

mikroProg Suite™ for PIC®

programming software



mikroProg Suite™ for PIC® is a free software used for programming all of Microchip® microcontroller families, including PIC10®, PIC12®, PIC16®, PIC18®, dsPIC30/33®, PIC24® and PIC32®. It features a user friendly interface with simple to use options and menus.

 **MikroElektronika**
DEVELOPMENT TOOLS | COMPILERS | BOOKS



TO OUR VALUED CUSTOMERS

I want to express my thanks to you for being interested in our products and for having confidence in MikroElektronika.

The primary aim of our company is to design and produce high quality electronic products and to constantly improve the performance thereof in order to better suit your needs.

A handwritten signature in white ink, appearing to read 'N. Matic', is positioned on the right side of the page. The signature is fluid and cursive, with a large initial 'N' and 'M'.

Nebojsa Matic
General Manager

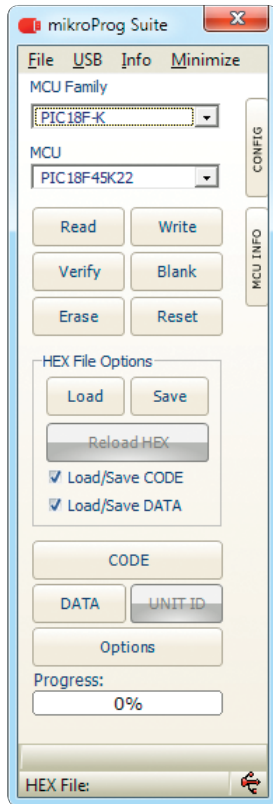
Table of contents

Introduction to mikroProg Suite™ for PIC®	4	step 7 - Finish upload	12
Main window	5	3. Menus	13
1. Installation	6	File menu	13
step 1 - Start installation	6	USB menu	13
step 2 - Licence agreement	7	Info menu	14
step 3 - Select user	7	Minimize	14
step 4 - Install location	8	4. Config window	15
step 5 - Progress bar	8	5. MCU Info window	16
step 6 - Finish installation	9	Voltage options section	17
2. Quick start	10	MCU information section	18
step 1 - MCU family	10	6. Advanced options	19
step 2 - MCU type	10	7. Keyboard shortcuts and command line parameters	21
step 3 - Load HEX	11	Keyboard shortcuts	21
step 4 - Browse for .hex file	11	Command line	21
step 5 - Write HEX	12	Example 01	22
step 6 - Progress bar	12	Example 02	22
		Example 03	22

Introduction to

mikroProg Suite™ for PIC®

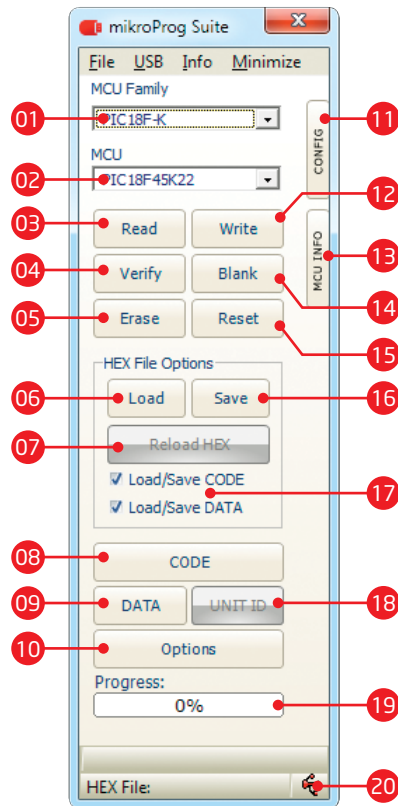
Program **mikroProg Suite™ for PIC®** is intended for programming **PIC®**, **dsPIC®** and **PIC32®** microcontrollers from Microchip®. The graphic interface of this program is clear and easy-to-use, which makes the use of this program faster. The program main window includes basic options for programming microcontrollers. In addition, there are advanced programming options that enable experienced users to set configuration bits on their own. The program includes views providing basic information about the selected MCU, voltage monitoring, etc.



Main window

mikroProg Suite™ for PIC® window contains all the programming options. These options are graphically presented in the form of buttons, drop-down lists and check boxes.

