



FlashPro Programmers

THE FLASHPRO SERIES OF PROGRAMMERS

FOR PROGRAMMING ALL ACTEL FLASH FPGAs

Key Features

- Support for All Actel Flash Families
 - Fusion
 - ARM7™-Ready ProASIC®3 and ProASIC3E
 - ProASIC3/E
 - ProASIC^{PLUS}
 - ProASIC®
- Supports In-System Programming
- Supports IEEE 1149 JTAG Programming Through STAPL
- Supports IEEE 1532
- Free Software Updates
- Connections to Parallel Port and USB Port Available
- Self-Test Option
- Supports Microsoft® Windows® 2000 and XP Operating Systems

FlashPro3

FlashPro LITE

FlashPro



In-System Programming

The Actel family of FlashPro device programmers provides in-system programming (ISP) in an easy to use, compact system that supports Fusion and all ProASIC families. Whether you are programming a board containing a single device or multiple devices connected in a chain, you can quickly program and reprogram by connecting to a PC and the target board. FlashPro programmers provide everything you need to program Flash devices for compliance with IEEE 1149, using the JTAG port. They automatically skip any nonprogrammable devices in the JTAG chain, ensuring straightforward programming.

FlashPro Saves Space, Money, and Time

Programming with the FlashPro series of programmers saves you board space, since a single JTAG chain can be used for all JTAG devices. Programming via the JTAG port adds the flexibility of field upgrades or post-assembly, production-line “characterization.” Costs can be significantly reduced as a result of eliminating sockets on the board. Because FlashPro programmers use JEDEC-standard STAPL files, there are no built-in algorithms; there is no delay between product release and programming support. FlashPro programmers support IEEE 1532 for increased design compatibility. The FlashPro series of programmers may also be used for interactive debug of designs by using embedded IP in the Flash devices in conjunction with the Logic Navigator software. In addition, Actel Fusion™ devices have specific debug software to allow access to Fusion-specific peripherals such as Flash memory and an analog to digital converter (ADC).

Comparison Table of Features Supported by FlashPro Series Programmings

Feature		Programmer		
		FlashPro3	FlashPro Lite	FlashPro
Device support	Fusion	✓		
	ProASIC3E and ARM7-Ready ProASIC3E	✓		
	ProASIC3 and ARM7-Ready ProASIC3	✓		
	ProASIC ^{PLUS}		✓	✓
	ProASIC			✓
Security	AES	✓		
	FlashLock [®]	✓	✓	✓
	Permanent FlashLock	✓	✓	✓
PC connection	USB 2.0 (high-speed)	✓		
	USB 1.1	✓		✓
	Parallel Port		✓	✓



Device Security

FlashPro3, combined with ProASIC3/E and Actel Fusion technologies, enables the highest level of design security in all environments. In a trusted secure environment, an AES encryption key can be programmed into the device. Further reprogramming may then be carried out in any location by transferring a STAPL file with programming data that has been encrypted with that key. The key itself is not transmitted. AES encryption protects the data en route to the FPGA; the data is then decrypted inside the Fusion, ARM7-ready ProASIC3/E, or ProASIC3/E device. With AES encryption, no key is passed to a preprogrammed device to unlock it; the data itself has been correctly encrypted—in Actel Libero[®] Integrated Design Environment (IDE) or Designer software tools—so that programming succeeds in a safe and secure manner. Even without AES encryption of the STAPL file, the FlashLock security mechanism can be used to limit reprogramming of the parts to only those who know the appropriate Pass Key. This mechanism is appropriate for more secure environments. Once you have decided that reprogramming is no longer necessary, you can choose to permanently lock the device using Actel permanent FlashLock[®] security capability, giving you the greatest protection from design theft.

FlashPro Lite and FlashPro programmers, using the ProASIC^{PLUS} and ProASIC technologies, also support Actel FlashLock security using the Pass Key mechanism. The FlashPro Lite and FlashPro programmers enable you to lock and unlock a device using a Pass Key—keeping your designs safe even if you need to reprogram the device.



