



**SMART MOTOR DEVICES**

<http://smd.ee>

**SMC-Program-LAN**

**User brief manual  
Ver. 01**

2018



## Start screen

Software SMC-Program LAN is intended for usage with stepper motor controllers SMSD-4.2LAN. It doesn't require installation and is ready to work upon it is copied to a directory on a PC hard drive. The directory of the program must have permissions for writing and changing files.

The start screen of the software is shown on the figure 1.



Fig.1. Start screen of SMC-Program-LAN

The start screen is the main screen of the software. If this screen is closed, the program SMC-Program is closed as well, all connections are closed.

## Chose language

To change the language of the software interface enter the menu «Settings» - «Language» and choose the language in the appeared application window.

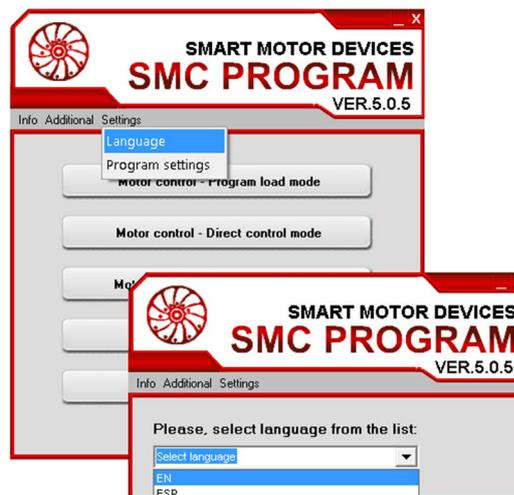


Fig.2. Choose the application language



## Controller connection

Before taking up the work of the controller SMSD-4.2LAN with SMC-Program-LAN it is needed to get it connected via Ethernet or USB. To start the connection in SMC-Program-LAN it is needed to open the window «Connect new device» from the start window of the application.

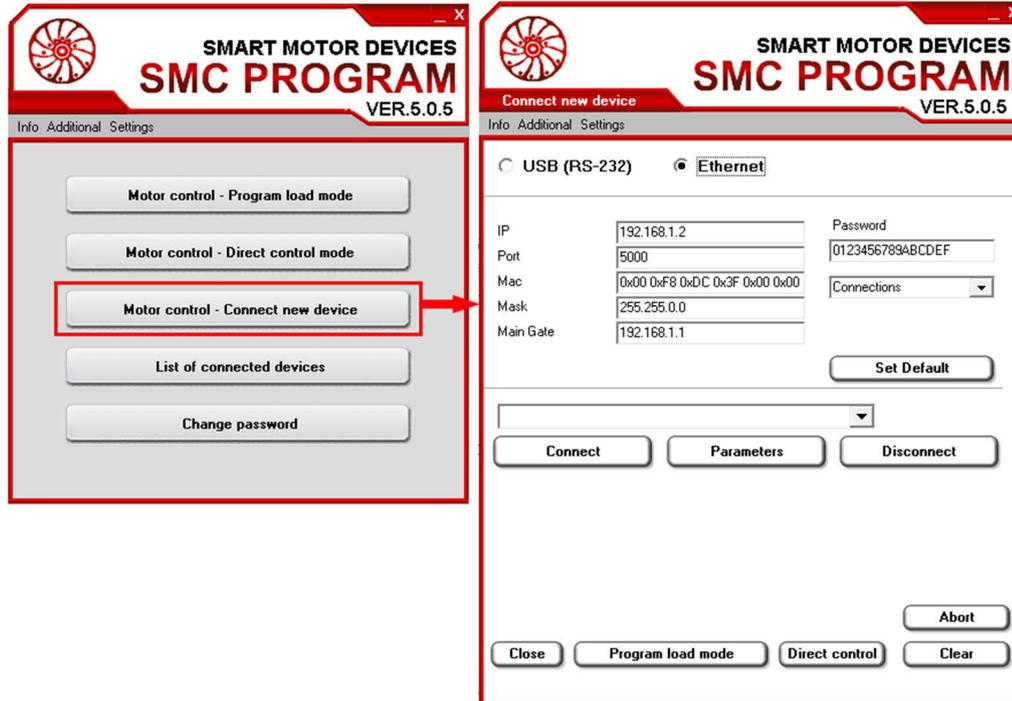


Fig.3. New controller connection

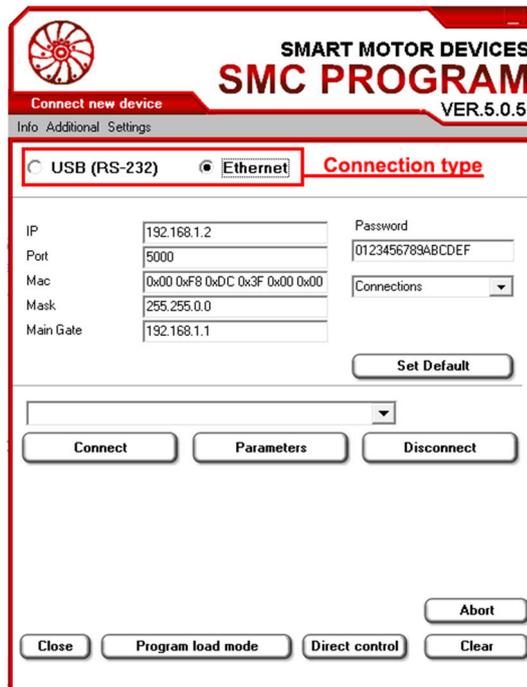


Fig. 4. Controller connection window.



Choose the connection type – USB or Ethernet - in the top part of the connection window (Fig. 4). Insert connection properties in the fields below. Insert the identification password to the field «Password» on the right side. Every controller from the factory has default password «0123456789ABCDEF». It is recommended to change the password to another one in order to prevent an unauthorized access to the controller and drive control.

In case the connection properties were changed accidentally, press the button «Set default» to return parameters in the application window to the values, which conform to the default values of the controllers SMSD-4.2LAN.

Press the button «Connect» to connect the controller.

