

Target Assisted Flash Programmer™ JTAG-Based In-System Programming of Flash Memories

- ❑ **Fast Flash Programming** - provides the ability to program Flash memory devices at their theoretical programming speed
- ❑ **Utilizes the target CPU** to shorten Flash memory programming time and simplify the operation of flash programming
- ❑ **Intuitive Windows 98/ME/NT/2000/XP™ Graphical User Interface (GUI)** with “XP Look and Feel”
- ❑ **Supports a Macro command language** for easy target initialization
- ❑ **Flash memory contents** can be dumped to file and used to program additional targets memories
- ❑ **Device Wizard** allows users to effortlessly add new Flash devices to the device library
- ❑ **Built-in target system RAM** memory tests
- ❑ **Connects with target system** through the simple and robust JTAG interface
- ❑ **Based on High-performance JTAG controllers** for the PCI bus, PCMCIA, USB 2.0, Parallel Port or LAN
- ❑ **Support for multiple ICs** in the JTAG scan chain
- ❑ **User programmable Test Clock (TCK)** up to 100 MHz
- ❑ **User-programmable JTAG TAP** voltage levels
- ❑ **Compatible with the Scan-Plus™ family of products** for testing and in-system programming (ISP) of Flash memories and CPLDs

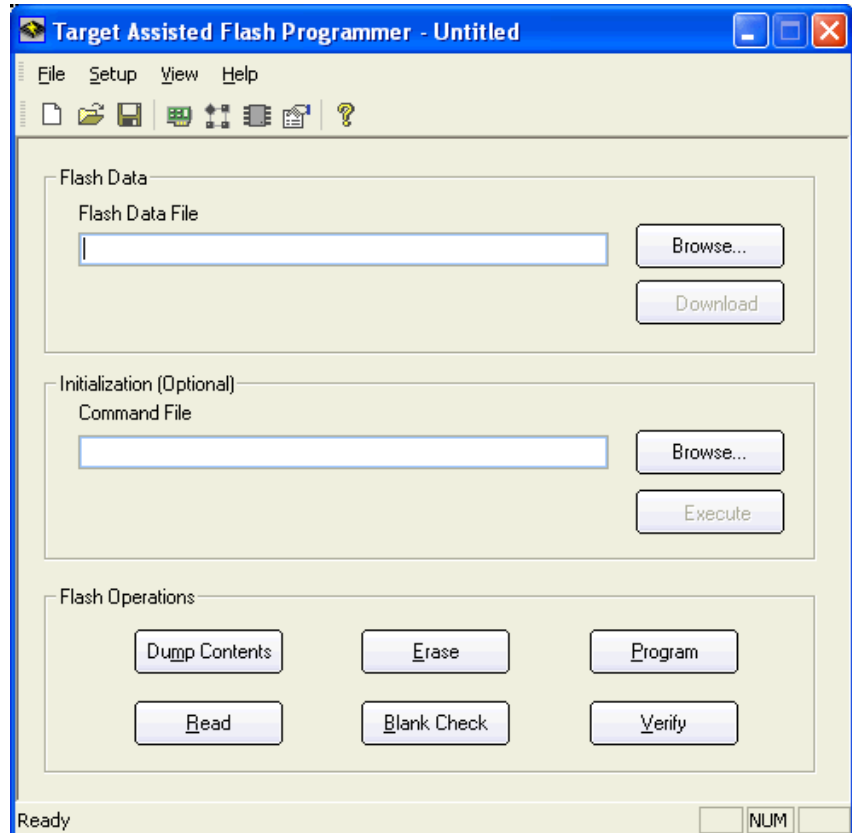


Figure 1. Target Assisted Flash Programmer Main Window

Overview

The Target Assisted Flash Programmer™ is an in-system programming tool for programming flash memory devices. It is used by hardware and software engineers to program data into onboard memories, even when these devices are soldered directly to the board and cannot be physically removed (for off-board programming). In-system programming is done quickly and efficiently and with its intuitive Graphical User Interface (GUI) the user can easily perform various programming functions at a click of a button.

The Target Assisted Flash Programmer takes advantage of the embedded CPU on the target board to

shorten the Flash memory programming time and simplify the operation of flash programming. With the Target Assisted Flash Programmer, the user can perform a complete spectrum of flash programming functions such as erase, blank check, program, verify, obtain device ID, etc. All of these functions can be performed while the device is installed in-circuit.

