Application Note

Using ZDSII – Command Processor for Flash Loading

AN016604-1020

Abstract

Zilog's Z8 Encore! XP microcontroller contains up to 64 KB of Flash memory with in-circuit programming capability. The Zilog Developer Studio II (ZDS II) Integrated Development Environment (IDE) can flash a specified .hex file to device memory using either the Flash Loader dialog or the command processor's Flash Loader interface. Using the command processor provides a simplified interface that reduces the number of steps required to program multiple Flash memory devices.

➢ **Note:** The procedures presented in this application note has been tested with version 5.5.0 of ZDSII for the Z8 Encore! XP MCU.

Discussion

The ZDS II command processor provides command-script access to almost all IDE functions. The command processor Flash Loader is an extension of this capability. Flash Loader commands can be entered directly into the command processor or used in BATCH scripts. This allows easy automation of the Flash loading process. Flash Loader parameters are persistent. Repeated operations on multiple targets use the most recent settings, made either in the Flash Loader dialog box or by using the FLASH OPTIONS command in the command processor.

Using the ZDS II Command Processor Flash Loader

Flash Loader commands are executed from the ZDS II Command Processor toolbar, as displayed in Figure 1. To execute a command, type the command in the text entry field, then click the GO icon (the green arrow in Figure 1).

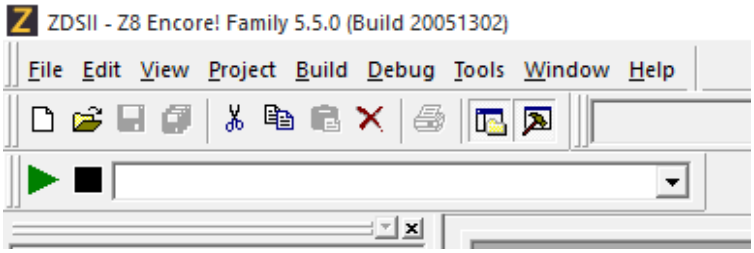

Figure 1. ZDSII Command Processor

Follow the steps below to run the command processor Flash Loader:

1. Create a project or open a project with a Z8 Encore! XP microcontroller selected in the CPU Family and CPU fields of the General tab of the Project Settings dialog box.
2. In the Debugger tab, select the Debug Tool to which the target is connected.
3. In the Command Processor toolbar, enter the commands in the following format to use the Flash Loader. Click the GO icon (see Figure 1) to run each command.

```
FLASH command_keyword [parameter] [REPEAT]
```

Note: [] indicates optional fields. Commands and keywords must be typed either in uppercase or lowercase letters.

Table 1. FLASH Command Keywords and Parameters

Command Keyword*1	Parameter*2	Description
SETUP		Displays the current Flash Loader parameter settings in the Command Output Window
HELP		Displays the FLASH command format in the Command Output Window
ERASE		Erase Flash
BURN		Burn Flash using current Flash Loader parameter settings
BURN-VERIFY		Burn and Verify Flash
VERIFY		Verify Flash
REPEAT		(Option command suffix) Repeats execution of the ERASE, BURN, BURN-VERIFY, or VERIFY command. The Flash Loader executes the command, disconnects from the target, and then prompts to repeat the operation. An option is provided to continue or stop. If the SI option is set, then the serial number is incremented after each burn.
OPTIONS	"filename"	The file to be flashed. The filename must include the absolute path and must be enclosed by double quotation marks, for example: FLASH OPTION "C:\Program File\test.hex" **NOTE:** *If you reference files across a network, use the File Explorer Tools → Map a Network Drive option to map the remote*

		file system as a network drive letter and use the network drive letter in your command files instead of the full network path.
	FLASHBASE = “address”	Start location for external Flash (eZ80Acclaim! Family processors only)
	OFFSET = “address”	Offset address in hexadecimal format
	INTMEM	Set target to internal Flash memory
	NEBF	No erase before Flash
	EBF	Erase before Flash
	NPBF	Do not page erase Flash memory; use mass erase
	PBF	Page erase Flash memory
	NISN	No serial number included
	ISN	Serial number included
	SERIALADDRESS = “address”	Start location for serial number
	SERIALNUMER = “number”	Serial number initial value (in hexadecimal format)
	SERIALSIZE = bytes	Number of bytes (1-8) in serial number
	INCREMENT = “value”	Increment value (in decimal format) for serial number

[*1] The commands and keywords must be typed either in uppercase or lowercase.