FlashPro3

FlashPro3 Specifications

Supports Fusion, ARM7-Ready ProASIC3/E, and ProASIC3/E Devices

Software

FlashPro v4.0 Software

DEVICE COMMAND

Erase, Program, Verify, Device ID, Device Info, AES Security, FROM Serialization

FEATURES

Device Chain Information Detection, Bypassing Non-Actel Flash Devices

OPERATING SYSTEMS

Microsoft Windows 2000, XP

Hardware

Connects to USB 2.0 Port (High-Speed and Full-Speed) or USB 1.1 Port

SIZE

0.93" x 1.85" x 2.4"

Input Voltage Requirement

None—Powered from USB Connection

Output Voltage

V_{PUMP} 3.3 V

Standard Accessories

Software CD

User's Guide

USB Microcable

Target Programming Cable

Self-Test Board

FlashPro3 is targeted at the latest generation of Flash devices offered by Actel: Fusion, ARM7-Ready ProASIC3/E, and ProASIC3/E. FlashPro3 offers extremely high performance through the use of USB 2.0 and is high-speed compliant for full use of the 480 Mbps bandwidth. This newest programmer can program ProASIC3E devices in under 30 seconds; even the largest ProASIC3E devices take under two minutes to program. Powered exclusively via USB, FlashPro3 provides a V_{PUMP} voltage of 3.3 V for programming ProASIC3/E and ARM7-Ready ProASIC3/E devices. FlashPro3 can connect to any PC with a USB port and can operate either with USB 1.1 (full-speed) or USB 2.0 (both high-speed and full-speed modes). Multiple FlashPro3 programmers may be connected together via USB hubs to enable multiple systems to be programmed in parallel using just one PC with the FlashPro software.

High performance Fusion Flash memory blocks support multiple functions, including state saving of volatile RAM and registers prior to power-down, initialization of RAM and registers at power-up, boot code store, data logging, and configuration data for the analog peripherals. The embedded FlashROM offers another programmable space, supporting use models such as device serialization.

Fusion programmable logic fabric has configurability and field reprogrammability similar to that of the successful Actel ProASIC3 family of Flash FPGA devices. The Flash memory of Fusion devices can also be easily programmed and reprogrammed with the FlashPro3 programmer. FlashPro3 supports a robust programming solution for the three regions of the Fusion device (FPGA core, Flash blocks, and FlashROM).

All three regions can be programmed in a single step, such as on a manufacturing line, when only a single device configuration is needed. Each region can also be programmed separately from the other two, increasing programming efficiency and enabling independent updates of design (FPGA code) and firmware (Flash memory blocks).

The programming can be used in conjunction with the embedded AES decryption engine, enabling secure programming both on the factory floor and in the field. Using an encrypted file for field upgrades enables the file to be sent over unsecured networks, such as the Internet, while securing the contents of the file. This method can be used on both design file upgrades and firmware upgrades. The embedded Flash memory blocks can be programmed with the data while still encrypted, and decrypted only when needed by the system.



FlashPro Lite Specifications

Supports ProASIC^{PLUS} Devices

Software

FlashPro v4.0 Software

DEVICE COMMAND

Erase, Program, Verify,
Device ID, Device Info

FEATURES

Device Chain
Information Detection,
Bypassing Non-ProASIC
Devices

OPERATING SYSTEMS

Microsoft
Windows 2000, XP

Hardware

Connects to Parallel Port

SIZE

0.75" x 2" x 3.5"

Input Voltage Requirement

2.5 V at 500 mA
Through V_{DD} Supply
From the Target Board

Standard Accessories

Software CD
User's Guide
Parallel Port Cable
ISP-CABLE-S

Debug Tools

Designs programmed into Fusion, ARM7-Ready ProASIC3/E, and ProASIC3/E devices can be debugged using logic analyzer software, working through the interface provided by the FlashPro3 programmer.

The Logic Navigator software from Actel also allows the control and exercise of the architecture-specific features of Fusion such as the ADC, the Flash memory blocks, and the RTC, without the need to program a design into the FPGA core fabric itself. As a complete programming and debugging tool chain, FlashPro3 keeps development costs low by eliminating the need for additional hardware debug solutions.

As with all of the FlashPro series of programmers, multiple devices may be connected together in a JTAG chain and each of these devices may be programmed in sequence using the closely related ChainBuilder functionality in the FlashPro software family. With ChainBuilder, multiple Flash devices may be programmed using a single programmer and one header on the board, by arranging the devices in a JTAG chain.

