ZAP

Source Level Cross Debugger

Installation and Setup Guide

ZAP Simulator
Configuration for Motorola 68HC12
PC/Windows 95/98/NT

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Installation Guide for ZAP 6812 SIM

This chapter describes how to install the COSMIC *ZAP C Cross Debugger Simulator MC68HC12* on your host system.

- Preparing For Installation
- Verifying Installation
- Compiling Programs for Cross Debugging
- Modifying and Saving the ZAP Environment

Preparing For Installation

Your ZAP package consists of the ZAP Debugger, installation script files, tutorial files, and message files. To use ZAP, the following is required:

- A PC with an 80386 or better microprocessor.
- Microsoft Windows 95/98 or Windows NT 4.0 operating system.
- A CD-ROM drive or 3-1/2" 1.44 Mb diskette drive.
- Hard disk drive with at least 5 Mbytes of free space.
- Minimum of 8 Mbytes of Extended RAM

Each software CD-ROM or diskette in the package has a printed label identifying the product, the product version number and the license serial number. In the installation instructions that follow, we assume that your CD disk drive is designated by **D:**, your floppy disk drive is designated by **A:** and your hard disk partition by **C:**. If your system uses different device names for your disks, you should adjust the installation instructions accordingly.

Installation Process

ZAP is installed by an Installshield setup program. Throughout the installation procedure, there is an assumed default directory in which ZAP will be installed. This directory is c:\cosmic\ZAPSIM12. If you install ZAP in a different directory or on a different hard disk drive, you must substitute your specified location wherever you see C:\cosmic\ZAPSIM12.

Running the Installation Program

1) Insert the Zap CD-ROM into your CD-driver or the **disk 1** into your floppy disk drive.

2) Open the Windows Explorer and select the appropriate CD-ROM or floppy disk drive letter by double clicking on it.

3) Double click on *Setup.exe* to run the Zap installation and setup program. As an alternative to steps 2 and 3 you can use the **Run** command from the Windows Start Menu and type **`D:\SETUP`** (or **A:\SETUP**) to run the installation program.

4) Follow the on-screen instructions provided by the installation. Read the license agreement and if you agree to it click on **Yes** and fill out the User information screen including your serial number and click next.

An Installshield window should appear. The installation program, allows you to select the hard disk drive and directory where ZAP will be installed. Follow the on-screen instructions to complete the installation. If you do not specify your own installation directory, ZAP and its associated programs will be installed in the c:\cosmic\ZAPSIM12 directory. The installation program will also create a **Cosmic Tools** program group and ZAP program items.

Verifying Installation

Select *Cosmic Tools-> ZAPSIM6812* from the Start Menu to open the ZAP debugger . The main ZAP window should now be active.

1. Choose *Load* from the file menu.

2. Select the file c:\cosmic\zaps12\examples\demo12.h12 by clicking on it and then clicking on OK.**NOTE**: The demo example may need to be relinked for use with some processors. Compare demo12.map with the processor map if download fails.

ZAP should load the file and you should see either the source (if compiled in debug) or the disassembly of the startup routine.

3. Choose *Step* from the Debug menu

The source file **CRTSI.S** should appear in the source window and the first line should be highlighted.

4. Choose *Registers* from the *Show* menu to open the register window.

Choose *StepInst* from the debug menu or click on the single foot in the button bar  to step one assembly instruction at a time. Instruction step a couple of times and you should see the program counter (PC) in the register window incrementing. The blue highlight which denotes the current assembly instruction should also move down one instruction at a time in the source and disassembly windows.

5. Choose *Go to Function Entry* from the debug menu, select main and click OK. The source window and the PC should move to the first line of the main function.

6. Click on the Source Step button  in the button bar a couple of times and you should see the blue highlight for the current line of C code trace through execution one C line at a time.

If you observe the behavior described above then ZAP should be configured correctly. .

Compiling Programs for Cross Debugging

The COSMIC ZAP debugger requires your application to be built with the COSMIC C cross compiler or its equivalent, version 4.0 or higher. To compile your C programs for full C source level cross debugging with *ZAP*, you must specify the **+debug** compiler option when you compile your program. The command line will have the form:

```
cx6812 -v +debug <options> file1.c file2.c file3.c
```

where **<options>** are any other compiler options you wish to specify, **<file1.c>, <file2.c> and <file3.c>** are the C source files that will make up part of the linked executable.

When you specify **+debug**, the compiler includes all of the necessary cross debugging information required by ZAP. The debug information is kept in a separate, hidden section on the host system. You should not attempt to link the debug section explicitly.

To build an assembly file for assembly source level debug you must use the **-x** assembly option. The following is an example command line for the assembler:

```
ca6812-vl -x <file.s>
or
cx6812 -vl -ax <file.s>
```

Modifying and Saving the ZAP Environment

The installation script creates the file **zaps.ini** in the **Windows** directory. This file is used to save configuration and initialization information for ZAP. The asterisk (*) is a comment delimiter in the initialization file. Standard C comments are also accepted.

The following environment variables under [Options] are recognized by ZAP. All of the variables under [Options] can be set using the **Setup** menu and are saved when the configuration is saved except for StartFile.

StartFile

Set this environment variable to have ZAP load the specified input command file automatically on startup.

DefIntFormat

This environment variable specifies the default display format for the variable browser window. This variable can also be set from the **Setup** menu (Default Int Format) and accepts binary, decimal, octal or hexadecimal.

VarFormat

The environment variable VarFormat is used to specify what information will be displayed in the variable window. VarFormat accepts the keywords “Brief”, “Standard” and “Full”. The “Brief” format lists the variable name and type. The “Standard” format lists the variable name, type and value. The “Full” format displays the variable name, type, value and address.

Tile

The Windows environment variable Tile is used to specify the layout of the sub windows on the main desktop. The Tile variable accepts the keywords Free, Cascade, Horizontal Tile and vertical Tile. These options are also found under the **Windows** menu.

Free Allows you to place and size all windows by hand with new windows opening with the default size and on top of other windows.

Cascade Displays all windows cascaded from top left to bottom right with new windows cascaded on top as the last window.

Horizontal Tile Displays all windows in a wider horizontal size. Each window is proportionally sized to fill the entire main the window without overlapping. New windows are added from the top left corner and push the other windows down and then up to the next column to keep the display proportional.

Vertical Tile Displays all windows in a taller vertical size. Each window is proportionally sized to fill the entire main window without overlapping. New windows are added from the top left corner and push the other windows to the right and then down to the next row to keep the display proportional.

Path

The Path environment variable is used to define the search path to the source files. By default, ZAP searches the directory where the debugger examples are installed. Paths are searched from left to right and separated by a vertical bar (|). You can also use the PATH editor to setup the search path. See the Path Editor section of the "*Using ZAP*" chapter for details.

Example

Options section of ZAP Initialization file.

```
[Options]

StartFile=c:\test\commandfile.in

DefIntFormat=Decimal    /* Default Int Format */

VarFormat=BRIEF

Tile=FREE

Path=C:\TEST\|C:\CX\SRC
```


NOTE

To enable any changes you made to the initialization file (**.ini**) file, including setting environment variables you will need to restart ZAP.