

Software

Software



The programmer software

The programmer package contains a CD with the control program, useful utilities and additional information. The permission to freely copy the content of the CD is granted in order to demonstrate how B+K Precision's programmers works. Differences and modifications to this manual (if they exist) may be found in www.bkprecision.com web site.

Installing of programmer software

Installing the programmer software is very easy. Insert delivered CD to your CD drive and install program starts automatically. Install program (setup.exe), which will guide you through the installation process and which will do all the necessary steps before you can first run the control program.

If you use the operating system **DOS**, run **Install** program from CD.

Programs PG4U.EXE (for DOS) and PG4UW.EXE (for Windows) are common control programs for these B+K Precision's programmers. We guarantee running of these programs under all of above mentioned operating systems without any problems. Also background operation under Windows is error-free.

For DOS versions of the control program running under WINDOWS 3.11/95/98, we suggest the following: (adjust "Properties" on the icon on your screen):

- Run the control program in **full-screen DOS** (in text mode). In graphic mode the control program might be somewhat slower.
- If you want the control program to run in the **background**, it is necessary to set: (WIN95/98) RIGHT mouse button on the DOS icon/ Properties/ Others/ Background/ Enable; (WIN3xx) in the appropriate PIF file, set the option to Background

New versions of programmer software

In order to exploit all the capabilities of programmer we recommend using the latest version of PG4U/PG4UW (see appendix B - Keep-Current Service). You may download the latest version of programmer software (file PG4UARC.EXE /PG4UWARC.EXE) from our Internet site www.bkprecision.com, part download.

Upgrading the programmer software

Copy PG4UARC.EXE / PG4UWARC.EXE to a temporary directory then launch it. After extraction you will see all available files needed for the installation process. Then redo a standard installation (run the Setup / Install program). You may delete all files from the temporary folder after the installation process is complete.

Using the programmer software

The control program delivered by B+K PRECISION, included on the CD in your package, is granted to be free from any viruses at the moment of delivery. To increase their safety our programs include a special algorithm for detecting possible virus infections.

Run the control program

From command line of MS/PC-DOS write:

PG4U

in Windows environment: double click to icon PG4UW.

After start, control program PG4U / PG4UW automatically scan all existing ports and search for the connected any B+K Precision's programmer. Program PG4U/PG4UW is common for these B+K Precision's programmers, hence program try to find all supported (865, 864, 844A, 848, 849, 862, 863 and 861) programmers.

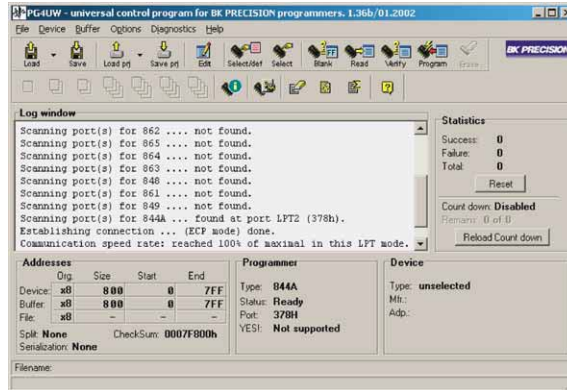
Notes: *When the PG4U/PG4UW program is started, program is checked for its integrity. Than the program display a standard user menu and waits for your instructions.*

If the control program cannot communicate with the programmer, an error message appears on the screen, including error code and description of possible reasons (disconnected programmer, bad connection, power supply failure, incompatible printer port, ...). Eliminate the error source and press any key. If error condition still exist, the program resumes its operation in the demo mode and access to the programmer is not possible. If you cannot find the cause of the error, follow the instructions in **Troubleshooting** section. In addition, the control program checks communication with programmer prior to any operation with the programmed device.

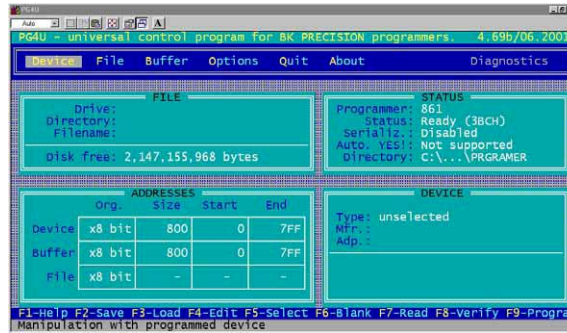


Description of the user screen

Windows program PG4UW



DOS program PG4U



Header bar	the name, copyright statement and version of the PG4U/PG4UW the control program
Menu bar	list of basic functions
File window/Filename	information on the currently loaded file in buffer
Status window	information about the status of the programmer and PG4U/PG4UW
Addresses window	organization, size, start and end addresses of the target device, buffer and file
Device window	all relevant information about the current target device
Help bar	a brief description of selected command

Menu selection is carried out in the normal GUI fashion - either by cursor moving plus pressing **<Enter>**, or by typing the highlighted letter in the wanted menu or - of course - by mouse. Hot-keys are available for even quicker selection of intensely used commands.

Note: *Data entered through keyboard is in HEX format, excepting ASCII blocks in Buffer/View/Edit command.*

List of hot keys

<F1>	Help	Calls Help
<F2>	Save	Save file
<F3>	Load	Load a file into the buffer
<F4>	Edit	Viewing/editing of buffer
<F5>	Select/default	Target-device selection from 10 last selected devices list
<Alt+F5>	Select/manual	Target-device selection by typing device/vendor name
<F6>	Blank	Blank check
<F7>	Read	Reads device's content into the buffer
<F8>	Verify	Compares contents of the target device with the buffer
<F9>	Program	Programs target device
<Alt+Q>	Exit without save	Terminates the PG4U / PG4UW
<Alt+X>	Exit and save	Terminates the PG4U / PG4UW and saving settings too
<Ctrl+F1>		Displays additional information about current device
<Ctrl+F2>	Erase	Fill's the buffer with a given value
<Ctrl+Shift+F2>		Fill's the buffer with random values.



