Handbook

Prog-Studio Software

- Software Installation and Registration -
- Devices and Chip Selection in the Software -
- Directions for the Programming of Chips -
- The Hex-Editor and its Functions -
- The Burning Menu and the Programming Options -

1. Software installation and registration

1.1 Installation

Please start the setup of the Prog-Studio software in the CD menu or directly in the CD directory "\ English \ Software \ Prog-Studio Software\" the file „Prog-Studio-Setup.exe".

After startup, you will be asked for the desired language. Please select the desired language and click OK. This setting only applies to setup. After this selection, you will be asked for the installation directory (default setting Program files \ Batronix \ Prog-Studio) and for the desired start menu entries as well as quick start icons.

1.2 The first startup of the Prog-Studio software

When first starting the Prog-Studio software, you will initially be asked for the desired language. Please click on one of the flags to select the desired language. You can change your selection at any later time in the menu „?".

Next, you are asked for the desired mode. You can choose between the Hex-Editor and the MC-Editor modes. You can change your selection back and forth between both modes at any later time in the „View" menu.

Which mode is correct?

You require the Hex-Editor mode when, for instance, you wish to read out, burn, copy, compare or delete memory chips (which is the case for most users of programming devices). You require the MC-Editor mode if you wish to develop separate assembler / basic programs for microcontrollers from the MCS-51 series. We will discuss both modes in more detail below.

1.3 Registration of the software

If you have purchased a Batronix programming device incl. software registration or an individual software registration from us, you should have received a sheet with a software coupon with the delivery. This software coupon can now be used to authorize your software.

Please select the item „Registration" in the „Service" menu. You will then see the registration dialog which is shown below. Please enter your address data in the left-hand section. Be careful to enter the data correctly, since your software coupon is registered to this and you can only change the data at a later time through our service team (with the exception of the e-mail address, which you can adapt later yourself). Enter your software coupon from the enclosed sheet at the top right. Then click on one of the two buttons labeled „Registration on computer ...".
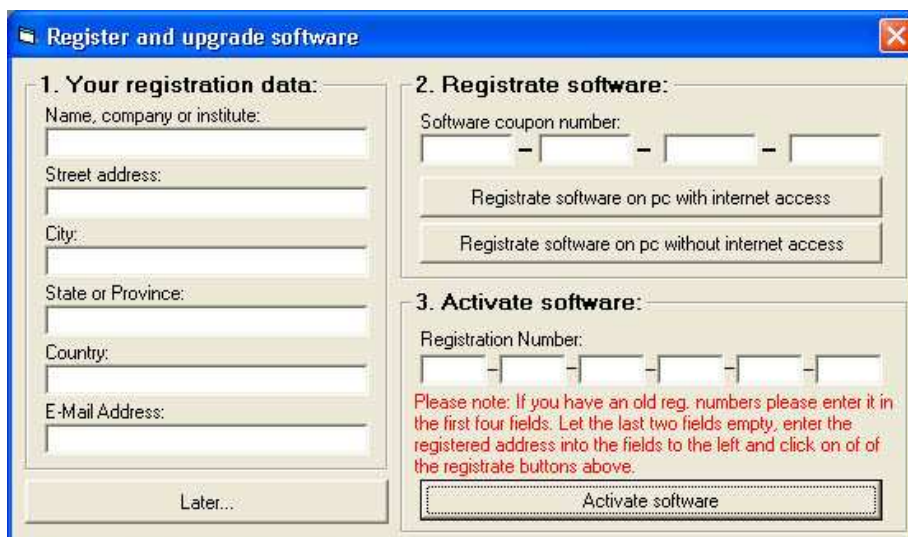
Your registration data are sent to our automated registration system by clicking on the button „Registration on a computer with internet access". Within 15 minutes, the system sends you an e-mail with your registration data and a special registration number. Please enter this registration number (consisting of six fields with four digits each) into the fields „Registration number" at bottom left and click on „Authorize software".

Registration of further installations

You can use your software coupon number to register further Prog-Studio software installations. Please proceed as described above. When entering your address data, please be careful to proceed exactly as with the first use of the software coupon number. If you enter other address data or even enter it in a slightly different manner, the automated registration system will send you a corresponding e-mail with the address data which you used originally. Please use these and pay attention to the use of uppercase and lowercase letters as well as all symbols including empty spaces.