To make the connection process easier and more convenient it is possible to use the list of connections properties which were saved to files. Choose the file from a dropdown list «Connections» under the password field. The saved parameters will be applied at once. Connection files are stored in the directory «data» of the program, files extension is \*.cnt.

In case of repeated connections of the same drives, it is faster and more convenient to create connection files for every of such drive. The file names will be displayed in the dropdown list «Connections».

An example of the connection file contents:

```
Program Settings:
<connection_type>=2
<COM_PORT_NUM>=0
<BAUD>=12
<DATA_BITS>=3
<PARITY>=0
<STOP_BIT>=0
<IP>=192.168.1.2
<PORT>=5000
<MAC>=0x00 0xF8 0xDC 0x3F 0x00 0x00
<MASK>=255.255.0.0
<GATE>=192.168.1.1
<PASSWORD>=0123456789ABCDEF
<ShowCommandData>=1
<AskMotorStatus>=1
<ShowAllData>=0
<MOTOR>=data/default.mtr
```

The descriptions of the connection file fields are the next:

<connection\_type> - the type of connection: =0 – USB, =2 – LAN.

<COM\_PORT\_NUM>=0 – the number of COM port (is used in case of USB connections only).

<BAUD>=12 – the baud rate – it is the counting number in the dropdown list (is used in case of USB connections only).

<DATA\_BITS>=3 – the number of data bits - it is the counting number in the dropdown list (is used in case of USB connections only).



<PARITY>=0 – the parity control - it is the counting number in the dropdown list (is used in case of USB connections only).

<STOP\_BIT>=0 – stop bit - it is the counting number in the dropdown list (is used in case of USB connections only).

<IP>=192.168.1.2 – IP address of the connection (is used in case of LAN connections only).

<PORT>=5000 – the port number (is used in case of LAN connections only).

<MAC>=0x00 0xF8 0xDC 0x3F 0x00 0x00 – MAC address (is used in case of LAN connections only).

<MASK>=255.255.0.0 – IP sub-network mask (is used in case of LAN connections only).

<GATE>=192.168.1.1 – the gateway (is used in case of LAN connections only).

<PASSWORD>=0123456789ABCDEF – the password for getting access to the drive control.

<ShowCommandData>=1 – is it necessary to show commands transfer data in the logs window (0 – no, 1 – yes).

<AskMotorStatus>=1 – is it necessary to request the motor status (0 – no, 1 – yes).

<ShowAllData>=0 – is it necessary to show all transfer data in the log window (0 – no, 1 – yes).

<MOTOR>=data/default.mtr – the path and name of the file, which contains parameters of the motor, which is associated to this connection.

None of the fields above is mandatory. Odd fields are not considered by the program. If some of connection parameters are not described in the connection file, these fields will not be changed.

Such connection files are meant to make the connection process easier and faster, usage of such files is not obligated. When a user chooses the connection file from the dropdown list, the connection of the controller is done automatically.

After a successful connection the information about it appears in the bottom part of the window. (In case if connection is fault the information about the error will appear.). After the controller is connected it is added to the list of connected devices and becomes available for the further work.

An example of successfully connected controllers via USB and LAN is shown on the figure 5.

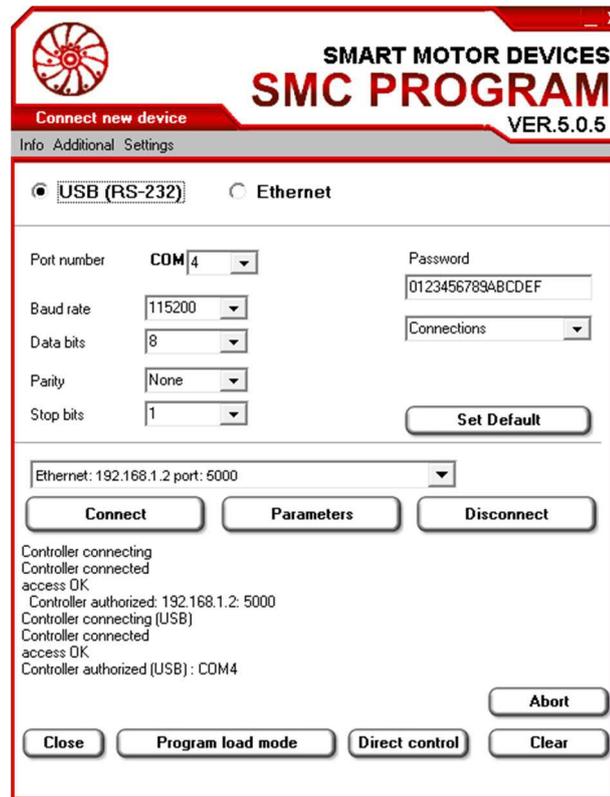


Fig. 5. Successful connection and authorization.

## Motor control parameters setting

To adjust motor control parameters it is necessary to select the connected controller from the dropdown list and press the button «parameters».

