In-Circuit Programmer/Loader

User Manual

April 28, 2011

Revision 1.10

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1 About this Document

1.1 Purpose

This document describes installation and operation of AMFELTEC Corp. In-Circuit Programmer/Loader (EasyLoader).

1.2 Feedback

AMFELTEC makes every effort to ensure that the information contained in this document is accurate and complete at time of release. Please contact AMFELTEC if you find any errors, inconsistencies or have trouble understanding any part of this document.

To provide your feedback, please send an email to support@amfeltec.com

Your comments or corrections are greatly valued in our effort for excellence and continued improvement.

1.3 Abbreviation

Abbreviation	Description
eLoader	In-Circuit Programmer/Loader
Host application	eLoader Update application

1.4 Revision History

Rev. No.	Description	Rev. Date
1.1	Initial Release.	June 20, 2007
1.2	Add program serial flash functionality	Oct 19, 2007
1.3	Add support I2C devices	Nov 20, 2008
1.4	Add FPGA EPCSxxx configuration devices support.	Jan 10, 2009
1.5	Add support for Microchip dsPIC30/dsPIC33/dsPIC24	May 01, 2009
1.6	Add support for SiliconLab 8051 MCU	Oct 14, 2009
1.7	Add support for Flash M25Pxxx/AT17LVxxx/AT17Fxxx	Feb 20, 2010
1.8	Add support for Altera	May 01, 2010

1.9	Add support for EXAR XRP77xx family Add Open/Save project list	Oct 25, 2010
1.10	Add support for TI MSP430 Family	Apr 28, 2011

2 General Description

2.1 Introduction

“eLoader” is designed to provide a flexible and cost effective programming/loading solution for electronic device manufacturers as well as for hardware design companies and their customers. It allows code upgrades on any JTAG/SPI/I2C or similar serial interfaces compliant device like FPGA / CPLD / EEPROM / Flash as well as programming different microcontrollers during development, testing or production.

Initially, “eLoader” has to be connected to the host computer via USB port and loaded with the programming information. The Windows based software application provides a user-friendly interface to “eLoader”.

During normal operation “eLoader” doesn’t have to be connected to the host computer. It connects to the “debug” connector on the target board and automatically starts loading / programming the target device when power is turned on. The result of the operation is displayed on the two LEDs (red and green).

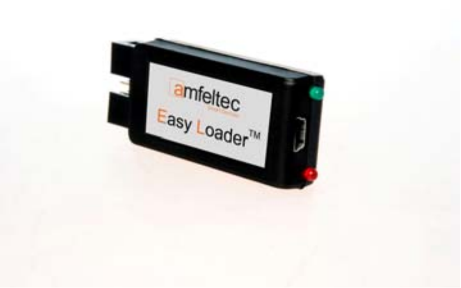


Figure 1: In-Circuit Programmer/Loader

2.2 How it works

“eLoader” can program/load specific device, group of the devices connected via the serial interface (JTAG, I2C or SPI) or multiple group of the devices (JTAG and I2C, JTAG and SPI, JTAG and Microcontroller).

Each target device requires a separate project to be created. The project describes the device in more detail with things such as interface type and the data file to be loaded. Designs containing multiple devices will have separate project files describing each device. A memory usage bar shows available “eLoader” resources, you'll notice the bar move as more and more projects are added. After “eLoader” is configured, it can be disconnected from the host computer to run independently. All the configuration data is stored in non volatile memory internally on the “eLoader”. The standard version of “eLoader” has 16 Mbytes of internal memory and the extended one has 32 Mbytes of internal memory.

“eLoader” uses a standard 10 pin 2 row 0.1 inch pitch connector (see Appendix B) to connect to the target board via cable. Cable can be ordered from AMFELTEC Corp. or manufactured by the user (for example, cable connector can used from DigiKey P/N CKC10S-ND). eLoader is taking power from the target board so no extra cables are required for powering.

When “eLoader” receives power from target board, it will start to execute all projects in order by starting from the first one. “eLoader” has two LEDs that show the current device status. Cycling RED-GREEN LEDs indicated success status after the target board has been programmed/loaded and verified. A blinking GREEN LED shows that the device in the process of programming or verification. A blinking RED LED shows that the program or verification task failed.

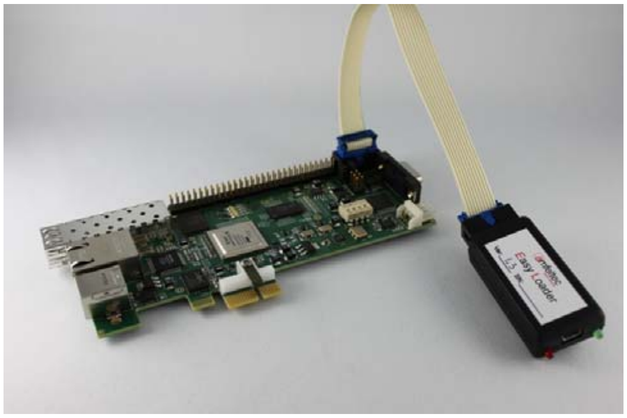


Figure 2: eLoader with target device

2.3 Application

2.3.1 Board Assembly House

“eLoader” can be used in a electronic board assembly house to program the programmable logic devices as they come off the assembly line. Do not need any preprogramming. After initial configuration, the device does not require a computer connection for normal operation. This can help completely avoid preprogramming parts, first article sign off and as a result significantly reduce production costs. It’s easy to use so minimal training is required for the personal.