Registration of the software without internet access

You can also authorize the software on a computer without online access. Please use the registration dialog on the computer on which you will later use the software. After entering the address data and the software coupon, please click on the button 'Registration on computer without internet access'. You will then receive a link in the windows clipboard memory, which you can paste anywhere with the keys CTRL+V or STRG+V. You can, for instance, paste this link into a text file which you can then open on any desired computer with internet access to copy the link into the address line of the browser.

After calling up the link on the computer with online access, you will receive an e-mail with the registration data for the computer without online access within 15 minutes.

Registration with altered address data

If your address data have changed (e.g. by moving), you can send us your old and new data and your software coupon number to the e-mail address Service@Batronix.com. We will then change your address data in the registration system as desired.

2. Device and chip selection in the software

In this section, we assume that you are in the Hex-Editor mode of the software. If this is not the case, please click on „Hex-Editor" in the "View" menu. If your display appears as in the following illustration, you are in the Hex-Editor:
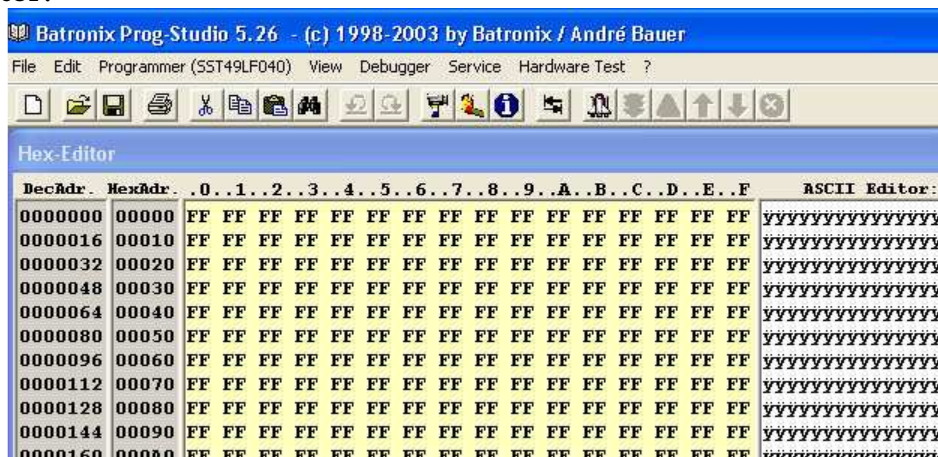
2.1 Programming device and chip selection

In the menu „Programmer", please click on the entry „Choose programmer and chip". At the top of the window, you can select your programming device from a „Drop-Down" list (click on the triangle at the right). In devices with several possible versions, you will then be asked for the version number (only when you select the device for the first time). You can find the version number on the device. If you would like to change the selection of the version number at a later time, you can click on the button „Hardware Version" at the right above the list of programming devices.
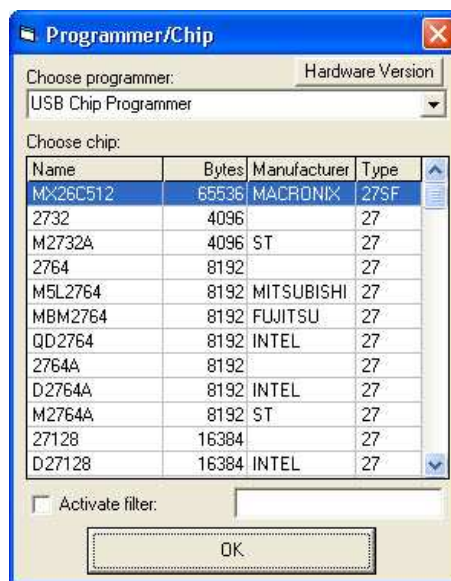
At the right, you see the window from which you have selected, for instance, the USB Chip Programmer.

Filter display to find chips more quickly:

In the window for the selection of the chip, you can turn on the function „Activate filter" at the bottom. A list of chips is shown, in which the text field in the description, the byte size, the manufacturer's name, or the types are displayed. If, for instance, you enter „27C256" into the text field, you will be shown a list of all 27C256's. If you enter, for instance, „AMD", you will receive a list of all chips from the manufacturer AMD.

2.2 Placement of chips and jumpers

Placement of the chips and jumpers in the Eprom burner:

When you have selected the Eprom burner as a programming device and have selected a chip and clicked „OK", an image with the placement of the jumpers and the Eproms appears on the display. The Eproms are, as shown in the illustration, always placed in such a manner that they are flush at the bottom (the bottom is the side which faces away from the parallel port connection).