- 01 MCU family selection list
- 02 MCU type selection list
- 03 Read program from MCU
- 04 Verify the loaded program
- 05 Erase MCU memory contents
- 06 Browse for a .hex file on your PC
- 07 Reload previously loaded .hex file
- 08 Preview program which is in buffer and ready for uploading in MCU FLASH memory
- 09 Preview program which is in buffer and ready for uploading in MCU EEPROM memory
- 10 Various settings of visual, advanced and programming options.
- 11 Expand configuration bits menu
- 12 Upload .hex file in to MCU memory
- 13 Expand MCU info menu
- 14 Check whether the MCU is empty
- 15 Reset the microcontroller
- 16 Save buffer to a .HEX file
- 17 Load/Save CODE/DATA in buffer
- 18 Used for some MCU-s ID
- 19 Progress bar
- 20 Shows that programmer is connected to USB port on a PC (red if connected)



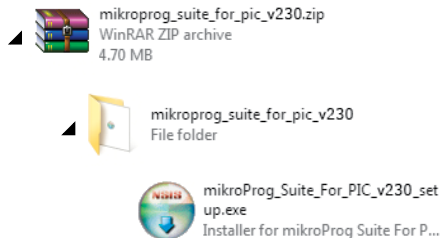
1. Installation

mikroProg Suite™ for PIC® setup executable can be downloaded from link below:

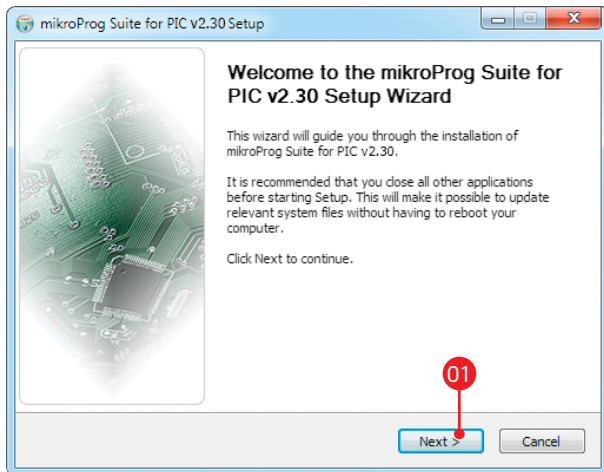


www.mikroe.com/downloads/get/1201/mikroprog_suite_for_pic_v230.zip

When you locate and download the setup, please extract files from the ZIP archive. Folder with extracted files contains setup executable. Double click it to start the setup wizard.