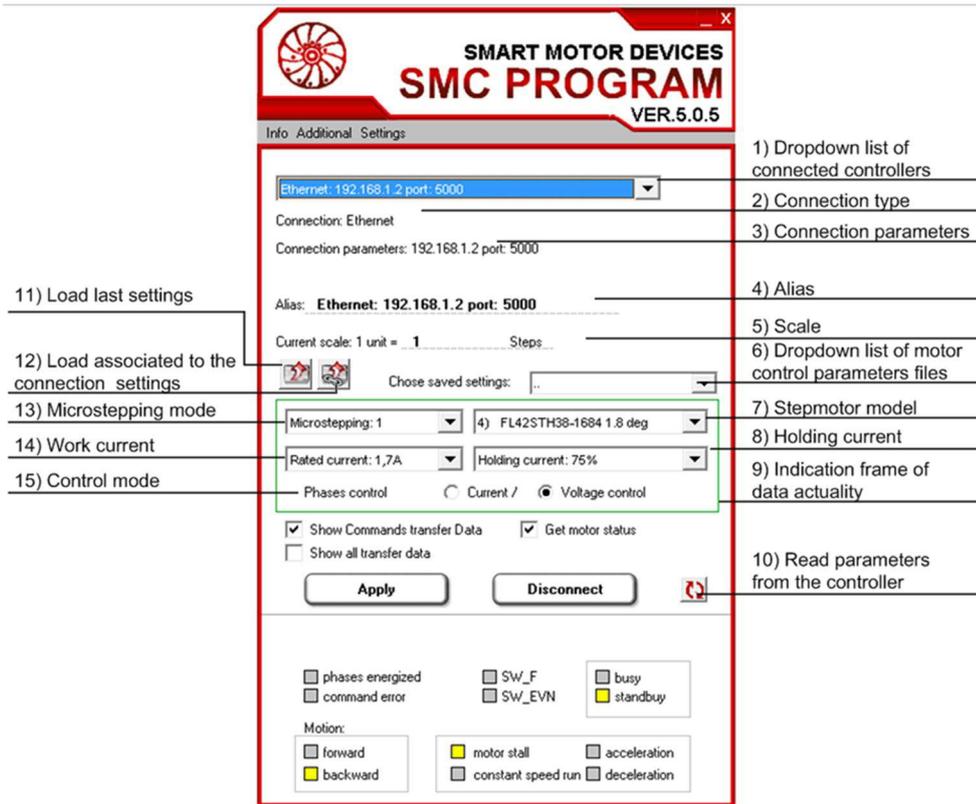


Fig. 6. Window of adjusting of a stepmotor control settings

As the window of adjusting motor control settings is opened, the current settings are read from the controller memory. If the reading is successful and displayed data is actual, the indication frame around the motor parameters turns green (p. 9 on fig. 6).

All adjusting in the window is applicable to the controller, which is selected and active in the dropdown list (p. 1 on the fig. 6). Connection type (USB or Ethernet) and parameters for the selected controller are displayed on the top part of the window (p. 2 and p. 3 on fig. 6).

The parameters values should be set according to the motor parameters and system requirements: microstepping mode (p. 13 on fig. 6), the motor rated current per phase (p. 15 on fig. 6 - is significant just in case of current control mode), the motor model (p. 7 on fig. 6 - is significant just in case of voltage control mode), holding current (p. 8 on fig. 6) (it is a percentage of a full rated current value), motor phase control mode (p. 15 on fig. 6).

If settings values, displayed in the program and stored in the controller memory differ (were changed by a user or/and were not read from the controller), the indication frame around the motor parameters turns red (p. 9 on fig. 6), the background turns grey. To read the stored in the controller memory settings it is needed to press the button  (p. 10 on fig. 6).

Settings changes are possible just when the motor phases are turned off. If the phases are turned on, it is possible to deenergize them in one of a motor control window. To send new setting to the controller it is needed to press the button «Apply».



Also it is possible to read motor parameters from a file. Files with saved motor parameters (with extension .mtr) are located in the directory «data» and available in the dropdown list (p. 6 on fig. 6). As the file is selected from the list, the parameters are displayed in the program and sent to the controller (upon condition, the motor phases are not energized).

If a same motor (or same motor models) is connected routinely, it is convenient to use the button of last motor settings  (p. 11 on fig. 6). As the button is pressed, the last motor settings are applied to the current drive.

If the connection of the controller was done with help of a \*.cnt file, the associated to the connection motor parameters button (p. 12 on fig. 6) is available straight after the window is opened. As the button is pressed the parameters from the connection file are applied to the current controller.

Besides the motor parameters it is possible to change the controller name (the field «alias» - p. 4 on fig. 6) and the scale for displacement commands (the field «scale» - p.5 on fig. 60).

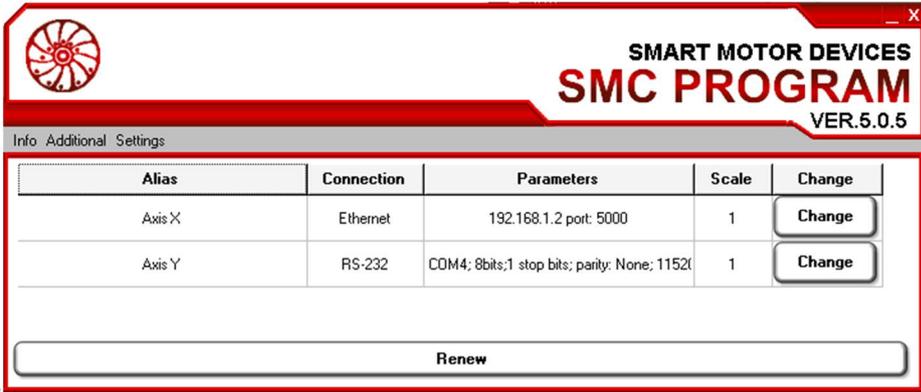
Also it is possible to indicate in the motor parameters window:

- if it is needed to display in the log window commands data transfer packets («Show command transfer data»),
- if it is needed to request motor status («get motor status»),
- if it is needed to display in the log window all data transfer packets («Show all transfer data»).

The window of adjusting motor settings is a modal one, this means it should be closed before continue the working.

## The list of connected controllers

It is possible to display all connected controllers by pressing the button «List of connected devices» from the program main window. For every of the controllers in the list its connection type and parameters, scale and button «change» are shown. The buttons «change» are intended to open the window of adjusting the motor.



Alias	Connection	Parameters	Scale	Change
Axis X	Ethernet	192.168.1.2 port: 5000	1	<input type="button" value="Change"/>
Axis Y	RS-232	COM4; 8bits; 1 stop bits; parity: None; 115200	1	<input type="button" value="Change"/>

Fig. 7. List of connected controllers



## Change controller password

It is recommended to change the controller control access password as soon as it is installed to a system. Press the button «Change password» from the main window of the program to change the password.

In the password change window select the target controller from the dropdown list, in the field below insert a new password, then press the button «Set new password».

