Application Note

Using the ZDS Command Processor for eZ80® and eZ80Acclaim!® Flash Loading

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Abstract

The Zilog Development Studio II (ZDS II) Integrated Development Environment (IDE) can flash a specified hex file to 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 targets.

The ZDS II Flash Loader function was introduced with Version 4.5.0 of the ZDS II IDE.

Overview of the ZDS II Command Processor

The ZDS II command processor gives you command-script access to all IDE functions. The command processor Flash Loader is an extension of this capability. Flash Loader commands can be typed 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 or by using the Flash Options command in the command processor.

Configuring ZDS II Virtual Flash Devices

The eZ80® and eZ80Acclaim!® development and evaluation platforms contain an external Flash Memory component. The ZDS II Flash Loader provides the ability to define that component as a set of virtual Flash devices. The Flash Loader dialog refers to these as external Flash devices;

they are in reality segments of external Flash Memory defined as virtual Flash devices. The configuration for these virtual Flash devices is defined in an XML file named `flashdevice.xml`, located in:

```
<INSTALL DIRECTORY>\Zilog\ZDS
_<Processor>_<version>\config
```

The `flashdevice.xml` file defines the configuration for the eZ80 and eZ80Acclaim! external Flash component, and some other available Flash devices. The XML file uses the syntax listed in Table 1 on page 2.

⚠ **Caution:** *The eZ80Acclaim! processors feature internal Flash Memory and external Flash Memory. Internal Flash device configuration is defined in an XML file named* `CPUflashdevice.xml`*. Do not attempt to modify this file.*

Table 1. FlashDevice.xml File Syntax

Syntax	Description
<flash>	Begin Flash Device Database
<Manufacture name="*company*">	Begin Flash Device Manufacturer
<Flash_Device name="*name*">	Begin Flash Device
<Device_ID>*number*</Device_ID>	Device ID from product specifications
<Manuf_ID>*number*</Manuf_ID>	Manufacturer ID from product specifications
<readDeviceOffset>*1 or 2*</readDeviceOffset>	Read offset for ID: 1 = byte, 2 = word
<deviceSize>*hex value*</deviceSize>	Overall size of Flash device in hexadecimal
<readArray>*hex value*</readArray>	Read array, defined in product specification
<Sequence name="*name*">	Begin command sequence definition, where *name* is one of the following: **Identify**—Read manufacture and device ID **Write**—Unlock flash and write bytes **Erase**—Unlock flash and erase a page
<Data>*hex value*</Data> <Data>*hex value*</Data> ...	Specify each byte in command sequence, from product specifications
</Sequence>	End command sequence
<eraseVerifyValue>*hex value*</eraseVerifyValue>	Define erase verify value
<eraseVerifyMask>*hex value*</eraseVerifyMask>	Define erase verify mask
<page>*first last*</page> <page>*first last*</page> ...	Define Flash device pages or sections, where *first* and *last* are the first and last address of each page, in hexadecimal
</Flash_Device>	End Flash Device
<Manufacture>	End Flash Device Manufacturer
</flash>	End Flash Device Database

You can create, delete, and alter virtual Flash devices by adding or removing Flash_Device block elements in the FlashDevice.xml file, and modifying the device name and page address range elements. However, the device-specific values and sequence elements must be preserved and be present for each defined Flash virtual device. An example FlashDevice.xml file is described in
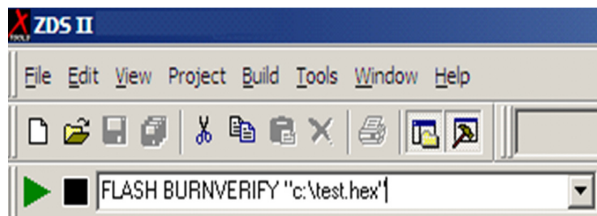
You can select a virtual Flash device in the Flash Loader dialog, or by using the MANUF...DEVICE option in the Command Processor Flash command, which is explained in the following section.

For example, the following Flash Loader command would cause subsequent commands to reference the Micron MT28F008B3xx-xxB device defined in `FlashDevice.xml`:

```
FLASH OPTIONS MANUF="Micron"
DEVICE="MT28F008B3xx-xxB"
```

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 and then click **Go** button .

Figure 1. ZDS II Command Processor

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

1. Create or open a project with eZ80F91, eZ80F92, eZ80F93, eZ80L92, or eZ80190

selected in the CPU field on the **General tab** of the **Project Settings** dialog box.

2. Configure the Chip Select parameters. The Flash Loader requires both RAM for execution and the correct external Flash Memory chip select parameters and memory limits. If there is internal RAM, the Flash Loader uses that memory for execution. The parameters are entered in the Initializations Dialog Box (**Project → Settings → Debugger → Initialization Params…**).

3. In the **Configure ZPAK II** dialog box, specify the ZPAK II Ethernet address. The Flash Loader uses the ZPAK II to communicate with the target.

4. In the command processor toolbar, type commands in the following format to use the Flash Loader. Click **Go** to execute each command.

