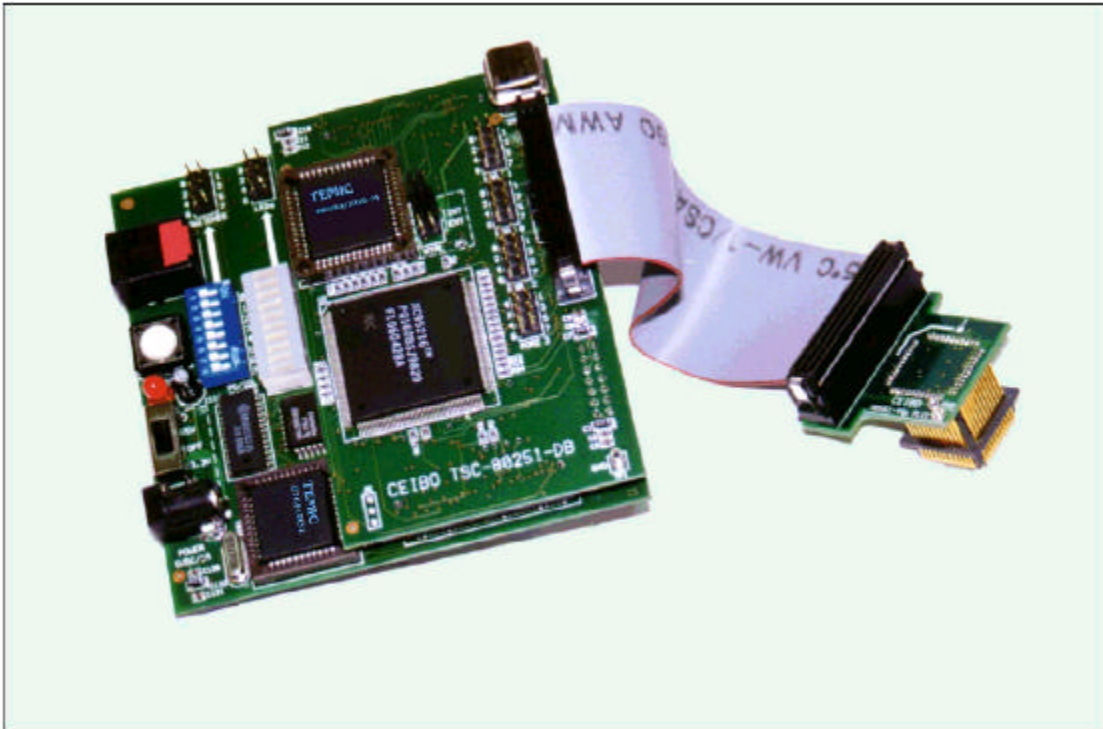


Ceibo EB-C251 Low-Cost Emulator



Low-Cost Emulator for C251

FEATURES

- **Real-Time and Transparent C251 Emulation**
- **supports Intel MCS[®]251 and Atmel W&M C251**
- **Uses Bond-Out Technology**
- **Maximum Frequency Support up to 24MHz**
- **Source-Level Debugger for C, PLM and Assembler**
- **MS-Windows Software**
- **Support for ROMless and ROMed Microcontrollers**
- **256K Internal Memory**
- **Memory Mapping Capabilities**
- **Real-Time Trace**
- **256K Software Breakpoints**
- **3.3V and 5V Operation**
- **Serially Linked to IBM PC at 115K Baud**