2.3.2 Update Firmware prior to Shipping

Electronics boards can be programmed just prior to shipping to the customer. This ensures that only the latest firmware will be used. This also adds further flexibility because a board can be programmed with different security/capability settings based on the particular customer order. No need to stock boards with different firmware. Board assembling can be done with the blank programming parts and firmware or security can be programmed before shipment per order base. This solution will decrease inventory and make it not depend of the market.

2.3.3 Remote Firmware Update

Compact size and ease to use make it possible to simply ship “eLoader” to customers around the world. Customer just needs to connect eLoader to the device and to switch power-on. eLoader starts working after power is turned on so it can be easily operated by anyone. No need to send an engineer overseas just to reprogram a customer’s device or ship device back to factory for update or for replacement.

2.3.4 Engineering

Because “eLoader” doesn’t need computer for the normal operation it can be very useful portable programming/loading solution in case were debugging laboratory and engineering cubes are in the different places. It also helps to programming/loading different chips via I2C or SPI interface during debugging.

3 Installation

This paragraph explains in detail the eLoader software installation steps. The software package includes EasyLoader Update application and device driver for USB devices

3.1 Software Installation

EasyLoader Update application provides communication between host computer and eLoader device. You will need to use it in order to update and verify contents of eLoader device.

The installation is simple. Execute *ELoaderSuiteInstall.msi* file from CD. You can leave all default settings. The installation process will copy the necessary files onto your hard drive, update registers and create shortcut to executable file.

3.2 Device Driver Installation for eLoader

eLoader device requires the USB device driver installation. Plug-in the eLoader device into a USB port of your host computer.

- Found New Hardware Wizard dialog will show up
- Select Yes and click on Next
- Select *Install from a list of specific location* and click on Next
- Type full path to *<EasyLoader directory>/Driver* directory, click on Next and follow the installation steps.

Now, you can un-plug and plug-in back eLoader. The system should recognize it as *AMFELTEC Corp. EasyLoader USB device*.

Host system recognizes eLoader device as a Serial device. You can detect the COM port number by opening Control Panel-System-Hardware-Device Manager. If installation succeeded, you will find eLoader device under *Ports (COM & LPT)* section (eLoader device must be plugged in). You will need to use the COM port number in host application (EasyLoader Update).

4 Configuration

4.1 XILINX FPGA/CPLD with JTAG interface

Target device	XILINX FPGA/CPLD/PROM
Interface	JTAG: TMS/TCK/TDI/TDO/TRST
Description	Current project description
Data File	Data file in XSVF or SVF formats

4.2 FLASH/EEPROM with I2C interface

Target device	FLASH/EEPROM
Interface	I2C: SDA/SDC
Description	Current project description
Data File	Data file in HEX/Motorola S-Record/Binary formats
I2C Cfg File	Custom I2C configuration file for target device created by ELoaderConfig

4.3 FLASH/EEPROM with SPI interface

Target device	FLASH/EEPROM
Interface	SPI: SCK/SCS/SDI/SDO
Description	Current project description
Data File	Data file in HEX/Motorola S-Record/Binary formats
Device	Select target device from the list (M25P05A/ M25P10A/ M25P128/ M25P16/ M25P20/ M25P32/ M25P40/ M25P64/ M25P80
Verify Data	Verify data after programming it

4.4 Microchip MCU/DSP

Target device	Microchip MCU/DSP
Chip Family	Select Microchip family from the list (dsPIC30/dsPIC33/PIC24)
Device ID	Select Microchip device id
Description	Current project description
Data File	Data file in HEX format

4.5 FPGA configuration device

Target device	FPGA Configuration Device
Interface	Select FPGA Configuration device
Description	Current project description
Data File	Data file in RPD format (raw programming data)

4.6 Silicon Labs MCPU with JTAG interface

Target device	Silicon Labs MCPU
Interface	JTAG: TMS/TCK/TDI/TDO/TRST
Chip Family	Select chip family device
Device ID	Select device ID
Data File	Data file in SVF format

4.7 Silicon Labs MCPU with C2 interface

Target device	Silicon Labs MCPU
Interface	C2
Chip Family	Select chip family device
Device ID	Select device id

Data File	Data file in HEX format
Verify Data	Verify data after programming it
Protect Data	Protect data after programming it

4.8 Altera FPGA/CPLD with JTAG interface

Target device	Altera FPGA/CPLD
Interface	JTAG: TMS/TCK/TDI/TDO/TRST
Data File	Data file in SVF format

4.9 EXAR XRP77xx family

Target device	EXAR
Description	Current project description
Device	Select your current product device (XRP7704/XRP7708/XRP7740/XRP7713/XRP7714)
Slave address	Provide slave address of your EXAR device if the target device was configured before to specific slave address different than 00 (default)
Chip Enable	If you have multiple EXAR device on your board connected in parallel and with the same slave address, you can use Chip Enable parameter to specify active target device. EasyLoader device supports up to 5 EXAR devices.
Data File	HEX file to program
Verify Data	Verify data after programming
Load to NVM	Select this option if you are going to program NVM space. This option will prevent you from programming NVM space by mistake.

