

The Superbrain

Bruce Nikkel, Bern University of Applied Sciences

With a cool sounding name and cool looking design, the Intertec Superbrain was an iconic computer released in 1979. The Superbrain was featured in 1980s movies and TV shows, including the classic Knight Rider. The Enter Technikwelt has both a Superbrain computer and a Knight Rider car on display in Solothurn.



In 1973 the U.S. company Intertec Data Systems Corporation was founded in Columbia by former IBM researcher William Wells. Initially producing data terminals, they released the original Superbrain in 1979 and the Superbrain II in 1982.



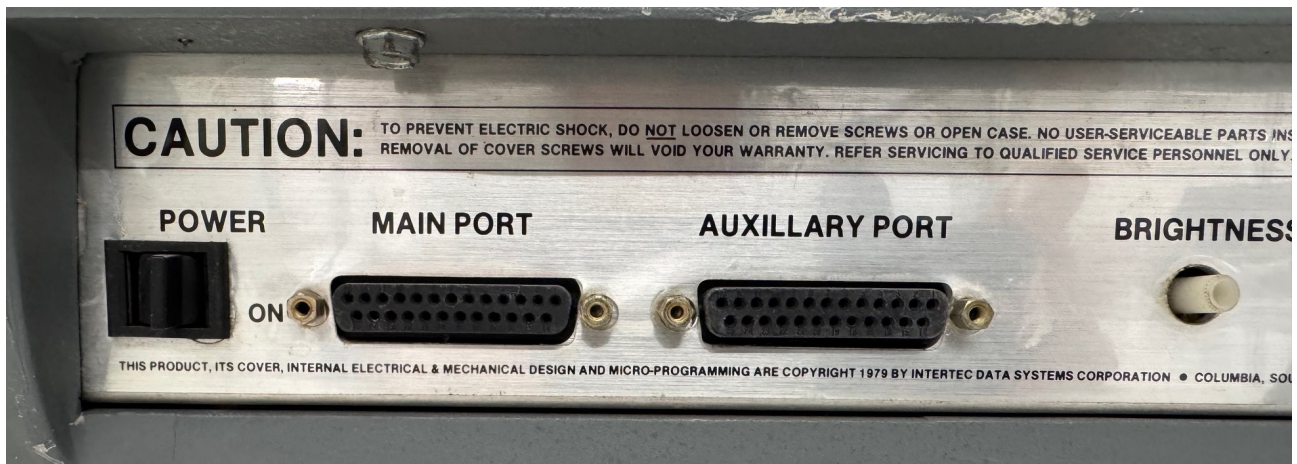
Summa Cum Laude!

The original Superbrain had 32k RAM with 64k as an upgrade option, The Superbrain II had 64k RAM as standard and included a battery operated date/time clock. Both models had dual Z80A 4MHZ CPUs. The first CPU ($\mu P1$) was for general execution of user programs, screen related functions, and serial port I/O, the second CPU ($\mu P2$) was for managing disk I/O. Both CPUs bootstrapped with a shared 2k ROM chip. A fast 1k or 2k static RAM bank was accessible by both CPUs and used to transfer commands and data to/from the floppy drives. The 32k or 64k dynamic RAM contained user programs for execution and the CRT refresh buffer (Video screen contents).



The dual floppy drive storage options basically defined the different Superbrain models. The base model had double-density single-sided drives (~350kb), and the QD (Quad Density) model had double-sided drives (~700kb). The Superbrain II also had an SD (Super Density) model with high-density, double-sided drives (~1.5mb).

The original Superbrain had an optional S-100 bus adapter that allowed a single S-100 interface card to be installed in the Superbrain. The S-100 bus was a popular standard in the late 1970s and early 1980s, introduced with the Altair 8800. Intertec stopped selling the S-100 bus option with the Superbrain II due to lack of demand. The Superbrain had dual RS232C serial ports with speeds of up to 9600 baud. An internal 40-pin Z80A CPU interface was also available for expansion.



The Superbrain used a switching power supply rather than the heavy transformer based linear power supplies used by other computers in the 1970s. The powersupply drove the CRT, the main logic board, and the floppies. On the original Superbrain, the serial ports and CRT brightness knob were part of the powersupply circuit board and had to be separately connected internally, this was moved to a separate transition board for the Superbrain II.

The operating system was called "Superbrain DOS" which was standard CP/M plus a few additional Intertec utilities for configuring and testing the Superbrain. Other applications such as FORTRAN, COBOL, BASIC were available, as well as standard business software like a word processor and finance/inventory/payroll programs.



The documentation included the Users Manual which described the hardware, system operation, and CP/M. A Product Schematics Package was available which provided schematics and board layouts of the Superbrain internal components. A community newsletter called "Superletter" was also published and copies can be found online (<https://bitsavers.org/pdf/intertec/superletter/>).

The screen is 80 columns by 24 rows, with a 12 inch P4 Phosphor CRT. Circuitry reads the video RAM row-by-row to create scan lines that are refreshed on the phosphor screen. The Superbrain did not support high resolution graphics.



Columbia University had many Superbrain computers for students and researchers to use. They were connected to the university's mainframe computers which provided limited storage. The Kermit file transfer protocol was developed on a Superbrain in 1981 to facilitate reliable upload and download of files between computers over a serial interface. Kermit is still actively maintained today (<https://www.kermitproject.org/>).



Intertec peaked around 1983 with 600 employees and then financial difficulty started. After rebranding and a failed attempt to join the IBM PC compatible market, they eventually went bankrupt in 1991.

Superbrain Users Manual: https://archive.org/details/bitsavers_intertecSuSep80_35747715

Superbrain II Users Manual: <http://dunfield.classiccmp.org/supbrain/manual.pdf>

The original English version can be found here: <https://digitalforensics.ch/enter/superbrain.pdf>