ds30 Loader
GUI manual

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Introduction

ds30 Loader

ds30 Loader is a boot loader supporting PIC12, PIC16, PIC18, PIC24, and dsPIC families of MCUs from Microchip. It supports all devices in each family out of the box (those in production). The firmware is written in assembler. The PC clients run on Windows, Linux, and Mac OS X.

Prerequisites and Requirements

.NET framework 2.0 or Mono

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Getting started

Requirements

ds30 Loader GUI requires a .NET framework to run. For Windows t here are two different frameworks available; .NET framework from Microsoft and Mono sponsored by Novell. For Linux and MAC OS X, only Mono is available. Mono is constantly being developed and bug fixed. It is recommended to use the latest version. Download links are available in appendix A.

Installation

The ds30 Loader GUI does not require to be installed, it can be run directly from the bin director. However, for Windows users an installation is included for those people who would like the application to be installed and have short cuts created on the start menu.

Starting

Windows

- Double click ds30LoaderGUI.exe from Explorer
- Click shortcut on the start menu
- Use run on the start menu, browse to ds30LoaderGUI.exe
- Start from command prompt

Linux

Run command: mono ds30LoaderGui.exe

MAC OS X

Run command: mono ds30LoaderGUI.exe
If there are graphics related problems different environment variables can be set to change how mono does graphics:
export MONO_MWF_USE_QUARTZ_BACKEND=1
export MONO_MWF_USE_CARBON_BACKEND=1
export MONO_MWF_MAC_FORCE_X11=1

First start

When started the first time it will look something like the screenshot to the right, depending on your operating system set-up.

If you are an experienced boot loader user you will probably want to switch to advanced mode on the menu View\Advanced mode. Doing so will enable more settings and features.
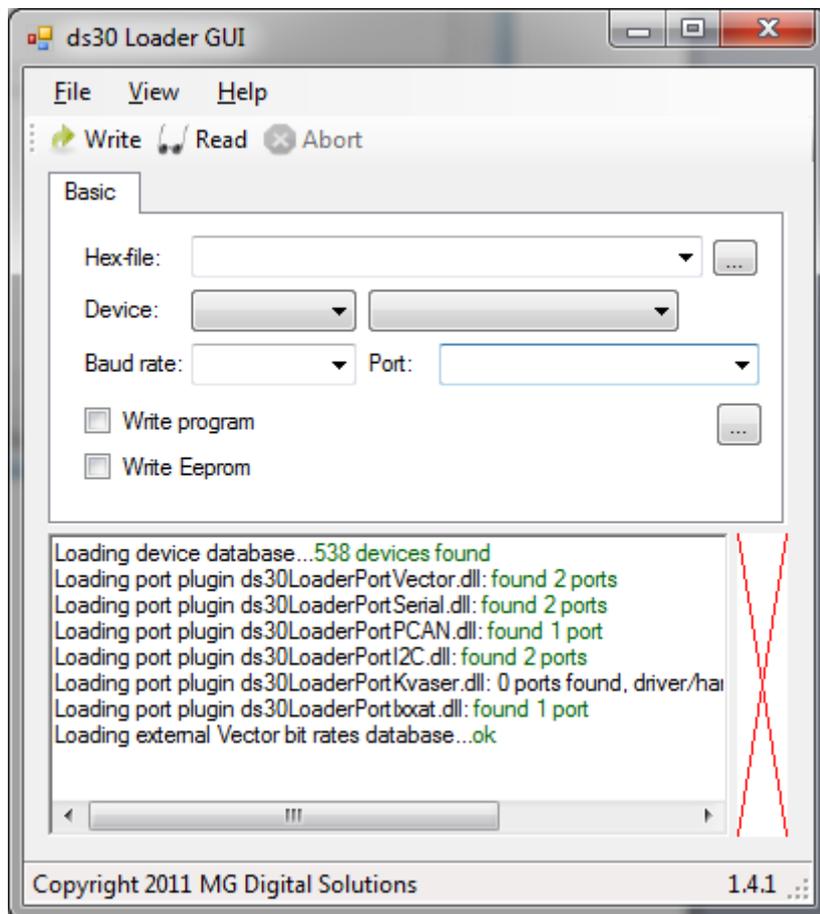
Window elements

The ds30 Loader GUI consists of 5 main parts; the menu, the toolbar, the tab pages, the output text box and the graphical hex-file representation.

Menus

File\Exit

Saves all settings and closes the application.

Options\Debug mode

When debug mode is enabled, additional information is outputted during parsing of a hex-file and during write. This option is normally only used when looking for causes of boot loader malfunction. When toggled, the hex-file is re-parsed.

