Z8932111ZEM

DSP FAMILY EMULATOR DEVELOPMENT TOOLS—Z89321

FEATURES

Supported Devices

Packages	Emulation	OTP Programming
40-pin PDIP	*Z89321/371*[1]	*Z89371*
44-pin PLCC	*Z89321/371*[1]	*Z89371*[1,2]
44-pin QFP	*Z89321/371*[3]	*Z89371*[1,2]

Notes:
1. With optional, separately-purchased adapter (Z8937101ZAC) from ZiLOG.
2. With optional, separately-purchased adapter (Z8937100ZAC) from ZiLOG.
3. Requires optional, separately purchased emulation adapter (Z080QFP0ZET) from ZiLOG and emulation pod (EPP-080-QF08-W) from Emulation Technology.

- Provides Source-Level Debugging for DSP Codes
- Symbolic Disassembly in the Debug Window
- Selectable Baud Rates—9600 to 57.6 Kbps
- Windows-Based User Interface
- RS-232 Connector
- ZDS (with ZiLOG Macro Cross Assembler)
  - Project Front End Interface (graphical-based)
  - Structured Assembly Code (resembles ‘C’ language code)
  - Listing, Map, and Linker Control Files
  - ZDS Syntax-Highlighting Editor (Windows 95 Only)
  - ZDS Faster Error Correction (Windows 95 Only)

GENERAL DESCRIPTION

ZiLOG’s in-circuit emulators are interactive Windows-oriented development tools that provide a real-time environment for developing and debugging software. Included with each of ZiLOG’s emulators is a powerful, full-featured macro cross assembler. When used in conjunction with the Z89321 Emulator, this tool is designed to enhance programmer productivity.

The Emulator provides a hardware platform that is a significant improvement compared to software simulators. The Emulator is faster in operation than simulators, making it more practical for code development.

The Z89321 Emulator, which supports the Z89321 family of DSP processors listed above, provides essential timing and I/O circuitry to simplify user emulation of the prototype hardware and software product.

The Z89321 Emulator can be connected to the serial port (COM1, COM2, COM3, or COM4) of the host computer, and it uses Graphical User Interface (GUI) software.

SPECIFICATIONS

Operating Conditions	
Operating Temperature:	*20°C, ±10°C*
Supply Voltage:	*9.0 VDC @ 1.2A wall adapter*
Operating Humidity:	*10%–90% RH (noncondensing)*
Minimum Emulation Speed:	*1 MHz*
Maximum Emulation Speed:	*20 MHz*
Power Requirements	*@ 0.8A typical, 1.2A maximum*
Dimensions	
Width:	*7.375 in. (18.733 cm)*
Length:	*9.75 in. (24.765 cm)*
Height:	*0.50 in. (1.27 cm)*
Serial Interface	*RS-232 @ 9600, 19200 (default), 28800, or 57600 Baud*
Emulation Memory	*DSP = 64K Words (maximum)*
Number of Breakpoints	*DSP = 256 (maximum)*

HOST COMPUTER

Minimum Requirements

IBM PC (or 100-percent compatible) 486-based machine

- 33 MHz
- 4 MB RAM
- VGA Video Adapter
- CD-ROM Drive
- RS-232 COM Port
- Mouse or Pointing Device
- Microsoft Windows 3.1 (utilized with DSPICE software)

Recommended

The following changes to the Minimum Requirements are recommended for increased performance:

- Pentium-Based Machine
- 66 MHz (or faster)
- 8 MB of RAM (or more)
- SVGA Video Adapter
- Color Monitor
- Printer
- Microsoft Windows 95

KIT CONTENTS

Quantity	Item
1	*Z8932111ZEM Emulator Board*
Cables/Pods	
1	*RS-232 Serial Cable, 9-pin M-F*
Host Software	
1	*CD-ROM Development Software*
Documentation	
1	*Z8932101ZEM Emulator User's Manual*
1	*ZiLOG Macro Cross Assembler User's Manual*
1	*Software License and Limited Warranty Agreement*