    FLASH *command_keyword* [*parameter*] [REPEAT]

➤ **Note:** *[ ] indicates optional fields. Commands and keywords can be typed in either uppercase or lowercase.*

Table 2 lists Flash Loader commands and keywords.

Table 2. Flash Command Keywords and Parameters

Command Keyword	Parameter	Description
SETUP		Displays the current Flash Loader parameter settings in the Command Output window.
HELP		Displays the Flash command format in the command window.
ERASE		Erase Flash.

Table 2. Flash Command Keywords and Parameters (Continued)

Command Keyword	Parameter	Description
BURN		Burn Flash using current Flash Loader parameter settings.
BURNVERIFY		Burn and Verify Flash.
VERIFY		Verify Flash.
REPEAT		(Optional command suffix.) Repeats execution of the ERASE, BURN, BURNVERIFY, or VERIFY command. The Flash Loader executes the command, disconnects from the target, and then prompts to repeat the operation. You are given the option to continue or stop. If the SI option is set, the serial number is incremented after each burn.
OPTIONS	"*filename*"	The file to be flashed. The file name must include the absolute path and must be enclosed by double quotation marks, for example: `FLASH OPTIONS "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).
	NUMFLASH = *number*	Number of stack flash devices.
	OFFSET = "*hex value*"	Offset for the specified memory segment. The specified file is shifted by the offset amount. If BOTHMEM is set, the offset is applied to both the internal and external memory segments. Example: `FLASH OPTIONS OFFSET = "0x10000".`
	INTMEM	Set target to internal Flash Memory.
	EXTMEM	Set target to external Flash Memory.
	BOTHMEM	Set target to internal and external Flash Memory.
	MANUF="*company*" DEVICE="*name*"	Set target device manufacturer and device name, as defined in `FlashDevice.xml`.
	NEBF	No erase before Flash.
	EBF	Erase before Flash.
	NEIP	No erase info page.
	EIP	Erase info page.
	NSI	No serial number included.

Table 2. Flash Command Keywords and Parameters (Continued)

Command Keyword	Parameter	Description
	SI	Serial number included.
	SERIALADDRESS = "*address*"	Start location for serial number.
	SERIALNUMBER = "*number*"	Serial number initial value (in hexadecimal).
	SERIALSIZE = *bytes*	Number of bytes (1–8) in serial number.
	INCREMENT = "*value*"	Increment value (in decimal) for serial number.
	NIP	No info page.
	IP	Info page.

> **Note:** *Parameters can be set 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

The following are examples for a target with an eZ80F91 and external Flash Memory.

> **Note:** *Commands and keywords can be typed in either uppercase or lowercase.*

```
FLASH OPTIONS INTMEM
FLASH OPTIONS "c:\testing\test.hex"
FLASH OPTIONS OFFSET="0x1000"
FLASH OPTIONS EBF
FLASH BURN REPEAT
```

The file test.hex is loaded into internal Flash Memory with a value of 0x1000 added to all addresses. The Flash Memory is erased before flashing. After the flashing is completed, you are prompted to program an additional unit.

```
FLASH VERIFY
```

The file test.hex is verified against internal Flash Memory with an offset value of 0x1000.

```
FLASH OPTIONS MANUF="Micron"
DEVICE="MT28F008B3xx-xxB"
FLASH VERIFY
```

The file test.hex (from the first example) is verified against the specified external Flash, as defined in FlashDevice.xml.

```
FLASH SETUP
```

The current Flash Loader parameters 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 plain text file containing a sequence of commands. The IDE executes the commands in the batch file one at a time. The following ZDS II batch file erases, burns, and verifies Flash Memory, and then repeats for one or more additional targets:

```
;   <Begin File Flashcmd.txt  >
;*********************************************************************
;Change directory to location of Hex file
cd "<INSTALL DIRECTORY>\zilog\<product><version>\myproject\src"

;Open Project file
open project "<INSTALL
DIRECTORY>\Zilog\<product><version>\myproject\src\boardprog.pro"

;Select Internal memory segment
flash options intmem

;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 ZDS II
exit
;*********************************************************************
; <End File Flashcmd.txt  >
```

The batch file example above is based on the following:

- A valid project is created that has the correct memory map for target Flash and RAM.
- The project is already been built and does not need to be rebuilt before flashing.
- The project is built in the release Flash configuration (.hex).
- The first target is connected and has power applied.
- The project has the correct Ethernet address selected for the ZPAK.
- The project is using internal Flash only and the default MANUF...DEVICE option is used.

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

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

Flashing with a DOS Batch File

Use a Windows DOS batch (.bat) file to execute a ZDS II batch file that flashes a target. The DOS batch file contains commands that start ZDS II and pass 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 user interface. It is equivalent to starting ZDS II and then entering the command BATCH 'c:\Flashcmd.txt' in the command processor window.