File

This submenu is used for source files manipulation, settings and viewing directory, changes drives, changes start and finish address of buffer for loading and saving files by **binary, MOTOROLA, MOS Technology, Intel (extended) HEX, Tektronix, ASCII space, JEDEC, and POF** format.

File / Load

Analyze file format and loads the data from specified file to the buffer. You can choose the format desired (**binary, MOTOROLA, MOS Technology, Tektronix, Intel (extended) HEX, ASCII space, JEDEC and POF**). The control program stores a last valid mask for file listing. You can save the mask into the config. file by command **Options / Save options**.

Checking the check box **Automatic file format recognition** tells program to detect file format automatically. When program can't detect file format from one of supported formats, the binary file format is assumed.

When the check box **Automatic file format recognition** is unchecked program allows user to manually select wished file format from list of available file formats on panel **Selected file format**. When Binary file format is selected, there can be specified Buffer start value. Buffer start value is buffer address from which data read from file will be written to buffer.

The reserved key **<F3>** will bring out this menu from any menu and any time.

File / Save

Saves data in the buffer, which has been created, modified, or read from a device onto a specified disk. You can choose the format desired (**binary, MOTOROLA, MOS Technology, Tektronix, Intel (extended) HEX, ASCII space, JEDEC and POF**).

The reserved key **<F2>** will bring out this menu from any menu and any time.

File / Load project

This option is used for loading project file, which contains device configuration buffer data saved and user interface configuration.

The standard dialog **Load project** contains additional window - **Project description** - placed at the bottom of dialog. This

window is for displaying information about currently selected project file in dialog Load project.

Project information consists of:

- name and manufacturer of the first device selected in the project
- date and time of project creation
- version of program by which project was created
- user written description of project (it can be arbitrary text, usually author of project and some notes)

File / Save project

This option is used for saving project file, which contains settings of device configuration and buffer data saved. Data saved to project file can be restored anytime by menu command **File / Load project**.

The dialog **Save project** contains three additional windows in **Project description** panel placed at the bottom of dialog **Save project**. The windows are for displaying information about currently selected project file in dialog **Save project** and information about current project, which has to be saved.

Project information consists of:

- name and manufacturer of the first device selected in the project
- date and time of project creation
- version of program by which project was created
- user written description of project (it can be arbitrary text, usually author of project and some notes)

The first (upper) window contains information about currently selected project file in dialog Save project.

The second (middle) windows displays information about actual program configuration including currently selected device, active programmer, date and time and program version. These actual program settings are used for creation of project description header.

The third (bottom) window is user editable and contains project description (arbitrary text), which usually consists of project author and some notes.

File /Reload file

Choose this option to reload a recently used file.

When you use a file, it is added to the **Reload file** list. Files are listed in order depending on time of use of them. Lastly used files are listed before files used far off.



To Reload a file:

1. From the File menu, choose Reload file.
2. List of lastly used files is displayed. Click the file you want to reload.

Note: *When reloading a file the file format is used, by which the file was lastly loaded/saved.*

File / Reload project

Choose this option to reload a recently used project.

When you use a project, it is added to the **Reload project** list. Projects are listed in order depending on time of use of them. Lastly used projects are listed before projects used far off.

To Reload a project:

1. From the File menu, choose Reload project.
2. List of lastly used projects is displayed. Click the project you want to reload.

File / Project options

This option is used for display/edit project options of actually loaded project. Project options means basic description of project including following project data:

- device name and manufacturer
- project creation date
- version of program by which project was created
- user defined project description (arbitrary text), e.g. project author and other text data for more detailed project description

User can directly edit user defined project description only. Device name, manufacturer, project date and program version are generated automatically by program.

File / Load encryption table

This command loads the data from binary file from disk and it saves them into the part of memory, reserved for an encryption (security) table.

File / Save encryption table

This command writes the content of the memory's part, reserved for an encryption table, into the file on the disk as a binary data.

File / Exit without save

The command deallocates heap, cancels buffer on disk (if exists) and returns back to the operation system.

File / Exit and save

The command deallocates heap, cancels buffer on the disk (if exists), saves current setting of last 10 selected devices to disk and returns back to the operation system.



Device

The functions for a work with selected programmable devices - device select, read data from device, device blank check, device program, device verify and device erase.

Device / Select from default devices

This window allows selecting the desired type of the device from list of default devices. This one is a cyclic buffer in which are stored last 10 selected devices including its device options. This list is saved to disk by command **File / Exit and save**.

If you wish display additional information about the current device, use an **<Ctrl+F1>** key. This command provides a size of device, organization, programming algorithm and a list of programmers (including auxiliary modules) that supported this device. You can find here a package information and other general information about current device too.

Use a **** key for delete of current device from list of default devices. There isn't possible to empty this list, if you repeat this access. The last device stays in buffer and the **** key isn't accepted.

Device / Select device ...

This window allows selecting the desired type of the device from all devices supported by current programmer. It is possible to choose device by **name**, by **type** or by **manufacturer**.

Selected device is automatically saved to buffer of default devices (max. 10 devices). This buffer is accessible with **Device / Select from default devices** command.

If you wish display additional information about the current device, use an **<Ctrl+F1>** key. This command provides a size of device, organization, programming algorithm and a list of programmers (including auxiliary modules) that supported this device. You can find here a package information and other general information about current device too.

Select device ... / All

This window allows selecting the desired type of the device from all devices supported by current programmer. Supported devices are displayed in a list box.

Device can be select by double click on a line from list with desired manufacturer name and device number or by entering manufacturer name and/or device number in a search box (use

a key **<Space>** as a separation character) and press **<Enter>** or click **OK** button.