Multiple FlashPro3 programmers may be connected via USB hubs to a single PC, enabling the end user to set up a small-scale production environment with concurrent ISP occurring across multiple boards. This results in volume production programming at very low cost. Volume production programming is not normally done for devices connected to boards; the USB 2.0 interface to FlashPro3 enables volume production ISP, which is a key feature of the technology.

Availability

FlashPro3 is available as a standalone item or as part of the low cost Fusion Starter Kit and ProASIC3 Starter Kit. In addition to FlashPro3, the ProASIC3 Starter Kit also includes a ProASIC3/E evaluation board (fitted with an A3PE600-PQ208 or A3P250-PQ208 device), Libero IDE Gold, the user's guide available on the CD, and a ProASIC3/E design example. The Fusion Starter Kit includes a FlashPro3 programmer, a Fusion evaluation board (fitted with an AFS600-FG256 device), Libero IDE Gold, and Fusion design examples.

FlashPro Specifications

Supports ProASIC and ProASIC^{PLUS} Devices

Software

FlashPro v4.0 Software

DEVICE COMMANDS

Erase, Program, Device
ID, Verify, Read

FEATURES

Device Chain
Information Detection,
Bypassing any
Non-ProASIC or Non-
ProASIC^{PLUS} Device

OPERATING SYSTEMS

Microsoft
Windows 2000, XP

Hardware

Self-Test
Connects to Parallel Port

SIZE

6" x 4" x 1"

Input Voltage Requirement

Powered from Universal
Power Supply
Does Not Draw Power
from Target Board

Standard Accessories

Software CD
User's Guide
Power Cable
Programming Cable
ISP-CABLE-S
Self-Test Board

FlashPro Lite and FlashPro

FlashPro Lite is used exclusively with the ProASIC^{PLUS} family. The FlashPro Lite programmer connects to your PC by means of a parallel port. Only a parallel port connection is available to the FlashPro Lite programmer.

All FlashPro programmers use JEDEC-standard STAPL files, meaning there are no algorithms built into the software. The same software is used for the GUI of all FlashPro series programmers so you do not have to learn new software to switch from one programmer to another.

FlashPro Lite provides all required programming voltages. The programming connection to the target board is a 26-pin SAMTEC micro header on the target board. A replaceable programming cable is connected to the FlashPro Lite. FlashPro Lite is conveniently powered from the target board.

The FlashPro programmer is a programmer for both the ProASIC^{PLUS} and ProASIC families of Flash devices. The choice of USB port or parallel port is made in the simple FlashPro software GUI. For ProASIC^{PLUS} devices, programming times are approximately 1.6 times faster when using the parallel port than when using the USB port. Both EPP and ECP parallel port configurations can be used. The FlashPro programmer has its own power supply, so the target board does not need to be powered up to support ISP. Multiple FlashPro programmers can be connected via USB hubs to a single PC, allowing a convenient, low cost, volume production programming environment to be set up for target boards containing ProASIC^{PLUS} or ProASIC devices. If the related ChainBuilder software is used, the target boards may contain a mixture of ProASIC^{PLUS} and ProASIC devices.

Debug Tools

FlashPro Lite and FlashPro can be used as the logic analyzer debug interface for tools such as the Logic Navigator software from Actel. This gives a designer the ability to quickly debug a design that was programmed into a Flash FPGA using the same hardware that was used to program the device the first time. No additional hardware is required. As such, FlashPro Lite may be used for the debug of ProASIC^{PLUS} designs and FlashPro may be used for the debug of both ProASIC^{PLUS} and ProASIC designs.

Availability

FlashPro Lite is available as a standalone item or as part of the low cost ProASIC^{PLUS} Starter Kit. In addition to FlashPro Lite, the ProASIC^{PLUS} Starter Kit also includes an APA300 evaluation board, Libero IDE Gold, the user's guide available on the CD, and a ProASIC^{PLUS} design example.



FlashPro Programmer

For more information regarding the **Actel FlashPro Series of Programmers**, please visit the Actel website at www.actel.com or contact your local sales representative.

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