The main window, shown in Figure 1, provides the user with easy access to the major flash programming operations. In addition to selecting the Flash Data File, an optional Command File can also be

selected from the main window. Selecting an optional Command File allows the user to initialize the target CPU, RAM, and on board resources prior to issuing Flash programming commands. An example of using this feature would be to initialize an on-chip SDRAM controller prior to programming the Flash memory.

Programming Flash Memories

Configuring the Target Assisted Flash Programmer is as simple as One-Two-Three. Step One is to configure the target processor settings, Step Two is to configure the JTAG controller settings, and Step Three is to specify the Flash Device settings. The capabilities provided by the Target Assisted Flash Programmer for each of these steps is outlined below.

Step One:

First, the configuration tab is selected by clicking the Configuration icon on the toolbar or by selecting Boundary-Scan Configuration from the Setup menu. The Configuration Manager, shown in Figure 2, allows the user to select the target processor, the host boundary-scan controller, and the TCK frequency and voltage interface level. Also included is an extensive target connection test that allows the user to quickly verify the integrity of the JTAG connection.

Step Two:

The Target Assisted Flash Programmer supports multiple ICs in the JTAG scan chain. If the target processor is the only device in the scan chain then this step can be skipped, otherwise the Topology tab, shown in Figure 3, is used to identify the various ICs in the scan chain. To identify the scan chain, simply give each component an arbitrary name and specify the length of the Instruction Register (this can be found in the components BSDL file obtained from the vendor's web site). Then select which component is the host processor by specifying YES in the Target IC location.

Step Three:

The next step is to specify the flash device, flash base address, flash address offset, and the RAM base address of the target processor.