Press a key **<Esc>** or click **Cancel** button at any time to cancel device selection without affecting the currently selected device.

Selected device is automatically saved to buffer of default devices (max. 10 devices). This buffer is accessible with **Device / Select from default devices** command.

If you wish display additional information about the current device, use an **<Ctrl+F1>** key. This command provides a size of device, organization, programming algorithm and a list of programmers (including auxiliary modules), which supported this device. You can find here a package information and other general information about current device too.

Select device ... / Only selected type

This window allows selecting the desired type of the device. At the first - you must select a device type (e.g. EPROM) and device subtype (e.g. 64Kx8 (27512)), using mouse or cursor keys. It will cause a list of manufacturers and devices will be displayed.

Device can be select by double click on a line from list with desired manufacturer name and device number or by entering manufacturer name and/or device number in a search box (use a key **<Space>** as a separation character) and press **<Enter>** or click **OK** button.

Press a key **<Esc>** or click **Cancel** button at any time to cancel device selection without affecting the currently selected device.

Selected device is automatically saved to buffer of default devices (max. 10 devices). This buffer is accessible with **Device / Select from default devices** command.

If you wish display additional information about the current device, use an **<Ctrl+F1>** key. This command provides a size of device, organization, programming algorithm and a list of programmers (including auxiliary modules), which supported this device. You can find here a package information and other general information about current device too.

Select device ... / Only selected manufacturer

This window allows selecting the desired device type by manufacturer. First select a required manufacturer in Manufacturer box using mouse or cursor keys. It will cause a list of selected manufacturer devices will be displayed.

Device can be select by double click on a line from list with desired manufacturer name and device number or by entering



device number in a search box (use a key **<Space>** as a separation character) and press **<Enter>** or click **OK** button.

Press a key **<Esc>** or click **Cancel** button at any time to cancel device selection without affecting the currently selected device.

Selected device is automatically saved to buffer of default devices (max. 10 devices). This buffer is accessible with **Device / Select from default devices** command.

If you wish display additional information about the current device, use an **<Ctrl+F1>** key. This command provides a size of device, organization, programming algorithm and a list of programmers (including auxiliary modules), which supported this device. You can find here a package information and other general information about current device too.

Device / Select EPROM /Flash by ID

Use this command for auto select an EPROM or Flash as active device by reading the device ID. The programmer can automatically identify certain devices by the reading the manufacturer and the device-ID that are burnt into the chip. This only applies to EPROM or Flash that supports this feature. If the device does not support a chip ID and manufacturer's ID, a message will be displayed indicating this as an unknown or not supported device.

If more devices with identical chip ID and manufacturer's ID were detected, the list of these devices will be displayed. A corresponding device can be chosen from this list by selecting its number (or manufacturer name) from list and press **<Enter>** (or click **OK** button). Press a key **<Esc>** or click **Cancel** button at any time to cancel device selection without affecting the currently selected device.

WARNING: *The control program only support this time EPROM's and Flash with 28 and 32 pins. Any of programmers determines pins number automatically. For other programmers you must enter this number manually.*

The programmer applies a high voltage to the appropriate pins on the socket. This is necessary to enable the system to read the device ID. Do not insert into the socket a device that is not an EPROM or Flash. It may be damaged when the programmer applies the high voltage.

We don't recommend apply this command to 2764 and 27128 EPROM types, because most of them ID not supports.

Device / Device options

All settings of this menu are used for programming process, serialization and associated file control.

Device / Device options / Operation options

All settings of this command are used for programming process control. This is a flexible environment which content items associated with current device and programmer type. Items, which are valid for the current device but aren't supported by current programmer, are disabled. These settings are saving to disk along with associated device by **File / Exit and save** command.

List of items:

- group Addresses:

device start address	(default 0)
device end address	(default device size-1)
buffer start address	(default 0)

- group Insertion test:

insertion test	(default ENABLE)
check ID bytes	(default ENABLE)

- group Command execution:

blank check before programming	(default DISABLE)
erase before programming	(default DISABLE)
verify after reading	(default ENABLE)
verify after programming	(ONCE, TWICE)
verify options	(nominal VCC 5%, nominal VCC 10%, VCCmin VCCmax)

Device / Device options / Serialization

Serialization is special mode of program. When a serialization mode is activated, a specified value is automatically inserted on predefined address into buffer before programming each device. When more devices are programmed one by one, the serial number value is changed for each device automatically and inserted into buffer before programming device, so each device has unique serial number.

There are two types of serialization:

- Incremental mode
- From file mode

If a new device is selected, the serialization function is set to a default state i.e. disabled.



Actual serialization settings for actually selected device are saving to disk along with associated device by **File / Exit and save** command.

When incremental mode is active following actual settings are saved to configuration file: address, size, serial value, incremental step and settings of modes ASCII / BIN, DEC / HEX, LS byte / MS Byte first.

When from-file mode is active following actual settings are saved to configuration file: name of input serialization file and actual label, which indicates the line with actual serial number in input file.

When program is in multiprogramming mode (multiple socket programmer is actually selected) the special section - **Action on not programmed serial values due to error** - is displayed in dialog **Serialization**. In this section two choices are available:

1. Ignore not programmed serial values
2. Add not programmed serial values to file

Ignore not programmed serial values means the not programmed serial values are ignored and no action is done with them.

Add not programmed serial values to file means the not programmed serial values are added to file. The file of not programmed serial values has the same text format as serialization file for "From-file" serialization mode. So there is possible to program the serial values later on by "From-file" serialization mode.

If device programming is stopped by user, program will not change the serial values ready for next batch of devices. The same situation is if device program is incomplete, e.g. for device insertion test error.

Ignoring or writing not programmed serial values is only used when at least one device from current batch of devices in multiple socket module programmer is completely programmed and verified without errors.