▶ **Note:** *In Windows 98, use* `start /wait` *to call the ZDS II executable.*

Windows 98SE Example

```
REM The following two lines should be entered as a single line.
start /wait "<INSTALL DIRECTORY>\Zilog\<product><version>\bin\Zds2Ide.exe"
@c:\Flashcmd.txt
```

Windows XP, Windows 2000, and Windows NT Example

```
REM The following two lines should be entered as a single line.
"<INSTALL DIRECTORY>\Zilog\<product><version>\bin\Zds2Ide.exe"
@c:\Flashcmd.txt
```

Combined Windows XP, Windows 2000, Windows NT and Windows 98SE Example

```
set ostype=win98
if %OS%!==Windows_NT! set ostype=NT
if %ostype%==NT goto nt1

:win98
REM The following two lines should be entered as a single line.
start /wait "<INSTALL DIRECTORY>\Zilog\<product><version>\bin\Zds2Ide.exe"
@c:\Flashcmd.txt
goto exit01

:nt1
REM The following two lines should be entered as a single line.
"<INSTALL DIRECTORY>\Zilog\ <product><version>\bin\Zds2Ide.exe"
@c:\Flashcmd.txt

:exit01
```

Flashing with a Desktop Shortcut

You can create a shortcut on the computer desktop that points to a DOS batch file in the ZDS II directory to minimize the number of the steps required to flash a target. To create the shortcut, right-click the batch file name and select 'Create Shortcut'. A shortcut is created in the same folder as the DOS batch file. Drag or copy the shortcut to the desktop.

Summary

The ZDS II Command Processor Flash Loader provides a tool for you to flash eZ80 and eZ80Acclaim! Flash microprocessors. You can automate the flashing process using a combination of DOS Batch files and ZDS II command files.

References

The documents associated with eZ80® and eZ80Acclaim!® available on www.zilog.com are provided below:

- Zilog Developer Studio II—eZ80Acclaim!® User Manual (UM0144)

- Zilog Developer Studio II —eZ80® User Manual (UM0123)

- For the latest syntax and for additional examples that are supported by the ZDS II FLASH command, refer to the On-Line Help (Help → Help Topics → Index → flash → Flash Loader, running from the command line).