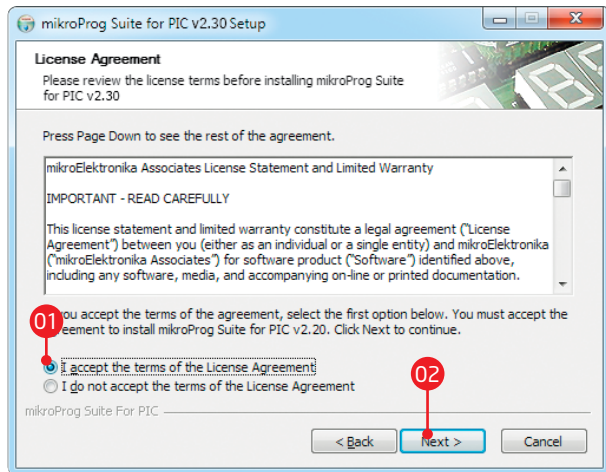


step 1 - Start installation



01 Welcome screen. Click **Next** to proceed.

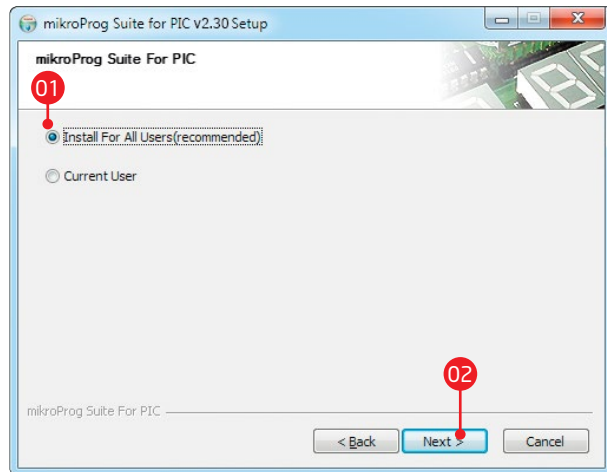
step 2 - Licence agreement



01 Carefully read the **End User License Agreement**.

02 If you agree with it, click **Next** to procede.

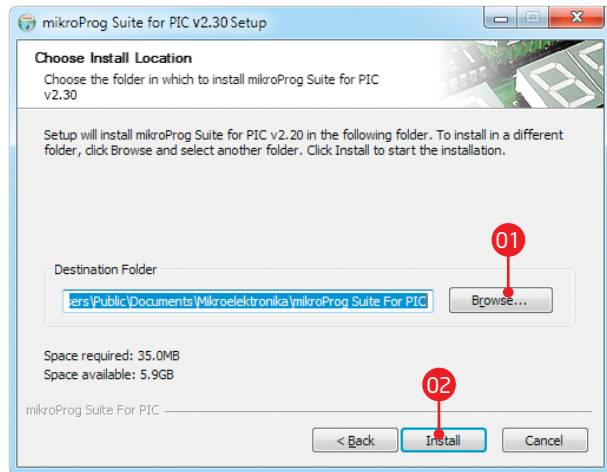
step 3 - Select user



01 It's recommended to select **Install For All Users** option.

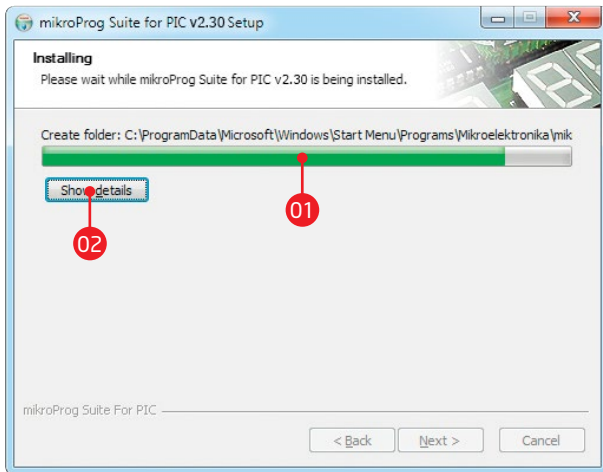
02 Click **Next**.

step 4 - Choose destination



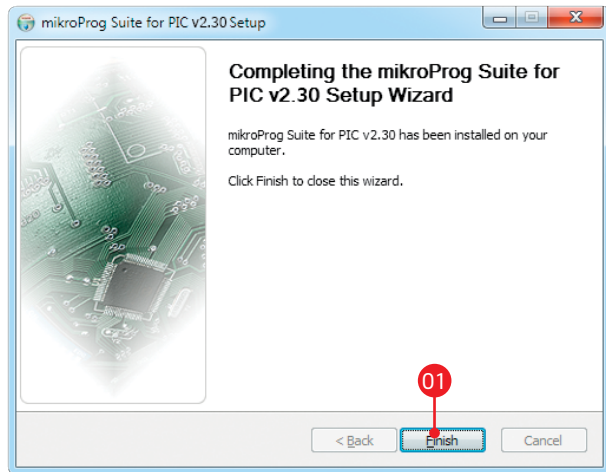
- 01 Use the suggested destination folder or select a different installation path by clicking the **Browse** button.
- 02 Click the **Install** button.

step 5 - Progress bar



- 01 Installation progress bar.
- 02 Click the **Show details** button to monitor the installation process more closely.

step 6 - Finish installation



- 01 Click the **Finish** button to close the Setup Wizard.

After the installation process is finished mikroProg Suite™ for PIC® shortcut will appear on your desktop.



Double click it to start mikroProg Suite™ for PIC® software.

2. Quick start

To program your microcontroller with a desired .HEX file just follow these few steps:

Before you begin, connect your device (programmer) with a PC via USB cable. Notice the USB icon in the bottom right corner of the **mikroProg Suite™ for PIC®** main window: it will turn red when the device is connected.

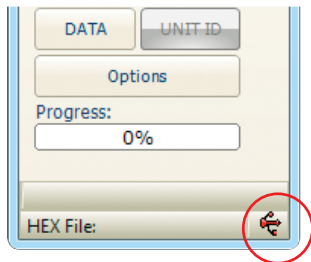
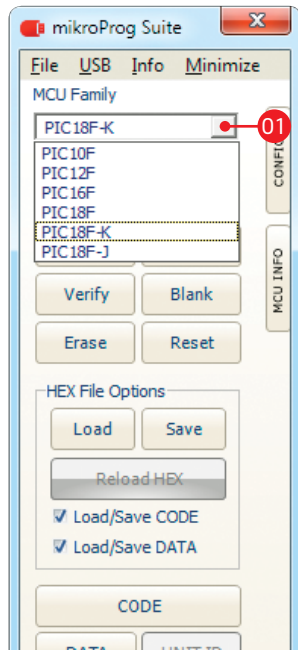