Device / Device options / Serialization / Incremental mode

The **Incremental mode** enables to assign individual serial numbers to each programmed device. A starting number entered by user will be incremented by specified step for each device program operation and loaded in selected format to specified buffer address prior to programming of each device.

There are following options, that user can modify for incremental mode:

S / N size

S / N size option defines the number of bytes of serial value which will be written to buffer. For Bin (binary) serialization modes values 1-4 are valid for S / N size and for ASCII serialization modes values 1-8 are valid for S / N size.

Address

Address option specifies the buffer address, where serial value has to be written. Note that address range must be inside the device start and device end addresses. Address must be correctly specified so the last (highest or lowest) byte of serial value must be inside device start and device end address range.

Start value

Start value option specifies the initial value, from which serialization will start. Generally the max. value for serialization is \$1FFFFFFF in 32 bit long word.

When the actual serial value exceeds maximum value, three most significant bits of serial number are set to zero. After this action the number is always inside 0..\$1FFFFFFF interval (this is basic style of overflow handling).

Step

Step options specifies the increment step of serial value incrementation.

S / N mode

S / N mode option defines the form in which serial value has to be written to buffer. Two options are available:

- ASCII
- Bin

ASCII - means the serial number is written to buffer as ASCII string. For example number \$0528CD is in ASCII mode written to buffer as 30h 35h 32h 38h 43h 44h ('0' '5' '2' '8' 'C' 'D'), i.e. six bytes.

Bin - means the serial number is written directly to buffer. If the serial number has more than one byte length, it can be written in one of two possible byte orders. The byte order can be changed in „Save to buffer“ item.

Style

Style option defines serial number base. There are two options:

- Decimal
- Hexadecimal.



Decimal numbers are entered and displayed using the characters '0' through '9'.

Hexadecimal numbers also use characters 'A' through 'F'. The special case is Binary Dec, that means BCD number style. BCD means the decimal number is stored in hexadecimal number, i.e. each nibble must have value from 0 to 9. Values A to F are not allowed as nibbles of BCD numbers.

Select the base in „Style“ options before entering numbers of serial start value and step.

Save to buffer

Save to buffer option specifies the serial value byte order to write to buffer. This option is used for Bin S / N mode (for ASCII mode it has no effect).

Two options are available:

- LSByte first (used by Intel processors) will place the Least Significant Byte of serial number to the lowest address in buffer.
- MSByte first (used by Motorola processors) will place the Most significant Byte first to the lowest address in buffer.

Device / Device options / Serialization / From file mode

Using the From-file method, serial values are read from the user specified input file and written to buffer on address specified in input file.

There are two user options: File name and Start label.

File name

File name option specifies the file name from which serial addresses and values will be read. The input file for From file serialization must have special format, which is described in From file serialization file format below.

Start label

Start label defines the start label in input file. The reading of serial values from file starts from defined start label.

From file serialization file format

From file serialization input file includes addresses and arrays of bytes defining buffer addresses and data to write to buffer. Input file has text type format, which structure is:

```
[label1] addr byte0 byte1 .. byten
...
[labeln] addr byte0 byte1 .. bytem , addr byte0 byte1 ... bytek
      \         /         \         /
      |         |         |         |
      basic part   optional part
```

; Comment

meaning is:

basic part

Basic part defines buffer address and array of bytes to write to buffer. Basic part must be always defined after label in line.

optional part

Optional part defines the second array of bytes and buffer address to write to buffer. One optional part can be defined after basic part of data.

label1, labeln - labels

Labels are identifiers for each line of input file. They are used for addressing each line of file. The labels should be unique. Addressing lines of file means, the required start label entered by user defines line in input file from which serial values reading starts.

addr -

Addr defines buffer address to write data following the address.

byte0..byten, byte0..bytem, byte0..bytek -

Bytes arrays byte0..byten, byte0..bytem and byte0..bytek are defining data, which are assigned to write to buffer. Maximum count of bytes in one data field following the address is 64 bytes. Data bytes are written to buffer from address addr to addr+n.

The process of writing particular bytes to buffer is:

byte0 to addr
byte1 to addr + 1
byte2 to addr + 2
....
byten to addr + n

Optional part is delimited from the first data part by character " , " (comma) and its structure is the same as in the first data part, i.e. address and following array of data bytes.

Characters with special use:

[] - labels must be defined inside square brackets

' ' - character which delimiters basic part and optional part of data



“;” - the semicolon character means the beginning of a comment. All characters from “;” to the end of line are ignored. Comment can be on individual line or in the end of definition line.

Note:

- Label names can contain all characters except '[' and ']'. The label names are analyzed as non case sensitive, i.e. character 'a' is same as 'A', 'b' is same as 'B' etc..
- All address and byte number values in input file are hexadecimal.
- Allowed address value size is from 1 to 4 bytes.
- Allowed size of data arrays in one line is in range from 1 to 64 bytes. When there are two data arrays in one line, the sum of their size in bytes can be maximally 80 bytes.
- Be careful to set correct addresses. Address must be defined inside device start and device end address range. In case of address out of range, warning window appears and serialization is set to disabled (None).

Example:

```
[nav1] A7890 78 89 56 02 AB CD ; comment1
[nav2] A7890 02 02 04 06 08 0A
[nav3] A7890 08 09 0A 0B A0 C0 ; comment2
[nav4] A7890 68 87 50 02 0B 8D
[nav5] A7890 A8 88 59 02 AB 7D

;next line contains also second definition
[nav6] A7890 18 29 36 42 5B 6D , FFFF6 44 11 22 33 99
88 77 66 55 16

; this is last line - end of file
```

In the example file six serial values with labels „nav1“, „nav2“, ...“nav6“ are defined. Each value is written to buffer on address \$A7890. All values have size 6 bytes. The line with „nav6“ label has also second value definition, which is written to buffer on address \$FFFF6 and has size 10 bytes, i.e. the last byte of this value will be written to address \$FFFFF.