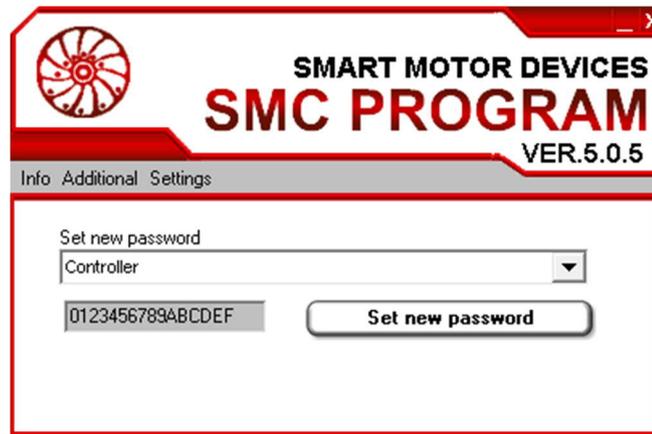


Fig. 8. Password change window

## Motor control window - program load mode

1) Controllers dropdown list

2) Controller parameters

Nr	Command	Scaled	Param.	Code
0	Min speed	1000	1000	SET_MIN_SPEED
1	Max speed	2000	2000	SET_MAX_SPEED
2	Acceleration	59000	59000	SET_ACC
3	Deceleration	59000	59000	SET_DEC
4	Go to zero position	0	0	GO_ZERO
5	Run forward until signal	3	3	GO_UNTIL_F
6	Go backward to position	2000	2000	GO_TO_R
7	Pause	3600	3600	SET_WAIT
8	Go forward to position	16000	16000	GO_TO_F
9	Call sub program	P:1; C:0	256	CALL_PROGRAM
10	Turn relay on	0	0	SET_RELE
11	Wait till input 1	0	0	WAIT_IN1
12	Turn relay off	0	0	CLR_RELE

3) Program table – a sequence of executing commands

4) End of program label

5) Reset error

6) Clear commands table

7) Label "End of program"

8) Buttons for operations with an executing program

9) Deenergize motor phases

10) Change to Direct Control operation mode

11) Connection parameters

12) Drive control commands

13) Controller state panel

Fig. 9. Motor control window – program load mode



For the purpose of a motor control two windows are intended: «Program load mode» and «Direct control mode». The window «Program load mode» can be launched either from the main window of the program (button «Motor control - Program load mode»), or from the controller connection window (button «Program load mode»).

The window «Program load mode» is intended to work with execution programs – assemble, read from controller, write to controller, read from file, write to file.

In the window «Program load mode» select the target controller from the dropdown list (p. 1 on fig. 9). In this list the controller names are displayed (the names, which are given in the «Alias» field in the window of adjusting of a stepmotor control settings). Connection type and parameters and scale are displayed in the top right part of the window (p. 11 on fig. 9). If the stepmotor control settings should be changed, press the button «Controller parameters» next to the dropdown list (p.2 on fig. 9).

During execution program assembling, reading from the controller or loading from a file the commands sequence is shown in the table at the left side of the window (p. 3 on fig. 9).

For every execution command added to the table, its order number is displayed in the column «№», text description – in the column «Command», command parameter and the scaled value in columns «Scaled» and «Param.», command code according to the data transfer protocol – in the column «Code».

Press the button, corresponded to the execution command, to add it to the commands list (p. 12 on fig. 9). To clear the table, press the button «Clear table» (p. 6 on fig. 9). To delete one command from the table click on the row of this command (except of the column «№»). The number of the deleted command will be changed to «del». It is possible to bring back the deleted command – click on the same row again, the «del» mark will be replaced by the command number.

For correct operation some commands require the end of program to be finished by the special end label. The button «End of prog.» is intended to add this end program mark.

It is possible to assemble few execution programs in SMC-Program-LAN at once. Special tabs are meant for this purpose. To add a new tab with a table for program assembling press the button «+». To delete the current tab with the table press the button «-».

Tabs for switching command tables						Delete command table	
Prog 0						Add command table	
1							
2							
3							
4							
5							
6							
	<b>№</b>	<b>Command</b>	<b>Scaled</b>	<b>Param.</b>	<b>Code</b>		
	0	Min speed	1000	5000	SET_MIN_SPEED		
Command number	1	Max speed	2000	10000	SET_MAX_SPEED		Scaled command parameter
	2	Acceleration	59000	295000	SET_ACC		Actual command parameter to be send to the controller
	3	Deceleration	59000	295000	SET_DEC		
Deleted command	del	Run forward until signal	1	1	GO_UNTIL_F		
	4	Run forward until signal	0	0	GO_UNTIL_F		
	5	Go to zero position	0	0	GO_ZERO		Command code
Command description	6	Pause	3600	3600	SET_WAIT		

Fig. 10. Command table – sequence of a drive control commands



Ready execution program can be written to one of four memory banks of the controller. To write a program to a controller, select the memory number from the dropdown list below the table (p. 7 on fig. 9) and press the button «Write» (p. 8 on fig. 9).

An execution program also can be saved to a file – use button «Save» (p. 8 on fig. 9) to save a program.

An execution program can be read from a controller memory. To read the program, select the target memory bank number from the dropdown list under the table (p. 7 on fig. 9) and press the button «Read» (p. 8 on fig. 9).

Also an execution program can be read from a file – press the button «Open» (p. 8 on fig. 9) and choose the target file with a program from a computer.

To start the execution program from the controller memory, select the bank memory number (p. 7 on fig. 9) and press the button «Start prog» (p. 8 on fig. 9).

The «Stop» button is intended to abort the program executing.

To deenergize the motor phases press the button «Phases off» (p. 9 on fig. 9).

The «DC» button (p. 10 on fig. 9) is intended to switch to the Direct Control mode window.

In the bottom part of the window there is a controller state panel (p. 13 on fig. 9). It displays the information about current state of the controller, speed and position. State indicators can be yellow (the parameter is active), grey (the parameter is inactive) or white (actual information is not received) color.



Fig. 11. Information about current state of the controller.

Information about the current state is transferred inside every data transfer packet from the controller. As the controller state could change rapidly and data actuality time is short, this information in the SMC-Program-LAN windows is reset at intervals of 1 second. So, if the new actual data have not been sent from a controller, the state indicators change color to white.

