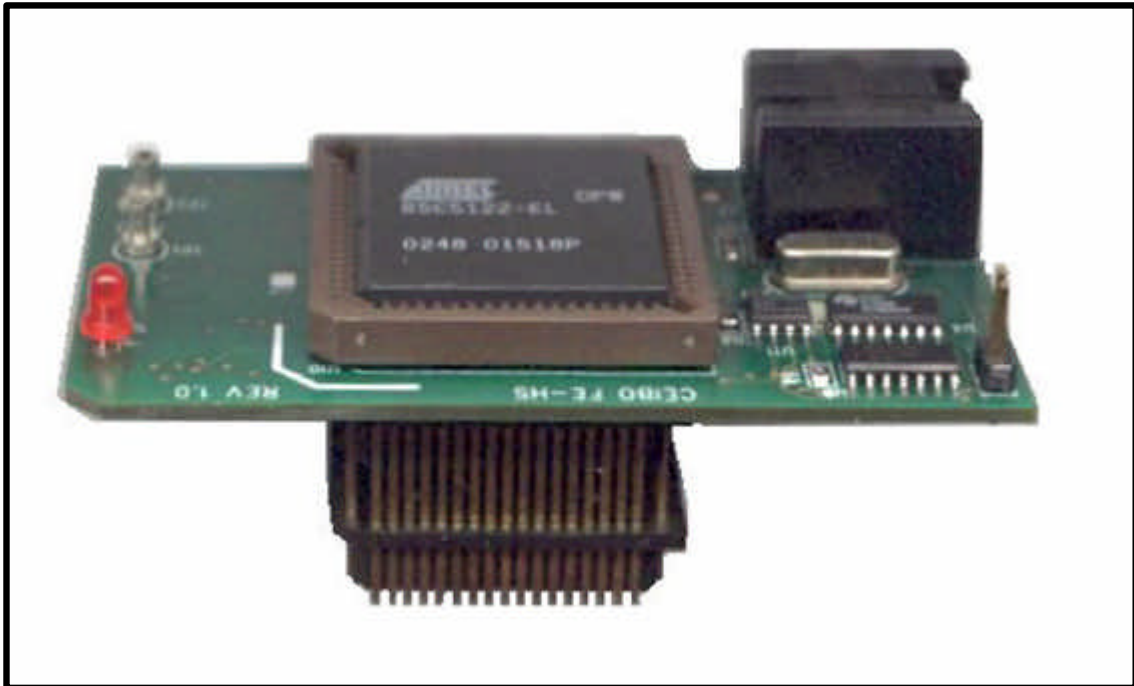


CEIBO FE-5122 Development System



Development System for Atmel AT8xC5122 Microcontrollers

FEATURES

- **Emulates AT8xC5122 Derivatives with 6/12 Clocks/Cycle**
- **32K Code Memory**
- **Software Trace**
- **Real-Time Emulation**
- **Frequency up to 40MHz**
- **MS-Windows Debugger for C and Assembler**
- **Keil μ Vision2 Debugger Compatible**
- **PLCC-68, PLCC-28, LQFP-32 and VQFP-64 Emulation Headers**
- **Serially Linked to PC at 115Kbaud**

DESCRIPTION

Ceibo FE-5122 is a development system that supports ATMEL AT8xC5122 microcontrollers with 6/12 clocks/cycle at any frequency allowed by the devices. It is serially linked to a PC or compatible systems and can emulate the microcontrollers using the built-in clock generator. Emulation is carried out by loading the system with the user software. An embedded monitor program is resident in the silicon (ROM), so the 32K code are all available to the user. Two working modes are available: real-time and simulator. In the **real-time mode** the user software is executed transparently and without interfering with the microcontroller speed. Breakpoints can be added to stop program execution at a specific address. Real time trace is available. The **simulation mode does not implement all the chip options** and it is intended only for software debugging of the basic 8051 functions. **Use the system in emulation mode.** The simulation mode is used to debug the software without any hardware. FE-5122 may be disconnected while using the simulation mode. The software includes C and Assembler Source Level Debugger, On-line Assembler and Disassembler, Trace, Conditional Breakpoints and many other features. The system is supplied with Windows debugger software, RS-232 cable and a power supply.

SPECIFICATIONS

SYSTEM MEMORY

FE-5122 provides 32K of code memory. This is all the available memory for the AT8xC5122 microcontrollers.

SOFTWARETRACE

Trace can be used to display the last executed instructions in real time. Trace is variable in depth and shows backward all the sequential instructions until the last branch instruction occurred (LJMP, ACALL, DJNZ, etc.).

BREAKPOINTS

Breakpoints allow real-time program execution until an opcode is executed at a specified address.

WINDOWS DEBUGGER

The FE-5122 software includes a source level debugger for Assembler and high-level languages C and others with the capability of executing lines of the program while displaying the state of any variable. The debugger uses symbols contained in the absolute file generated by the most commonly used Assemblers and High Level Language Compilers. The CEIBO Windows Debugger runs only under Windows 95 or later and also under Windows NT.

