

# Microprocessor Trainer

Educational Training Equipment for the 21st Century

Bulletin 279-4A

## MCB-486 32-bit Microprocessor Trainer

### Purpose

The Hampden **Model MCB-486** Microcomputer Board is a 32-bit microprocessor trainer utilizing the latest in VLSI (Very Large Scale Integration) technology. Its approach to training expands upon the concepts of Hampden's highly successful MCB-1A 8-bit microprocessor trainer; that is, stressing the functionality and fundamentals of microcomputers.

### Description

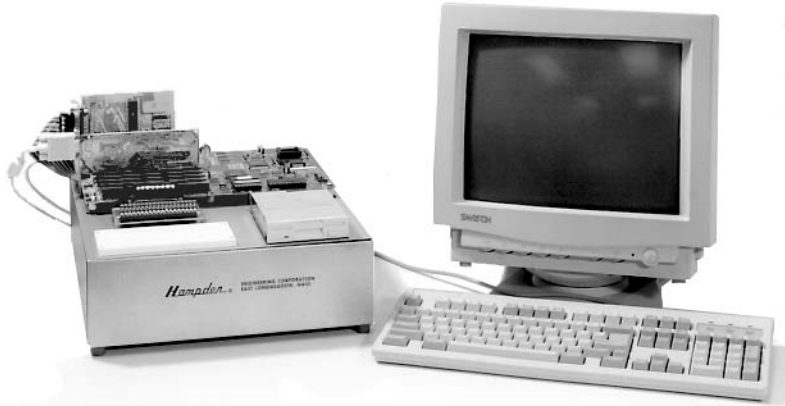
By having all of the computer circuitry on one open-faced printed circuit board and grouped in clearly defined sections, it allows the student to examine the internal workings of Intel Corp.'s very popular 80486 32-bit microprocessor series and use it in conjunction with other state-of-the-art VLSI components.

Incorporated in the **MCB-486** are the following sections:

- 1Mbit Flash EPROM memory space
- Up to 64M bytes of SIMM RAM memory (8M supplied)
- High Density 3.5" Floppy Disk Drive
- Color VGA Controller & Monitor
- Dual RS232 Serial Interface
- Real Time Clock
- Primary/Secondary IDE Interface
- SCSI Interface
- PC-compatible SpeakerInterface
- Parallel Printer Interface
- Experiment Breadboard Area (6.5" x 3.8")
- Keyboard Interface (keyboard included)
- 6 PC-AT Bus Expansion connectors

### Options

- **Troubleshooting Trainer:**  
The **MCB-486** is also available with twelve built-in faults. Specify **Model MCB-486FT**.
- **Communications Trainer:**  
The **MCB-486** is available with Fax/modem interface and Network Interface. Specify **Model MCB-486CT**.



- **Disk Interface Control Section:**  
supports up to two 5.25" and 3.5" disk drives, paralleled from the 34-pin connector. A high-density 3.5" disk drive is included.
- **Numeric Coprocessing Section:**  
Integral to the Intel 486DX microprocessor.
- **I/O Control Section:**  
Contains a high-current Programmable Peripheral Input/Output (PPIO) chip, which provides two 8-bit parallel ports for student use.
- **Experimentation Section:**  
Consists of a large (6½" x 3 3/8") area of solderless breadboard that accommodates all DIP integrated circuit chips and other electronic components.
- **Dynamic RAM Section:**  
8M bytes of dynamic read/write memory, in SIMM modules, with space for up to 64M bytes. With 8M bytes of RAM, the student has virtually unlimited programming capabilities.
- **Dual RS232 Serial I/O Section:**  
Two complete RS232 I/O ports designed to interface the MCB-486 with most asynchronous peripherals.
- **CPU Section:**  
Contains the 66 MHz Intel 80486DX microprocessor, which incorporates two independently operating processing units (Execution and Bus Interface), eight 16-bit general registers, four segment registers, and nine 1-bit flag registers.
- **Parallel I/O Section:**  
A complete parallel interface port designed to interface the **MCB-386** with most parallel peripherals, such as printers.
- **IDE And SCSI Interface Section:**  
Provided for interfacing to hard disk drives, CDROM, tape storage, or other peripherals.
- **PC-AT Bus Interface Section:**  
Six standard 16-bit personal computer bus expansion connectors for the addition of a fax/modem board, additional memory, GPIB (IEEE-488) interface, or any of the standard PC accessories.

### Courseware

- 1 Text: *Microprocessors and Interfacing Programming and Hardware*, 2nd edition by Douglas Hall
- 1 Experiment Manual for above
- 1 Instructor's Guide for above

All Hampden units are available for operation at any voltage or frequency

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# Microprocessor Trainers

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## MCB-486 Peripheral Equipment

### Model SI-1

#### Serial Printer

The MODEL SI-1 Serial Printer accessory consists of a serial printer, with tractor-feed and letterhead capability.

### Model EBA-2

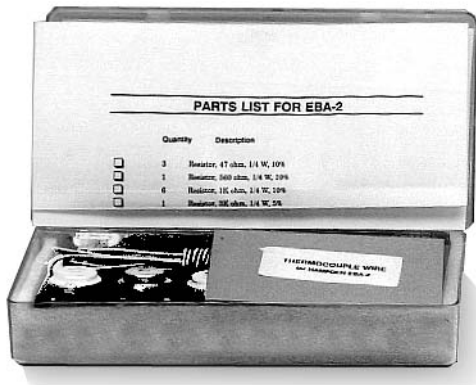
#### Experimental Accessories Package

Consists of the electrical and electronic components necessary for students to construct interfacing circuits. The manual includes circuits for half-wave AC control, full-wave AC control, DC control, D/A and A/D conversion, and temperature-to-digital conversion.

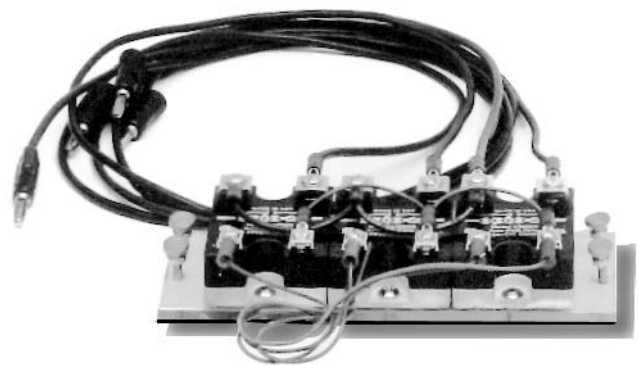
### Model EBA-3

#### AC Relay Control Package

Consists of three AC relays suitable for control from a Digital I/O TTL-level control line, such as present on the **Model MCB-486** trainer.



MODEL EBA-2



MODEL EBA-3

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