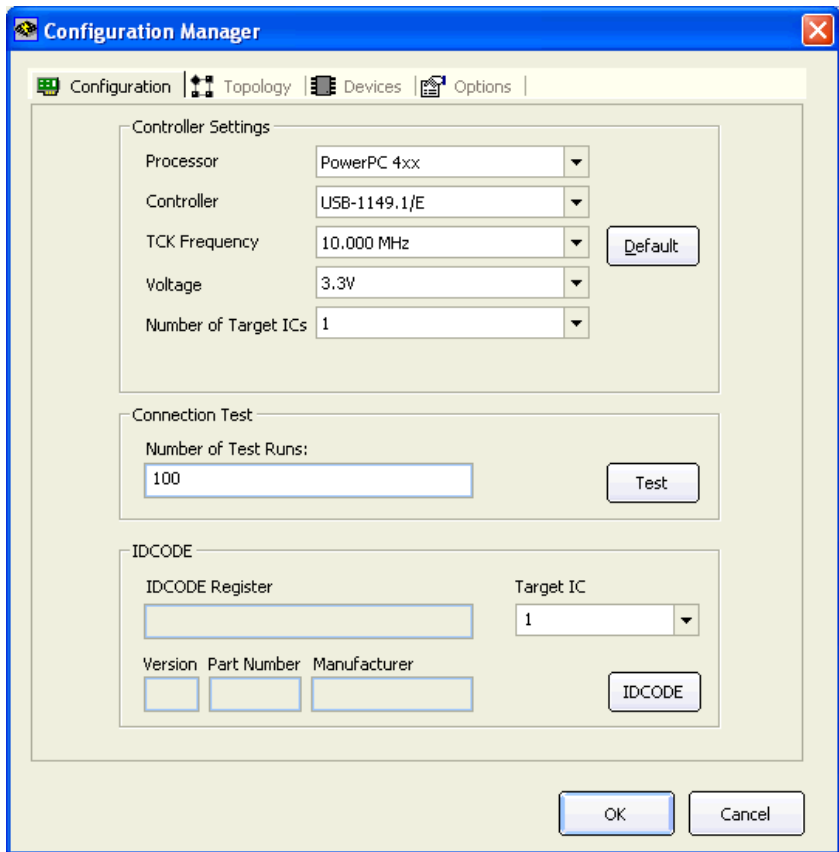


Figure 2. Target Assisted Flash Programmer Configuration Window

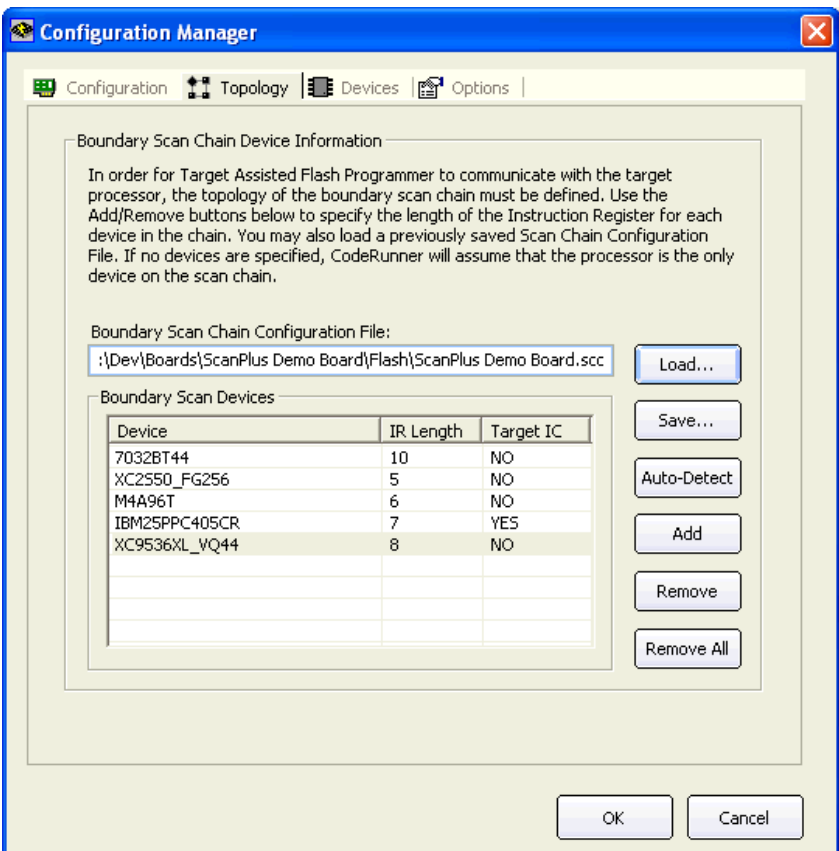


Figure 3. Target Assisted Flash Programmer Topology Window

This is done on the Devices tab of the Configuration Manager (see Figure 4).

First the manufacturer of the flash device is selected from the Manufacturer drop down menu. Once this is done, the Part Number drop down menu is automatically filled with the flash devices that are currently in the Target Assisted Flash Programmers' device library for that vendor. Then the exact flash device is selected from the Part Number drop down menu. If the exact flash device is not yet present, clicking the Add Flash Device to Library button will launch a wizard that will step you through the process of adding a flash device to the Target Assisted Flash Programmer's library. In this way, new devices can be effortlessly added on-the-fly to the device library by the user. The user can then directly specify the Flash Base Address in the Flash Base Address (hex) field. If it is desired that the flash data be written to a specific location, then this offset can be entered in the Flash Program Offset (hex) field. Finally, the RAM base address is entered in the RAM Base Address (hex) field. This address will be used with Target Assisted Flash Programmer to download the flash commands and the flash data.

The Target Assisted Flash Programmer has the ability to test the JTAG connection, test the RAM, check the flash device ID, erase the flash device, verify the erasure, download flash data to RAM, program the flash device, and verify the flash data in one step. This can be setup on the Options tab of the Configuration Manager as shown in Figure 5. After enabling or disabling the flash options, the user can click the OK button to save the changes. In most cases, the default settings are the appropriate choices for the specified device and hence this step is optional.

Click the OK button to accept all entries and return to the main window. All the information entered in the Configuration manager can now be saved to file so that subsequent configurations are accomplished by simply loading the specified configuration file.

