

## Fast USB-MSP430 Flash Programmer



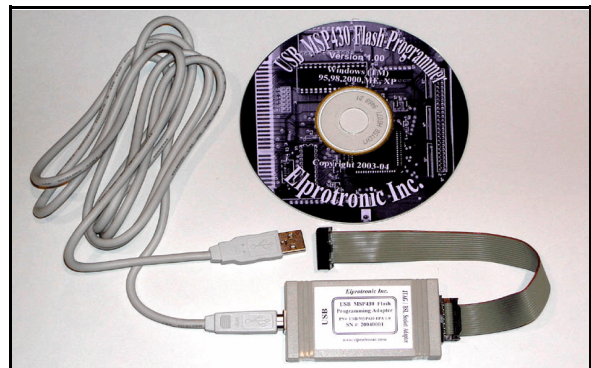
**60 kB Flash - can be programmed in 2 seconds.**

**Can be erased, blank checked, programmed and verified in less than 4 seconds.**

- \* Support all MSP430Fxx microcontrollers from TI.
- \* Our programmers are professionally made and are **recommended** by Texas Instruments as the Third Party Tools source.
- \* Our programmers are currently **the fastest programmers** on the market.
- \* Programmer has a **unique feature** - two interfaces in one package allows to program the target device via **JTAG** or **BSL** Interface.
- \* To speed up production process optimized programming algorithms are used to significantly reduce programming time. Our proprietary Fast BSL algorithms allow to communicate with the target devices over **35 times faster** then standard TI BSL (9.6kb/s) reducing programming time from few minutes to few seconds.
- \* Communication procedures via JTAG interface are **2-6 times faster** then competitor's programmers.
- \* Blow the JTAG security fuse capability.
- \* No code size limitations.
- \* Target device can be powered from the programming adapter or from external source.
- \* Easy to use Windows™ based software.
- \* Programmer accept TI (\*.txt), Motorola (\*.s19) and Intel (\*.hex) data files for programming.
- \* Combine code files capability.
- \* Lock setup capability, useful in production.
- \* Software package can assign and automatically increment **serial number**, model type and revision. Serial Number with or without an automatically inserted current date can be stored in the FLASH memory in HEX, BCD or ASCII format. Log file capability allowing to review information about the flashed target devices.
- \* **Serial number** can be read from the bar code using **Bar Code Scanner** and saved in the target's device FLASH.
- \* **API-DLL** software package can control programmer from other programs.
- \* **MSP430.DLL** allows to use USB-FPA as a FET with the IAR, CrossWork or Quadravox debugging software.
- \* Programmer has been fully tested to comply with the **FCC** and **CE** requirements.
- \* Our programmers are inexpensive - for users interested in basic features we provide limited, or lite software version. Even in the lite software version you can get more features then are provided by competitor's programmers.

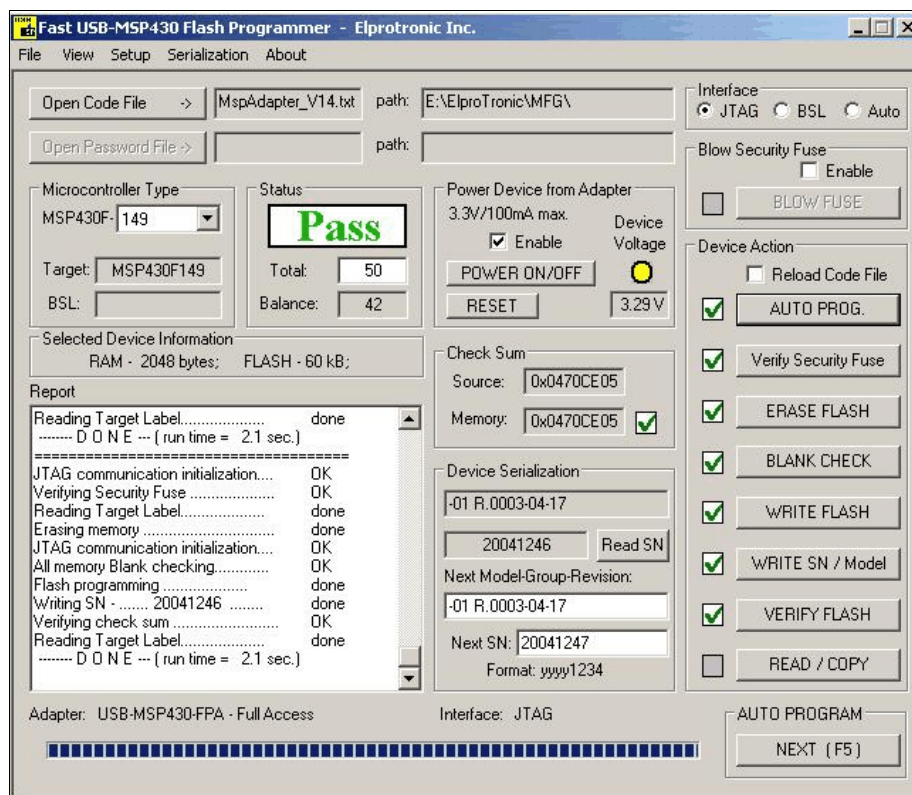
The Fast USB-MSP430 Flash Programmer is dedicated to programming the Texas Instruments MSP430Fxx family microcontrollers. Using the Fast USB-MSP430 Flash Programmer the target device can be programmed via the JTAG Interface, or via the BSL (Boot Strap Loader) Interface. MSP430Fxx microcontrollers can be programmed via the JTAG Interface as long, as the Security Fuse is not blown. When the Security Fuse is blown then the MSP430Fxx microcontrollers still can be accessible, but only via the BSL Interface.

