

Z80-DATS

Z80 DEVELOPMENT & TRAINING SYSTEM

Z80-DATS is a comprehensive computer board based on the Z80 microprocessor. Designed to be user friendly and versatile, **Z80-DATS** offers a wide variety of hardware and software facilities whilst retaining simplicity in operation.

Ideal for **EDUCATIONAL** and **TRAINING** applications, **Z80-DATS** can be used as a development system for Z80 **Assembler** or **Machine Code** programs, the EPROM based monitor providing a user interface to any standard PC via one of its serial ports.

Programs are entered directly into memory in Hex format or downloaded from the host in Intel Hex format. The clear graphical display enables **LINE-by-LINE assembler** programs to be entered and **Disassembled** and powerful **Monitor** facilities then enable programs to be easily debugged. **Register** contents are displayed on the screen at all times and the Monitor's totally integrated environment gives direct access to the users Cross development software.

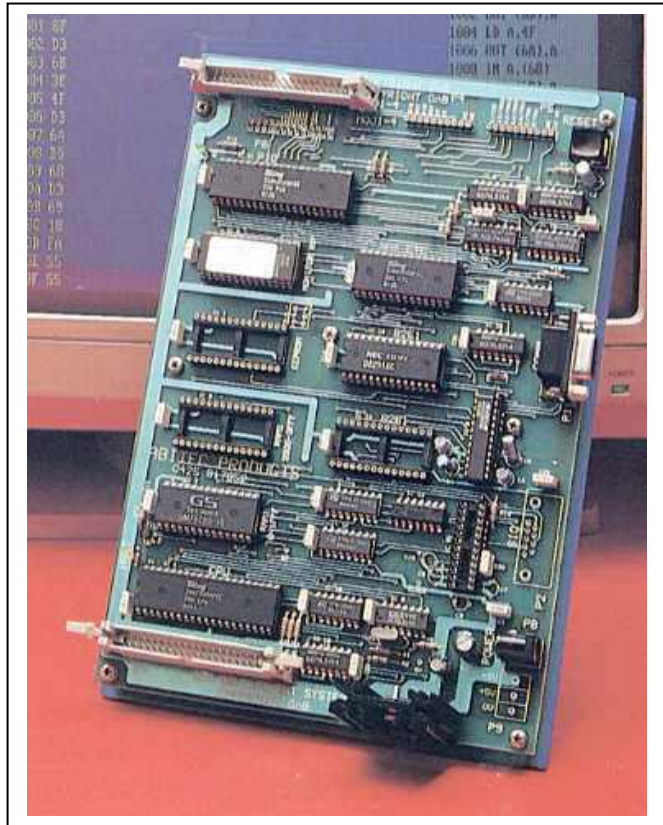
On board static RAM and EPROM are provided, and auxiliary memory sockets allow for the fitting of additional RAM and EPROM/EEPROM chips. Using the EEPROM programming routines provided by the monitor, the board is an excellent target for many 'stand alone' applications.

Standard connectors give full access to Data and Address buses so that logic analysers and other diagnostic equipment can be connected easily for demonstration and debugging purposes.

Z80-DATS standard package is supplied with: Monitor/Assembler EPROMS, RAM, Serial, CTC and Parallel I/O devices, User Manual, Power Supply and Disk based PC Communications software with the option of being mounted on an acrylic sub-plate or in a moulded storage box.

Interface connecting cables and a range of parallel I/O applications products are also available along with low cost and professional grade cross development software.

Target systems are also available for many other popular processors and customised designs can be developed to individual customer requirements.



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Z80-DATS Hardware Features

- **Z80 CPU** running at 1.79MHz as standard (optional higher speeds) with all lines accessed via a 40 way IDC connector.
- **Z80 CTC** chip with channel input/output lines accessible via a 10-way single in-line connector.
- **Z80 PIO** with all input/output and control lines accessed via 40 and 26 way IDC connectors.
- **RS232** port using the 8251 USARTs and MAX238 line receiver/drivers with the option of fitting a second serial port if required.
- **Full interrupt** control provided by Z80 peripherals.
- **Up to 16K Static RAM** (8K is fitted as standard).
- **8K EPROM based monitor** with 2nd EEPROM socket programmable by the user via routines provided by the monitor. Optionally, the monitor can be supplied in EEPROM.
- **Onboard voltage regulation** allows the unit to be powered from a simple unregulated 8 to 13V dc or from a regulated +5V dc source.

Z80-DATS is manufactured as a double Eurocard size (160mm x 233.4mm) printed circuit board with through plated holes, solder mask and screen printed component identification. Serial port connection is via 9 way 'D' type connectors. 40 way or 26 way IDC connectors and a single row 0.1" pin header are used for access to the Parallel Input/Output port. A 40 way IDC connector is also used for direct access to all of the connections to the Z80 Microprocessor. A standard 2.1 mm power inlet socket is fitted for use with the unregulated supply or alternatively screw terminals allow direct connection of a 5V DC supply.

Z80-DATS Software Features

- **Program load** - Z80 code may be downloaded from the host in Intel Hex format which may be produced by most Z80 cross assemblers.
- **Line-by-Line assembler** - Accepts assembler source code a line at a time, assembles it, and stores the resulting code in memory.
- **Disassembler** - Specified areas of memory may be disassembled and displayed on the host screen in the disassembly window. The window remains in view whilst further operations are performed or may be cleared at any time. ,
- **Memory operations** - Specified memory locations may be examined and/or modified. Consecutive locations may be displayed with a single key press without the need to re-enter the address. Blocks of memory can be "dumped" to the screen using specified start/stop addresses or default parameters that fill a single user screen.
- **Register operations** - All registers are displayed on the host in two register windows; the register window and the alternative register window. The contents of any register may be modified either by positioning the cursor within the register windows and entering new data, or individual registers can be specified and the contents entered directly.
- **Run user program** - User programs may be run on the board from a specified address. When (and if) the program returns to the monitor, the register windows are modified showing the contents at the end of the user program.
- **Set Break point** - Break point is set at a specified (and valid) address. When a break point is encountered control is passed back to the monitor and current register contents displayed in the register windows. All monitor facilities are then available including the resumption of user program from the break point.
- **Single-step** - Programs may be single stepped from a specified address (or default address), after each instruction is executed the register windows are updated. Further single step operations may then be executed using a single key press. Optionally, the disassembly window may be displayed whilst in the single step mode, the disassembly display automatically follows the user program being single stepped.
- **System calls** - Many system calls are available to the user such as the RS232 communication routines, various format conversion routines such as ascii to hex and hex to ascii, etc.
- **EEPROM programming facilities** - The second EEPROM may be programmed by the user allowing simple program/system development. Data in the EEPROMs is protected by a "software key" thus accidental writes to the EEPROMs will not corrupt data. This facility also provides a simple and efficient method of implementing controllers for stand-alone applications.
- **Integrated Environment** - Users Cross-assembler and Editor are directly accessible via the Z80-DATS communication software providing the totally integrated environment.

The on-board monitor software is provided in a minimum of a 2764 EPROM (or optionally in a 28C64 EEPROM). A full instruction code set is included in the Z80-DATS user manual.

The monitor communicates with the host computer via the RS232 interface operating at 9600 baud; interface software is also provided to run on the host PC.