Appendix A—FlashDevice.xml File Listing

```
<flash>
<!--********************************************************************* -->
<!-- Zilog Flash Device XML Database                               -->
<!-- This file can be modified to add different flash devices or   -->
<!-- multiple instances of a single flash device.                 -->
<!--                                                               -->
<!-- Zilog Development Tools only validates the Flash Devices that are -->
<!-- defined with the release of the Zilog Development Tools.      -->
<!--                                                               -->
<!-- This file can be open using a standard browser.  If the      -->
<!-- browser generates an error the file has an illegal format.    -->
<!--                                                               -->
<!-- Limitations:                                                  -->
<!-- Comments are limited to a single line                         -->
<!-- Blank lines are not allowed                                   -->
<!--********************************************************************* -->
    <version>04032501</version>
    <!-- Defines a folder named that will contain a set of flash devices -->
    <Manufacture name="Micron">
       <!-- Defines the Device name or part number used uniquely identify the device-->
       <Flash_Device name="MT28F008B3xx-xxB">
          <!-- Flash Device identifier defined in the product specifications-->
          <Device_ID>99</Device_ID>
          <!-- Manufacture identifier defined in the product specifications-->
          <Manuf_ID>89</Manuf_ID>
          <!-- Read offset for the identifier 1-Byte 2-Word -->
          <readDeviceOffset>1</readDeviceOffset>
          <!-- Define the overall Size of the Flash Device -->
          <deviceSize>FFFFF</deviceSize>
          <!-- Read array defined in product specification -->
          <readArray>FF</readArray>
          <!-- Defines the Identify sequence to read the manufacture and device ID -->
          <Sequence name="Identify">
             <Data>90</Data>
          </Sequence>
          <!-- Defines the write sequence to unlock flash and write bytes-->
          <Sequence name="Write">
             <Data>50</Data>
             <Data>40</Data>
          </Sequence>
          <!-- Defines the write verify value and mask-->
          <UnlockVerifyValue>80</UnlockVerifyValue>
          <UnlockVerifyMask>f8</UnlockVerifyMask>
          <!-- Defines the erase sequence to unlock flash and erase a page of flash-->
          <Sequence name="Erase">
             <Data>50</Data>
             <Data>20</Data>
             <Data>d0</Data>
          </Sequence>
          <!-- Defines the erase verify value and mask-->
          <eraseVerifyValue>80</eraseVerifyValue>
          <eraseVerifyMask>f8</eraseVerifyMask>
          <!-- Defines the Flash Device pages or sections-->
```

```
        <page>0000 3FFF</page>
        <page>4000 5FFF</page>
        <page>6000 7FFF</page>
        <page>8000 1FFFF</page>
        <page>20000 3FFFF</page>
        <page>40000 5FFFF</page>
        <page>60000 7FFFF</page>
        <page>80000 9FFFF</page>
        <page>A0000 BFFFF</page>
        <page>C0000 DFFFF</page>
        <page>E0000 FFFFF</page>
    </Flash_Device>
    <!-- Defines the Device name or part number used uniquely identify the device-->
    <Flash_Device name="MT28F008B3xx-xxT">
        <!-- Flash Device identifier defined in the product specifications-->
        <Device_ID>99</Device_ID>
        <!-- Manufacture identifier defined in the product specifications-->
        <Manuf_ID>89</Manuf_ID>
        <!-- Read offset for the identifier 1-Byte 2-Word -->
        <readDeviceOffset>1</readDeviceOffset>
        <!-- Define the overall Size of the Flash Device -->
        <deviceSize>FFFFF</deviceSize>
        <!-- Read array defined in product specification -->
        <readArray>FF</readArray>
        <!-- Defines the Identify sequence to read the manufacture and device ID -->
        <Sequence name="Identify">
            <Data>90</Data>
        </Sequence>
        <!-- Defines the write sequence to unlock flash and write bytes-->
        <Sequence name="Write">
            <Data>50</Data>
            <Data>40</Data>
        </Sequence>
        <!-- Defines the write verify value and mask-->
        <UnlockVerifyValue>80</UnlockVerifyValue>
        <UnlockVerifyMask>f8</UnlockVerifyMask>
        <!-- Defines the erase sequence to unlock flash and erase a page of flash-->
        <Sequence name="Erase">
            <Data>50</Data>
            <Data>20</Data>
            <Data>d0</Data>
        </Sequence>
        <!-- Defines the erase verify value and mask-->
        <eraseVerifyValue>80</eraseVerifyValue>
        <eraseVerifyMask>f8</eraseVerifyMask>
        <!-- Defines the Flash Device pages or sections-->
        <page>00000 1FFFF</page>
        <page>20000 3FFFF</page>
        <page>40000 5FFFF</page>
        <page>60000 7FFFF</page>
        <page>80000 9FFFF</page>
        <page>A0000 BFFFF</page>
        <page>C0000 DFFFF</page>
        <page>E0000 F7FFF</page>
        <page>F8000 F9FFF</page>
```

```xml
            <page>FA000 FBFFF</page>