Device / Device options / Statistics

Statistics gives the information about actual count of device operations, which were proceeded on selected type device. If one device is corresponding to one device operation, e.g. programming, the number of device operations will be equal to number of programmed devices.

The next function of statistics is Count down. Count down allows checking the number of device operations, and then number of devices, on which device operations have to be done. After each successful device operation the value of

count down counter is decremented. Count down has user defined start number of devices to do. When count down value reach zero, it means, specified number of devices is complete and user message about complete count down will be displayed.

Statistics dialog contains following options:

Check boxes Program, Verify, Blank, Erase and Read define operations, after which statistics values increment.

Check box Count down sets Count down activity (enable or disable). Edit box following the Count down check box defines initial number of count down counter, from which count down starts.

Statistics dialog can be also opened by pressing right mouse button on Statistics panel and clicking displayed item Statistics.

Actual statistics values are displaying in main window of control program in Statistics panel.

Statistics panel contains three statistics values – Success, Failure, Total and two Count down information values Count down and Remains.

Meaning of the values is:

Success number of operations which where successfully completed

Failure number of operations which where not successfully completed

Total number of all operations

Count down informs about Count down activity (Enabled or Disabled)

Remains informs about remaining number of device operations to do

Successful operation means any device operation of these, which is completed without errors:

program
verify
blank check
erase
read

If device operation is finished with error(s) it is not successful operation.

When new device type is selected, all statistics values are set to zero and Count down is set to Disabled.

Reset button in Statistics panel reset statistics values.



Reload Count down button in Statistics panel reloads initial value to Count down.

Device / Device options / Associated file

This command is used for setting associated file with current device. This is a file, which can be automatic loaded to buffer after device is selected from default devices select list or by start control program.

You can edit the associated file name in file name box, put a full pathname. The control program checks the present of this file on the disk. Also is possible enabling or disabling automatic load of this file.

You can save both settings i.e. associated file and enabling of automatic load of this file to disk by command **File / Exit and save**.

Device / Blank check

This command allows to blank check of all devices or its part if possible. The control program reports a result of this action by a write of a warning message to INFO window.

The menu command **Device / Device options / Operation options** allows to set another working area as the standard.

Device / Read

This command allows to read all device or its part into the buffer. The control program reports a finish of this action by write a message to INFO window.

The menu command **Device / Device options / Operation options** allows to set another working area as the standard. Setting an option Verify data after reading in this menu command means a higher reliability for device reading.

Device / Verify

This command compares the programmed data of the all device or its part with data in buffer. The control program reports a result of this action by a write of an error message to INFO window.

The menu command **Device / Device options / Operation options** allows to set another working area as the standard.

By the setting in the menu **Options / Display errors the command** lets to write the found errors on the display or write the found errors to VERIFY.ERR file. In the Display errors mode to the screen can display the program max. 45 the first

found differences, which are located by the address where they were caused.

Device / Program

This command allows to programming of the all device or its part by the data of the buffer. The control program reports a result of this action by a write of an error message to INFO window.

The menu command **Device / Device options / Operation options** allows to set another working area as the standard, and set other operation options for programming process control.

Device / Erase

This command allows to erase the all programmable device. The program reports the end without error or end with the error by writes the warning report on the display.

Device / Test

This command executes a test with device selected from list of supported devices (e.g. static RAM) on programmers, which support this test.

Device / Device info

The command provides additional information about the current device - size of device, organization, programming algorithm and a list of programmers (including auxiliary modules), that supported this device. You can find here a package information and other general information about current device too.

The reserved key <Ctrl+F1> will bring out this menu from any menu and any time immediately.



Buffer

This submenu is used for buffer manipulation, block operation, filling a part of buffer with string, erasing, checksum and of course editing and viewing with other items (find and replace string, printing...).

Buffer / View/Edit

This command is used to view (view mode) or edit (edit mode) data in buffer (for viewing in DUMP mode only). Use arrow keys for select the object for edit. Edited data are signified by color.

You can use <F4> hot key also.

View/Edit Buffer

F1	display help of actual window
F2	fill block causes filling selected block of buffer by requested hex (or ASCII) string. Sets start and end block for filling and requested hex or ASCII string.
Ctrl+F2	erase buffer with specified blank value
Ctrl+Shift+F2	fill buffer with random data
F3	copy block is used to copy specified block of data in current buffer on new address. Target address needn't be out from source block addresses.
F4	move block is used to move specified block of data in current buffer on new address. Target address needn't be out from source block addresses. Source address block (or part) will be filled by topical blank character.
F5	swap bytes command swaps a high- and low- order of byte pairs in current buffer block. This block must started on even address and must have an even number of bytes. If this conditions do not fulfill, the program modifies addresses itself (start address is moved on lower even address and/or end address is moved on higher odd address).
F6	print buffer
F7	find string (max. length 16 ASCII characters)
F8	find and replace string (max. 16 ASCII chars.)
F9	change current address
F10	change mode view / edit

F11	switch the mode of buffer data view between 8 bit and 16 bit view. It can be also do by mouse clicking on the button to the right of View/Edit mode buffer indicator. This button indicates actual data view mode (8 bit or 16 bit), too.
F12	checksum dialog allows to count checksum of selected block of buffer change mode view / edit
Arrow keys	move cursor up, down, right and left
Home/End	jump on start / end current line
PgUp/PgDn	jump on previous / next page
Ctrl+PgUp/PgDn	jump on start / end current page
Ctrl+Home/End	jump on start / end current device
Backspace	move cursor one position left (back)

Note: characters 20H - FFH (mode ASCII) and numbers 0..9, A..F (mode HEX) immediately changes content of edit area.

Warning: Editing of ASCII characters for word devices is disabled.