DESCRIPTION

EB-C251 is a Low-Cost Emulator dedicated to Intel MCS[®]251 and Atmel W&M C251 microcontrollers. It is serially linked to a PC or compatible systems and can emulate the microcontroller using either the built-in clock oscillator or any other clock source connected to the microcontroller. The operating frequency range is from the microcontroller fmin to fmax (up to 24MHz). The system emulates transparently the microcontroller in both ROMless and ROMed modes using bond-out chips, which are special emulation devices. All the microcontroller resources are available for user applications. The MS-Windows software includes a Source-Level Debugger for C, PLM and Assembler, On-line Assembler and Disassembler, Real-Time Trace, Conditional Breakpoints and many other features. EB-251 provides 256K of code memory, which permits downloading and modifying of user programs. Program execution can be recorded in real-time in a 1K x 32-bit trace memory. The trace buffer can be viewed in disassembled instructions or high-level language lines embedded with the related instructions without stopping the emulation. I/O lines are easily accessed and may be connected to the on-board switches and LEDs when trying out a specific idea. The system supports 3.3V and 5V applications. The complete system includes the Emulator with trace and 44-pin PLCC emulation header, user software, Source-Level Debugger, User Manual, RS-232 interface cable and Power Supply.

SPECIFICATIONS

SYSTEM MEMORY

EB-C251 provides 256 KByte of internal code memory. This RAM memory permits downloading and modifying of user programs and variables. Memory from FF0000h may be mapped as belonging to the emulator or a target circuit connected to it in boundaries of 4K, 8K, 16K, 32K and 64K for page FF; other pages have a mapping resolution of 32K. The remaining code memory of the microcontroller is automatically mapped to the target board.

BREAKPOINTS

Breakpoints allow real-time program execution until an opcode is executed at a specified address. Up to 256K breakpoints are available for addresses of C251 code memory.

REAL-TIME TRACE

It records all the non-sequential changes of the program counter caused by branch instructions or interrupts in a 1024x 32-bit memory, where 24-bit are for program counter recording and 8-bit are the microcontroller status lines. The software completes the sequential instructions, thus allowing a more efficient usage of the trace memory. The trace depth is according to this definition. The trace is a real-time function.

FREQUENCY

The system includes a crystal oscillator able to support different clock frequencies. This oscillator may be changed to the required value. The operating frequency range is from the microcontroller fmin to 24MHz or higher. The maximum frequency is 24MHz. Any external frequency is also possible.

EMULATION VOLTAGE

The system has a built-in voltage regulator that permits selection of either a 5V or a 3.3V voltage supply. Selection is done by setting the position of the power switch to the desired voltage.

SUPPORTED MICROCONTROLLERS

The supported microcontrollers are C251s derivatives in both ROMless and ROMed versions, according to the bond-out chip. This device is placed on a small daughter board, so the system will be able to support future derivatives with different packages and bond-outs. As the list of supported devices is continuously evolving, call Ceibo to receive the latest update.

SOURCE-LEVEL DEBUGGER

EB-C251 software comes with MS-Windows Debugger. The Debugger includes commands which allow the user to get all the information necessary 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, displaying floating point values, showing the trace buffer, executing assembly steps and many more useful functions.