When placing the chips, please ascertain correct poling! When components are wrongly placed, they and/or the device may be damaged.

Pin 1 (the marking on the chip) must be at top left (in the direction of the parallel port connection). The jumpers must be placed as shown by the software.

Placement of the chips with the USB Chip Programmer:

Please place the chip as shown in the drawing to the left beside the lever socket. The chips are, as shown, always placed in such a manner that they are flush at the bottom (the bottom is the side facing away from the USB connection). Pin 1 (the marking on the chip) must be at top left (in the direction of the USB connection).

When placing chips, please ascertain correct poling! When components are placed wrongly, they and/or the device may be damaged.

Placement of the chips with the Flash MC Burner I:

When placing chips, please ascertain correct poling! When components are placed wrongly, they and/or the device may be damaged.

The layout of the Flash MC Burner I can also handle larger sockets. This was made for the Basic, since the 20 pin lever sockets are much more expensive than, for instance, the 24 pin lever sockets, and therefore considerable costs can be saved by using the 24 pin lever sockets. Please place the microcontroller in such a manner that it is flush at the bottom (the bottom is the side facing away from the parallel port plug). Pin 1 (the marking on the microcontroller housing) must face in the direction of the parallel port plug. The upper pins of the sockets remain empty. The illustration shows correct placement.

Placement of the chips and jumpers with the Flash MC Burner II:

When placing chips, please ascertain correct poling! When components are placed wrongly, they and/or the device may be damaged.

Please place the microcontroller in such a manner that pin 1 (the marking on the microcontroller housing) points in the direction of the written legend „Flash MC Burner II". After you select the microcontroller, the software will show whether the jumper should be placed or removed.

The following image shows correct placement:
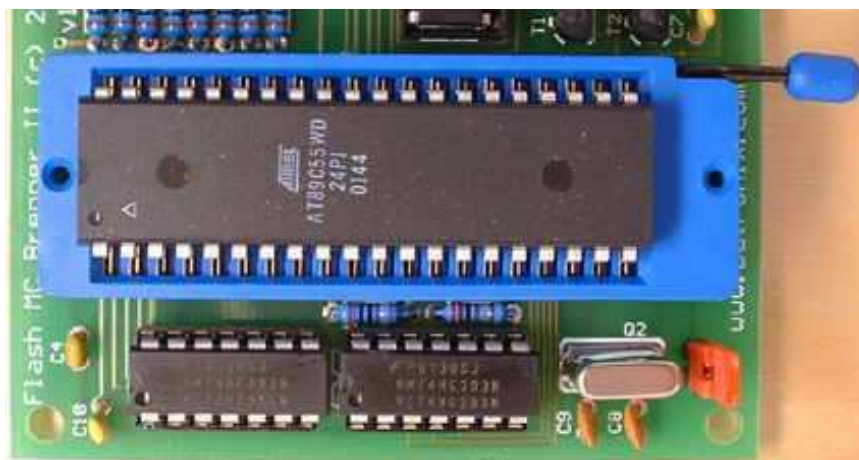
3. To the programmed chip in a few steps

3.1 Programming of data from a file onto a chip

1. Load the file to be programmed into the Hex-Editor. To do this, click on „Open" in the "File" menu and select the file.

2. If you have not yet selected the programming device and the chip, go to the menu „Programmer" and click on „Choose Programmer and chip ". First select the programming device and then select the chip to be programmed from the list (more information on this can be found in the preceding chapter).

3. Place the chip to be programmed in its position. Please be sure to pay attention to the notes on the placement of the chip in our programming device (see previous chapter).

4. In the menu „Programmer", click on „Program IC". You will see a status display while the chip is initially read out. In the programming dialog which is shown next, all settings have been automatically preset to the correct settings for your chip. In special cases (splitting, offset), you can click the button „further options" to view further settings and change them. Generally, however, you only need to click on the button „Burn". The burning dialog will be explained in more detail further below.

5. After you click on „Start", the programming process starts, and you see a status display. After the programming process, the data are read in again and compared bit by bit. After the data from the chip has been read in and the comparison of the data on the chip with the data to be programmed has been successfully completed, the chip is ready, and you can remove and use it.