Print buffer

This command allows write selected part of buffer to printer or to file. Program uses at it an external text editor in which selected block of buffer is displayed and can be printed or saved to file, too. By default is set simple text editor Notepad.exe, which is standard part of all versions of MS Windows.

In Print buffer dialog are following options:

Block start
Defines start address of selected block in buffer.
Block end
Defines end address of selected block in buffer.

External editor
Defines path and name of external program, which has to be used as text viewer for selected block of buffer. By default is set simple text editor NOTEPAD.EXE, which is standard part of all versions of MS Windows. User can define any text editor for example WORDPAD.EXE, which is able to work with large text files. In user defined text editor user can print or save to file selected block of buffer.

The external editor path and name is saved automatically to disk.

Find dialog box

Enter the search string to Find to text input box and choose <Find> to begin the search or choose <Cancel> to forget it.



Direction box specifies which way you want to search, starting from the current cursor position (In edit mode). Forward (from the current position or start of buffer to the end of the buffer) is the default. Backward searches toward the beginning. In view mode searches all buffer.

Origin specifies where the search should start.

Find & Replace dialog box

Enter the search string in the Text to find string input box and enter the replacement string in the Replace with input box.

In Options box you can select prompt on replace: if program finds instance you will be asked before program change it.

Origin specifies where the search should start.

Direction box specifies which way you want to search, starting from the current cursor position (In edit mode). Forward (from the current position or start of buffer to the end of the buffer) is the default. Backward searches toward the beginning. In view mode searches all buffer.

Press <Esc> or click Cancel button to close dialog window.

By pressing Replace button the dialog box is closed and a Question window is displayed. This window contains following choices:

Yes replaces found item and finds next
No finds next item without replacing current one
Replace All replaces all found items
Abort search aborts this command

View/Edit buffer for PLD

Ctrl+F2	erase buffer with specified blank value
Ctrl+Shift+F2	fill buffer with random data
F9	goto address...
F10	change mode view / edit
F11	switch the mode of buffer data view between 1 bit and 8 bit view. It can be also do by mouse clicking on the button to the right of View/Edit mode buffer indicator. This button indicates actual data view mode (1 bit or 8 bit), too.
Arrow keys	move cursor up, down, right and left
Home/End	jump on start / end current line
PgUp/PgDn	jump on previous / next page
Ctrl+PgUp/PgDn	jump on start / end current page
Ctrl+Home/End	jump on start / end edit area
Backspace	move cursor one position left (back)

Note: Characters 0 and 1 immediately changes content of edit area.

Buffer / Fill block

Selecting this command causes filling selected block of buffer by requested hex (or ASCII) string. Sets start and end block for filling and requested hex or ASCII string.

Buffer / Copy block

This command is used to copy specified block of data in current buffer on new address. Target address needn't be out from source block addresses.

Buffer / Move block

This command is used to move specified block of data in current buffer on new address. Target address needn't be out from source block addresses. Source address block (or part) will be filled by topical blank character.

Buffer / Swap block

This command swaps a high- and low- order of byte pairs in current buffer block. This block must started on even address and must have an even number of bytes. If this conditions do not fulfill, the program modifies addresses itself (start address is moved on lower even address and/or end address is moved on higher odd address).

Buffer / Erase

If this command is selected, the content of the buffer will be filled with topical blank character.

The reserved key <Ctrl+F2> will bring out this menu from any menu and any time.

Buffer / Fill random data

If this command is selected, the content of the buffer will be filled with random data.

The reserved key <Shift+Ctrl+F2> will bring out this menu from any menu and any time.

Buffer / Checksum

The checksum dialog is used for calculate checksums of selected block in buffer. The checksums are calculated by next way :

Byte sum by bytes to "word". CY flag is



Word	ignored sum by words to "word". CY flag is ignored
Byte (CY)	sum by bytes to "word". CY flag is added to result.
Word (CY)	sum by words to "word". CY flag is added to result.
CRC-CCITT	sum by bytes to "word" using $RESULT=PREVIOUS + (x^{16} + x^{12} + x^5 + 1)$
CRC-XModem	sum by bytes to "word" using $RESULT=PREVIOUS + (x^{16} + x^{15} + x^2 + 1)$

Column marked as Neg. is a negation of checksum so, that
 $Sum + Neg. = FFFFH$.

Column marked as Suppl. is complement of checksum so, that
 $Sum + Suppl. = 0 (+ carry)$.

Dialog checksum contains following items:

From address: This is a start address of block selected for calculating checksums in buffer. Address is defined as Byte address.

To address: This is an end address of block selected for calculating checksums in buffer. Address is defined as Byte address.

Insert checksum: This is special item used for select which kind of checksum will be written into the buffer when, the Calculate & insert was executed.

Insert address: This is special item that specifies an address from the buffer where a result of chosen checksum will be written, when the Calculate & insert was executed. Address can not be specified inside the range <From address> to <To address>. Address is defined as Byte address.

Size: This item is used for setting a size of chosen checksum result, which will be written into the buffer. A size of checksum result may be 8 (byte) or 16 (word) bits long. If word size was selected, whole checksum value will be written into the buffer. In other case will be written only low byte of checksum value.

Note: If word size was selected, a low byte of checksum value will be written on address specified in box Insert address and a high byte will be written on address incremented by one.

Calculate: Click on the button Calculate starts calculating checksums for selected block in buffer. No writes into the buffer are executed.

Calculate & insert: Click on the button Calculate & insert starts calculating checksums for selected block in the buffer and

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writes the chosen checksum into the buffer on address specified by Insert address.



Options

The Options menu contains commands that let you view and change various default settings.

Options / General options

General options dialog allows user to control following options of program.

File options

File options page allows you to set file masks, auto-reload of current file and choose file format recognizing for loaded files.

