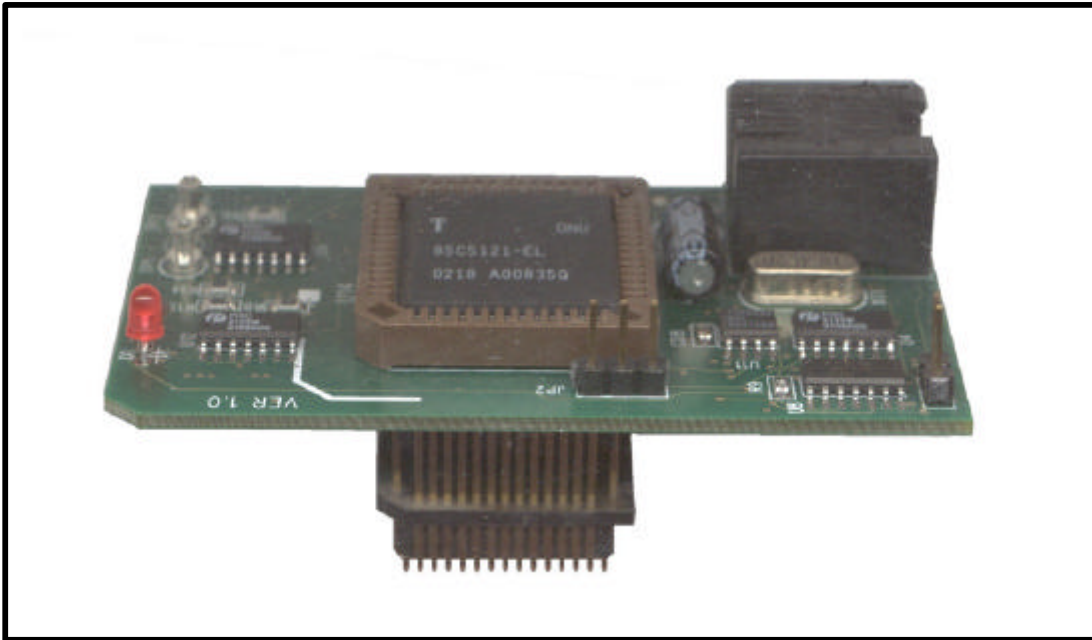


CEIBO FE-5121 Development System



Development System for Atmel AT89C5121 Microcontrollers

FEATURES

- **Emulates AT89C5121 Derivatives with 6/12 Clocks/Cycle**
- **16K Code Memory**
- **Software Trace**
- **Real-Time Emulation**
- **Frequency up to 16MHz/ 3V, 5V**
- **X1 and X2 Mode Support**
- **MS-Windows Debugger for C and Assembler**
- **Keil μ Vision2 Debugger Compatible**
- **PLCC-52 and SSOP-24 Emulation Headers**
- **Serially Linked to PC at 115Kbaud**

DESCRIPTION

Ceibo FE-5121 is a development system that supports ATMEL AT89C5121 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 16K 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-5121 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.

The system includes 2 main hardware boards:

1. FE-5121 - In-circuit Emulator
2. ADP-5121/T - Termination Board

SPECIFICATIONS

System Memory

FE-5121 provides 32K of code memory. This is all the available memory for the AT89C5121 microcontrollers

Software Trace

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-5121 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 AT89C5121 microcontrollers. The standard supported package for emulation is PLCC-52. Other package need mechanical adapter available from Ceibo is SSOP-24.

Frequency

FE-5121 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 $f_{max}=16\text{MHz}$ 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-52 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: SSOP-24.

EMULATION RESTRICTIONS

The following restrictions are valid for FE-5121:

1. FE-5121 Monitor Program shares 1 KByte of the 32K memory code space. Therefore, only 31K are available because the system comes with an embedded monitor program that uses this 1K of the memory space, from 7C00h to 7FFFh.
2. Code memory cannot be mapped external and always belongs to the emulator system.
3. The program also uses 4 Bytes of the internal stack memory.
4. The stack pointer may not be defined below address 7.
5. The first instruction (address 0000h) must be 3-bytes long. For example: use LJMP and not SJMP or AJMP as the first instruction.

6. The UART is shared with the system and interrupts should not be disabled. Also the related timer to the serial port must not be stopped. The Halt Mechanism in the Options Menu offers other solutions in case you need these resources in your application.
7. TxD line can be used as Output Port or UART line. It cannot be used as Input Port.
8. RxD line can be used only as UART line. It cannot be used as generic I/O Port.
9. Breakpoints cannot be set to the Reset Vector (address 0000h-0002h), Serial Interrupt (address 0023h-0025h) or to the 1K of the reserved memory space (address 7C00h-7FFFh). Any other location is allowed, included inside interrupt service routines.
10. 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.
11. 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-5121 - ORDERING INFORMATION

<i>Item</i>	<i>Description</i>
FE-5121	Emulator for Atmel AT89C5121/PLCC-52
ADP-5121/T	Termination Board
ADP-24S/5121	PLCC-52 to SSOP-24 Adapter