

ds30 Loader

Welcome to the home of the ds30 Loader!

What this is

It's an 100% open source bootloader for PIC18F, PIC24F, PIC24H, dsPIC30F and dsPIC33F familys of MCUs from Micropchip. It supports all devices in each family out of the box (thoose in production), only minor adjustments need to be done in firmware.

The firmware is programmed in asm/asm30 and comes with a preconfigured MPLAB-project. The GUI is written in C#.

Firmware features

	PIC18F	PIC18FJ	PIC24F	PIC24FJ	PIC24H	dsPIC30F	dsPIC33F
Flash write	X	coming	X	X	X	X	X
Flash write verification	X	coming	X	X	X	X	X
EEPROM write	X	coming	X	n/a	n/a	X	n/a
EEPROM write verification	X	coming	X	n/a	n/a	X	n/a
Config write	X	coming	X	n/a	X	X	X
Config write verification	-	coming	-	n/a	-	-	-
Open source	X	coming	X	X	X	X	X
Single fw for all devices	X	coming	X	X	X	X	X
UART only	X	coming	X	X	X	X	X
Easy configuration	X	coming	X	X	X	X	X
Checksum control	X	coming	X	X	X	X	X
Size	256B (4 pages)	coming	384B (4 rows)	1,5kB (1 page)	1,5kB (1 page)	384B (4 rows)	1,5kB (1 page)
Status	Tested	coming	Untested	Stable	Untested	Stable	Stable

GUI features

- open source
- small size
- doesn't need installation
- checks hex-file for code that would overwrite the bootloader
- checks hex-file for goto at 0x00
- possible to select any com-port and baudrate
- remembers your settings
- requires.net framework 2.0

Latest news 2009-07-20

GUI 1.0.0

- * Added support for PIC24H
- * Split PIC24F to PIC24F and PIC24FJ
- * Added support for PIC18F
- * Fixed som copy/paste errors

Firmware PIC18F 0.9.0

- * First release

Firmware PIC24F 0.9.0

- * First release

Firmware PIC24FJ 1.0.0

- * Added flash verification
- * Removed PIC24FxxKAyyy stuff, se separate fw
- * Corrected buffer variable location to .bss

* Buffer is now properly sized

Firmware PIC24H 0.9.0

* First release

Firmware dsPIC30F 2.0.0

* Added flash & eeprom verify

* Size of bl is now 4 rows instead of 3

* Command decides what to do instead of address

Firmware dsPIC33F 1.0.0

* Added flash verification

* Corrected buffer variable location to .bss

* Buffer is now correctly sized

Supported devices PIC18F

- | | | |
|---------|---------|---------|
| • 1220 | • 2553 | • 4525 |
| • 1230 | • 2580 | • 4550 |
| • 1320 | • 2585 | • 4553 |
| • 1330 | • 25K20 | • 4580 |
| • 13K22 | • 2620 | • 4585 |
| • 13K50 | • 2680 | • 45K20 |
| • 14K22 | • 2682 | • 4620 |
| • 14K50 | • 2685 | • 4680 |
| • 2220 | • 26K20 | • 4682 |
| • 2221 | • 4220 | • 4685 |
| • 2320 | • 4221 | • 46K20 |
| • 2321 | • 4320 | • 6520 |
| • 2331 | • 4321 | • 6527 |
| • 23K20 | • 4331 | • 6622 |
| • 2420 | • 43K20 | • 6627 |
| • 2423 | • 4420 | • 6628 |
| • 2431 | • 4423 | • 6722 |
| • 2450 | • 4431 | • 6723 |
| • 2455 | • 4450 | • 8520 |
| • 2458 | • 4455 | • 8527 |
| • 2480 | • 4458 | • 8622 |
| • 24K20 | • 4480 | • 8627 |
| • 2520 | • 44K20 | • 8628 |
| • 2523 | • 4520 | • 8722 |
| • 2525 | • 4523 | • 8723 |
| • 2550 | | |

