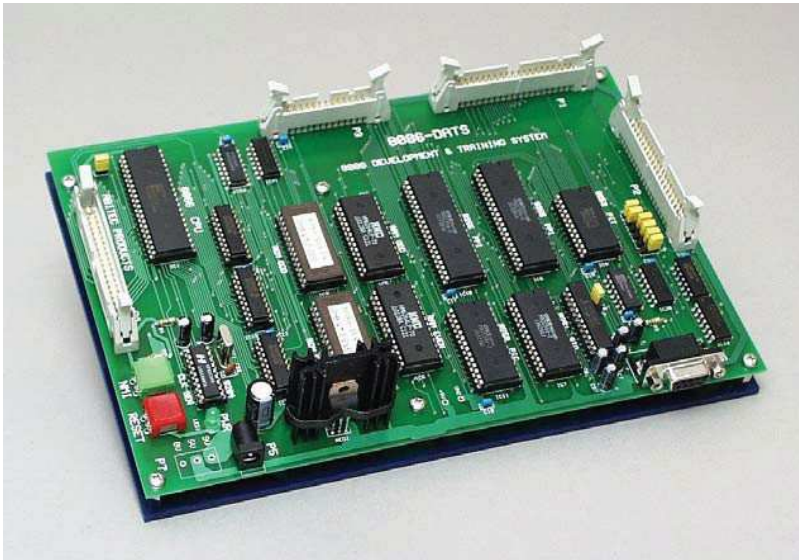# Feedback

8086 Development & Training System (DATS)   24-131

The 24-131 DATS includes a comprehensive target board based on the true 16-bit 8086 microprocessor. Designed as a general purpose unit it simplifies the teaching of the 8086 CPU & its commonly used peripherals. Suitable for use at all levels, from simple programs flashing an LED to use as a controller in complex projects. The 24-131 DATS offers a wide variety of hardware and software facilities whilst retaining simplicity in operation.

Ideally suited to Educational and Training applications, 24-131 DATS is used as a development system for 8086 Assembler Code programs, the EPROM based monitor providing a user interface to a standard Personal Computer via its serial port.

8086 assembler code programs are constructed on the standard Personal Computer running WIN95 or higher & downloaded from the host in Intel Hex format. Programs can be entered into the integral Windows based, Line-by- Line assembler, Disassembled and easily debugged with the powerful Monitor facilities. Line Assembled programs can also be saved & re-loaded when required. When Single Stepping, the current program position is highlighted in either the Line assembler or Disassembler windows.

The floating windows format of the 8086-DATS communication software enables both Register and Memory contents to be displayed on the screen in their respective windows and a Watch Window enables specific selected memory locations to be displayed and monitored. The Ports window allows the reading and writing of data to specified Port addresses. Also, Port addresses can be selected and added to a Port Watch list. Alternatively, programs may be developed using a standard Assembler and Linker producing Intel Hex format code for down loading to the 24-131 DATS.

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. The 8086 PCB is supplied mounted on an acrylic base with rubber feet for stability on the bench.

All major components are retained in turned pin I/C sockets. This enables faults to be easily applied without fear of damage to the target board for the teaching of fault finding techniques. The teaching of Logic and Signature Analysis and In-Circuit Emulation techniques is enhanced because the board may be set up for a realistic dedicated application.

Major Hardware Features include

- External bus expansion

- Fully buffered, programmable serial port Full address decoding

- Seven levels of prioritised interrupts

- Two 16-bit programmable parallel I/O ports

- Three channel programmable timer

Hardware Features

- 8086 Microprocessor running at 4.9152 MHz from Clock Generator Driver (8284A)

- CPU connections accessed via a 40-way IDC connector for external processor bus expansion

- RS232 port using the (8251) USART and fully buffered by MAX238 line receiver/ drivers

- Powered from a simple unregulated 8 to 13V dc or from a regulated +5 V dc source.

- Two Programmable Peripheral Interface chips (8255) giving two 16-bit programmable I/O ports.

- I/O connections compatible with Feedback's range of Application products

- Programmable Interval Timer (8253) providing three channel 16-bit counter/ timer channels

- Programmable Interrupt Controller (8259) provides 8 levels of prioritised interrupts for peripherals

- Two 27256 EPROMs with embedded Monitor provide 64 Kbytes EPROM memory

- Two 6264 RAM chips providing 16 Kbytes RAM memory expandable to 64 Kbytes

- Full address decoding and additional isolated I/O decoded signals for external expansion

- Hardware reset and Non-mask- able interrupt push-buttons

- Non-maskable interrupt control of 8086 from external signal source

- Power supply, serial cable, communication software and comprehensive manual included

- The board is mounted on an acrylic base and supplied in a rugged moulded storage case

The 8086 target board is supplied complete with its powerful "on board" EPROM based monitor, a Windows based host control software and comprehensive technical reference manual.

The 24-131DATS is manufactured as a double Eurocard size (160 mm x 233.4 mm) printed circuit board with through plated holes, solder mask and screen printed component identification. Serial port connection is via 9 way D type connector. A 40 way IDC connector is used to access the parallel input/output port, and a 40 way IDC connector is used for direct access to all of the connections to the 8086 Microprocessor. A standard 2.1 mm power inlet socket is fitted for use with an unregulated power supply or alternatively screw terminals allow direct connection of a 5 V d.c. supply.

24-131 DATS Windows Software / Monitor Features

- **Line Assemble** – to enter code line at a time (programs can be saved, reloaded and downloaded to the board when required)
- **Memory** – examine/alter memory contents
- **Register** – examine/alter registers contents
- **Memory Block** – displays 256 bytes memory
- **Single Step** – highlights and steps through code a single instruction at a time
- **Port Input** – read and display specified port
- **Port Output** – output byte to specified port
- **Disassemble** – disassembles code to screen
- **Breakpoint** – sets up to 4 breakpoints
- **Download** – loads extended Intel hex files
- **Full specified memory mapping**
- **Jump Calculator** – 16 and 8-bit two's compliment jump calculator

The on-board monitor software is provided in a pair of 27256 EPROMs (or optionally in 28C256 EEPROMs). The monitor communicates with the host computer via the RS232 interface operating at 9600 baud; interface. The 24-131 DATS standard package consists of the 8086 PCB supplied in a rugged moulded storage case, the Technical/User Manual, Power Supply (9V1A) and Disk based PC Communications. To operate the 24-131 DATS a PC is required running an operating system of WIN98 or higher. Interface connecting cables and a range of parallel I/O applications products are also available along with low cost and professional grade development software. An optional Cross-assembler is available, which requires a PC running Windows 98 or higher.

Ordering Information

Development & Training system (specify UK or EU)   24-131
Cross Assembler software - dependent on number of users   24-945

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Feedback reserves the right to change these specifications without notice.