            <page>FC000 FFFFF</page>
    </Flash_Device>
</Manufacture>
<!-- Defines a folder named that will contain a set of flash devices -->
<Manufacture name="AMD">
    <!-- Defines the Device name or part number used uniquely identify the device-->
    <Flash_Device name="Am29LV160BB">
        <!-- Flash Device identifier defined in the product specifications-->
        <Device_ID>49</Device_ID>
        <!-- Manufacture identifier defined in the product specifications-->
        <Manuf_ID>01</Manuf_ID>
        <!-- Read offset for the identifier 1-Byte 2-Word-->
        <readDeviceOffset>2</readDeviceOffset>
        <!-- Define the overall Size of the Flash Device -->
        <deviceSize>1FFFFF</deviceSize>
        <!-- Read array defined in product specification -->
        <readArray>F0</readArray>
        <!-- Defines the Identify sequence to read the manufacture and device ID -->
        <Sequence name="Identify">
            <Address>AAA</Address>
            <Data>AA</Data>
            <Address>555</Address>
            <Data>55</Data>
            <Address>AAA</Address>
            <Data>90</Data>
        </Sequence>
        <!-- Defines the write sequence to unlock flash and write bytes-->
        <Sequence name="Write">
            <Address>AAA</Address>
            <Data>AA</Data>
            <Address>555</Address>
            <Data>55</Data>
            <Address>AAA</Address>
            <Data>A0</Data>
        </Sequence>
        <!-- Defines the write verify value and mask-->
        <UnlockVerifyValue>80</UnlockVerifyValue>
        <UnlockVerifyMask>f8</UnlockVerifyMask>
        <!-- Defines the erase sequence to unlock flash and erase a page of flash-->
        <Sequence name="Erase">
            <Address>AAA</Address>
            <Data>AA</Data>
            <Address>555</Address>
            <Data>55</Data>
            <Address>AAA</Address>
            <Data>80</Data>
            <Address>AAA</Address>
            <Data>AA</Data>
            <Address>555</Address>
            <Data>55</Data>
            <Address>XXX</Address>
            <Data>30</Data>
        </Sequence>
        <!-- Defines the erase verify value and mask-->
```

```
        <eraseVerifyValue>80</eraseVerifyValue>
        <eraseVerifyMask>80</eraseVerifyMask>
        <!-- Defines the Flash Device pages or sections-->
        <page>0000 3FFF</page>
        <page>4000 5FFF</page>
        <page>6000 7FFF</page>
        <page>8000 FFFF</page>
        <page>10000 1FFFF</page>
        <page>20000 2FFFF</page>
        <page>30000 3FFFF</page>
        <page>40000 4FFFF</page>
        <page>50000 5FFFF</page>
        <page>60000 6FFFF</page>
        <page>70000 7FFFF</page>
        <page>80000 8FFFF</page>
        <page>90000 9FFFF</page>
        <page>A0000 AFFFF</page>
        <page>B0000 BFFFF</page>
        <page>C0000 CFFFF</page>
        <page>D0000 DFFFF</page>
        <page>E0000 EFFFF</page>
        <page>F0000 FFFFF</page>
        <page>100000 103FFF</page>
        <page>104000 105FFF</page>
        <page>106000 107FFF</page>
        <page>108000 10FFFF</page>
        <page>110000 11FFFF</page>
        <page>120000 12FFFF</page>
        <page>130000 13FFFF</page>
        <page>140000 14FFFF</page>
        <page>150000 15FFFF</page>
        <page>160000 16FFFF</page>
        <page>170000 17FFFF</page>
        <page>180000 18FFFF</page>
        <page>190000 19FFFF</page>
        <page>1A0000 1AFFFF</page>
        <page>1B0000 1BFFFF</page>
        <page>1C0000 1CFFFF</page>
        <page>1D0000 1DFFFF</page>
        <page>1E0000 1EFFFF</page>
        <page>1F0000 1FFFFF</page>
    </Flash_Device>
    <!-- Defines the Device name or part number used uniquely identify the device-->
    <Flash_Device name="Am29LV160BT">
        <!-- Flash Device identifier defined in the product specifications-->
        <Device_ID>C4</Device_ID>
        <!-- Manufacture identifier defined in the product specifications-->
        <Manuf_ID>01</Manuf_ID>
        <!-- Read offset for the identifier 1-Byte 2-Word -->
        <readDeviceOffset>2</readDeviceOffset>
        <!-- Define the overall Size of the Flash Device -->
        <deviceSize>1FFFFF</deviceSize>
        <!-- Read array defined in product specification -->
        <readArray>F0</readArray>
        <!-- Defines the Identify sequence to read the manufacture and device ID -->
```

```xml
<Sequence name="Identify">
    <Address>AAA</Address>
    <Data>AA</Data>
    <Address>555</Address>
    <Data>55</Data>
    <Address>AAA</Address>
    <Data>90</Data>
</Sequence>
<!-- Defines the write sequence to unlock flash and write bytes-->
<Sequence name="Write">
    <Address>AAA</Address>
    <Data>AA</Data>
    <Address>555</Address>
    <Data>55</Data>
    <Address>AAA</Address>
    <Data>A0</Data>
</Sequence>
<!-- Defines the write verify value and mask-->
<UnlockVerifyValue>80</UnlockVerifyValue>
<UnlockVerifyMask>f8</UnlockVerifyMask>
<!-- Defines the erase sequence to unlock flash and erase a page of flash-->
<Sequence name="Erase">
    <Address>AAA</Address>
    <Data>AA</Data>
    <Address>555</Address>
    <Data>55</Data>
    <Address>AAA</Address>
    <Data>80</Data>
    <Address>AAA</Address>