Options\Reset all settings to default

When clicked, all settings are set to their default values for the current file. Text boxes and drop down boxes retain their values.

Commands\Abort

Aborts the current write, read, or check for boot loader operation. This command is also available as a toolbar button.
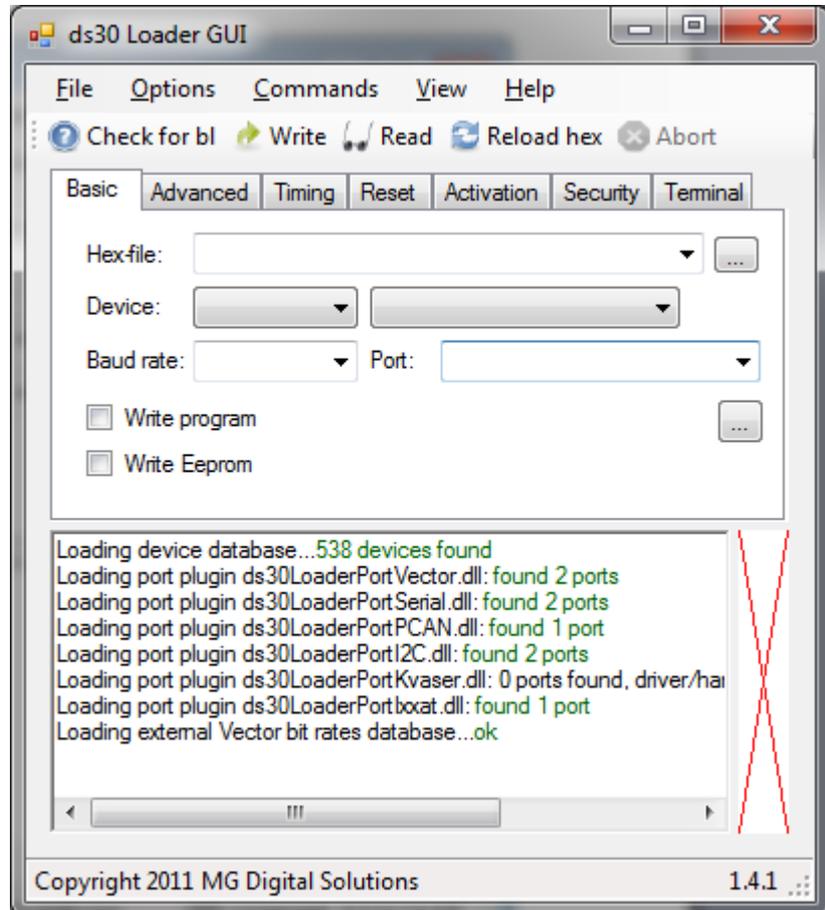
Commands\Write

Initiates a write operation. If write program, write eeprom and write configs are all unchecked a message box will appear saying "Nothing to do". This command is also available as toolbar button.

If poll time is set to lower than 100ms, the applications process priority is raised to above normal. The priority is restored after write.

If "Switch to after write" is checked in the Terminal tab, the terminal tab is shown after a successful write and the port is opened.

After write, successful or not, the user application is loaded after the time out time specified in firmware.

Commands\Check for boot loader

Sends the hello command to the boot loader and displays firmware and device information if it is received properly. A write cannot be issued without first resetting the device first. But the user application is still loaded after the time out time.

Commands\Reparse hex-file

Reload the current hex-file.

Commands\Read

Reads the flash and eeprom memory contents and exports them to a hex file.

Commands\Create console command

Creates a command string that can be used with ds30 Loader console. The command is outputted in the info textbox and copied to the clipboard.

View\Always on top

When checked, the window stays on top of other windows even when not active.

View\Advanced mode

When enabled all available options are made visible.

View\Info window

Open a window that displays information about the selected device and hex file.

View\Settings directory

Opens the directory where the setting files are stored.

Help\About…

Opens the about window.

Toolbar buttons

The toolbar buttons have the same function as the menu items with the same name.

Tab pages

For detailed information about the settings, refer to the ds30 Loader main manual.

Basic

This page contains all settings that are required for proper operation

Hex-file

This is the file that is to be written. There are two ways to select a new file. Pressing the "…"-button opens up the open file dialogue. Hex files can also be dragged and dropped into the ds30 Loader GUI window.

There are two ways to remove recent files. The easiest way is to right click the list and select "Remove from list"; this will remove the currently selected file. The other is to select "Settings directory" from the View menu, close ds30 Loader GUI and then remove the unwanted recent file xml files.

Family & device

Chosen device and family are used to parse the hex-file correctly. When device or family is changed, the hex-file is re parsed.