3.2 Copying an existing chip

1. In the menu „Programmer", click on „Choose programmer and chip". First select the programming device and then select the chip to be copied from the list. In the case of the Eprom Programmer, the software shows you the position of the jumpers graphically. In the case of the Flash MC Burner II, a short note is displayed, stating whether the jumper should be set or pulled. Set the jumpers as directed by the software.

2. Place the chip to be copied. Please pay close attention to the „Notes on the placement of chips in programming devices" (see farther above), go to the menu „Programmer" and click on „IC-Read". The readout starts, and you will see a status display. After the reading process, the data are shown in the Hex-Editor. Remove the chip to be copied.

3. If the chip to be programmed does not correspond to the chip which was copied, please go to the menu „Programmer" -> „Choose programmer and chip " to select the proper chip.

4. Now proceed with step 3 of „3.1 Programming of data from a file onto a chip".

4. The Hex-Editor mode

You can load data from files into the Hex-Editor or read data from chips into it, show and change the data, and of course, save it as a file / burn it onto a chip again.

The Hex-Editor mode is required if, for instance, you wish to read out, burn, copy, compare or delete memory chips.
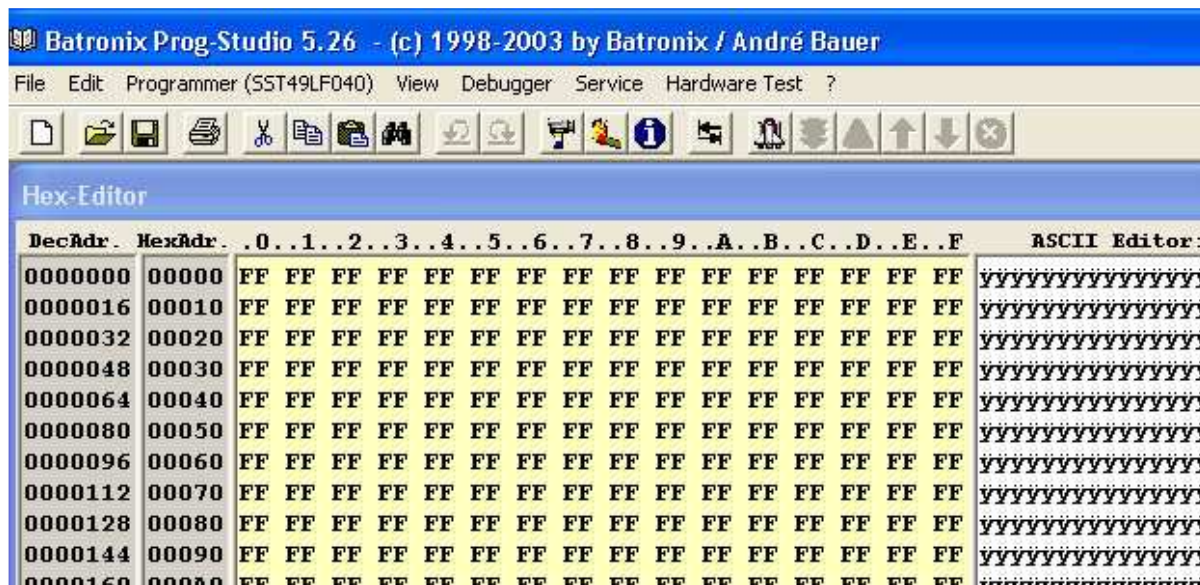
In the left-hand section, you see the addresses for the first byte of a series in each case. The addresses are stated in the decimal number system (base 10, 0-9) and in the hexadecimal number system (base 16, 0-F).

The actual data are shown in the middle, always 16 bytes per series. They are shown in the hexadecimal number system. Two digits represent a byte in each case. One byte, in turn, consists of 8 bits (which are not individually shown here) and can take the form of 256 different values (from 00 to FF / 0 to 255 in the decimal system).

To the right beside the data section, you see the ASCII symbol which corresponds to the hexadecimal numbers. 16 symbols per series are represented; one for each byte.

4.1 The toolbar in the Hex-Editor mode

In the toolbar, you will find icons for the most frequently used functions. Let your mouse cursor rest over an icon for a few seconds to see a brief explanatory text about the icon.
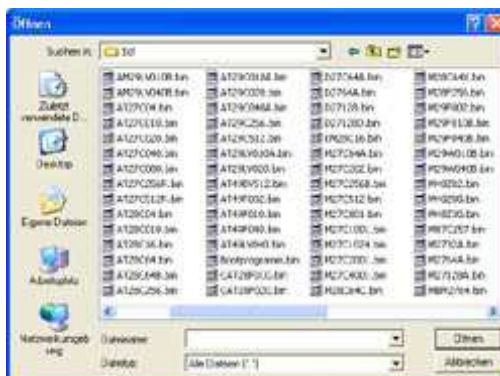
4.2 The „File" menu in the Hex-Editor mode

New file

This allows you to delete the content of the Hex-Editor. All bytes are then set to „FF".