    <Data>AA</Data>
    <Address>555</Address>
    <Data>55</Data>
    <Address>XXX</Address>
    <Data>30</Data>
</Sequence>
<!-- Defines the erase verify value and mask-->
<eraseVerifyValue>80</eraseVerifyValue>
<eraseVerifyMask>80</eraseVerifyMask>
<!-- Defines the Flash Device pages or sections-->
<page>0000 FFFF</page>
<page>10000 1FFFF</page>
<page>20000 2FFFF</page>
<page>30000 3FFFF</page>
<page>40000 4FFFF</page>
<page>50000 5FFFF</page>
<page>60000 6FFFF</page>
<page>70000 7FFFF</page>
<page>80000 8FFFF</page>
<page>90000 9FFFF</page>
<page>A0000 AFFFF</page>
<page>B0000 BFFFF</page>
<page>C0000 CFFFF</page>
<page>D0000 DFFFF</page>
<page>E0000 EFFFF</page>
<page>F0000 FFFFF</page>
```

```
        <page>108000 10FFFF</page>
        <page>110000 11FFFF</page>
        <page>120000 12FFFF</page>
        <page>130000 13FFFF</page>
        <page>140000 14FFFF</page>
        <page>150000 15FFFF</page>
        <page>160000 16FFFF</page>
        <page>170000 17FFFF</page>
        <page>180000 18FFFF</page>
        <page>190000 19FFFF</page>
        <page>1A0000 1AFFFF</page>
        <page>1B0000 1BFFFF</page>
        <page>1C0000 1CFFFF</page>
        <page>1D0000 1DFFFF</page>
        <page>1E0000 1EFFFF</page>
        <page>1F0000 1F7FFF</page>
        <page>1F8000 1F9FFF</page>
        <page>1FA000 1FBFFF</page>
        <page>1FC000 1FFFFF</page>
    </Flash_Device>
</Manufacture>
<!-- Defines a folder named that will contain a set of flash devices -->
<Manufacture name="STMicro">
    <!-- Defines the Device name or part number used uniquely identify the device-->
    <Flash_Device name="M29W008AB">
        <!-- Flash Device identifier defined in the product specifications-->
        <Device_ID>DC</Device_ID>
        <!-- Manufacture identifier defined in the product specifications-->
        <Manuf_ID>20</Manuf_ID>
        <!-- Define the overall Size of the Flash Device -->
        <deviceSize>FFFFF</deviceSize>
        <!-- Read offset for the identifier 1-Byte 2-Word -->
        <readDeviceOffset>1</readDeviceOffset>
        <!-- Read array defined in product specification -->
        <readArray>F0</readArray>
        <!-- Defines the Identify sequence to read the manufacture and device ID -->
        <Sequence name="Identify">
            <Address>555</Address>
            <Data>AA</Data>
            <Address>2AA</Address>
            <Data>55</Data>
            <Address>555</Address>
            <Data>90</Data>
        </Sequence>
        <!-- Defines the write sequence to unlock flash and write bytes-->
        <Sequence name="Write">
            <Address>555</Address>
            <Data>AA</Data>
            <Address>2AA</Address>
            <Data>55</Data>
            <Address>555</Address>
            <Data>A0</Data>
        </Sequence>
        <!-- Defines the write verify value and mask-->
        <UnlockVerifyValue>80</UnlockVerifyValue>
```

```
    <UnlockVerifyMask>f8</UnlockVerifyMask>
    <!-- Defines the erase sequence to unlock flash and erase a page of flash-->
    <Sequence name="Erase">
        <Address>555</Address>
        <Data>AA</Data>
        <Address>2AA</Address>
        <Data>55</Data>
        <Address>555</Address>
        <Data>80</Data>
        <Address>555</Address>
        <Data>AA</Data>
        <Address>2AA</Address>
        <Data>55</Data>
        <Address>XXX</Address>
        <Data>30</Data>
    </Sequence>
    <!-- Defines the erase verify value and mask-->
    <eraseVerifyValue>80</eraseVerifyValue>
    <eraseVerifyMask>80</eraseVerifyMask>
    <!-- Defines the Flash Device pages or sections-->
    <page>0000 3FFF</page>
    <page>4000 5FFF</page>
    <page>6000 7FFF</page>
    <page>8000 FFFF</page>
    <page>10000 1FFFF</page>
    <page>20000 2FFFF</page>
    <page>30000 3FFFF</page>
    <page>40000 4FFFF</page>
    <page>50000 5FFFF</page>
    <page>60000 6FFFF</page>
    <page>70000 7FFFF</page>
    <page>80000 8FFFF</page>
    <page>90000 9FFFF</page>
    <page>A0000 AFFFF</page>
    <page>B0000 BFFFF</page>
    <page>C0000 CFFFF</page>
    <page>D0000 DFFFF</page>
    <page>E0000 EFFFF</page>
    <page>F0000 FFFFF</page>
</Flash_Device>
<!-- Defines the Device name or part number used uniquely identify the device-->
<Flash_Device name="M29W008AT">
    <!-- Flash Device identifier defined in the product specifications-->
    <Device_ID>D2</Device_ID>
    <!-- Manufacture identifier defined in the product specifications-->
    <Manuf_ID>20</Manuf_ID>
    <!-- Define the overall Size of the Flash Device -->
    <deviceSize>FFFFF</deviceSize>
    <!-- Read offset for the identifier 1-Byte 2-Word -->
    <readDeviceOffset>1</readDeviceOffset>
    <!-- Read array defined in product specification -->
    <readArray>F0</readArray>
    <!-- Defines the Identify sequence to read the manufacture and device ID -->
    <Sequence name="Identify">
        <Address>555</Address>
```

```
        <Data>AA</Data>
        <Address>2AA</Address>
        <Data>55</Data>
        <Address>555</Address>
        <Data>90</Data>
    </Sequence>
    <!-- Defines the write sequence to unlock flash and write bytes-->
    <Sequence name="Write">
        <Address>555</Address>
        <Data>AA</Data>
        <Address>2AA</Address>