The next information is displayed on the status panel:

Indicator «**phases energized**» is yellow when the motor is powered, it is grey when the motor is deenergized.

Indicator «**command error**» is grey when there is not operational error, it is yellow when there is an error. (The current error could be reset by command GET\_STATUS\_AND\_CLEAR. To send this command to the controller press the button «Reset error» (p. 5 on fig. 9).

Indicator «**SW\_F**» is yellow when function SW is turned on, it is grey when SW function is turned off.

Indicator «**SW\_EVN**» - event flag SW – yellow if the event occurred, it is grey when the event didn't occur.

Indicators «**busy**» and «**standby**» - flags of business and standby of the controller. If the controller is ready to execute a next command, the indicator «standby» is active (yellow), If the previous command is being executed, the flag «busy» is active (yellow).



The part «Motion» contains information about motor shaft rotation. Current motor speed is displayed in the field «current speed». Indicators «forward» and «backward» reflect the direction of rotation.

When the motor is stopped and stands in holding mode, the indicator «Motor stall» is active (yellow). When the motor rotates at a constant speed, the indicator «constant speed run» is active (yellow). During acceleration the indicator «acceleration» is active, during deceleration the indicator «deceleration» is active.

Information about the current position (measured in steps/microsteps) is displayed in the part «Position». The position value in the field «total steps» is increased during forward motion and decreased during backward motion.

At the right side of the commands table there are panels with command buttons, which are intended to add the commands to the table (p. 12 on fig. 9). Just press the button to add the corresponding command to the table. The command list is shown below in the table 1.

Table 1. Executing commands.

№ on fig. 12	Button on command panel	Description	Command code (CMD_PowerSTEP01_xxx)
1	Set MIN speed	Set minimum motor speed	SET_MIN_SPEED
20	Set MAX speed	Set maximum motor speed	SET_MAX_SPEED
21	Full step speed	Set switching to a full step mode speed	SET_FS_SPEED
2	Acceleration	Set acceleration	SET_ACC
22	Deceleration	Set deceleration	SET_DEC
4	Permanent motion	Start permanent motion with speed set in field p. 3 at direction set by radio button p. 23.	RUN_F RUN_R
6	Move	In case the radio button p. 5 is set «Abs» - the motor moves to the target position (coordinate). In case the radio button p. 5 is set «Inc» - the motor executes a displacement. Motion direction is determined by radio buttons p. 23.	Move to coordinate: MOVE_F (forward) MOVE_R (backward)  Execute displacement: GO_TO_F (forward) GO_TO_R (backward)
7	Shortest way to	Move to the target position by a shortest way	GO_TO
24	Pause	Set waiting time	SET_WAIT
8	Go to Zero	Move to Zero position	GO_ZERO
25	Set Zero	Set current position as Zero	RESET_POS
26	Search Zero	Start searching for a zero position – start permanent motion till a signal comes to the input. Rotation speed during searching zero is determined by parameter set in field p. 27. Motion direction is determined by radio button p. 23.	SCAN_ZERO_F SCAN_ZERO_R
9	Go to «V»	Move to the mark «V» position.	GO_LABEL
28	Search «V»	Start searching for label «V» - start permanent motion till a signal comes to the input. The motor position at the moment, when the signal comes to the input, is	SCAN_LABEL_F SCAN_LABEL_R



		stored by the controller as label «V».	
10	Move till signal to input	Start permanent motion till a signal comes to the input, which is determined by the command parameter. Movement direction is set by radio button p. 23.	GO_UNTIL_F GO_UNTIL_R
29	Wait till signal to input	Wait till a signal comes to the input, which is determined by the command parameter.	WAIT_IN0 WAIT_IN1
11	Call prog.	Call a subprogram: it is used to start another program (or a part of a program) as a subprogram. The called program number is set in the field p. 31, numerical order of the subprogram start command is set in the field p. 33. To return to the main program the subprogram should be finished by the «return» command - RETURN_PROGRAM – p.34. The subprogram is executed till the command RETURN_PROGRAM and then returns back to the main program.	CALL_PROGRAM
12	Loop program	Cycle creation - the controller will repeat commands which follow the «Loop» command: Number of commands is set in the field p. 13, number of cycles is set in the field p. 14.	LOOP_PROGRAM
30	Go to	Unconditional transfer of control: the controller jump to an execution program and command, which are determined in the parameter: the program number is set in p. 31, the command number is set in p. 33. If the «if input» checkbox is checked, the transfer will be executed just in case there is a signal at the input (input number is set in the field p. 32).	GOTO_PROGRAM GOTO_PROGRAM_IF_IN0 GOTO_PROGRAM_IF_IN1
34	Return	It is the command of return to a main program (from which the subprogram was called).	RETURN_PROGRAM
15	Switch to pulse control mode	Switch to a pulse control mode (STEP/DIR signals).	STEP_CLOCK
37	Relay	Relay indicator. Yellow – relay is turned on, grey – relay is turned off.	
35	ON	Turn relay on.	SET_RELE
36	OFF	Turn relay off	CLR_RELE
16	Hard stop	Sudden motor stop: If the radio button «phases energized» is selected (p. 18 on fig. 12), the motor will change to a position holding mode. If the radio button «deenergize phases» is selected (p. 19 on fig. 12), the motor phases power will be turned off.	HARD_STOP HARD_HI_Z
17	Soft stop	Soft stop with determined deceleration (command №22): If the radio button «phases energized» is selected (p. 18 on fig. 12), the motor will decelerate and then change to a position holding mode.	SOFT_STOP SOFT_HI_Z



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		If the radio button «deenergize phases» is selected (p. 19 on fig. 12), the motor will decelerate and then the motor phases power will be turned off.	
38	SM	To set signal mask select signals (p. 39 on fig. 12) which should be masked.	SET_MASK_EVENT