Open

Through the menu „File" – „Open", you can load a file into the Hex-Editor. All common file formats (binary, Intel Hex, Motorola Hex) are supported.

By using the „Drop-Down Box" file type, you can limit the display to certain file types.

Import files

The „Import files" function is similar to the „Open file" function in the selection dialog. However, after the selection of the file to be loaded, it offers the option of adding the content of the file, starting with a certain address, into the Hex-Editor. This can be used, for instance, to put two files together.

Save files / save under

„Save" and „Save under" can be used to save the content of the Hex-Editor into a file. All common file formats (binary, Intel Hex, Motorola Hex) are supported.

Comparing hex or binary data

The function „Compare hex or binary data" can be used to compare the content of the Hex-Editor with the content of a file. In the case of deviations, you will see a list of all differing addresses and values.

Printer setup / print

„Printer setup" – „Print" can be used to set up the printer and to print the contents of the Hex-Editor.

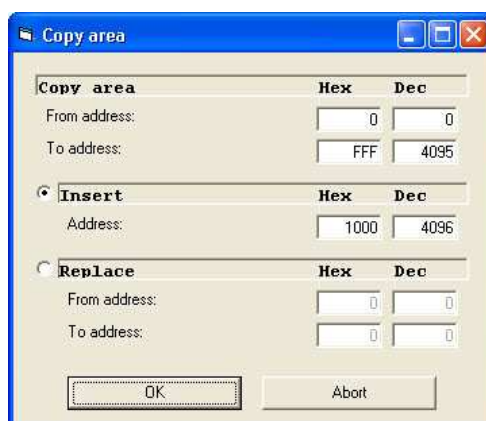### End program

The program is closed.

4.3 The menu „Process" in the Hex-Editor mode

Cut / Copy / Paste / Delete

You can use this to cut, copy, paste, and delete marked areas within the Hex-Editor.

Copy / set / delete a section

These functions can be used to select entire areas within the Hex-Editor to copy them, set them to a certain value or delete (cut) them.

Skip directly to address

This function allows you to skip directly to a certain address which you have entered.

Skip to the first / next / last byte <> FFh

This function can be used to skip to the first / next / last address which is unequal FFh (written to).

Search / replace

This function allows you to search for certain values or series of values in the Hex-Editor and in the ASCII-Editor.
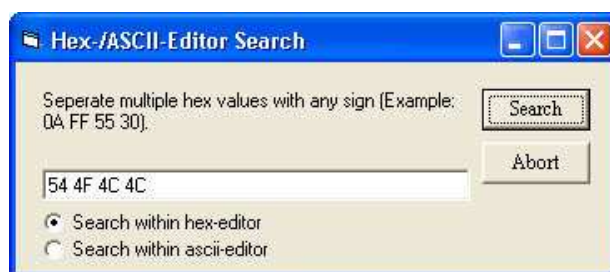
Options

The options are explained in further detail in another chapter below.

4.4 The menu „Programmer" in the Hex-Editor mode

Select programmer and chip

This menu item is described in detail above under „Programming device and chip selection".

Read IC

Reads out the contents of a chip and displays them in the Hex-Editor.

Program IC

Shows the programming menu. This item is discussed in further detail below under the item „the programming menu".

Check IC / Compare data

This function reads out the chip which is in the device and checks whether it is empty. If it is not empty, the data contained on it are compared to the data in the Hex-Editor. Differing data can be shown.

Erase IC

This function erases the chip in the device and then immediately carries out the function „Check IC / Compare data". Depending on the chip, the deletion can take between a few fractions of a second and up to half a minute.

This menu item is masked in the case of chips which cannot be electrically erased. For instance, this applies to 27C... chips, since these can only be erased with the aid of ultraviolet light in the UV Eprom Eraser (UV types) or cannot be erased at all (OTP = One Time Programmable).

Lock Bit Protection

So-called „Lock Bits" can be set in some chips. In Flash microcontrollers, this prevents, for instance, reading out, and in memory chips, it prevents accidental overprogramming. With chips in which this function is not supported, the menu item remains masked.