File format masks is used for setting file-name masks to use as a filter for file listing in **File / Save** and **File / Load file** window for all file formats. Mask must contain one of wildcards (*, ?) at least and must be applied correctly by syntax.

Project file default extension is used for setting project files-extension used as default extension in **File / Load project** and **File / Save project** dialogs.

In group **When current file is modified by another process** can be set mode of reloading of actually loaded (current) file.

There are three choices:

1. Prompt before reloading file
2. Reload automatically
3. Ignore change scanning of current file

Load file format allows to set mode of file format recognition for loading files. When automatic file format is selected, program analyses format of loading file and test file for each of supported formats, that are available in program. If file format matches one of supported formats, the file is read to buffer in detected format.

Manual file format allows user to select explicitly wished file format from list of supported file formats. File may be loaded no completely or incorrectly, if file format does not match to user selected format.

Hex file options

This page contains several options for loading control by any of HEX formats.

The first option sets **erasing** buffer (with desired value) automatically before the loading by any of HEX formats.

The second option sets a **negative offset**, which is used for data addresses modification by loading from any HEX file so, that data can be written to existing buffer addresses.

Example:

A file contains data by Motorola S - format. A data block started at address FFFF0H. It is a S2 format with length of address array of 3 bytes. For all data reading you can set a value of negative offset to FFFF0H. It means, that the offset will be subtracted from current real addresses and so data will be written from buffer address 0.

Warning: *The value of negative offset is subtracted from real address and therefore a result of subtraction can be negative number. Because take care of correct setting of this value.*

The third option sets data **redirecting** from file by extended Intel HEX format to physically existing buffer addresses. It means, that the user will be prompted to enter segment, which is associated with the lowest segment in file (record type 02) and the other segments will be modified with this difference. This option isn't valid for "simple" Intel HEX format. Default set means inactive status.

Example:

The file contains two records of type 02 with addresses F000H and F800H. When we enter new segment for example 0H, data from segment F000H will be directed to segment 0H and similar data from segment F800H to segment 800H.

Default setting is no active.

Language

This page allows you to select another language for user interface such as menu, buttons, dialogs, information and messages. It also allows to select wished help file in another language. For another language support of user interface the language definition file is required.

Sound

Sound page allows user to select the sound mode of program. Program generates sounds after some activities, e.g. activities on device (programming, verifying, reading, etc.). Program generates sound also when warning or error message is displayed. User can now select sound from MS Windows system sound (required installed sound card), PC speaker or none sound.

Other

Page Other allows user to manage other program settings. In the panel Tool buttons, hint display options on toolbar buttons in main program window can be modified. In the panel Start-up directory can be selected mode of selecting directory when program starts. Default start-up directory means directory, from which program is called. Directory in which program was lastly ended means the last current directory when program was lastly ended. This directory assumes the first directory from directory history list.



Save options

Save options page allows you to select the program options saving when exiting program. Three options are available here:

Don't save options - don't save options during quitting program and don't ask for saving options.

Auto save options - save options during quitting program without asking for saving options.

Prompt for save options - program asks user for saving options before quoting program. User can select to save or not to save options.

Options / View

Use the View menu commands to display or hide different elements of program environment such as toolbars.

Options / View / Main toolbar

Choose this command to show or hide the Main toolbar.

Options / View / Additional toolbar

Choose this command to show or hide the Additional toolbar.

Options / View / Programming conditions before programming

Choose this command to enable/disable display of Programming conditions before device program operation is confirmed.

Options / Display errors

This option allows you set a form of errors displaying as a result of programmed data verifying. Errors can be displayed to the **screen** (max. 45 differences), **saved to VERIFY.ERR** file on the disk in current directory or it will **not displayed**. In case the displaying errors are turned off, the control program reports a warning message in INFO window only.

This setting can be saved to disk by command **Options / Save options**. Default form is set to a screen displaying.

Options / Find programmer

Selects a new type of programmer and communication parameters. This command contains following items:

Programmer - sets a new type of programmer for find. If a Search all is selected, the control program finds all supported programmers.

Establish communication - allows manual or automatic establishing communication for a new programmer.

Speed - sets speed, if a manual establishing communication is selected, which PC sends data into the programmer. Speed is expressed as a percent from a maximal speed.

The communication speed modification is important for PCs with "slow" LPT ports, which haven't sufficient driving power for a PC->programmer cable (laptop, notebook, ...). Use this command, if you have any communication problems with connected programmer on the LPT port of your PC (e.g. control program reports a programmer absence, the communication with the programmer is unreliable, etc.).

If automatic establishing communication is selected, then control program sets a maximal communication speed.

Port - selects a LPT port, which will be scanned for a requested programmer. If All port is selected, the control program scans all LPT ports, which are available on standard addresses.

Address for special port - sets address of LPT port, if a Special port is selected.

Pressing key <Enter> or button **OK** initiates scanning for programmer by set parameters. There is same activity as at start the control program. The command clears a list of default devices without the current device, if the new selected programmer supports this one.

This setting is saved to disk by command **Options / Save options**.

Options / Handler

In dialog **Handler** a Handler type and Handler communication parameters can be set. Handler is an external device for special control of device operations in control program. When None Handler is selected, this means default state of control program, i.e. device operations are controlled directly by user otherwise control program is in special mode, when device operations are controlled automatically with co-operation with Handler.

Dialog **Handler** contains following items:

Selected Handler select wished Handler type.
Search at port select a COM port, which will be scanned for a requested Handler.

Pressing key <Enter> or button **OK** initiates scanning for Handler by set parameters. If selected Handler type is **None**, no Handler scanning will be processed. Current Handler



settings are saved to configuration file by command **Options / Save options** or when control program is closed.

Handler is not available for sale.

Options / Module options

This option is used for multiple socket programmers for defining MASTER socket and activity of each socket. **MASTER socket** group box allows user to set socket which is preferentially used for device reading operation. **Enable/Disable socket** checkbox array allows user to set enabling and disabling of each socket individually. Disabled sockets are ignored for any device operation.