PRECAUTIONS

1. GUI software versions prior to 3.00 are incompatible with hardware containing BOOTROM 3.00. The GUI software may still boot; however, the program could fail at some later point.
2. When simultaneously running two different GUI versions on two different Communication Ports, the former executed version is used for both emulators. These are typical Windows OS bugs.
3. The emulator cannot be operated while performing ESD/EMI testing on the target board.
4. The GUI occasionally indicates *Executing* after a HALT instruction. Pushing the *GO* button also indicates *Executing* (*Executing* displays in the caption bar of the Debug window). This condition is applicable to DSPICE GUI software only.
5. Ensure that the target cable is correctly aligned (pin-1 to pin-1) before inserting into the target system. Incorrect alignment may damage the emulator and/or the target system.
6. Do not start the emulator with an OTP device in the programming socket. This action may cause the emulator to not start up correctly.
7. A shorted PLCC or DIP OTP can crash the emulator when inserted into the OTP programming socket. If a PLCC part is inserted in such a way as to cause a temporary short, then functionality is lost. An attempt to perform BLANK CHECK on such a part causes the "hour-glass" to run incessantly. The Windows application must be reset and restarted.
8. The status color bar in the OTP dialog box clears when a new window opens on top of it. This condition applies to DSPICE GUI software only.
9. Do not press the emulator MASTER RESET when the emulator is in the OTP dialog for programming. If MASTER RESET is pressed while the GUI is doing OTP programming, close the OTP dialog box and reopen it to reload the information back to the hardware.

Note: The emulator is really sitting idle, although the Command Status shows "Processing" after the GUI reestablishes the communication link when "Retry" was selected in the "Out of Synchronization with the Emulator" dialog box.

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10. When device serialization is enabled in the OTP dialog, the GUI copies the current serial number to code memory immediately before performing a VERIFY operation. If this behavior is undesirable, then device serialization should be disabled prior to invoking the VERIFY operation.
11. Do not use the OTP operation while in the Debug's trace and/or animation mode.
12. Option selections for the OTP are not cleared after changing a Device selection.
13. The *Edit|Fill|Memory* Decimal radix option will not accept entry of more than 9,999 for the Fill Value. Please use the Hexadecimal radix option when using a fill value of more than 9,999 decimal.

LIMITATIONS

1. Switching ICEBOX emulators without quitting the GUI is not supported and causes unexpected results.
2. The maximum loadable symbols is 32,768 (provided there is enough system memory).
3. Although version 3.00 or higher of the GUI may support baud rates up to 57.6K baud, the actual maximum usable rate may be less due to limitations of the users hardware and/or system software setup. The maximum usable rate is determined by the users tolerance of the frequency of communication errors.
4. The GUI does not recognize the PUSH and POP instructions when entered in the In-Line Assembler (Debug window). As a workaround, use *LD STACK,xxx* for PUSH and *LD xxx,STACK* for POP.
5. The emulator breakpoint hardware cannot distinguish between instruction and data fetches. Consequently, the breakpoint hardware triggers when the address specified matches either an instruction or data fetch.

Example:

```
0000    LD A, #%0006
0002    ADD A,#%0002
0003    LD Y,@A
0004    NOP
0005    NOP
0006    JP %0000
0008    NOP
```

Setting a breakpoint at %0008 and clicking *GO* causes the code to break at %0004 due to the data fetch address match during the prior instruction. This anomaly does not occur during Animate mode because Animate mode does not use hardware breakpoints.

6. The *STEP OVER* button sets a temporary breakpoint on the next instruction and starts execution of the current instruction. If control does not return to the temporary breakpoint in a fixed amount of time a *ZILOG ICEBOX TARGET PROGRAM EXECUTION ERROR* message occurs. As a workaround, the user should simply set a regular breakpoint on the next instruction, and click on the *GO* button (perform this action in place of using the *STEP OVER* function).

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