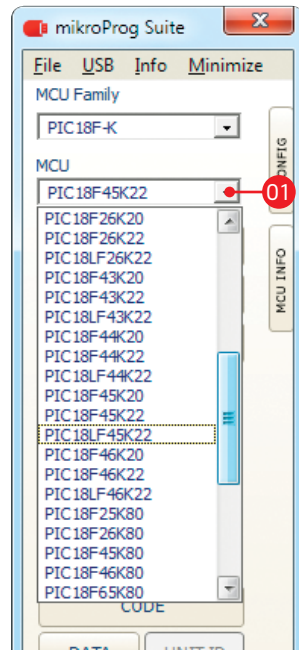
Figure 2-1: USB icon in bottom right corner

step 1 - MCU family



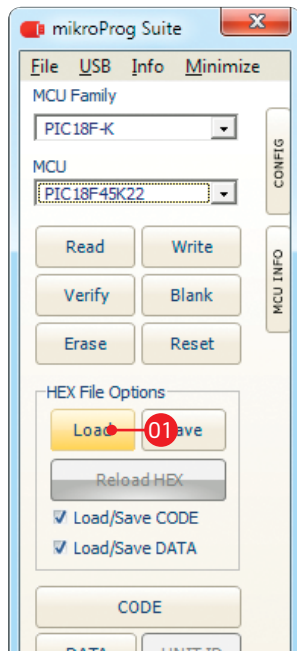
- 01 From the drop down list select MCU family of your device (here PIC18F-K)

step 2 - MCU type



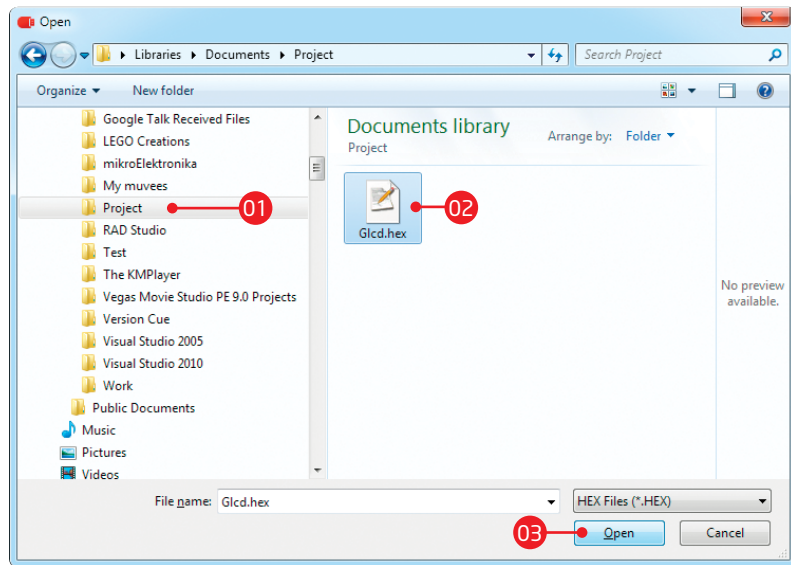
- 01 From the drop down list select MCU type (in this case PIC18F-K)

step 3 - Load .HEX



01 Click **Load** to find a .HEX file

step 4 - Browse for .HEX file



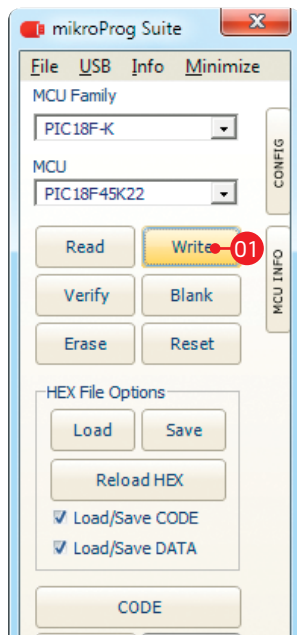
01 Locate the folder that contains the target HEX file