4.10 TI MSP430 family with 2-wire JTAG (Spy-Bi-Wire)

Target device	Select [TI MCU]
Description	Current project description
Interface	Select [SpyBiWire]
Chip Family	Select your target device family

Device ID	Select your target device from selected family
Data File	Select data file to program (A43 file format)
Erase	Select memory segment that required ERASE command. NOTE 1: If the data file accesses the memory that was not selected to be erased, warning message will display. NOTE 2: If data file doesn't access selected memory for erase, this memory segment will not be erase (optimization)
Blank Check	Enable Blank Check after erase
Verify Data	Verify data after programming

5 Operation

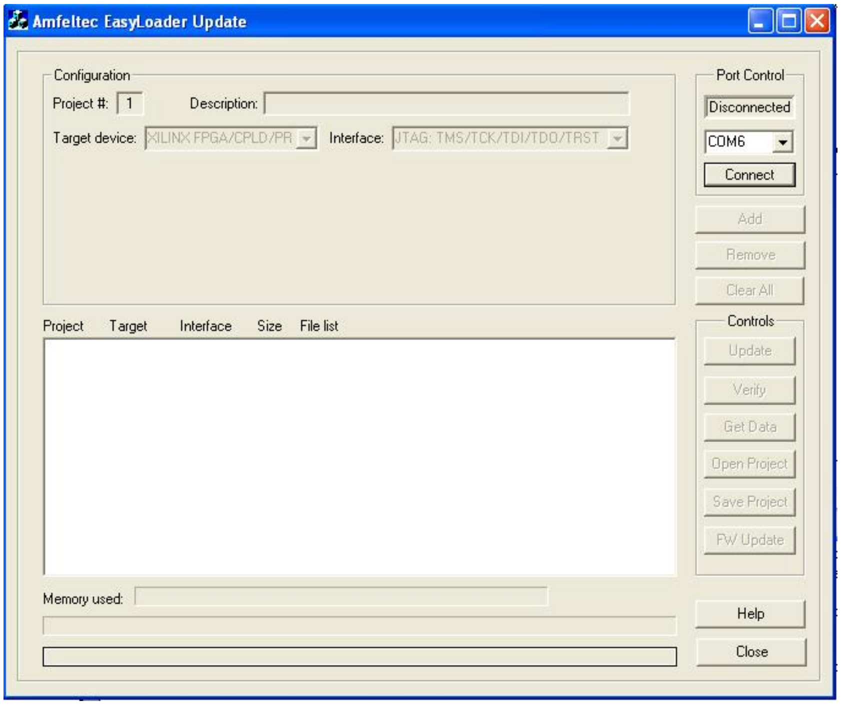
5.1 Update EasyLoader device

This section explains the details of operation of the eLoader with the host computer during configuration steps.

NOTE: During this step, please verify that DIP switch 4 on the eLoader is set to ON position!

5.1.1 Start EasyLoader Update Utility

To start the EasyLoader Update utility, click on Start | Program | Amfeltec | EasyLoader | EasyLoader Update. The following dialog will show up:



Amfeltec EasyLoader Update

Project #: 1

Target device: XILINX FPGA/CPLD/PR

Interface: JTAG: TMS/TCK/TDI/TDO/TRST

Port Control: Disconnected

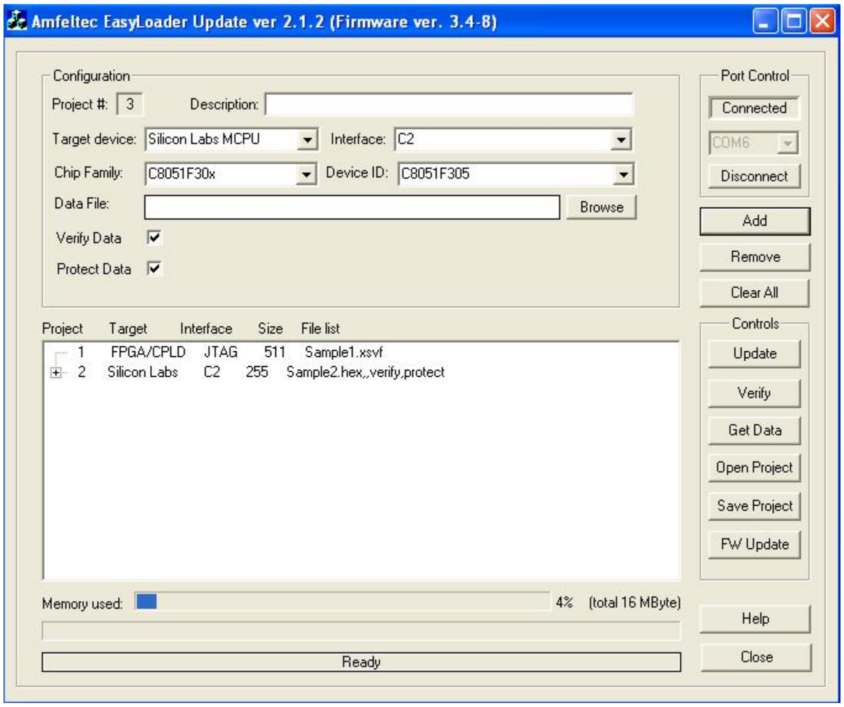
COM6

Figure 3: EasyLoader main dialog

5.1.2 Establish connection with eLoader

Verify that position 4 of the DIP switch on eLoader device is in ON position. This position enable eLoader device to be program using EasyLoader Update application.

Connect eLoader to USB port of your host computer. If your computer was started, you will see flashing GREEN LED on the eLoader.



Amfeltec EasyLoader Update ver 2.1.2 (Firmware ver. 3.4-8)

Configuration

Project #: 3 Description:

Target device: Silicon Labs MCPU Interface: C2

Chip Family: C8051F30x Device ID: C8051F305

Data File:

Verify Data ☑

Protect Data ☑

Port Control: Connected, COM6

Project	Target	Interface	Size	File list
1	FPGA/CPLD	JTAG	511	Sample1.xsvf
2	Silicon Labs	C2	255	Sample2.hex,,verify,protect

Memory used: 4% (total 16 MByte)

Ready

Figure 4: EasyLoader Update main dialog with sample project

The system recognizes eLoader as Serial device. From Port Control section, select port name (COM#) that connects to eLoader device. Press Connect button and EasyLoader Update software will try to establish a connection with the device. If connection succeeded, the connection status will change to "*Connected*" in Port Control section and software will ask you to read contents of the device now. If you select YES, the software will read and show you the contents (see sample contents in Figure 4). Otherwise, the project list will stay empty.

If connection failed to establish, the error message will show up. Please refer to Troubleshooting section for more details.

5.1.3 Project Contents Management

EasyLoader Update application uses term of *Project* to separate different target devices. Before you are going to create multiple projects, you need to understand where you can use single project and where you need to create multiple projects.

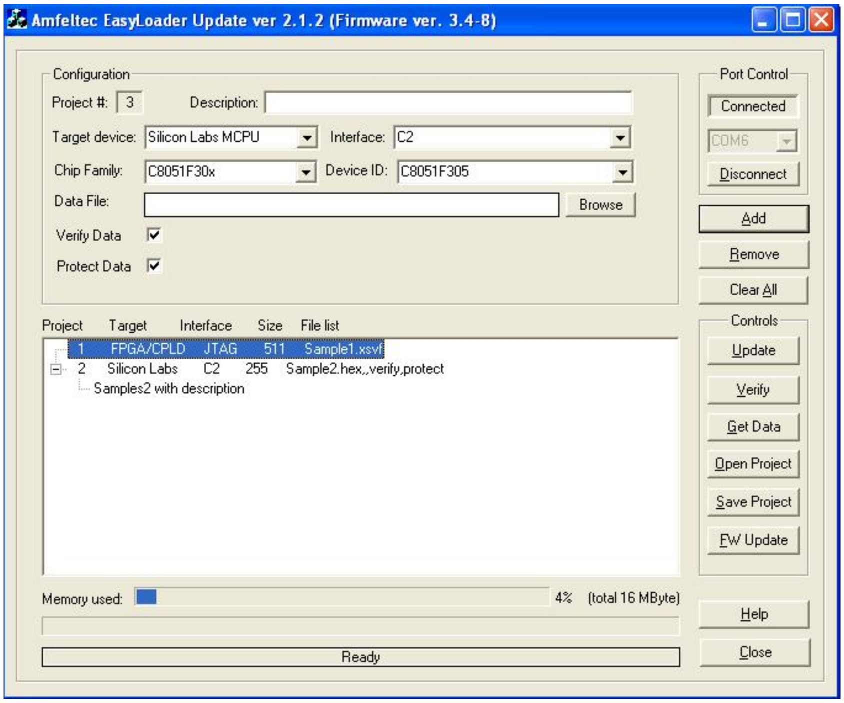
If you would like to use multiple projects in eLoader device, contact Amfeltec support to confirm that the specified target device can be programmed by eLoader device one after another.

5.1.3.1 Add new Project (Add)

This option will allow you to create and add new projects to the eLoader. You will be required to provide different information depending on your target device and interface type (See Appendix A for more details).