Keil μ Vision2 Debugger

This debugger may also be used to operate the emulator. Some files have to be added to the original Keil package and those can be downloaded from www.ceibo.com.

SUPPORTED MICROCONTROLLERS

The system supports ATMEL AT8xC5122 microcontrollers. The standard supported package for emulation is PLCC-68. Other packages need mechanical adapters available from Ceibo: PLCC-28, LQFP-32 and VQFP-64.

FREQUENCY

FE-5122 runs from programmable clock generator, which can be set under software control. The minimum and maximum frequencies are determined by the emulated chip characteristics, up to $f_{max}=40\text{MHz}$ for the current silicon version.

HOST CHARACTERISTICS

PC or compatible systems with 8 MByte of RAM, one RS-232C interface card for the PC, Windows 95 or later.

INPUT POWER

5V, 1.5A power supply supplied.

MECHANICAL DIMENSIONS

3cm x 7cm.

ITEMS SUPPLIED AS STANDARD

Development system including emulator, termination board, PLCC-68 emulation header, Windows software with source level debugger, on-line assembler and disassembler, user's manual, power supply and RS-232 cable. Power cord is not included. Other mechanical adapters are optional: PLCC-28, LQFP-32 and VQFP-64.

PARTS OF THE SYSTEM

The system includes 2 main hardware boards:

1. FE-5122 - In-circuit Emulator
2. ADP-5122/T - Termination Board

HARDWARE DESCRIPTION

FE-5122 Emulator

The first step required to work with the FE-5122 board is to be able to identify its different parts and to understand how the electronics function. This will help you to take full advantage of all the FE-5122 capabilities.

On the bottom side of the FE-5122 you will see a phone jack. It is used to serially link the FE-5122 to your computer and to utilize the software in emulation mode instead of just the simulator. The emulation mode is used to interact with the hardware while the simulator is independent of any hardware connection. The RS-232 cable connections are given separately.

A POWER LED indicates whether or not the power is applied to the system. It is located beside the RS-232 jack (D1).

U10 is the microcontroller used for your emulation. It is placed on a 68-PLCC socket. The chip is a standard AT8xC5122.

On the other bottom side of the emulator board there is a PLCC-68 plug, that you may connect to a target board or the termination board supplied with the system. ***Make sure that pin #1 of the PLCC plug is to pin #1 of your target.*** The emulator and plug are clearly marked (see emulator left upper corner).

JP1 is a connector necessary only for firmware updates. It is on the left bottom side. Make sure that the cap is not placed on it to work properly. If any firmware update will be necessary, follow the instructions that will come with it in www.ceibo.com.



FIGURE 1: FE-5122 EMULATOR

ADP-5122/T Termination Board

This board is supplied to be used as a possible target and to test your software.

The emulator must be connected to a target to work as power supply is provided only through the target. Therefore, if you do not have a target board, connect the emulator to ADP-5122/T and only then you will be able to start working with it.

On the right bottom side of the board you will see the power jack. You need to connect the 5V power supply to this jack. Use the power supply that comes with the system.



FIGURE 1.2: ADP-5122/T BOARD

ADP-5122/T has several testpoints to check microcontroller signals. The available signals are:

P1.0, P1.1, XTAL2, P3.0, P3.1, P4.6, P4.7, RST_IN.

All the available options are:

NAME	SIGNAL	CONNECTED	DISCONNECTED
JP1	VTERM	VCC	FLOATED
JP2	DVCC	VCC	FLOATED
JP3	AVCC	VCC	FLOATED
JP4	CVCC	VCC	FLOATED
JP5	AVSS	VSS	FLOATED
JP6	CVSS	VSS	FLOATED
J503	5V to 3V converter		
J501.1	XTAL2		
J501.2	P1_0		
J501.3	USER RST INPUT		
J501.4	P1_1		
J501.5	P4_6		
J501.6	USER RxD(P3_0)		
J501.7	P4_7		
J501.8	USER TxD(P3_1)		

EMULATION RESTRICTIONS

The following restrictions are valid for FE-5122:

1. Code memory cannot be mapped external and always belongs to the emulator system.
2. The program also uses 2 Bytes of the internal stack memory.
3. The stack pointer may not be defined below address 7.
4. The first instruction (address 0000h) must be 3-bytes long. For example: use LJMP and not SJMP or AJMP as the first instruction.
5. Breakpoints cannot be set to the Reset Vector (address 0000h-0002h).
6. Address 0073h-007Bh are reserved memory space and the user code should not load into this area.
7. The Simulator can simulate timers only in Timer Mode and while the Gate control is 0. The simulator may not support specific hardware and real-time functions. Emulation mode is always recommended.
8. The simulation mode supports only the basic functions of the 8051 microcontrollers. Special registers and functions of some derivatives may be not supported in the simulation modes. Use the real-time mode for fully support of dedicated functions.

FE-51RD2 - ORDERING INFORMATION

<i>Item</i>	<i>Description</i>
FE-5122	Atmel AT8xC5122 Microcontrollers
ADP-5122/T	Termination Board