02 Select .HEX file

03 Click the **Open** button

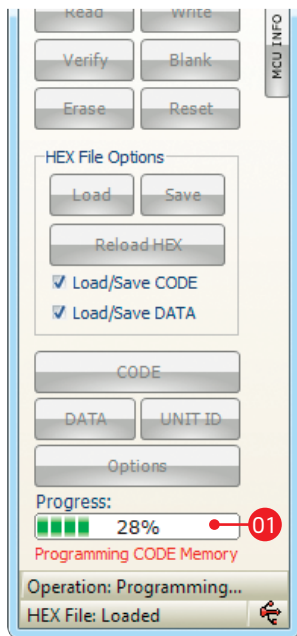
** Note that you can also load the HEX file by dragging and dropping it onto the mikroProg Suite™ for PIC® window.*

step 5 - Write HEX



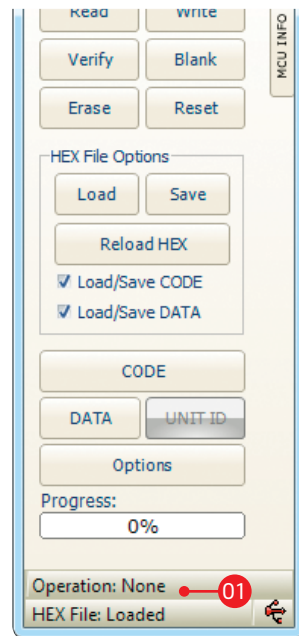
- 01 Click **Write** to start programming the microcontroller.

step 6 - Progress bar



- 01 **Progress bar** displays programming progress.

step 7 - Finish upload



- 01 When uploading is finished your MCU is programmed and ready for use

3. Menus

mikroProg Suite™ for PIC® comes in the form of a graphical user interface which consists of buttons, check boxes, and menus.

File menu

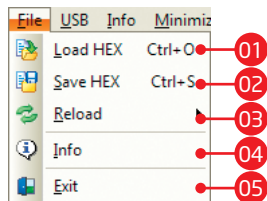


Figure 3-1: File menu

- 01 Load .HEX file
- 02 Save .HEX file under different name
- 03 Reload .HEX file
- 04 Display information about .HEX file
- 05 Close mikroProg Suite™ for PIC®

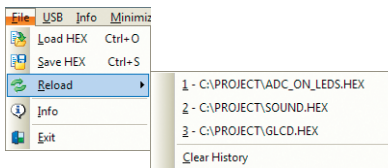


Figure 3-2: Reload

Reload menu shows previously loaded .HEX files which can be reloaded with a single click. Click the **Clear History** option any time to erase the list.

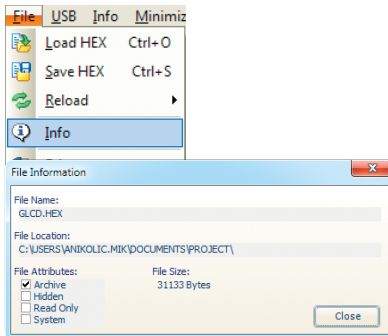


Figure 3-2: File information

USB menu

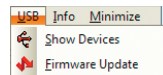


Figure 3-3: USB menu

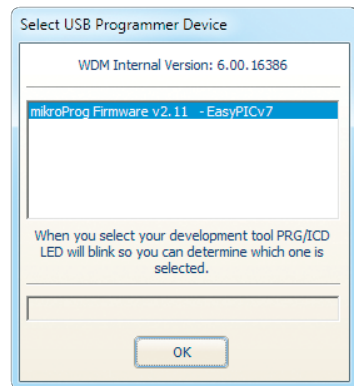


Figure 3-4: USB menu

Under the USB menu click the **Show Devices** option. A new window will appear containing information about the connected USB device and firmware version.

It is also possible to connect two devices at the same time, Figure 3-5.

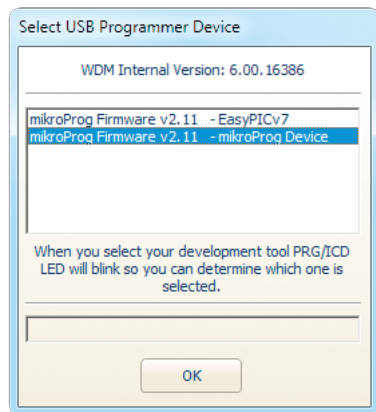


Figure 3-5: USB menu

When two devices are connected at the same time it is necessary to choose which one is used for programming your target device. Note that it is not possible to use multiple programmers at the same time.

Info menu



Figure 3-6: Info menu

Info menu contains History and About options. Click **History** to get information about program changes throughout releases. The **About** option contains information about the development team.