Options / Automatic YES!

This command is used for setting **Automatic YES!** mode. In this mode you just put a device into ZIF socket and a last operation will be repeated automatically. Program automatically detects an insertion of a new device and runs last executed operation without pressing any key or button. An insertion of device into ZIF is displayed on the screen. Repeated operation executing will be cancelled by pressing key **<Esc>** during waiting for insert/remove a device to/from ZIF.

Note: During waiting for an insertion a new device into ZIF socket, the LED BUSY on the programmer is blinking.

This mode may be enabled or disabled by item **Automatic YES!** mode. If a new programmer is selected **Options / Find programmer**, this mode will be disabled.

In **Response time** is possible to set a time interval within must be detected device in ZIF socket to accept an insertion of a new device. Default is set standard interval. If socket adapter is used then is recommended to set an elongated interval.

In **Pins with capacitors** bar may be entered a list of a pins interconnected by capacitors (for example: if a converter, which have connected capacitor between VCC and GND, is used), which may makes problems at detecting insertion of a new device.

List of pins of device is in form:

pinA, pinB, pinC....

Example: 4,6,17

This list is erased if a new device is selected by **Device / Select default** or **Device / Select device ...**

This setting is saved to disk by command **Options / Save options**.

Options / Log file

This options associates with using of **Log window**. All reports for this window can be written into the **Log file** too. The Log file name as **REPORT.REP** and the control program creates this file in current directory.

Sets **New** caused deleting old Log file if exist and creating a new file for reports. Sets **Append** adds all reports into existing Log file. If file not exist, the new file will be created. Settings are applied only at program start.

This setting can be saved to disk by command **Options / Save options**. Default form is set to a using Log window without Log file i.e. all reports will be displayed to a Log window only.

Options / Protected mode

Protected mode is special mode of program. When program is in Protected mode, there are disabled program operation and commands which can modify buffer or device settings. Protected mode is used for prevent operator from modify buffer or device settings due to insignificance. Protected mode is suitable for the programming of a large amount of the same type of devices.

There are two ways how to switch program to Protected mode:

1. by using menu command **Options / Protected mode**. This command displays password dialog. User have to enter password twice to confirm the password is correct. After password confirmation program switches to Protected mode. The entered password is then used to switch off Protected mode.
2. by reading project, which was previously saved in Protected mode.

To switch program from Protected mode to normal mode use the menu command **Options / Normal mode**. The "Password required" dialog appears. User have to enter the same password as the password entered during switch to Protected mode.

Other way to cancel Protected mode of program is closing of program, because program Protected mode is active until program is closed. The next program start will be to Normal (standard) mode (the only exception is case of project loaded by command line parameter name of project and the project was saved in Protected mode).



Options / Save options

This command saves all settings that are currently supported for saving, even if auto-save is turned off. Following options are saved: options under the Options menu, ten last selected devices, file history, main program window position and size.

Diagnostics

This command includes self test for programmers and IC test.

Diagnostics / Self test

Command executes a self test of current programmer without diagnostic POD. We recommend execute also **Diagnostics / Self test plus** of programmer.

Diagnostics / Self test plus

Command executes a self test of current programmer using diagnostic POD, which is included in standard delivery of programmer. We recommend run this test as often as possible, e.g. once per month.

Diagnostics / IC test

This command activates a test section for ICs separated by compatibility to any libraries (on distribution diskette). First select an appropriate library, wished device and then a mode for test vectors run (**Loop, Single step**). Control sequence and test results are displayed to Log window.

Diagnostics / Create diagnostic report

Command Create Diagnostic report is used for writing more particular diagnostic information to **Log window** and consequently copy **Log window** content to clipboard. The Log window content can be placed from clipboard to any text editor. Diagnostic report is useful when error occurs in control program or programmer and kind of the error is, that user can not resolve it oneself and he must contact programmer manufacturer. In this case when customer send message to manufacturer about his problem it is good to send also diagnostic report. Diagnostic report can help manufacturer to localize the reason of error and resolve it sooner.



Help

Pressing the <F1> key accesses the Help. When you selecting menu item and press <F1>, you access context-sensitive help. If PG4U / PG4UW is executing an operation with the programmer <F1> generates no response.

The following Help items are highlighted:

- words describing the keys referred to by the current Help
- all other significant words
- current cross-references; click on this cross-reference to obtain further information.

Since the Help system is continuously updated together with the control program, it may contain information not included in this manual.

Detailed information on individual menu commands can be found in the integrated on-line Help.

Note: *Information provided in this manual is intended to be accurate at the moment of release, but we continuously improve all our products. Please consult manual on www.bkprecision.com.*

Help / Supported devices

This command displays list of all devices supported by at least one type of all supported programmers. It is useful especially when user wants to find any device supported by at least one type of programmers.

Prefix "g_" before name of device means the device is supported by multi-socket programmer.

Help / Supported programmers

This command displays information about programmers, where supported this program.

Help / Device list (current programmer)

This command makes a list of all devices supported by current programmer and saves its to `?????DEV.txt` text file and `?????DEV.htm` HTML file in the directory where control program is run from. Marks `?????` are replaced by abbreviated name of current programmer, the device list is generated for.

Help / Device list (cross reference)

This command makes cross reference list of all devices supported by all programmers available on market and supported by this control program. The resulting list is in HTML format and consists of following files:

- one main HTML file **TOP_DEV.htm** with supported device manufacturers listed
- partial HTML files with list of supported devices for each device manufacturer

Main HTML file is placed to directory where this control program for programmers is located.

Partial HTML files are placed to subdirectory **DEV_HTML** placed to the directory where control program for programmers is located.

About

When you choose the Info command from the menu, a window appears, showing copyright and version information.