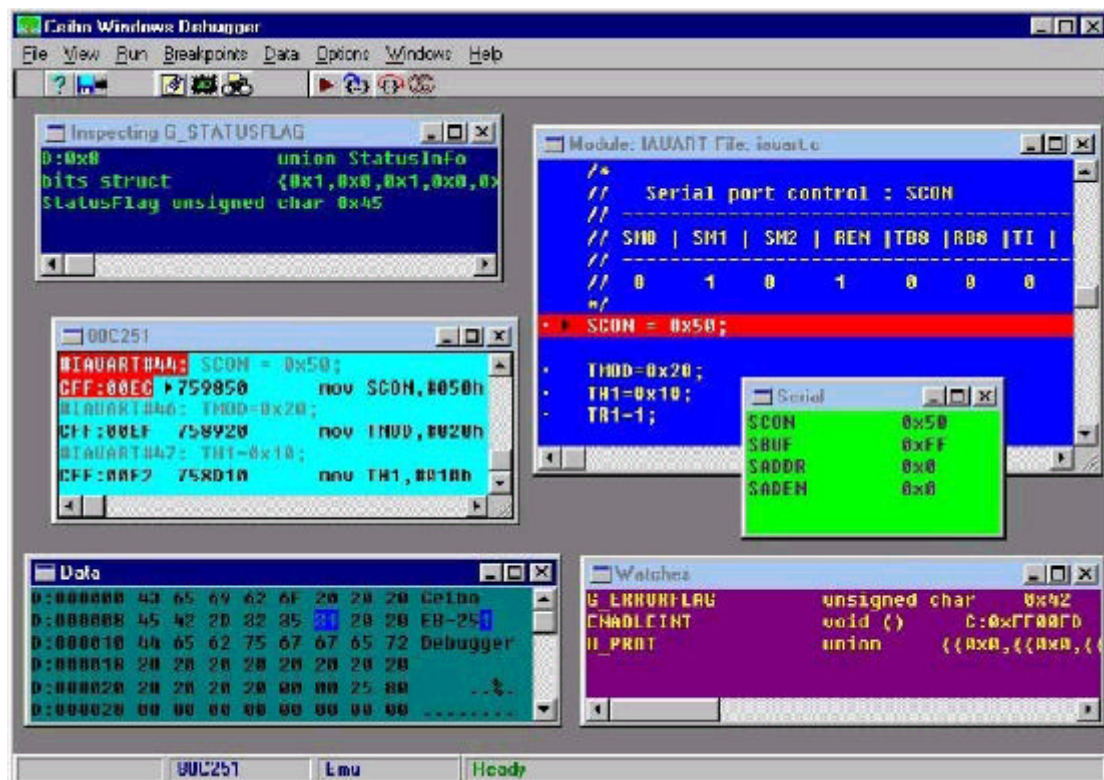


Figure 1: EB- C251 Debugger

LANGUAGES AND FILE FORMATS

EB-C251 accepts files generated by Software from many vendors (Keil, IAR, Tasking, etc.). Assemblers and high-level languages such as C and PLM are fully supported both in C251 and 8051 formats.

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

110 to 230VAC, 5VDC/1A Power Supply supplied.

MECHANICAL DIMENSIONS

4"x 4"(10cm x 10cm approx).

TEMS SUPPLIED AS STANDARD

Low-Cost Emulator with 44-pin PLCC header, user software including Source-Level Debugger, User Manual, RS-232 interface cable and Power Supply.

EMULATION RESTRICTIONS

The following restrictions are valid for EB-C251:

1. NMI (or INT0 or INT1) is used by the emulator according to the Halt Mechanism selection in the Option Menu. If you need any of it in your application, you can define the interrupt as shared and only a few clock cycles will be added to the interrupt response. Interrupts must not be disabled in your code.
2. Trap function is reserved by the system.
3. Address 7FH in page FF is also reserved by the system (FF:007B).

| Daughter Board | Support uC |
|----------------|---|
| B-C251Gx | Atmel: TSC80C251G2D, TSC83C251G1D, TSC83C251G2D, TSC87C251G1A, TSC87C251G2D-16K, TSC87C251G2D-32K |
| B-C251Tx | Intel: 80C251SB, 80C251SQ, 80C251TB, 80C251TQ, 83C251SA, 83C251SB, 83C251SP, 83C251SQ, 83C251TA, 83C251TB, 83C251TP, 83C251TQ, 87C251SA, 87C251SB, 87C251SP, 87C251SQ, 87C251TA, 87C251TB, 87C251TP, 87C251TQ |

WARRANTY

Two years limited warranty, parts and labor.

EB-C251 - ORDERING INFORMATION

| <i>Item</i> | <i>Description</i> |
|--------------------|--|
| EB-C251 | Emulator, Software, Real-Time Trace, Power Supply, Cables |
| B-C251Gx | Daughter Board for C251Gx Microcontrollers with Bond-Out |
| B-C251Tx | Daughter Board for C251Tx Microcontrollers and Derivatives with Intel Bond-Out |
| H-40D | 40-Pin DIP Header |
| H-44P | 44-Pin PLCC Header |
| ADP-44Q | 40-Pin DIP to 44-Pin QFP Adapter |
| ADP-44QP | 44-Pin PLCC to 44-Pin QFP Adapter |