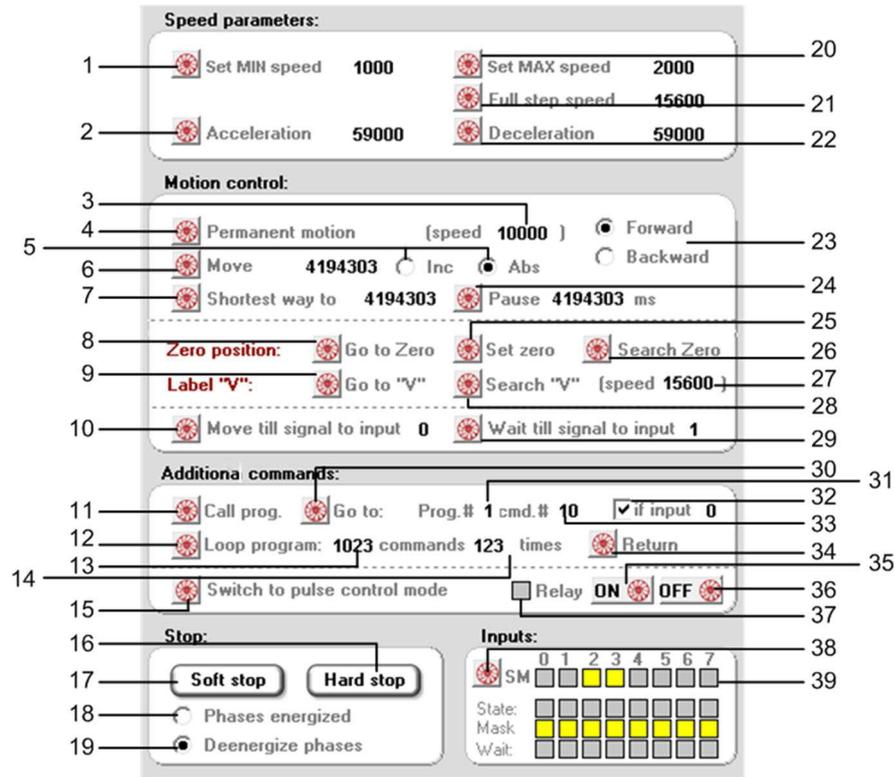


Fig. 12. Panels with command buttons



En example of an execution program, which is stored in a file:

```
<Any comments here>
numerical_order=true
0 SCAN_ZERO_R      -> 50 //search for zero position
1 SET_MIN_SPEED    -> 50 // set minimum speed
2 SET_MAX_SPEED     -> 400
3 GOTO_PROGRAM_IF_IN0 -> 7  any comments here
4 GOTO_PROGRAM_IF_IN1 -> 9
5 GOTO_PROGRAM      -> 4
SET_MAX_SPEED       -> 2000 this command will not be taken into account
7 GO_TO             -> 1600 this command will not be taken into account
4 5 GOTO_PROGRAM    -> 4  this command will not be taken into account
numerical_order=false
SET_MAX_SPEED       -> 3000
7 GOTO_PROGRAM      -> 4
8 GO_TO             -> 3200
6 GOTO_PROGRAM      -> 4
```

Commands in a file should be placed one on a line. The first is command code, then symbols «->», then parameter value. Symbols «->» are mandatory. To align values it is possible to use symbols of horizontal tab and space mark. Any characters in a string after the parameter value will not be taken into account and can be used for comments. Any strings without command code, parameter value or symbols «->» are treated as comments. Before the command code could be placed an order number of the command.

If the directive string «numerical\_order=true» is placed before command strings, order numbers shall be placed before every of actual command in all lines below. Command strings without the number or with a wrong enumeration will be treated as comments. The directive string «numerical\_order=false» cancels the directive «numerical\_order=true».

If the example above the next commands will not be taken into account as their enumeration is wrong:

```
SET_MAX_SPEED       -> 2000 this command will not be taken into account
7 GO_TO             -> 1600 this command will not be taken into account
4 5 GOTO_PROGRAM    -> 4  this command will not be taken into account
```

## Motor control window – direct control mode

The window «Direct control mode» (fig. 13) is intended to control the drive command by command on a real time.

The window «Direct control mode» can be launched either from the main window of the program (button «Motor control – Direct control mode »), or from the controller connection window (button «Direct control»).

The main difference of this control mode – execution commands are sent to the controller for executing right away.



**SMART MOTOR DEVICES SMC PROGRAM VER.5.0.5**

Direct control mode - real time motor control

Info Additional Settings 192.168.1.2 port: 5000; Scale: 1

Ethernet: 192.168.1.2 port: 5000 Controller parameters

Nº	Command	Scaled	Param.	Code	Result
0	Min speed	500	500	SET_MIN_SPEED	Ok
1	Max speed	1000	1000	SET_MAX_SPEED	Ok
2	Deceleration	15600	15600	SET_DEC	Ok
3	Acceleration	15600	15600	SET_ACC	Ok
4	Go to zero position	0	0	GO_ZERO	Ok
5	Move forward	10000	10000	MOVE_F	Ok
6	Move backward	10000	10000	MOVE_R	Ok
7	Get status and CLR	0	0	GET_STATUS_AND_CLR	Ok
8	Move backward	10000	10000	MOVE_R	Ok
9	Search label backward	15600	15600	SCAN_LABEL_R	Ok

Speed parameters:

- Set MIN speed: 500
- Set MAX speed: 1000
- Acceleration: 15600
- Full step speed: 100000
- Deceleration: 15600

Motion control:

- Permanent motion [speed 2000]  Forward  Backward
- Move 10000  Inc  Abs
- Shortest way to 4194303

Zero position:  Go to Zero  Set zero  Search Zero

Label "V":  Go to "V"  Search "V" [speed 15600]

Move till signal to input 1  Wait till signal to input 0

Stop:

Inputs: SM 7 6 5 4 3 2 1 0

State Mask Wait

Stop:  Phases energized  Deenergize phases

phases energized  command error  SW\_F  SW\_EVN  busy  standby

Motion: Current speed: 992  forward  backward  motor stall  constant speed run  acceleration  deceleration

Position: Total steps: 4190916

Fig. 13. Window of a real time motor control - Direct Control mode

Select the target controller from the dropdown list in the top left part of the direct control window. In this list the controller names are displayed (the names, which are given in the «Alias» field in the window of adjusting of a stepmotor control settings). Connection type and parameters and scale are displayed in the top right part of the window. If the stepmotor control settings should be changed, press the button «Controller parameters» next to the dropdown list.