Supported devices PIC24F

- | | | |
|-----------|-----------|-----------|
| • 04KA200 | • 08KA101 | • 16KA101 |
| • 04KA201 | • 08KA102 | • 16KA102 |

Supported devices PIC24FJ

- | | | |
|-----------|------------|------------|
| • 16GA002 | • 96GA006 | • 192GA106 |
| • 16GA004 | • 96GA008 | • 192GA108 |
| • 32GA002 | • 96GA010 | • 192GA110 |
| • 32GA004 | • 128GA006 | • 192GB106 |
| • 48GA002 | • 128GA008 | • 192GB108 |
| • 48GA004 | • 128GA010 | • 192GB110 |
| • 64GA002 | • 128GA106 | • 256GA106 |
| • 64GA004 | • 128GA108 | • 256GA108 |
| • 64GA006 | • 128GA110 | • 256GA110 |
| • 64GA008 | • 128GB106 | • 256GB106 |
| • 64GA010 | • 128GB108 | • 256GB108 |
| • 64GB106 | • 128GB110 | • 256GB110 |
| • 64GB108 | | |

- 64GB110

Supported devices PIC24H

- | | | |
|------------|-------------|--------------|
| • J12GP201 | • J64GP202 | • J128GP202 |
| • J12GP202 | • J64GP204 | • J128GP204 |
| • J16GP304 | • J64GP206 | • J128GP206 |
| • J32GP202 | • J64GP210 | • J128GP210 |
| • J32GP204 | • J64GP210A | • J128GP210A |
| • J32GP302 | • J64GP502 | • J128GP306 |
| • J32GP304 | • J64GP504 | • J128GP310 |
| | • J64GP506 | • J128GP310A |
| | • J64GP506A | • J128GP502 |
| | • J64GP510 | • J128GP504 |
| | • J64GP510A | • J128GP506 |
| | | • J128GP506A |
| | | • J128GP510 |
| | | • J128GP510A |
| | | • J256GP206 |
| | | • J256GP210 |
| | | • J256GP610 |

Supported devices dsPIC30F

- | | | |
|--------|--------|--------|
| • 1010 | • 3010 | • 5011 |
| • 2010 | • 3011 | • 5013 |
| • 2011 | • 3012 | • 5015 |
| • 2012 | • 3013 | • 5016 |
| • 2020 | • 3014 | • 6010 |
| • 2023 | • 4011 | • 6011 |
| | • 4012 | • 6012 |
| | • 4013 | • 6013 |
| | | • 6014 |
| | | • 6015 |

Supported devices dsPIC33F

- | | | |
|------------|-------------|--------------|
| • J06GS101 | • J64GP202 | • J128GP202 |
| • J06GS102 | • J64GP204 | • J128GP204 |
| • J06GS202 | • J64GP206 | • J128GP206 |
| • J12GP201 | • J64GP306 | • J128GP206A |
| • J12GP202 | • J64GP310 | • J128GP306 |
| • J12MC201 | • J64GP706 | • J128GP306A |
| • J12MC202 | • J64GP706A | • J128GP310 |
| • J16GP304 | • J64GP708 | • J128GP706 |
| • J16GS402 | • J64GP710 | • J128GP708 |
| • J16GS404 | • J64GP802 | • J128GP710 |
| • J16GS502 | • J64GP804 | • J128GP802 |
| • J16GS504 | • J64MC202 | • J128GP804 |
| • J16MC304 | • J64MC204 | • J128MC202 |
| • J32GP202 | • J64MC506 | • J128MC204 |
| • J32GP204 | • J64MC508 | • J128MC506 |
| • J32GP302 | • J64MC510 | • J128MC510 |
| • J32GP304 | • J64MC510A | • J128MC706 |
| • J32MC202 | • J64MC706 | • J128MC708 |
| • J32MC204 | • J64MC710 | • J128MC710 |
| • J32MC302 | • J64MC802 | • J128MC802 |
| • J32MC304 | • J64MC804 | • J128MC804 |
| | | • J256GP506 |
| | | • J256GP510 |
| | | • J256GP710 |
| | | • J256MC510 |
| | | • J256MC710 |