- Select the target device and interface type. Depending on your selection, different dialog controls will become visible. Provide all necessary information (see Appendix A) and click on *Add Project*. The EasyLoader application will analyze the data and create the project. You will see it in a project window

- If you want to add another project, you can now select new target device, interface type and provide additional information. When done, click *Add*. The new project will be added after the previous project and application will update the memory used bar.



Amfeltec EasyLoader Update ver 2.1.2 (Firmware ver. 3.4-8)

Configuration

Project #: 3 Description:

Target device: Silicon Labs MCPU Interface: C2

Chip Family: C8051F30x Device ID: C8051F305

Data File:

Verify Data ☑

Protect Data ☑

Project	Target	Interface	Size	File list
1	FPGA/CPLD	JTAG	511	Sample1.xsvf
2	Silicon Labs	C2	255	Sample2.hex,,verify,protect

Samples2 with description

Memory used: 4% (total 16 MByte)

Ready

Port Control

Connected

COM6

Figure 5: eLoader project with description

You can add as many projects as the EasyLoader's memory capacity will allow.

Your eLoader project can include some extra information like project description. This information is hidden by default. If this information exists, it will appear as a second line in a project.

5.1.3.2 Remove Command (Remove)

This option will allow you to remove a project from the list.

If you decided to remove the project, select the project and click Remove button. The project will disappear from the list.

5.1.3.3 Clear All Command (Clear All)

Click on Clear All button in order to clear the project list (all project created before it, will be removed).

5.1.4 Update Command

When all projects are created and you are ready to update eLoader device with a new data, please click on Update button. The application will start to uploading new data into eLoader. The progress bar will show the current status of update.

5.1.5 Get Info Command

This command reads the control information (without data) of all projects stored in eLoader and displays it in the project window.

If you decided to add new project, simply add new project and click on Update button. The application will update eLoader with a new project only.

5.1.6 Verify Command

This command compares the currently created projects with projects that are stored in eLoader.

You can use this command to verify the contents of you device.

5.1.7 Get Data Command

This command reads all the data of all projects stored in the EasyLoader device.

5.1.8 Open Project Command

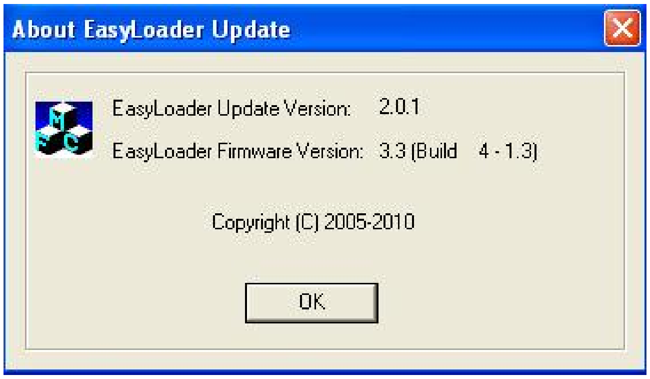
This command open previously saved project list from the file.

5.1.9 Save Project Command

Save current project list into file.

5.1.10 Firmware Update Command (FW Update)

eLoader supports field upgrade firmware functionality. This option allows updating “eLoader” internal firmware by customer for bug fixing or adding additional functionality. In order to check current firmware version, click left top corner of EasyLoader Update software and then click on *About EasyLoader*. The About windows will come up:


About EasyLoader Update

EasyLoader Update Version: 2.0.1

EasyLoader Firmware Version: 3.3 (Build 4 - 1.3)

Copyright (C) 2005-2010

Figure 6: EasyLoader Update utility About dialog

This feature should be used only if Amfeltec support team requests it. The new firmware file has extension *.eld. Please do not modify name of firmware filename.

In order to upgrade firmware, please execute the following steps (we assume that eLoader is connected to the host computer and connection status is *Connected* and DIP switch 4 is set to ON position):

1. Copy new firmware file received from Amfeltec Corp. into temporary directory.

2. Click on *FW Upgrade* button. Software will show the current firmware version and confirm that the operation. Click on YES, to continue.

3. The Open File dialog will ask you for a new firmware file. Select new firmware received from Amfeltec Corp. and click on Open to start the firmware upgrade.

4. If the firmware upgrades succeeded, the windows with new firmware version will show up.

If the firmware upgrade failed, please refer to Troubleshooting section or contact Amfeltec Corp. tech. support!

5.2 Programming Target Device

This section describes details during eLoader normal operation.

NOTE: Please verify that the DIP switch 4 is set to OFF position. This position enables operation with target device.

When all necessary data is stored in the "eLoader", you can then program the target device. "eLoader" doesn't require separate power sources. It receives power from the target device.

After the "eLoader" is connected to the target device via cable, applying power to the target device will initiate the programming/loading sequence. Projects stored in the "eLoader" will be executed one after another until all target devices are programmed.

Two led lights (red and green) will show the current status of the process. This is the complete list of available statuses:

Status	Description
Green LED is blinking and Red LED OFF	Program or verification task in progress
Green LED OFF and Red LED is blinking	Program or verification task failure.
Sequential Green-Red LEDs are blinking	Program and verification is complete.