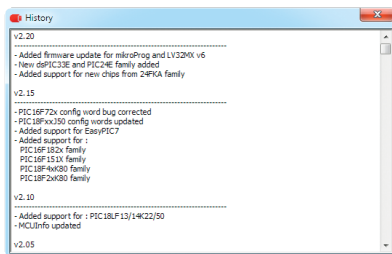


Figure 3-7: History window

Minimize

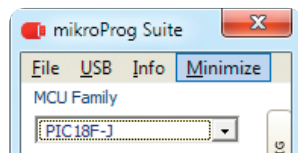
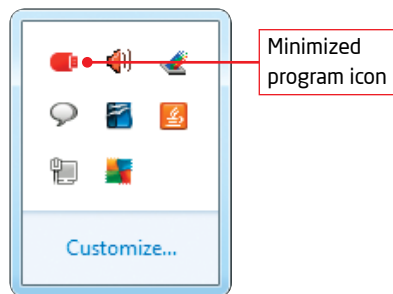


Figure 3-8: Minimize option

Minimize option minimizes program to tray. The program stays active until explicitly closed.



4. Config window

Along the right side of the main window, you may notice a **CONFIG** button. Click it to expand the main window with an additional panel containing MCU configuration options. It's contents will be adjusted depending on the selected microcontrollers.

Common options for all MCU's are:

- 01 CONFIG button opens config window
- 02 Configuration Bits section is used to set specific options for the chosen MCU.
- 03 Protect parts of MCU memory from unauthorized reading and writing.
- 04 ID Location in MCU memory.
- 05 Basic information about selected MCU.

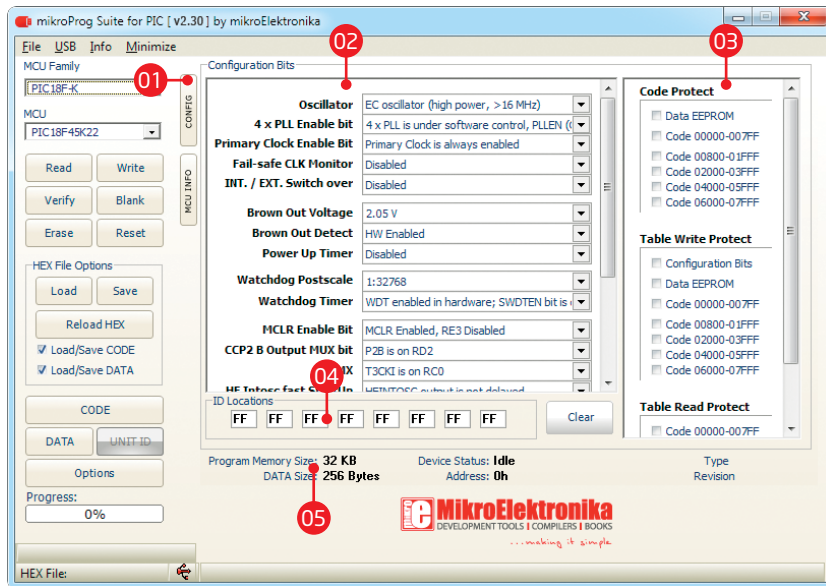


Figure 4-1: Config window

5. MCU Info window

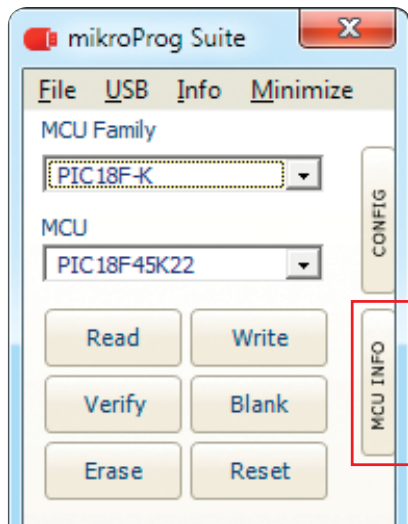
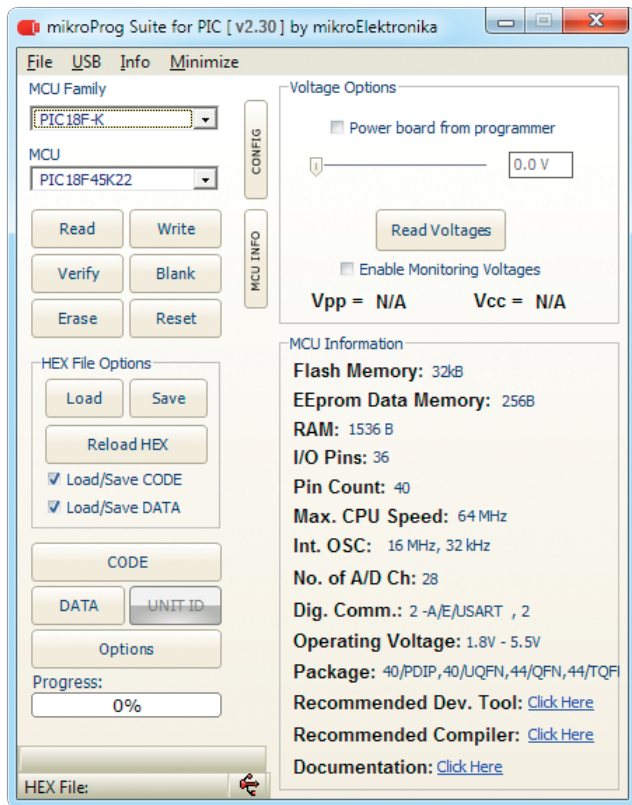