Show Hex-Editor check sum

The check sum on the content of the Hex-Editor is calculated. Care must be taken so that the complete section of the chip selected at that time is counted.

4.5 The menu „View" in the Hex-Editor mode

MC-Editor and Hex-Editor

These menu items can be used to switch back and forth between both modes. Data contained in the Hex-Editor are disassembled immediately in this case. This difficult process can take several minutes. Therefore, if you would only like to get a look at the other MC mode, you should first click on the menu „File" -> "New".

MCS-51 insructions / basic instructions / jumpmarks / notes

These additional windows are for the purpose of developing microcontrollers programs. They are explained in further detail in the MC-Editor section.

Basic window settings

This function places all sub-windows optimally within the main window of the Prog-Studio software.

4.6 The menu „Debugger" in the Hex-Editor mode

This menu is without meaning in the Hex-Editor mode.

4.7 The menu „Service" in the Hex-Editor mode

Registration

This can be used to call up the registration dialog, which has already been discussed in further detail above under „Registration of the software".

Registration info

This function calls up a browser window with our online shop webpage of the software.

Discussion board

This function calls up a browser window with our discussion forum.

Online help and contact

This function calls up a browser window with our help and contact webpage.

Book-Quick finder

This function calls up a browser window with the Amazon.de website.

4.8 The menu „Hardware Test" in the Hex-Editor mode

This menu is discussed in greater detail within the frame of the documentation „Help in case of problems".

4.9 The menu „?" in the Hex-Editor mode

Language selection German / English

Here you can select the desired language.

Eprom programmer jumper

This gives you the option of having the jumper settings for the currently selected chip once again without having to go through the menu „Burner" -> "Select burner and chip" again.

Info

Shows the copyright information as well as the software version.

Help

Shows this help file.

5. The programming dialog

In the menu „Programmer", first click on „Program IC". You will see a status display while the chip is initially read out. In the programming dialog which is shown next, all settings have automatically been set in advance for your chip. In special cases (splitting, offset), you can use the button „Further options" to look at further settings and change them. Generally, however, you only need to click on the button „Start".
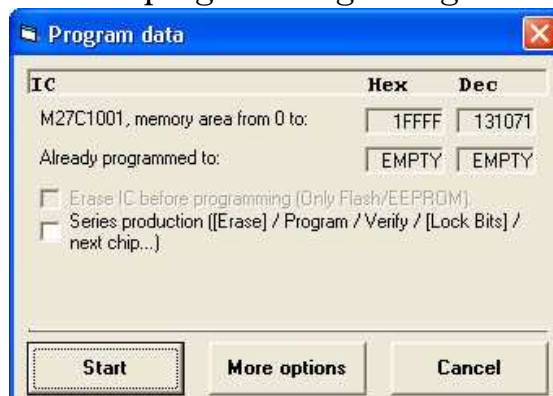
In the upper section, you can see the name of the selected chip as well as its memory section. Furthermore, you can see whether and to which address this chip has already been written to, or whether it is empty (erased). All number statements in the burning dialog are given both in hexadecimals and in decimals and can be adapted in either form.

Erase ICs prior to programming

The option „Erase IC before programming" is preset if the chip is electrically erasable. If you are sure that your chips are empty (e.g. with new chips), you can turn this option off in order to speed up the process. Depending on the chip technology, erasing a chip can take between a few fractions of a second and 30 seconds.

If the selected chip cannot be electrically erased, this option is masked.

Serial production of chips

To simplify the programming of a larger number of chips with the same data, you can select the option „Serial production" in the burning dialogue. In serial production, the following steps take place automatically for each chip which is to be burned:

- Erasure of the chip (if this is possible with the selected chip)
- Prgramming the chip with the default or selected settings
- Comparison (verification) of the data on the chip with the data in the editor
- Setting of lock bits in the level selected in the program options (if this is possible with the selected chip).

After these steps have taken place, the software asks you to place the next chip in the device or end the serial production.

Further options

Please click on the button „Further options" in the burning dialog to look at the following options and adapt them. These options are only needed in a few areas. Normally, you can simply click on „Start".

Select programming areas

You can set the address entries in the section „Edit " to determine which section of the editor is to be burned onto the chip. This may be feasible, for instance, when a file is to be separated onto two chips without splitting. For its pre-setting, the software selects the section from the first address (0) to the last address which fits onto the selected chip.

