Z8932311ZEM

DSP FAMILY EMULATOR
DEVELOPMENT TOOLS—Z89323

FEATURES

Supported Devices

Packages	Emulation	OTP Programming
44-Pin PLCC	Z89223/273[1]	Z89273[2]
44-Pin QFP	Z89223[1]	N/A
68-Pin PLCC	Z89323/373[1]	Z89373[3]
80-Pin QFP	Z89323/373[1]	Z89373[3]

Notes:
1. Requires hand-wiring the Z89323 Emulator board to your target board's socket or by using a daughterboard connected to JP2 and JP3.
2. Requires an optional, separately-purchased accessory kit (Z8922300ZAC) from ZiLOG.
3. Requires an optional, separately-purchased accessory kit (Z8937300ZAC) from ZiLOG.

- ICEBOX Emulator 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-232C Connector
- ZiLOG Macro Cross Assembler (ZMASM)
  - Structured Assembly and Data Code
  - Source-Level Debug Support
  - Built-In Register Equates
  - Linker

GENERAL DESCRIPTION

ZiLOG's in-circuit emulators are interactive Windows-oriented development tools providing a real-time environment for developing and debugging software. Also included is a full-featured macro cross assembler to enhance programmer productivity when used in conjunction with the Z89323 Emulator.

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

The Z89323 Emulator, which supports the Z89323 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 Z89323 Emulator can be connected to a 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:	+5 VDC ±5% or 9 VDC@ 1.2 A wall adapter
Operating Humidity:	10%–90% RH (noncondensing)
Minimum Emulation Speed:	1 MHz
Maximum Emulation Speed:	20 MHz
Power Requirements	The emulator board has dual-power capability: 9.0 VDC or 5.0 VDC. If optional OTP programming is enabled and the 5.0 VDC terminal is used, a 6.0 VDC ±5% @ 500 mA (typical) power source is also required.
Dimensions	
Width:	5.25 in. (13.34 cm)
Length:	9.50 in. (24.13 cm)
Height:	0.50 in. (1.20 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) 386-based machine:
- 33 MHz
- 4 MB RAM
- VGA Video Adapter
- CD-ROM Drive
- RS-232C COM Port
- Mouse or Pointing Device
- Microsoft Windows 3.1(Use with DSPICE software)

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	Z8932311ZEM Emulator Board
Cables/Pods	
1	RS-232 Serial Cable, 9-pin M-F
Host Software	
1	CD-ROM Development Software
Documentation	
1	Z8932301ZEM Emulator User's Manual
1	ZiLOG Macro Cross Assembler User's Manual
1	Software License and Limited Warranty Agreement

ADDITIONAL REQUIRED ITEMS NOT SUPPLIED

- A Target Design

  Typically, your design is a wire-wrapped or printed-circuit prototype that includes connectors which connect to the emulator's JP2 and JP3, or points which connect with the emulator P6.

PRECAUTIONS

1. The Emulator cannot be operated while performing ESD/EMI testing on the target board.
2. For 386 PCs, set the baud rate to 19.2K or less because Windows' communication driver does not guarantee "reliable" operation at more than 9600 baud. Selecting a high baud rate on some slower 386 machines may crash the Windows environment.
3. Breakpoint overshoot. The Debug window shows the processor halting at one or two instructions past the instruction where the breakpoint was set.
4. Do not start the Emulator with an OTP in the socket.
5. The GUI occasionally indicates Executing after a Halt instruction. Pushing the GO button also indicates Executing. (Executing displays at the top of the screen.)

LIMITATIONS

1. Switching Emulators without quitting the GUI is not supported and causes unexpected results.
2. The Emulator breakpoint hardware does not 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 the breakpoint at %0008 and click GO causes the code to break at %0004 due to the data fetch address match during the prior instruction. This does not occur when Animate Mode is on because the GUI is not using the hardware breakpoints when in Animate Mode.

3. ROM PROTECT option programming is temporarily disabled.
4. The maximum loadable symbols is 32,768, provided there is enough system resource (memory).
5. Although GUI 3.00 and later 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.
6. 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.

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