DS-M8 Microprocessor Development System

In-Circuit Emulator for Microchip PICs

FEATURES

- **Real-Time and Transparent In-Circuit Emulator**

- **Supports PIC12xxx, PIC14xxx, PIC16xxx, PIC17xxx and others**

- **Uses Microchip Bond-Out Technology**

- **Maximum Frequency Support**

- **Standard 64Kx16 Emulation Memory**

- **32Kx48 Real-time Trace with Filters and Triggers**

- **64K Hardware Breakpoints with External Signals**

- **Memory Mapping Capabilities**

- **Software for MS-Windows**

- **Source-Level Debugger for C and Assembler**

- **Performance Analyzer**

- **Serially Linked to IBM PC at 115KBaud**

DESCRIPTION

Ceibo DS-M8 is a real-time in-circuit Emulator dedicated to all Microchip microcontrollers. It is serially linked at 115KBaud to a PC or compatible host and can emulate the microcontroller using either the built-in clock oscillator or any other clock source connected to the microcontroller up to its maximum frequency as specified by Microchip. The system is prepared to run up to 40MHz for supporting future Microchip derivatives. DS-M8 provides 64Kx16 of code memory with software mapping. Breakpoints allow real-time program execution until an opcode is executed at a specified address. Breakpoints on data values, data read or write and an AND/OR combination of two external signals are also implemented. The MS-Windows software includes source level debugger for C, assembler debugger, performance analyzer, on-line assembler and disassembler, conditional breakpoints and many other features. The DS-M8 Source Level Debugger includes commands for testing the programs and hardware in real-time. The commands permit setting breakpoints on high-level language lines, adding a watch window with the symbols and variables of interest, modifying variables, showing the trace buffer, executing assembly steps and many more useful functions. Files generated by the most common assemblers and high-level language compilers are accepted by the DS-M8. Standard systems are supplied with MS-Windows debugger, 128 KBytes of internal memory organized as 64Kx16, 64K hardware breakpoints, real-time trace memory and logic analyzer with external test points.

SPECIFICATIONS

LANGUAGES AND FILE FORMATS
DS-M8 accepts files with absolute object or hex format. Assemblers and high-level languages from leading vendors are supported: Microchip, ByteCraft, Hitech and others.

SOURCE-LEVEL DEBUGGER
The DS-M8 Software includes a Source-Level Debugger. This function may be used to debug code written in Assembler and C. The Source-Level Debugger includes commands which allow the user to get all the information necessary for testing the programs and hardware in real-time.
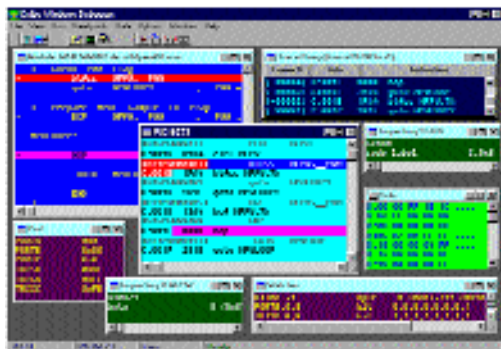

Figure 1: DS-M8 Windows Debugger

PERSONALITY PROBES

DS-M8 uses Microchip bond-out microcontrollers, which are special devices for transparent hardware and software emulation. The selection of a different microcontroller is made by software selection or changing the probe or socket adapter. Following is the list of personality probes and supported devices.

Probe	Supported Devices
14000	14000
16C01	12C508, 12C509, 16C52, 16C54, 16C55, 16C56, 16C57, 16C58
16C558	16C554, 16C556, 16C558
16C61	16C61
16C622	16C620, 16C621, 16C622
16C74	16C62, 16C63, 16C64, 16C65, 16C72, 16C73, 16C74
16C77	16C66, 16C67, 16C76, 16C77
16C711	16C71, 16C710, 16C711
16C715	16C715
16C84	16C83, 16C84
17C02	17C42, 17C43, 17C44
17C03	17C752, 17C756

As the list of supported devices and available probes is continuously evolving, call Ceibo to receive the latest update.

FREQUENCY

The Personality Probes run at the frequency of the crystal on them or from the clock source supplied by the user hardware. Therefore, the same probe may be adapted to your frequency requirements. The minimum and maximum frequencies are determined by the Microchip bond-out characteristics, but in many cases Ceibo's additional hardware emulates the microcontroller beyond the Microchip bond-out limitations. The Emulator maximum frequency is 40MHz and thus prepared for future devices.

TRACE AND LOGIC ANALYZER

The 32Kx48 Trace Memory is used to record the microprocessor activities. Eight lines are external test points. Trigger inputs and conditions are available for starting and stopping the trace recording. Frames can be filtered as well as started and stopped with a resolution of a single instruction. The trace buffer can be viewed in disassembled instructions or high level language lines embedded with the related instructions.

PERFORMANCE ANALYZER
This useful function checks the trace buffer and provides time statistics on modules and procedures as a percentage of the total execution time.

HOST CHARACTERISTICS
IBM PC or compatible systems with 8 MBytes of RAM and one RS-232 port. MS-Windows 3.1x/95/NT or later.

INPUT POWER
5VDC/1.5A.

MECHANICAL DIMENSIONS
26mm x 151mm x 195mm (1" x 6" x 7").

ITEMS SUPPLIED AS STANDARD
In-circuit Emulator with 64 KByte breakpoints, 128 KByte internal code memory, user software including Source-Level Debugger, On-line Assembler and Disassembler, User's Manual and Operating Instructions. RS-232 cable and Power Supply.

OPTIONS
Personality Probes and adapters for different microcontrollers and packages*.*

WARRANTY
Two years limited warranty, parts and labor.

DS-M8 - ORDERING INFORMATION

Item	Description
DS-M8	Emulator, Trace, Software, Power Supply, Cables
P-14000	Personality Probe, 28-DIP, 28-SDIP Headers
P-16C01	Personality Probe, 8-DIP, 14-DIP, 18-DIP, 28-DIP, 28-SDIP
P-16C558	Personality Probe, 18-DIP Header
P-16C61	Personality Probe, 18-DIP Header
P-16C622	Personality Probe, 18-DIP Header
P-16C74	Personality Probe, 28-DIP, 28-SDIP, 40-DIP, 44-PLCC Headers
P-16C77	Personality Probe, 28-DIP, 28-SDIP, 40-DIP, 44-PLCC Headers
P-16C711	Personality Probe, 18-DIP Header
P-16C715	Personality Probe, 18-DIP Header
P-16C84	Personality Probe, 18-DIP Header
P-17C02	Personality Probe, 40-DIP, 44-PLCC Headers
P-17C03	Personality Probe, 68-PLCC Header