As the command is sent to the controller it appears in the table (at the left part of the window).

For every added to the table command its order number is displayed in the column «Nº», text description – in the column «Command», command parameter and the scaled value in columns «Scaled» and «Param.», command code according to the data transfer protocol – in the column «Code», execution result – in the column «Result»: «ok» in case of successful result or «error» in case of any fault.

SMC-Program-LAN allows creating few executed command lists. To add a new tab with a table for adding executed commands press the button «+». To delete the current tab and table press the button «-». Use tabs above the table to switch between the tables.



To send a command to the controller press the button corresponded to this execution command. To clear the table, press the button «Clear table». Assignment and description of the commands in Direct Control window are the same as in the Program Load window (refer to the table 1).

The button «Start prog.» is intended to start an execution program, stored in one of the controller memory banks. The bank number should be selected from the dropdown list under the commands table.

The «Stop» button is intended to abort the program executing.

The «LP» button is intended to switch to the Program load mode window.

Information about current controller state, speed and position is displayed at the bottom part of the window on the status panel. Indicators can be yellow (the parameter is active), grey (the parameter is inactive) or white (actual information is not received) color. The information on this panel is the same as for Program load mode window (fig. 11).

On the panel «Inputs» it is possible to change the mask of signals. To change the signals mask choose the target signal indicators and press the button «SM».

If the box «Add the command to a program» under the commands table is checked, every sent to the controller command will be added to a list, which could be opened by button «Show as program». This list could be saved to a file as an execution program (press the button «save» and choose path and a file name for saving). Afterwards this execution program could be read from the file and written to the controller from Program load mode window.

The button «Clear» clears the commands list. Buttons «numerical\_order=true» and «numerical\_order=false» add corresponded directives to the list.

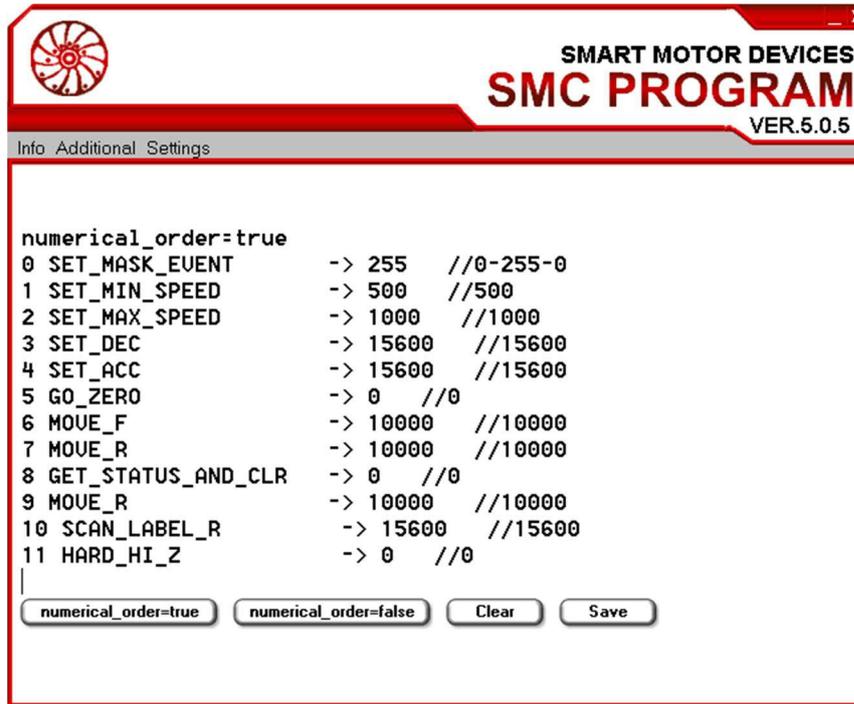


Fig. 14. List of command, sent from a Direct Control window

## Operation log

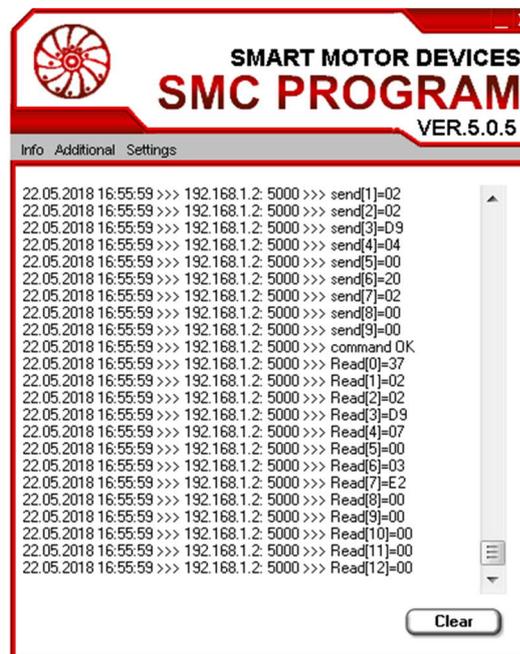


Fig. 15. Log of transferred and received data packets

SMC-Program-LAN provides possibility to check operation log – data transfer packets and result of some commands. To launch the log window choose the menu item «Info» -> «See logs».



If the checkbox «Show commands transfer data» is checked in the window of adjusting of a stepmotor control settings (fig. 6), the commands data transfer packets will be displayed in the log window. If the checkbox «Show all transfer data» is checked, all data transfer packets (including packets of getting motor state) will be displayed in the log window.

In the log window every received or sent byte is displayed on a separate line. The line contains date and time of data transfer, controller name, transfer direction («send» - to the controller, «read» - from the controller), the byte order number in the packet and its value.

For data transfer to the controller («send» packets) via USB, the marker bytes start and finish of packets and shielding bytes are also displayed in the log window. For data transfer from the controller («read» packets) via USB, these markers and shielding bytes are not displayed.