Downloads

Firmware PIC18F 0.9.0
 Firmware PIC24F 0.9.0
 Firmware PIC24FJ 1.0.0
 Firmware PIC24H 0.9.0
 Firmware dsPIC30F 2.0.0
 Firmware dsPIC33F 1.0.0
 GUI 1.0.0
[ds30 Loader 090720.zip](#) (309 kB)

Usage

1. Modify firmware settings

This steps involves adapting the firmware code to your hardware. Open the firmware MPLAB project and search for xxx in settings.inc and you'll find all lines you may need to alter. Also read the instructions in ds30loader.s.

2. Download firmware

Download the firmware to your device using your favorite programmer.

3. Prepare your application

You need to make sure there's a goto placed at location 0x00 in you application. In most cases your linker already does this for you. To check if it does you can pick *Program Memory* from the *View-menu* in MPLAB. It'll look something like this:

	Line	Address	Opcode	Dis:
➡	1	0000	047F40	goto 0x007f40
	2	0002	000000	nop
	3	0004	007FEA	DefaultInterrupt
	4	0006	007FEA	DefaultInterrupt
	5	0008	007FEA	DefaultInterrupt
	6	000A	007FEA	DefaultInterrupt
	-	----	-----	- - - -

4. Download the application to the device

- Start the GUI
- Select the desired communication settings and pick your hex-file
- Press the download button
- Reset your device
- Wait until write completes and you're finished

Support

Please visit the supportthreads at the Microchip forum:

PIC18F:

PIC24F: <http://www.microchip.com/forums/tm.aspx?m=433695>

PIC24H:

dsPIC30F: <http://www.microchip.com/forums/tm.aspx?m=333711>

dsPIC33F: <http://www.microchip.com/forums/tm.aspx?m=433367>

Svenska elektronikforumet (swedish only)

<http://elektronikforumet.com/forum/>

FAQ

Q: Why isn't my device supported?

A: Let me know and I can probably add support for it.

Q: How do I get the bootloader into my device?

A: You need to use an ordinary pic programmer such as the ICD2 or any cheaper third party programmer.

Q: Why do I get "The hex-file contains code that will overwrite the bootloader"?

A: If your application is big enough it will reach the end of the flash program memory where the bootloader is stored. You need to decrease the size of your application.

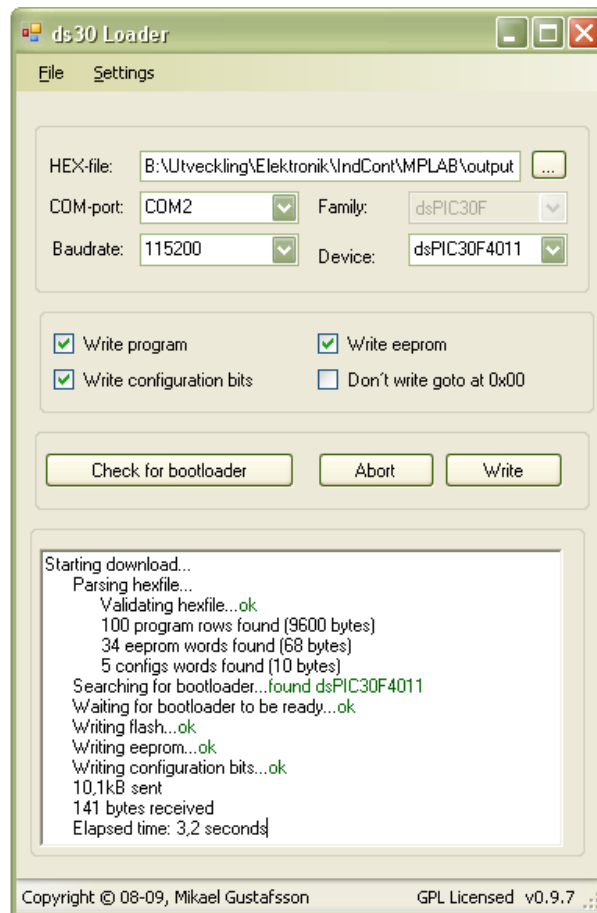
Q: Why do I get "Hex-file contains more config locations than the device has"?