If any problem happened during programming target device, refer to Troubleshooting section for more details.

6 Troubleshooting

If any problem happened during operation with host PC, the error messages will be printed in a status bar. Please send the output as well as details about the project to Amfeltec tech. support at support@amfeltec.com.

6.1 Failed to establish connection

- Verify that eLoader is connected to host computer. Please look Control Panel to verify that host computer recognize "eLoader" and check what port number assigned to it.
- Unplug eLoader device and plug it back. Check that green LED flashed 3 times
- Verify that DIP switch 4 is set to ON position during operation with the host PC

6.2 Failed to update firmware

- Verify that eLoader connection status is "*Connected*" in Port Control section on the EasyLoader Update utility main dialog.
- Verify that firmware filename is original and didn't corrupted.

6.3 Failed to program target device

The "eLoader" supports debugging mode that allows sending debug messages via mini-USB connector to the host PC during programming/loading operation. This mode slow down "eLoader" operation but at the same time can provide full debug information. For this purpose, you need to connect eLoader to USB port of any PC. Start HyperTerminal application with the following settings:

Baud rate	230400 bps
Data bits	8
Parity	None
Stop bits	1
Flow control	None

eLoader supports 3 levels of debugging that can be enabled by using main dip switch (position 1 and 2) located on top side.

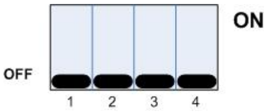
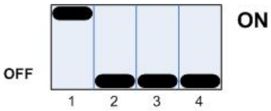
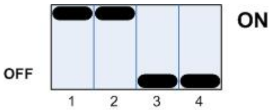
Debug Level	Description	Dip switch position
Level 0	Defines default debug level and prints only main information/header and status of each project	
Level 1	Includes extra debugging information like project header details.	
Level 2	Includes full debug information. WARNING: Please use this option ONLY if you are advised by Amfeltec tech. support.	

Table 1: Debugging mode switch setting

7 Appendix A 10-pin connector

eLoader device uses 10 pin connector (Figure ??) to connect to target device.

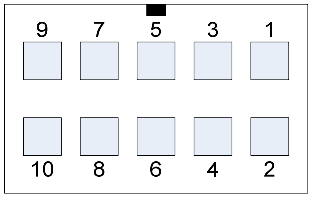


Figure 7: Connector (10 pin) to target device

The following tables show pin assignment of 10-pin connector depending of selected target device and interface type (direction OUT means output from eLoader)

7.1 Pin-out for JTAG interface

Pin #	Pin Name	Direction	Description
1	TCLK	OUT	
2	N/C	N/C	
3	TDO	IN	
4	VCC	P	Power from target
5	TMS	OUT	
6	N/C	N/C	
7	TRST	OUT	
8	N/C	N/C	
9	TDI	OUT	
10	GND	P	Ground from target

Table 2: Pin-out for JTAG interface

7.2 Pin-out for JTAG and I2C interfaces

Pin #	Pin Name	Direction	Description
1	TCLK	OUT	
2	ME	OUT	Master access indication: set ‘1’ when access to I2C bus
3	TDO	IN	
4	VCC	P	
5	TMS	OUT	
6	SCLK	OUT	
7	TRST	OUT	
8	SDA	B	
9	TDI	OUT	
10	GND	P	

Table 3: Pin-out for JTAG and I2C interface (multiple interface configurations)

7.3 Pin-out for JTAG and SPI interface

Pin #	Pin Name	Direction	Description
1	TCLK	OUT	
2	ME	OUT	Master access indication: set ‘1’ when access to SPI bus
3	TDO/DO	IN	
4	VCC	P	
5	TMS	OUT	
6	SCLK	OUT	
7	TRST	OUT	
8	CS	B	
9	TDI/DI	OUT	
10	GND	P	

Table 4: Pin-out for JTAG and SPI interface (multiple interface configurations)

7.4 Pin-out for I2C interface

Pin #	Pin Name	Direction	Description
1	N/C	N/C	
2	ME	OUT	Master access indication: set ‘1’ when access to I2C bus
3	N/C	N/C	
4	VCC	P	
5	N/C	N/C	
6	SCLK	OUT	
7	N/C	N/C	
8	SDA	B	
9	N/C	N/C	
10	GND	P	

Table 5: Pin-out for I2C interface

7.5 Pin-out for SPI interface

Pin #	Pin Name	Direction	Description
1	N/C	N/C	
2	ME	OUT	Master access indication: set ‘1’ when access to SPI bus
3	DO	IN	
4	VCC	P	
5	N/C	N/C	
6	N/C	N/C	
7	SCLK	OUT	
8	CSL	OUT	
9	DI	OUT	
10	GND	P	

Table 6: Pin-out for SPI interface

7.6 Pin-out for Altera FPGA/EPCSxxx devices

Pin #	Pin Name	Direction	Description
1	DCLK	OUT	
2	N/C	N/C	
3	DATA	IN	
4	VCC	P	
5	nCONFIG	OUT	
6	N/C	N/C	
7	nCE	OUT	
8	nCS	OUT	
9	ASDI	OUT	
10	GND	P	