The button «clear» clears the log.

## LAN data transfer parameters

SMC-Program-LAN gives an opportunity to change and read LAN data transfer parameters. Choose menu item «Additional» - «LAN settings» to open the LAN parameters window. Select the target controller from the dropdown list, then press the button «Get LAN parameters» to read them from the controller or press the button «Set LAN parameters» to write parameters to the controller (new parameters from corresponded fields will be sent).

This option can be used when LAN parameters were changed and it is impossible to connect a controller via LAN. So a user can connect controller via USB, read and change LAN parameters and then connect it via LAN interface.

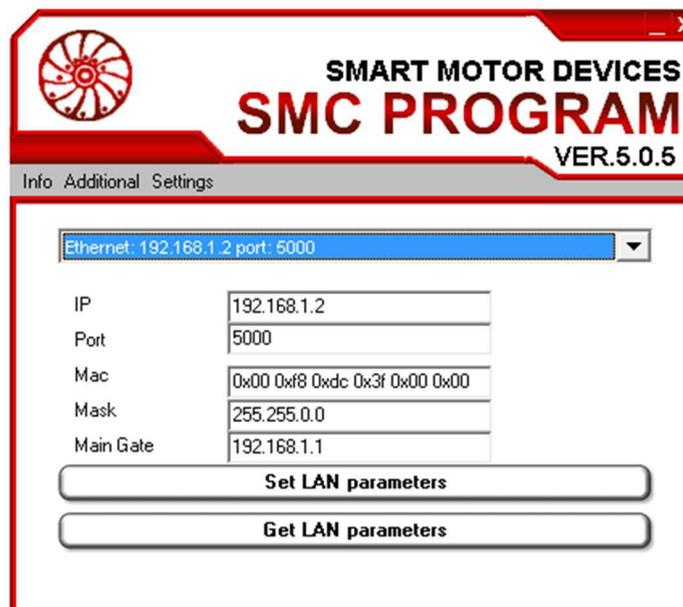


Fig. 15. LAN parameters window



**Attention!** The changed parameters are applied to the controller at once. So after LAN parameters are changed via LAN connection, it is necessary to reconnect the controller in SMC-Program\_LAN. If the parameters were changed via USB, reconnection is not necessary.

## Reset the controller

In case it is needed to reset the controller choose the menu item «Additional» - «Reset». In the Reset window select the target controller from the dropdown list and press the button «Reset».

To reset the controller the command CMD\_PowerSTEP01\_RESET\_POWERSTEP01 is sent to the controller (hardware and software reset of the stepper motor control module, but does not reset the whole Controller).

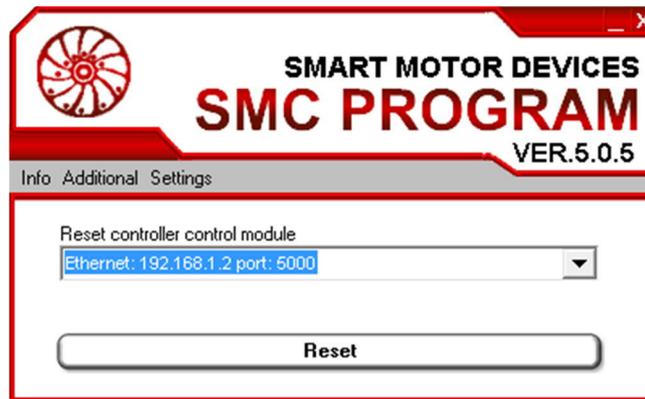


Fig. 17. Controller reset window

## Saving of the program settings

It is possible to save settings of the software SMC-Program-LAN. For adjusting program settings and saving parameters choose the menu item «Settings» - > «Program settings».

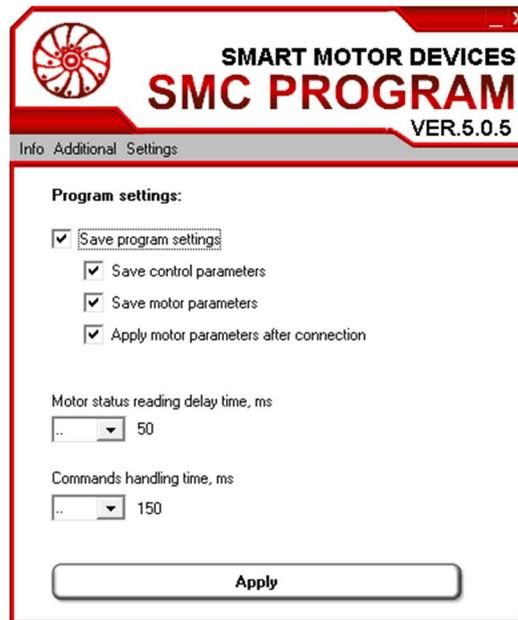


Fig. 18. SMC-Program-LAN settings

«Save program settings» - when the checkbox is checked all settings and changes applied during work will be saved to the file «settings.txt» in «data» directory at the moment of closing the program. These settings will be read and applied during the next run of the program.

«Save control parameters» - when the checkbox is checked, the last values of command parameters (in the windows «Program load» and «Direct control») will be also saved to the file. These values will be read from the file and set to corresponding fields during the next run of the program.

«Save motor parameters» - if the checkbox is checked, at the moment the program is closing, the motor parameters and control settings will be saved to the file data/default.mtr. These settings will be read during the next run of the program.

«Motor status reading delay time» - it is the timeout of getting controller state cycle. This timeout decreases a computer (or PLC) processor load. The more timeout the more pause between status requests. In the dropdown list it is possible to select a value multiplied 50 ms. In the file settings.txt it is possible to set any value in range from 10 to 1000 ms.

«Commands handling time» - it is maximum time of waiting for a response from the controller. It is recommended to consider a processor performance and OS workload. Too small value could cause operational errors, too big value will decrease the program speedwork. In the dropdown list it is possible to select a value multiplied 50 ms. In the file settings.txt it is possible to set any value in range from 10 to 1000 ms.