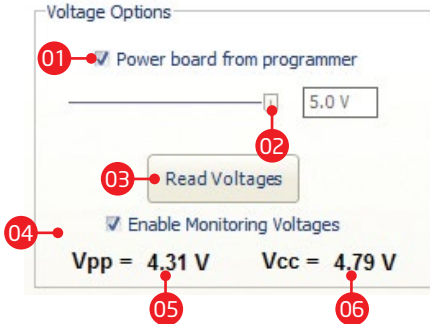
Figure 5-1: Unfold MCU Info section using button in the main window

A click on the **MCU INFO** button opens a window containing basic data about the selected microcontroller as well as voltage monitoring options.

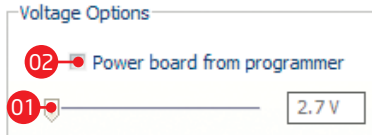


Voltage options section

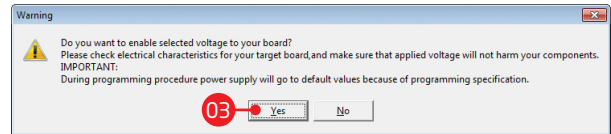
The programming voltage (V_{pp}) is provided by the programmer during the programming procedure. Depending on the type of the microcontroller, the V_{pp} programming voltage can be up to 13V.



- 01 Check box for enabling supply voltage from programmer
- 02 Setting supply voltage value from 2.7 to 5V (max 250mA)
- 03 Manually read voltages on V_{pp} and V_{cc} MCU pins
- 04 Check box for enabling automatic voltage monitoring
- 05 Current V_{pp} value (programming voltage)
- 06 Current V_{cc} value (power supply voltage)



After programming is finished it is possible to power up the target device via mikroProg™ programmer. While the device is connected to the programmer set the desired voltage using the slider. Max supply voltage is determined by the MCU's power supply voltage while minimum voltage is 2.7V (max 250mA). When voltage is set just check **"Power board from programmer"** check box.



A warning window will appear. If electrical characteristics of the target device are correct click **Yes**. Otherwise click **No** and set appropriate electrical characteristics of the connected device.

- 01 Move slider to set required voltage level
- 02 Tick "Power board from programmer" box
- 03 Click **Yes** after the electrical characteristics of connected device are met.

Figure 5-2:
MCU information
section

MCU Information	
Flash Memory:	32kB
EEProm Data Memory:	256B
RAM:	1536 B
I/O Pins:	36
Pin Count:	40
Max. CPU Speed:	64 MHz
Int. OSC:	16 MHz, 32 kHz
No. of A/D Ch:	28
Dig. Comm.:	2 -A/E/USART , 2
Operating Voltage:	1.8V - 5.5V
Package:	40/PDIP, 40/UQFN, 44/QFN, 44/TQFN
Recommended Dev. Tool:	Click Here
Recommended Compiler:	Click Here
Documentation:	Click Here

MCU information section

Example in Figure 5-2 shows information on the PIC18F45K22 microcontroller such as: microcontroller memory size, number of integrated modules and I/O pins, operating speed, package etc. In addition, there are links to web pages where you can find the recommended development system and compiler for the selected microcontroller. There is also a link to the MCU manufacturer website where you can find a complete documentation for the selected microcontroller.

6. Advanced options

Click the **Options** button, and a window containing Program/Verify Options, Advanced Options and Visual Settings will appear.