The Target Assisted Flash Programmer is now ready to program the flash device. Click the Program but-

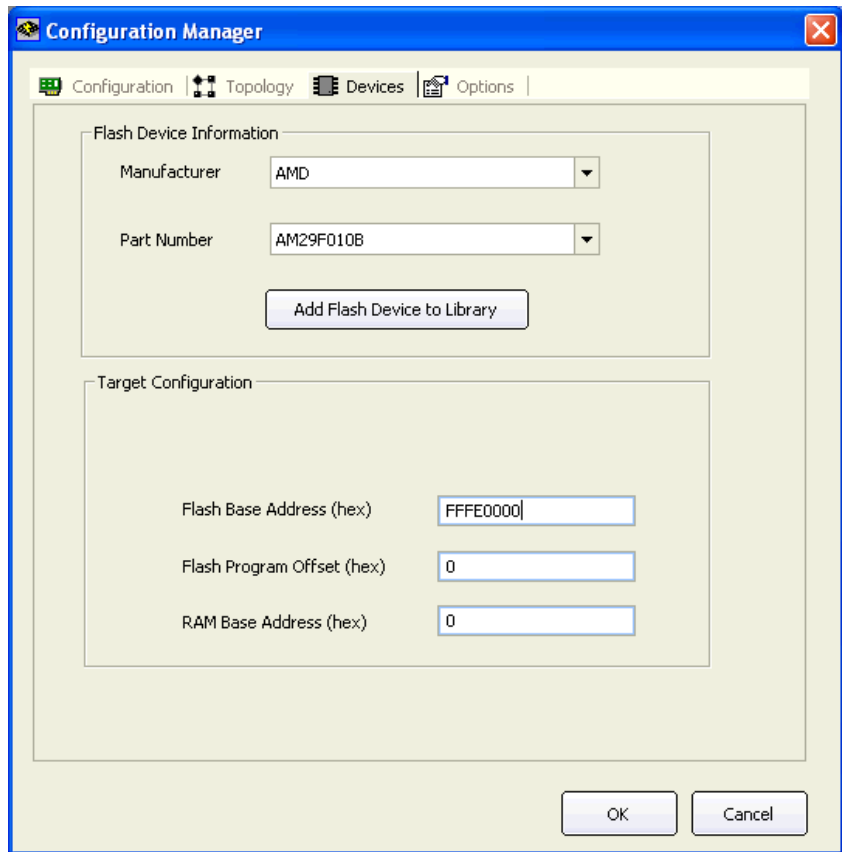


Figure 4. Target Assisted Flash Programmer Device Window

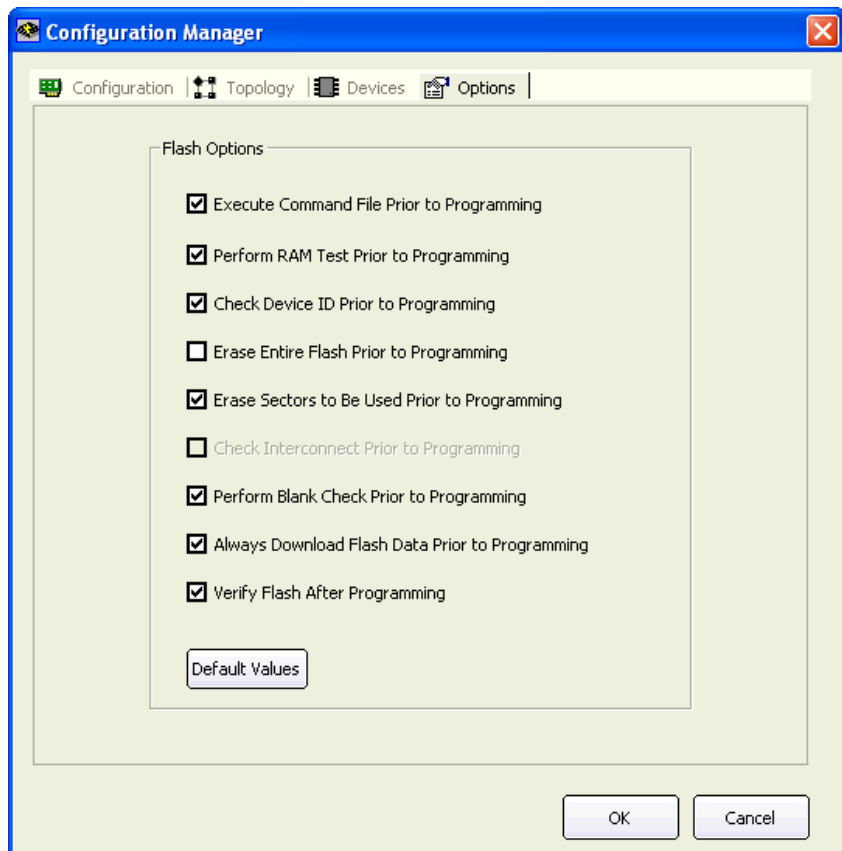


Figure 5. Target Assisted Flash Programmer Options Window

ton on the main window. The status window will be displayed reporting the status of the flash operations (see Figure 6).