You can use the address entries in the section „Program" to determine which section of the chip will be burned. This can, for instance, be useful when you would like to program the data onto the chip with an offset, that is, starting at a certain address.

A further option here is to select that all addresses before the address which is to be programmed first are set to 00 (otherwise they are not burned and keep their current value. In the case of empty chips, all data before the first address to be burned therefore remain at FFh).

Splitting

By selecting the splitting options, you can split the data in the Hex-Editor onto two chips, in which case one address is burned onto the first and one onto the second chip. This option is often used in 16 bit applications, which work with two 8 bit memory chips.
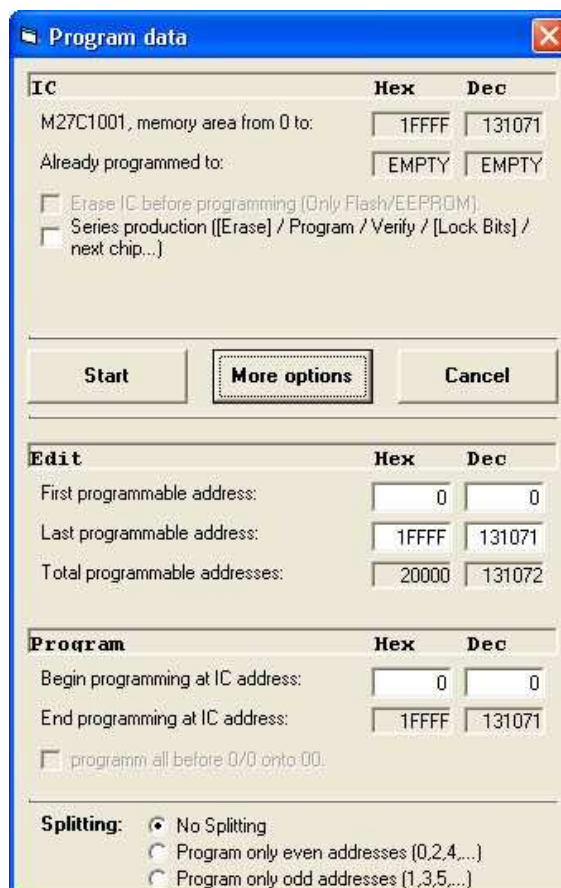
6. The software options

6.1 Display section

In this section, you can use the first checkbox to set whether the program automatically loads the last file which was worked on at startup, or not.

The option „Save binary files with the same bytes length as the selected chip " is important when working with some emulators, since some only accept files in the size of the memory of the chip. If you leave this option turned off, only as many data as have been written (that is, unequal FFh) are saved.

In the text field, you can adapt the number of steps to be saved for the Undo/Redo function. This function affects only the MC-Editor part. You can enter values between 0 and 99.

Furthermore, you can set up the fonts, font sizes and font colors as well as the basic background colors here, as desired.
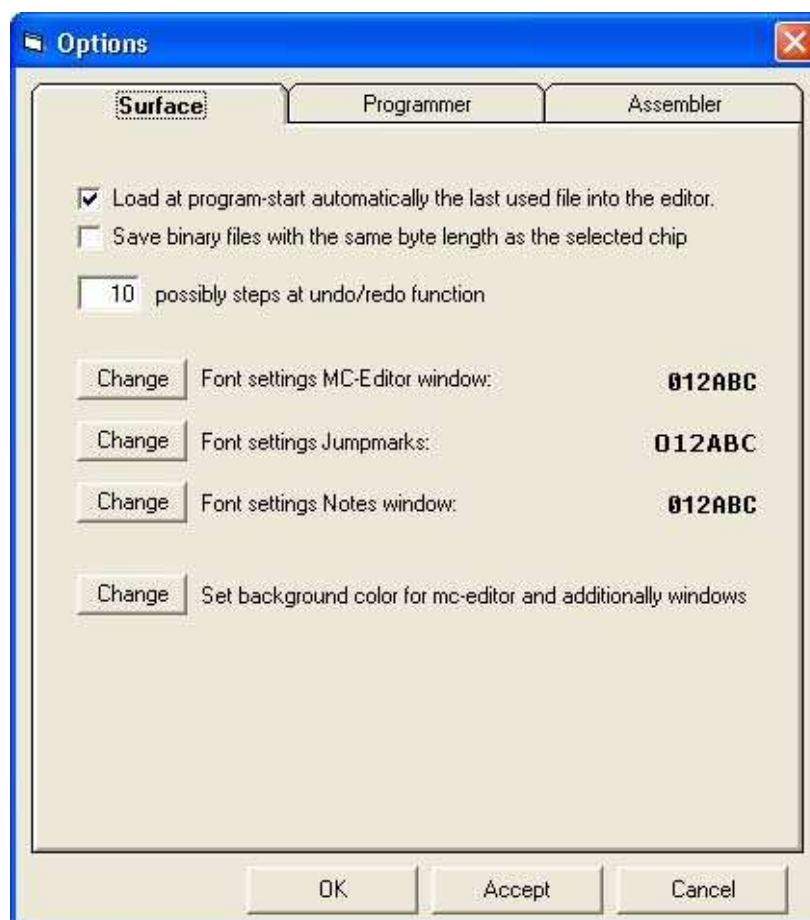
6.2 Programmer device section