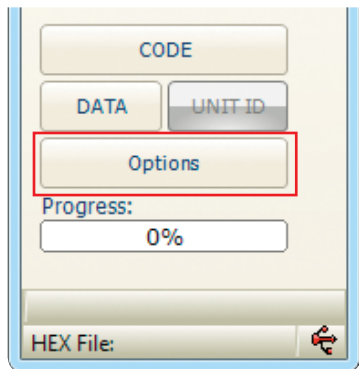


Figure 6-1: Options button

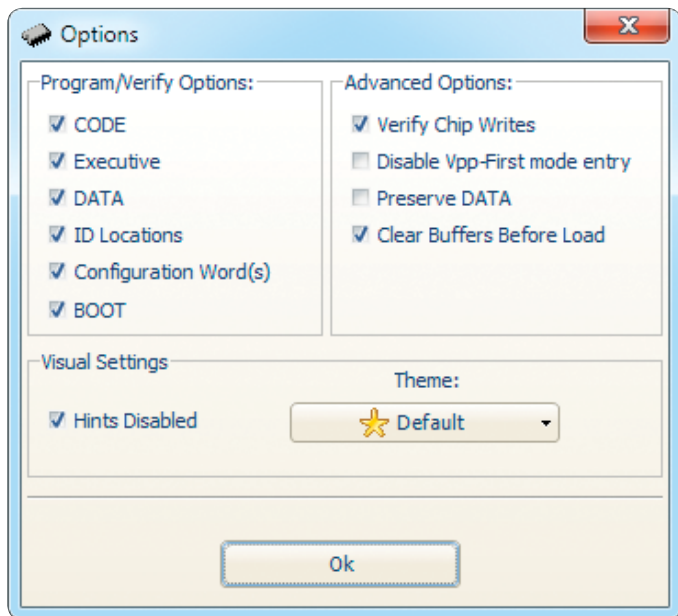


Figure 6-2: Options window

Program/Verify Options:

- CODE
- Executive
- DATA
- ID Locations
- Configuration Word(s)
- BOOT

Advanced Options:

- Verify Chip Writes
- Disable Vpp-First mode entry
- Preserve DATA
- Clear Buffers Before Load

Within the **Program/Verify Options** section it is possible to disable programming /verification of the microcontroller memory: CODE, Executive, DATA, ID Locations, Configuration Words) and BOOT. Verification is performed by clicking on the Verify button in Main window, page 5.

The **Advanced Options** section includes:

Verify Chip Writes: After programming is finished .hex code verification is performed automatically. By verifying .hex code you eliminate the possibility of error in program execution.

Disable Vpp-First mode entry : prevent the device from entering program mode via VPP

Preserve DATA: EEPROM memory is not erased during MCU programming

Clear Buffers Before Load: Clears DATA and CODE buffers

Visual Settings

- Hints Disabled
- Theme: ★ Default ▼

The **Visual Settings option** is used to select visual program settings as well as to disable hints.

7. Keyboard shortcuts

and command line parameters

Keyboard shortcuts

- Alt+E** Erase the contents of the microcontroller memory
- Alt+B** Program memory blank check (whether it is empty)
- Alt+W** Write a hex code into microcontroller(F11 key may be optionally used)
- Alt+V** Verify the loaded hex code
- Alt+R** Read program memory
- Alt+D** Change microcontroller type
- Alt+F** Open File menu
- Alt+U** Open USB menu
- Alt+I** Open Info menu
- Alt+M** Minimize man window
- Ctrl+S** Save hex code
- Ctrl+O** Open (load) file with hex code
- Ctrl+R** Reload hex code

Command line

The mikroProg Suite™ for PIC® programmer may also be set up from the command line, which enables you to use it from some other software, compiler, etc. Here is a list of the command line parameters:

- w** Write to MCU
- v** Verify
- e** Erase program from MCU
- r** Read program from MCU
- p** Microcontroller type
- f** .hex file name (FLASH) “[<name should be enclosed within quotation marks>]”
- b** Memory blank check (whether it is empty)
- q** the mikroProg Suite™ for PIC® program after programming

Example 01

```
mikroProg Suite for PIC.exe -w -pPIC18F45K22 -v -f"C:\somefile.hex"
```

This command is used for loading C:\somefile.hex into the PIC18F45K22 microcontroller. This file will be verified immediately after being loaded into the microcontroller.

Example 02

```
mikroProg Suite for PIC.exe -r -pPIC18F45K22
```

This command is used for reading the contents of the PIC18F45K22 microcontroller program memory.

Example 03

```
mikroProg Suite for PIC.exe -e -pPIC18F45K22
```

This command is used to erase program from the PIC18F45K22 microcontroller.

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