        <Data>55</Data>
        <Address>555</Address>
        <Data>A0</Data>
    </Sequence>
    <!-- Defines the write verify value and mask-->
    <UnlockVerifyValue>80</UnlockVerifyValue>
    <UnlockVerifyMask>f8</UnlockVerifyMask>
    <!-- Defines the erase sequence to unlock flash and erase a page of flash-->
    <Sequence name="Erase">
        <Address>555</Address>
        <Data>AA</Data>
        <Address>2AA</Address>
        <Data>55</Data>
        <Address>555</Address>
        <Data>80</Data>
        <Address>555</Address>
        <Data>AA</Data>
        <Address>2AA</Address>
        <Data>55</Data>
        <Address>XXX</Address>
        <Data>30</Data>
    </Sequence>
    <!-- Defines the erase verify value and mask-->
    <eraseVerifyValue>80</eraseVerifyValue>
    <eraseVerifyMask>80</eraseVerifyMask>
    <!-- Defines the Flash Device pages or sections-->
    <page>0000 FFFF</page>
    <page>10000 1FFFF</page>
    <page>20000 2FFFF</page>
    <page>30000 3FFFF</page>
    <page>40000 4FFFF</page>
    <page>50000 5FFFF</page>
    <page>60000 6FFFF</page>
    <page>70000 7FFFF</page>
    <page>80000 8FFFF</page>
    <page>90000 9FFFF</page>
    <page>A0000 AFFFF</page>
    <page>B0000 BFFFF</page>
    <page>C0000 CFFFF</page>
    <page>D0000 DFFFF</page>
    <page>E0000 EFFFF</page>
    <page>F0000 F7FFF</page>
    <page>F8000 F9FFF</page>
    <page>FA000 FBFFF</page>
```

```
                <page>FC000 FFFFF</page>
        </Flash_Device>
            </Manufacture>
    <Manufacture name="Atmel">
        <!-- Defines the Device name or part number used uniquely identify the device-->
        <Flash_Device name="AT49BV162A">
            <!-- Flash Device identifier defined in the product specifications-->
            <Device_ID>C0</Device_ID>
            <!-- Manufacture identifier defined in the product specifications-->
            <Manuf_ID>1F</Manuf_ID>
            <!-- Define the overall Size of the Flash Device -->
            <deviceSize>FFFFF</deviceSize>
            <!-- Read offset for the identifier 1-Byte 2-Word -->
            <readDeviceOffset>2</readDeviceOffset>
            <!-- Read array defined in product specification -->
            <readArray>F0</readArray>
            <!-- Defines the Identify sequence to read the manufacture and device ID -->
            <Sequence name="Identify">
                <Address>AAA</Address>
                <Data>AA</Data>
                <Address>554</Address>
                <Data>55</Data>
                <Address>AAA</Address>
                <Data>90</Data>
            </Sequence>
            <!-- Defines the write sequence to unlock flash and write bytes-->
            <Sequence name="Write">
                <Address>AAA</Address>
                <Data>AA</Data>
                <Address>554</Address>
                <Data>55</Data>
                <Address>AAA</Address>
                <Data>A0</Data>
            </Sequence>
            <!-- Defines the write verify value and mask-->
            <UnlockVerifyValue>80</UnlockVerifyValue>
            <UnlockVerifyMask>f8</UnlockVerifyMask>
            <!-- Defines the erase sequence to unlock flash and erase a page of flash-->
            <Sequence name="Erase">
                <Address>AAA</Address>
                <Data>AA</Data>
                <Address>554</Address>
                <Data>55</Data>
                <Address>AAA</Address>
                <Data>80</Data>
                <Address>AAA</Address>
                <Data>AA</Data>
                <Address>554</Address>
                <Data>55</Data>
                <Address>XXX</Address>
                <Data>30</Data>
            </Sequence>
            <!-- Defines the erase verify value and mask-->
            <eraseVerifyValue>80</eraseVerifyValue>
            <eraseVerifyMask>80</eraseVerifyMask>
```

```
    <!-- Defines the Flash Device pages or sections-->
    <page>0000 1FFF</page>
    <page>2000 3FFF</page>
    <page>4000 5FFF</page>
    <page>6000 7FFF</page>
    <page>8000 9FFF</page>
    <page>A000 BFFF</page>
    <page>C000 DFFF</page>
    <page>E000 FFFF</page>
    <page>10000 1FFFF</page>
    <page>20000 2FFFF</page>
    <page>30000 3FFFF</page>
    <page>40000 4FFFF</page>
    <page>50000 5FFFF</page>
    <page>60000 6FFFF</page>
    <page>70000 7FFFF</page>
    <page>80000 8FFFF</page>
    <page>90000 9FFFF</page>
    <page>A0000 AFFFF</page>
    <page>B0000 BFFFF</page>
    <page>C0000 CFFFF</page>
    <page>D0000 DFFFF</page>
    <page>E0000 EFFFF</page>
    <page>F0000 FFFFF</page>
    <page>110000 11FFFF</page>
    <page>120000 12FFFF</page>
    <page>130000 13FFFF</page>
    <page>140000 14FFFF</page>
    <page>150000 15FFFF</page>
    <page>160000 16FFFF</page>
    <page>170000 17FFFF</page>
    <page>180000 18FFFF</page>
    <page>190000 19FFFF</page>
    <page>1A0000 1AFFFF</page>
    <page>1B0000 1BFFFF</page>
    <page>1C0000 1CFFFF</page>
    <page>1D0000 1DFFFF</page>
    <page>1E0000 1EFFFF</page>
    <page>1F0000 1FFFFF</page>
</Flash_Device>
<!-- Defines the Device name or part number used uniquely identify the device-->
<Flash_Device name="AT49BV162AT">
    <!-- Flash Device identifier defined in the product specifications-->