Baud-/bit rate

If the desired rate isn't available, it may be possible to specify a custom rate depending on which port type is selected. See the ds30 Loader main manual for additional information.

PIC ID

It can be entered as decimal (example 10) or hex (example 0xa). See the ds30 Loader main manual for additional information.

GUI ID

This can be entered as decimal (example 10) or hex (example 0xa). See the ds30 Loader main manual for additional information.

Port

Port used to communicate with the boot loader. If the desired serial port is not available in the drop down list it is possible to manually type in the port name.

"…"-button

When pressed a configuration window is opened for the selected port. Not all ports have a configuration window, when that is the case the button is disabled.

Write flash

See the ds30 Loader main manual.

Write eeprom
This is disabled if the chosen hex-file does not contain any eeprom memory locations. See the ds30 Loader main manual for additional information.

Read program
When checked, the flash memory is read during a read operation.

Read eeprom
When checked, the eeprom memory is read during a read operation.

Advanced

Don't write goto to the user application
See the ds30 Loader main manual.

Allow overwrite of boot loader
See the ds30 Loader main manual.

Write configs
See the ds30 Loader main manual.

Custom boot loader
See the ds30 Loader main manual.

Auto baud rate
See the ds30 Loader main manual.

Echo verification
See the ds30 Loader main manual.

Put CRC before goto
See the ds30 Loader main manual.

Don't write empty pages
See the ds30 Loader main manual.

Don't set goto to bl at 0x00
See the ds30 Loader main manual.

Timing

Hello timeout
See the ds30 Loader main manual.

Poll time
See the ds30 Loader main manual.

Timeout
See the ds30 Loader main manual.

Delay after port open
See the ds30 Loader main manual.

Reset

Manual
When checked, the user is responsible to get the device into boot loading state.

RTS
See the ds30 Loader main manual.

DTR
See the ds30 Loader main manual.

Command
See the ds30 Loader main manual.

ID
This option is only available for CAN ports and when reset command is selected. This can be entered as decimal (example 10) or hex (example 0xa). See the ds30 Loader main manual for additional information.

DLC
This option is only available for CAN ports and when reset command is selected. See the ds30 Loader main manual for additional information.

Baud rate
See the ds30 Loader main manual.

Activation

Manual
When checked, the user is responsible to activate the device.

RTS
See the ds30 Loader main manual.

DTR

See the ds30 Loader main manual.

Security

Encrypted hex file
This is checked if the loaded hex file contains encrypted data.

Signed hex file
This is checked if the loaded hex file contains signed data.

IV Counter
If the hex file contains encrypted data the iv counter is displayed

Password
See the ds30 Loader main manual.

Save password
Check this if you want the password to be remembered. It is not stored in a safe way.

Terminal

Baud rate
The baud rate used to communicate with the firmware. If auto baud rate is not checked, the baud rate must match the baud rate set in firmware.

Open
Opens the port specified on the basic page.

Close
Closes the port

RTS
When checked the RTS pin is activated. This option is only enabled for serial ports.

DTR
When checked the RTS pin is activated. This option is only enabled for serial ports.

Tx text
Transmit of text, type the text and press enter to send.

Tx hex
Transmit of data, type the data and press enter to send. The format of the data is hexval1;'string';"string"….
Example hex only: 0;11;f;ab;3e
Example strings only: 'Hello';"Reset"
Example mixed: a5;'Reset'

\r \n \0
When checked return feed, newline, and null character respectively are appended to the string. Only for text transmission.

Clear Rx
Clears the receive text box

Switch to after write
When checked, the terminal page is showed and the port is opened after a successful write operation.

Clear rx on close
When checked, the rx textbox is cleared when the terminal is closed.

Output text box

Information, warnings and errors are outputted to this text box.

Graphical hex-file representation

This bar represents the entire device flash memory. Eeprom and configs memory are not shown. Because the boot loader size is unknown until communication has been established it may be partly incorrect. Colours:
- Green – user application
- Orange – boot loader
- Red – colliding user application and boot loader

Distribution settings

The settings file contains a section called DefaultStartSettings, the values in this section can be manually modified in a text editor to make restrictions of the settings in the GUI. This is useful when GUI is distributed to customers. The settings.xml must be placed together with the GUI binary.

Appendix A – Links

ds30 Loader website
http://www.ds30loader.com

ds30 Loader free edition website
http://mrmackey.no-ip.org/elektronik/ds30loader/

Microsoft .NET Framework Version 2.0
http://www.microsoft.com/sv-se/download/details.aspx?id=1639

Mono / MonoDevelop
http://www.mono-project.com