CPUs Supported

The Target Assisted Flash Programmer relies on using a supported JTAG compatible CPU device on the target in order to accomplish the flash programming operation. Please contact Corelis for CPU devices currently supported.

For target configurations which do not contain a compatible CPU or configuration - for example, a board containing only programmable logic devices (PLDs) - please refer to the ScanPlus Flash datasheet for JTAG in-system programming.

Boundary-Scan Controllers

The Target Assisted Flash Programmer currently supports the following boundary-scan controllers offered by Corelis: PCI-1149.1/Turbo™, PCMCIA-1149.1/E™, USB-1149.1/E™, PIO-1149.1/E™ and NetUSB-1149.1™. Please contact Corelis regarding support for other controllers.

Flash Devices Supported

The Target Assisted Flash Programmer supports many of the popular flash devices available today from various manufacturers. New devices are constantly being added. As pointed out early in this datasheet, a "Custom Device Wizard" allows the user to create instant

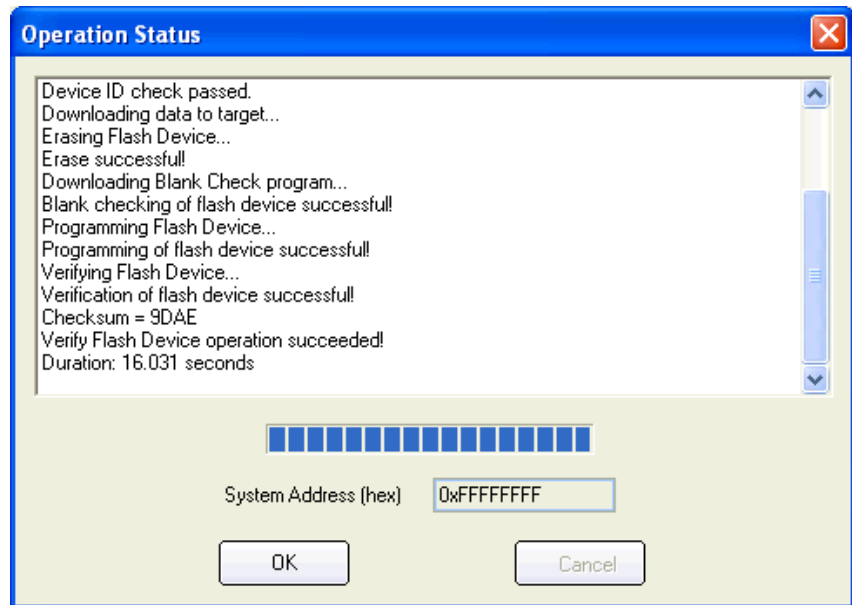


Figure 6. Operation Status of Flash Programming Operation

support for new flash devices that are not yet listed in the default device library. Check with Corelis regarding current support for your particular device selection.

Ordering Information

The Target Assisted Flash Programmer (P/N 20342) includes:

- Software CD
- User's Manual

Target Assisted Flash Programmer requires a boundary-scan controller that must be purchased separately.

System Requirements

The Target Assisted Flash Programmer is a Microsoft Windows 98SE/ME/NT/2000/XP 32-bit application.

Your PC must have a minimum configuration as follows:

- Microsoft Windows 98SE, ME, NT 4.0, 2000, or XP installed
- CD-ROM drive
- Pentium 3 processor or higher
- 128 megabytes (MB) of RAM
- 50 MB of free hard disk space
- Display adapter supporting at least 1024x768 resolution and 256 colors
- A standard 25-pin parallel port. ScanPlus software is protected with a hardware key attached to the printer port. The hardware key has a pass through which will not affect the operation of a printer. Optional soft-key license available.

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