In this section, you can go into the upper text box to set the parallel port address for your Batronix parallel port programming device. In rare cases, the address of the parallel port must be adapted to your PC as well. The default setting is the address 378(h), which applies to most PCs. In Windows, you can find the address in the system guidance under System -> Device manager -> Connections -> LPT -> Resources. The entry E/A-Section 378-37F means that the base address of the port is 378(h).

The options that follow can be used to adapt the programming process to your needs. For instance, you can save time by turning of the default setting „Read IC data before displaying the burning dialog". The safety options for checking the device, the chip, and the data should remain switched on. If you have problems with self-built construction kits, you can turn off these options selectively in order to avoid error messages.

In the lower text box, you can set the Lock Bit Level for serial production (see „Serial production of chips" further above).
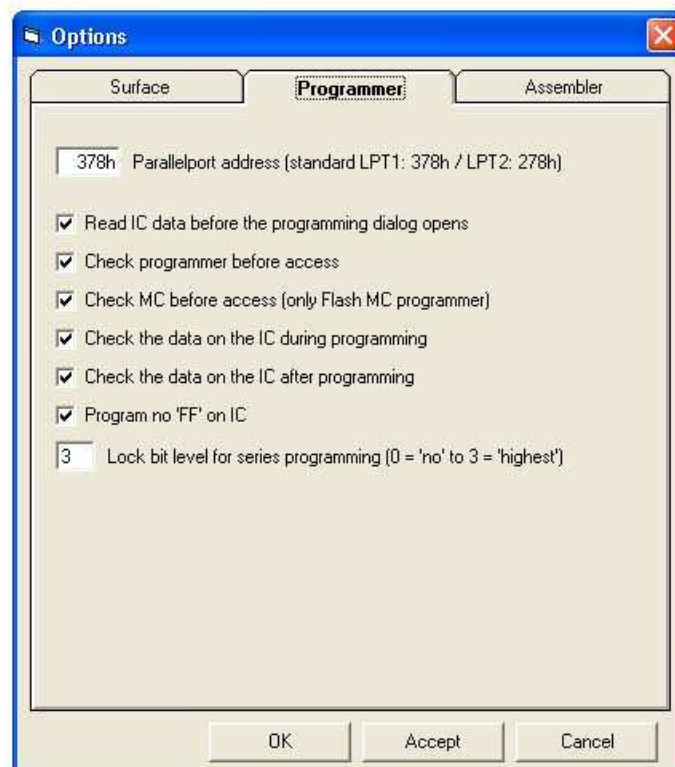
6.3 Section assembler

This section deals with the behavior of the MC-Editor and with the assembler/compiler.

The first two options serve the purpose of limiting the displayed jump marks in the „jump marks window". This restriction can be very useful if one becomes accustomed to marking subordinate jump marks with a preceding tab or underline.

The next three options can be used to automatically create and save a list file, a binary file, or a hex file at every assembly. These files, which are created automatically during assembly, are marked with the same name as the current assembler file plus the correct ending (.L51 / .BIN / .HEX) and saved into the same directory as the assembler file.

The „Autosave" options serve to secure you against power outages, unintentional changes, or similar disasters. The safety backups are saved in the subdirectory „Autosave" of the Prog-Studio software. The last 20 „Autosave" files are stored.

The automatic upper and lowercase writing serves only an optical purpose. You can set this option to suit your requirements. The special settings for the command MOV directly, directly and for the decoding of unmarked number statements are older and should generally be left at their standard settings.