his recent offerings.

Heath offered a Hard Disk Drive system. The biggest disadvantage was its cost! You could buy two new automobiles for about the same amount as you would have to invest to put together a hard disk system. The second was the fact that it was rotating equipment and subject to wearing out with hours of use. For this reason, only a few are in existence and even fewer that operate to any extent. So, we have a hole in many collections where the hard drive system should go.

Once again, Norberto rose to the challenge by producing the Z67-IDE which fully mimics the original Z67 Hard Disk unit. Not only does it provide hard drive capability for your Heath, it also avoids many of the disadvantages. First, it costs only a teeny fraction of the original even without factoring inflation into the calculation! Secondly, it can use the newer IDE hard drives or Compact Flash cards for the hard drive to avoid the pit-fall failure of rotating equipment. AND it is simply an add-on component like the original hard drive system by installing the Z-67 interface card.

Now, we can have our Heath and run it, too!

{Note: CF cards have a limit on the number of writes before it will fail to retain the information long term. The operating system partitions are somewhat immune to this as we don't change them very often. By using a separate partition for data files, we can manage the area of concern. Programs and data files need to be exported for long term storage to protect any critical data.

We have modem programs available that will allow transferring these files to your personal computer for archiving to a network or backing up the files on CD or DVD disks.}

He has also bridged the divide between the two SEBHC camps. The basic Heath machine is maintained in virtually pristine Heath configuration by only adding a third party replacement for the very scarce original Heath Z-67 card. This provides the standard Heath interface to connect the Z67-IDE to provide the Heath with a hard drive system.

The Z67-IDE has been under continued upgrade since we first got it working well in 2010. It now has Write-Protect switches for the hard disks just like the original Z-67 and will allow selecting One-of-Many boot system environments. The number of boot systems is determined by the size of the Hard Disk(s). For example, 1 GB will host seven boot systems (0 to 6), 2 GB will host fifteen (0 to 14), 4 GB will host thirty systems (0 to 29), 8 GB will host sixty (0 to 59), etc.

Each boot system may consist of two hard drives. Drive 0 can be used in Heath mode to host HDOS, CP/M and/or USDPascal. Drive 1 can only be used as a QuikData hard disk hosting CP/M.

For a Heath HD, we boot drive 0 into HDOS on a 15 Megabyte hard disk offering up to eight partitions of approximately 1.8 Megabytes. This disk can also have CP/M or USDPascal partitions. For the QuikData HD system, we boot CP/M, on either drive 0 or drive 1 sporting 15 partitions of eight Megabytes. On both hard disk systems, any or all of the partitions may be booted.

That means each boot system can support: Heath HD (Drive 0) and QuikData HD (Drive 1) providing 135 MB of storage or with QuikData HD on both Drive 0 and Drive 1 providing 240 MB of storage.

So, with two 8 GB storage devices we would get storage of 8.1 GB for a dual booting system with Heath HD with HDOS/CPM/USDPascal (drive 0)& QuikData HD with CP/M (drive 1), or storage of 14.4 GB for two QuikData Hard Drives running CP/M.

With this much storage, we can not only have a Heath computer that runs, but one that can quickly and easily demonstrate all of the software in our collection as well.



The original Z-67 Unit
with Z67-IDE on top.

The original Z-67 unit had a 10 MB
hard disk and an 8" floppy drive.

The Z67-IDE hosts one or two Hds
with multiple Boot-Systems as
described above.

Both units have their own power
system and interface to the
Heath computer via the SASI
interface from the Z67 controller
card inside of the computer.