A: If you use export a hex-file from Mplab you might get this. Please use the outputted hex-file from the linker or compiler.

Q: Will you add support for PIC32 devices?

A: Probably not, at the moment I don't know very much about the architecture

Screenshot



Links

Microchip
<http://www.microchip.com>

Microchip forums
<http://www.microchip.com/forums/>

Microsoft Visual Studio express editions
<http://www.microsoft.com/express/download/>

Contact

ICQ 19123278
Email micke82 at hotmail dot com

Old news

2009-07-12

GUI 0.9.9(still)

- * Fixed no configs detected for dsPIC33F
- * Fixed possible index exception in ParseHex()
- * Fixed dsPIC33F config write, byte instead of word

Firmware dsPIC30F 1.0.1

- * Removed initialization of stack limit register
- * Added baudrate error check
- * BRG is rounded instead of truncated

Firmware dsPIC33F 0.9.4

- * Removed initialization of stack limit register
- * Added code to restore pps settings
- * BRG is rounded instead of truncated
- * Fixed config write, byte instead of word

Firmware PIC24F 0.9.1

- * Removed initialization of stack limit register
- * Added baudrate error check
- * BRG is rounded instead of truncated
- * Removed frc+pll option
- * Added pps code

2009-07-06

Firmware PIC24F 0.9.0

- * First release (successfully tested on PIC24FJ128GA010)

GUI 0.9.9

- * Fixed bug in ParseHex() causing rows in the end to not be programmed
- * Added support for PIC24F

2009-06-26

Firmware dsPIC30F 1.0.0

- * Added watchdog clear
- * Sends firmware version
- * Disables uart transmit on exit
- * Clear uart interrupt flags on exit
- * Tweaked code

Firmware dsPIC33F 0.9.0

- * First release (successfully tested on dsPIC33F256GP710)
- * Supports flash and config programming
- * Occupys 1,5kB (1 page)

GUI 0.9.8

- * Added support for dsPIC33F devices
- * EEPROM buffer is now properly sized
- * Compatible with previous fw30 0.9.4
- * Larger device combobox (makes it easier to find your device)
- * Remembers window position and size

* 2009-06-06 Firmware 0.9.4 + GUI 0.9.7

- * Added support for programming of eeprom
- * Better error handling for checksum error
- * Added chek for config count
- * GUI remembers all settings now
- * Not compatible with previous versions
- * VB gui is longer updated, latest version is 0.9.5

* 2009-05-30 GUI 0.9.6

- * Fixed checksum calc for configs

* 2009-05-26 Firmware 0.9.3

- * Simpler setup of the firmware
- * All settings moved to settings.inc, nothing needs to be changed in actual firmware code for the average user

- * Better directory structure for firmware
- * Binaries are now put in a separate directory
- * Compatible with the previous release
- * Programming time of the actual bootloader firmware is reduced

2009-05-09 GUI 0.9.5

- * Fixed broken support for dsPIC30F3013
- * Added support for 1010, 2020, 2023, 5016 and 6015
- * New code for enumerating com-ports in the vb-gui

2009-02-05 GUI 0.9.4

- * Fixed a bug that caused invalid goto on devices with flash size > 0xffff

2009-02-04 GUI 0.9.3

- * Fixed bug in C# gui in ParseHex()
- * C# gui now remembers the settings

2009-01-09 Version 0.9.2

- * Now includes C# version of the gui.
- * Most significant change is a 65% decrease of programming time (C# edition gui only).

Both algorithm and implementation is optimized.

A 110kB hex-file (~30kB actual data transmitted) takes only 5 seconds to program at 115,2kbps.

- * This new 0.9.2 firmware is not compatible with the old 0.9.0 gui.

2008-04-27 Version 0.9.0

Initial release to the public.