Table 7: Pin-out for Altera FPGA/EPCSxxx devices

7.7 Pin-out for Atmel AT17LVxxx devices

Pin #	Pin Name	Direction	Description
1	SCLK	OUT	
2	N/C	N/C	
3	N/C	N/C	
4	VCC	P	
5	N/C	N/C	
6	SER_EN	OUT	
7	N/C	N/C	
8	DATA	OUT	
9	N/C	N/C	
10	GND	P	

Table 8: Pin-out for Atmel AT17LVxxx devices

7.8 Pin-out for Silicon Labs MPU

Pin #	Pin Name	Direction	Description
1	N/C	N/C	
2	N/C	N/C	
3	N/C	N/C	
4	VCC	P	
5	N/C	N/C	
6	C2CK	OUT	
7	N/C	N/C	
8	C2D	IN/OUT	
9	N/C	N/C	
10	GND	P	

Table 9: Pin-out for Silicon Labs MPU

7.9 Pin-out for Microchip MPU

Pin #	Pin Name	Direction	Description
1	PGC	OUT	
2	N/C	N/C	
3	PGD	B	
4	VCC	P	
5	N/C	N/C	
6	N/C	N/C	
7	N/C	N/C	
8	N/C	N/C	
9	MCLR	OUT	
10	GND	P	

Table 10: Pin-out for Microchip MPU

7.10 Pin-out for EXAR XRP77xx Family

Pin #	Pin Name	Direction	Description
1	CE0	OUT	
2	ME	OUT	
3	CE1	OUT	
4	LOC_PWR	P	
5	CE2	OUT	
6	SCLK	OUT	
7	CE3	OUT	
8	SDA	B	
9	CE4	OUT	
10	GND	P	

Table 10: Pin-out for EXAR XRP77xx Family

7.11 Pin-out for TI MSP430 Family

Pin #	Pin Name	Direction	Description
1	TCLK	OUT	
2	N/C	N/C	
3	TDO/TDI	IN/OUT	
4	LOC_PWR	P	
5	N/C	N/C	
6	N/C	N/C	
7	N/C	N/C	
8	N/C	N/C	
9	N/C	N/C	
10	GND	P	

Table 11: Pin-out for TI MSP430 Family (Spy-Bi-Wire)

8 Appendix B: DIP Switch Description

“eLoader” uses multipurpose dip switch for operation and debugging purposes. The default manufacture setting is OFF for all positions.

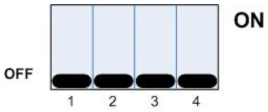


Figure 8: Multipurpose DIP switch

Position	Description
4	This position enables configuration or operation modes. If the position 1 is set to ON, the configuration mode is enabled. Otherwise, the operation mode is enabled.
3	Currently not used
1-2	These positions enable or disable different operation debug modes. For more details, please refer to troubleshooting section.

9 Appendix C: EasyLoader Configurator

EasyLoader configuration utility (*ELoaderConfig*) is used to create custom configuration for target device. The utility includes in an installation package.

To start ELoaderConfig, click on Start | Program | Amfeltec | EasyLoader X.Y.Z | ELoaderConfig. The main dialog will come up (Figure 9).