    <Device_ID>C2</Device_ID>
    <!-- Manufacture identifier defined in the product specifications-->
    <Manuf_ID>1F</Manuf_ID>
    <!-- Define the overall Size of the Flash Device -->
    <deviceSize>FFFFF</deviceSize>
    <!-- Read offset for the identifier 1-Byte 2-Word -->
    <readDeviceOffset>2</readDeviceOffset>
    <!-- Read array defined in product specification -->
    <readArray>F0</readArray>
    <!-- Defines the Identify sequence to read the manufacture and device ID -->
    <Sequence name="Identify">
        <Address>AAA</Address>
```

```
        <Data>AA</Data>
        <Address>554</Address>
        <Data>55</Data>
        <Address>AAA</Address>
        <Data>90</Data>
    </Sequence>
    <!-- Defines the write sequence to unlock flash and write bytes-->
    <Sequence name="Write">
        <Address>AAA</Address>
        <Data>AA</Data>
        <Address>554</Address>
        <Data>55</Data>
        <Address>AAA</Address>
        <Data>A0</Data>
    </Sequence>
    <!-- Defines the write verify value and mask-->
    <UnlockVerifyValue>80</UnlockVerifyValue>
    <UnlockVerifyMask>f8</UnlockVerifyMask>
    <!-- Defines the erase sequence to unlock flash and erase a page of flash-->
    <Sequence name="Erase">
        <Address>AAA</Address>
        <Data>AA</Data>
        <Address>554</Address>
        <Data>55</Data>
        <Address>AAA</Address>
        <Data>80</Data>
        <Address>AAA</Address>
        <Data>AA</Data>
        <Address>554</Address>
        <Data>55</Data>
        <Address>XXX</Address>
        <Data>30</Data>
    </Sequence>
    <!-- Defines the erase verify value and mask-->
    <eraseVerifyValue>80</eraseVerifyValue>
    <eraseVerifyMask>80</eraseVerifyMask>
    <!-- Defines the Flash Device pages or sections-->
    <page>0000 FFFF</page>
    <page>10000 1FFFF</page>
    <page>20000 2FFFF</page>
    <page>30000 3FFFF</page>
    <page>40000 4FFFF</page>
    <page>50000 5FFFF</page>
    <page>60000 6FFFF</page>
    <page>70000 7FFFF</page>
    <page>80000 8FFFF</page>
    <page>90000 9FFFF</page>
    <page>A0000 AFFFF</page>
    <page>B0000 BFFFF</page>
    <page>C0000 CFFFF</page>
    <page>D0000 DFFFF</page>
    <page>E0000 EFFFF</page>
    <page>F0000 FFFFF</page>
    <page>100000 10FFFF</page>
    <page>110000 11FFFF</page>
```

```xml
        <page>120000 12FFFF</page>
        <page>130000 13FFFF</page>
        <page>140000 14FFFF</page>
        <page>150000 15FFFF</page>
        <page>160000 16FFFF</page>
        <page>170000 17FFFF</page>
        <page>180000 18FFFF</page>
        <page>190000 19FFFF</page>
        <page>1A0000 1AFFFF</page>
        <page>1B0000 1BFFFF</page>
        <page>1C0000 1CFFFF</page>
        <page>1D0000 1DFFFF</page>
        <page>1E0000 1EFFFF</page>
        <page>1F0000 1F1FFF</page>
        <page>1F2000 1F3FFF</page>
        <page>1F4000 1F5FFF</page>
        <page>1F6000 1F7FFF</page>
        <page>1F8000 1F9FFF</page>
        <page>1FA000 1FBFFF</page>
        <page>1FC000 1FDFFF</page>
        <page>1FE000 1FFFFF</page>
    </Flash_Device>
     </Manufacture>
 <!-- Custom Flash Configuration to support L92 and F92 Jump configuration -->
<Manufacture name="Custom">
    <Flash_Device name="MT28F008B3 w/Jmp Vectors">
        <!-- Flash Device identifier defined in the product specifications-->
        <Device_ID>99</Device_ID>
        <!-- Manufacture identifier defined in the product specifications-->
        <Manuf_ID>89</Manuf_ID>
        <!-- Read offset for the identifier 1-Byte 2-Word -->
        <readDeviceOffset>1</readDeviceOffset>
        <!-- Define the overall Size of the Flash Device -->
        <deviceSize>FFFFF</deviceSize>
        <!-- Read array defined in product specification -->
        <readArray>FF</readArray>
        <!-- Defines the Identify sequence to read the manufacture and device ID -->
        <Sequence name="Identify">
            <Data>90</Data>
        </Sequence>
        <readArray>ff</readArray>
        <Sequence name="Write">
            <Data>50</Data>
            <Data>40</Data>
        </Sequence>
        <UnlockVerifyValue>80</UnlockVerifyValue>
        <UnlockVerifyMask>f8</UnlockVerifyMask>
        <Sequence name="Erase">
            <Data>50</Data>
            <Data>20</Data>
            <Data>d0</Data>
        </Sequence>
        <eraseVerifyValue>80</eraseVerifyValue>
        <eraseVerifyMask>f8</eraseVerifyMask>
        <page>0000 3fff</page>
```

```
        <page>4000 5fff</page>
        <page>6000 7fff</page>
        <page>8000 1ffff</page>
        <page>20000 3ffff</page>
        <page>40000 5ffff</page>
        <page>60000 7ffff</page>
        <page>80000 9ffff</page>
        <page>a0000 bffff</page>
        <page>c0000 dffff</page>
        <page>e0000 fffff</page>
                    <!-- Insert Jump Vectors at the specified locations -->
                    <!-- Support L92 and F92 processors                   -->
                      <interruptJumpTableBase>8000</interruptJumpTableBase>
                      <interruptJumpDestination>C00000</interruptJumpDestination>
      </Flash_Device>
    </Manufacture>
</flash>
```

Warning: DO NOT USE IN LIFE SUPPORT

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