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Each programmer package consists of a microcontroller based adapter, Windows™ based software and a cable used to connect the adapter with the computer's USB port. The internal adapter software allows communication with the programmed device at a high speed. The effective speed using the JTAG interface is about **29 kbytes/s**. The Fast BSL Interface allows communication with the programmed device at a speed of up to 350 kb/s, which is **over 35 times faster** than that with standard BSL (communication speed 9.6 kb/s). Due to the high speed of the programmer, it can be effectively utilized to program flash devices in the production process. For example, a microcontroller

with **60 kB Flash**, such as MSP430F149, can be programmed in **less than 4 seconds** via the JTAG Interface, or in **6 seconds** via the BSL Interface. This time includes initialization, erasing memory, blank checking, programming and fast verification.

To facilitate high speed communication via the BSL Interface, a new Fast Bootstrap Loader (Fast BSL) is temporarily downloaded to the RAM of each programmed device. Due to the small size of Fast BSL, almost all TI microcontrollers from MSP430Fxx family can utilize this high speed communication. Microcontrollers with small RAM (128 bytes - only 3 family members) can be programmed with the standard communication speed (9.6 kb/s - communication speed is selected automatically). Programming time for these types of microcontrollers is not very long, since the size of the programming FLASH is very small (up to 2 kB). To simplify the production process, the programming software package can assign serial numbers, model types, and revisions. Each serial number is unique for each programmed device and is assigned automatically. Several serial number formats are available.

There are a number of erase/write options available. All or just specified fragments of flash memory can be erased/written. This feature saves time when only specific parts of data/code need to be changed. For example this feature can be used to download the serial number, calibration data or personality data without losing existing program code.



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*Programming / reading times for a target microcontroller with **60 kB** of Flash Memory*

| <i>Interface type =&gt;<br/>Communication Speed [ kb/s ] =&gt;</i> | <i>JTAG<br/>----</i> | <i>BSL<br/>350 kb/s</i> | <i>BSL<br/>9.6 kb/s</i> |
|--|----------------------|-------------------------|-------------------------|
| <i>1. Flash Programming time with fast verification</i>            | <i>2.3 s</i>         | <i>5 s</i>              | <i>98 s</i>             |
| <i>2. Flash Reading time with fast verification</i>                | <i>1.3 s</i>         | <i>5.2 s</i>            | <i>127 s</i>            |
| <i>3. Flash Erasing time</i>                                       | <i>0.5 s</i>         | <i>0.5 s</i>            | <i>0.5 s</i>            |
| <i>4. Flash Blank Checking time</i>                                | <i>0.4 s</i>         | <i>1.4 s</i>            | <i>127 s</i>            |
| <i>5. Verification time</i>  | <i>1.2 s</i>         | <i>5.2 s</i>            | <i>127 s</i>            |
| <i>6. Auto Program with fast verification time</i>                 | <i>3.5 s</i>         | <i>6.3 s</i>            | <i>-</i>                |
| <i>7. Auto Program with standard verification time</i>             | <i>4.0 s</i>         | <i>10 s</i>             | <i>226 s</i>            |
| <i>8. Blowing the Security Fuse time</i>                           | <i>0.3 s</i>         | <i>-</i>                | <i>-</i>                |

**Note:** \* - add 0.2 second, if blow the Security Fuse is enabled.

*Specified times include target DC voltage verification, communication initialization and access verification.*

#### **Specification:**

PC Communication Interface:

USB connector

Target connector

DC Power - from USB Interface

Target Device DC supply

- external

- from programming adapter

Communication speed via JTAG Interface

Flash programming

Flash/RAM uploading

Ram downloading

Communication speed via BSL Interface

Flash programming

Flash/RAM uploading

Size:

Verification Compliance:

- Full Speed USB-1.1 (12Mbps/s)

- Adapter site: USB-type B, Computer site: USB-type A

- 14 pins header connector - standard JTAG pinhead with added BSL connection to unused pins.

- 5V +/- 20%, 50mA + target's current (0-100mA)

- 2.2 V to 3.6 V

- 2.2 V to 3.6 V in step 0.2V / 100 mA max.

- up to 29 kbytes/s

- up to 80 kbytes/s

- up to 130 kbytes/s

- up to 20 kbytes/s

- up to 19 kbytes/s

- 76 x 43 x 20 mm ( 3.0 x 1.68 x 0.8 inch )

- CE ( European CISPR 22 and EN 55022 ).

- FCC Part 15, Subpart B- Class B Unintentional Radiators for Uses in Home, Commercial and Industrial Areas.



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