[*2] Parameters are setup using either the OPTIONS keyword or the Flash Loader dialog box. If you do not specify an OPTIONS parameter, the current setting in the Flash Loader dialog box is used. Changing an OPTIONS parameter also changes the corresponding setting in the Flash Loader dialog box.

Example

```
FLASH OPTIONS INTMEM
FLASH OPTIONS "c:\testing\test.hex"
FLASH BURN REPEAT
```

The `test.hex` file is loaded into internal Flash memory. After the flashing is completed, you are prompted to program an additional unit.

```
FLASH VERIFY
```

Using the options previously specified, the `test.hex` file is verified against internal Flash memory.

FLASH SETUP

The current Flash Loader parameter settings are displayed in the **Command Output Window**.

FLASH HELP

The current Flash Loader command options are displayed in the **Command Output Window**.

Flashing with a Command Processor Batch File

You can use the `BATCH filename.txt` command in the ZDS II command processor interface to specify a `.txt` file containing a sequence of commands. The IDE executes the commands in the batch file one at a time. The following Z8 Encore! XP ZDS II batch file erases, burns, verifies the Flash memory and then repeats:

```
; <Begin File Flashcmd.txt >
;***********************************
;Change directory to location of Hex file
cd "c:\Program Files\zilog\<product><version>\myproject\src"
;Open Project file
open project ".\boardprog.pro"
;Set Erase Before Flash
flash options ebf
;Set file to be flashed
flash options ".\boardprog.hex" 'Execute flash command
flash burnverify repeat
;Wait 2 seconds
wait 2000
;exit ZDSII
exit
;***********************************
; <End File Flashcmd.txt >
```

The following assumptions are made in the example:

- A valid project has been created.
- The project has the correct Debug Tool selected for the target.
- A hexadecimal file has been created in a valid format (.hex).
- The target is connected and has power applied.

To run the batch file, enter the following command in the ZDS II Command Processor:

```
BATCH "c:\flashcmd.txt"
```

Flashing with a DOS Batch File

Windows DOS batch (`.bat`) file to execute a ZDS II batch file that flashes a target. The DOS batch file contains commands that start the ZDS II IDE and pass through a specified command processor batch file. In the DOS batch file, the "`@`" symbol following the `ZDS2IDE.exe` command causes the IDE to process the specified command file after starting the ZDS II interface. It is equivalent to starting ZDS II and then entering the command `BATCH "c:\Flashcmd.txt"` in the command processor window.

Windows 98 Example

```
start/wait "C:\<ZDSII Install dir>\bin\Zds2Ide.exe"
@C:\Flashcmd.txt
```

Windows NT, 2000, XP Example

```
"C<ZDSII Install dir>\bin\Zds2Ide.exe" @C:\Flashcmd.txt
```

Flashing with a Desktop Shortcut

You can create a shortcut on the computer desktop that points to a DOS batch file in the ZDSII directory. This minimizes the steps required to flash a target. To create the shortcut, right click on the batch file name and select **Create Shortcut**. A shortcut is created in the folder where the DOS batch file exists. Drag or copy the shortcut to the desktop.

Summary

The ZDS II command processor Flash Loader provides a tool for developers, technicians, and manufacturers to Flash Z8 Encore! XP Microcontrollers. By using combination of DOS batch files and ZDS II command files, flashing process can be automated.

This application note is also applicable to eZ80 and ZNEO Microcontroller Families.

References

Documents associated with this application note are listed below.

- ZDSII On-Line Help (ZDSII Menu → Help → Help Topics → Contents → Using the Command Processor → Running the Flash Loader from the Command Processor)

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