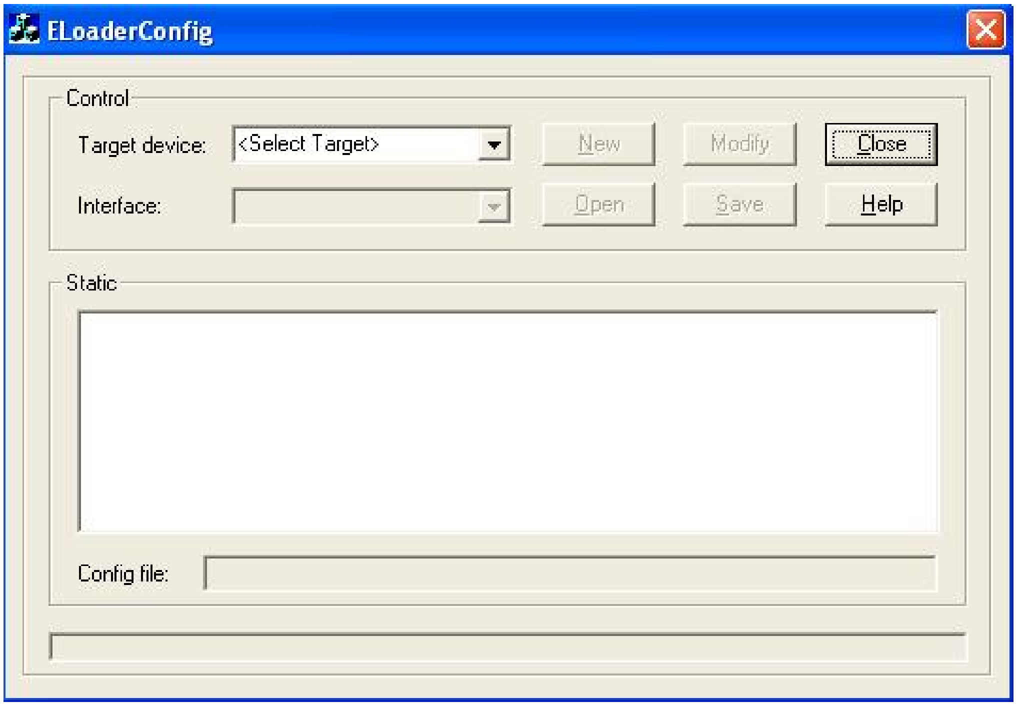


Figure 9: ELoaderConfig utility main dialog

Select *Target device* and *Interface type*. ELoaderConfig provides configuration only for the parts that needs special configuration file for “eLoader” For example I2C devices that has different parameters or SPI devices. Created by this Utility configuration file has *.ecfg extension and has interface and timing parameters that specific for target part.

The configuration utility supports four commands: *New*, *Open*, *Modify* and *Save*.

The *New* command will open sequence of dialogs (**Error! Reference source not found.**) that will ask detail information about target device. This information will used later in order to properly program the target device.

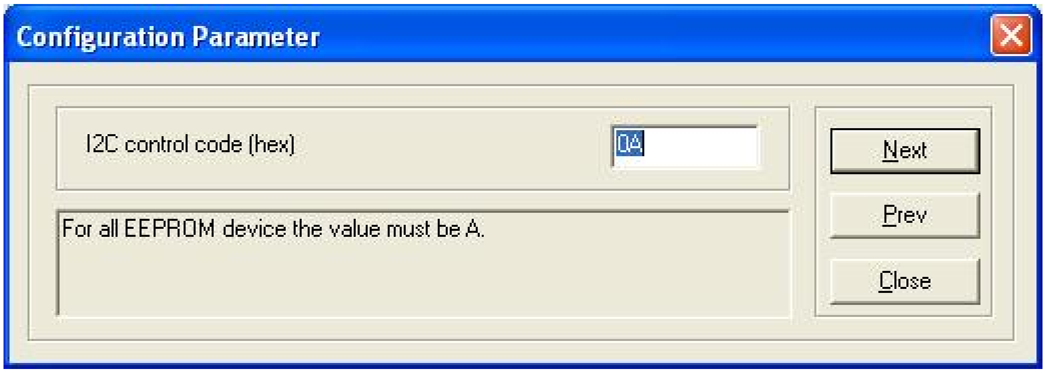
The *Open* command will read previously created configuration file and will show it in a configuration window.

The *Modify* command will provide you options to modify the configuration parameters.

The *Save* command will save current configuration parameters into file.

9.1 EasyLoader Custom Configuration Dialog

EasyLoader Custom Configuration dialog displays single parameter of the target device and wait for the value.



I2C control code (hex) 0A

For all EEPROM device the value must be A.

Figure 10: EasyLoader Custom Configuration dialog

When you click on *Next* button, the current configuration parameter will be saved in configuration structure and next parameter will show up.

When you click on *Prev* button, the current configuration parameter will be saved in configuration structure and previous parameter will show up.

When you click on *Close* button, the current configuration parameter will be ignore and control will be returned to the main dialog.

9.2 EasyLoader Export Configuration Command

EasyLoader Configurator includes feature that allowed to user to export target device configuration into text file.

To execute this command, click on top left corner of EasyLoader Configurator main dialog and then *Export Configuration*.

9.3 I2C Configuration parameters

The following list of parameter describe the required information about I2C target device that you need to provide in order properly program the device.

I2C Parameter	Note
Total flash memory size (Kbytes)	
Number of bits in a flash address (bits)	
Number of address bytes (1/2/3)	
Flash page size (bytes)	
I2C control code (hex)	For all EEPROM devices the value must be “A”
I2C control code mask (hex)	For all EEPROM devices the value must be “F”
I2C control code shift (bits)	For all EEPROM devices the value must be “4”
I2C device address (hex)	
I2C device address mask (hex)	If device address mask is zero, device doesn’t use any device address bits
I2C device address shift (bits)	
I2C upper address bits mask (hex)	I2C upper address bits mask in device address
I2C upper address bits shift (bits)	I2C upper address bits shift in device address (bits)
I2C I/O noactive (hex)	
I2C not used byte value (hex)	
Clock frequency (kHz)	
Clock high time (tHigh) (ns)	
Clock low time (tLow) (ns)	
Start condition hold time (tHD_STA) (ns)	
Start condition setup time (tSU_STA) (ns)	
Data input hold time (tHD_DAT) (ns)	
Data input setup time (tSU_DAT) (ns)	
Stop condition setup time (tSU_STO) (ns)	
Bus free time (tBuf) (ns)	
Write cycle time (tWR) (ms)	