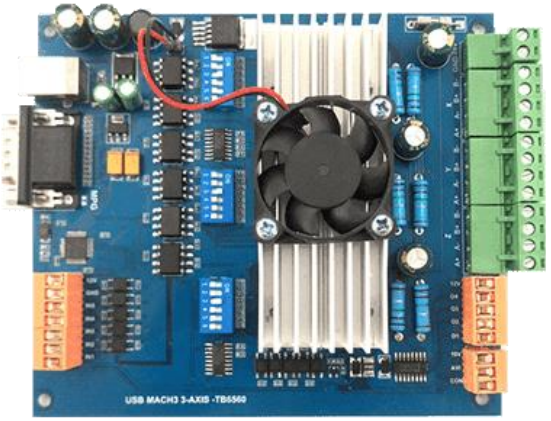
DrufelCNC USBCNC3 TB6560
Installation Manual



DrufelCNC, 2020

Contents

Annotation

This document is the user guide for the DrufelCNC software. The information contained in this document may be modified by employees of the company with the subsequent notification. Your changes are reflected in the document version. The company does not guarantee the absence of errors or typographical errors in this document, but will work to eliminate them, and will also be grateful to everyone who finds them and points to them.

Comments and suggestions to this document are accepted by email: social@drufelcnc.com. Document version - V.1.16.

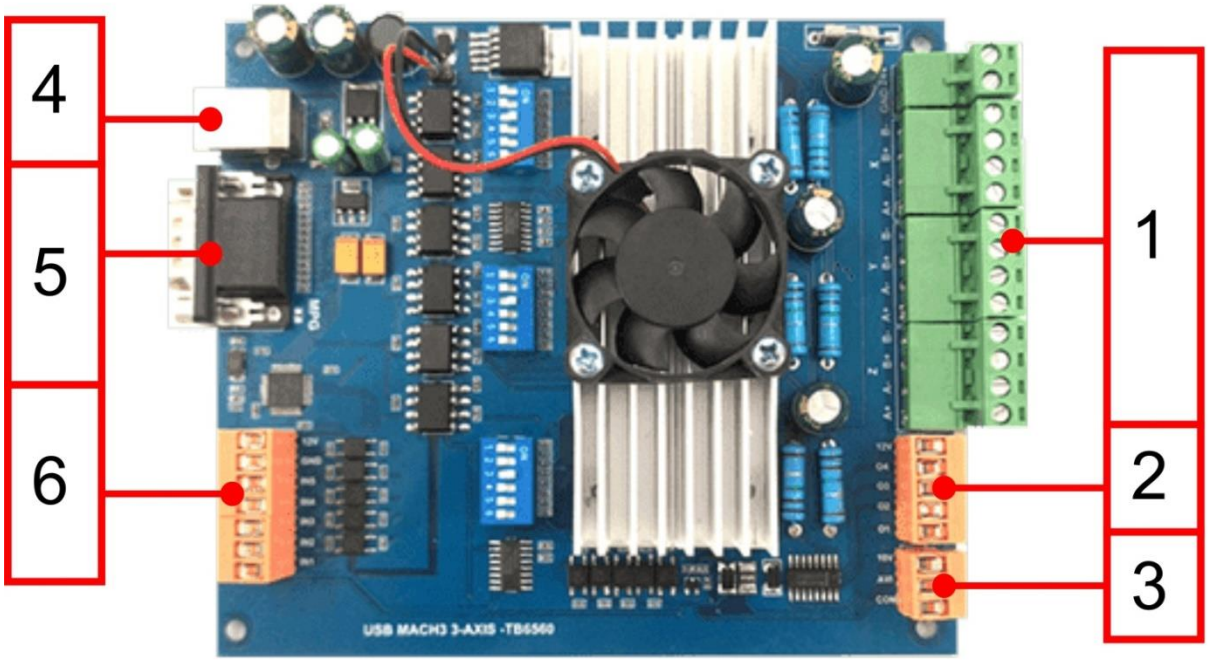
NOTICE OF LIABILITY

Using any CNC machine is a dangerous operation. All precautions must be taken, as the machines may turn on at any time, the software MAY malfunction at any time, any user of the Software must understand and take this into account, and must immediately uninstall the Software and not proceed with the installation if they are not fully understand all the consequences of the use, as well as the fact that in case of misuse, the wrong code, unexpected movement or any damage caused by the aforementioned consequences mi, there is no legal protection.

1. Features

- Support for CNC controlled 3-Axis, can connect five stepper motor drivers or servo drives.
- Power of the control board: voltage 12-24 V DC, current more than 500 mA.
- The maximum frequency of the output pulse is 100 kHz, and the pulse width can automatically change depending on the frequency of the pulse.
- Support for the operating system Windows XP, Windows 7 (32 / 64bit), Windows 8, Windows 10.
- Applicable to all versions of DrufelCNC software.

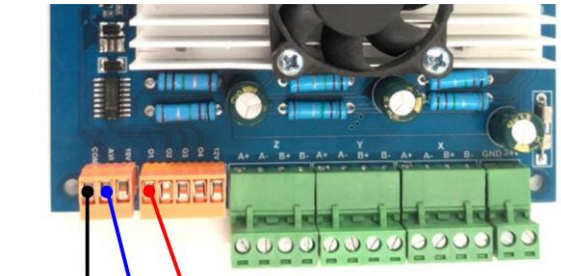
2. Product connection define and method

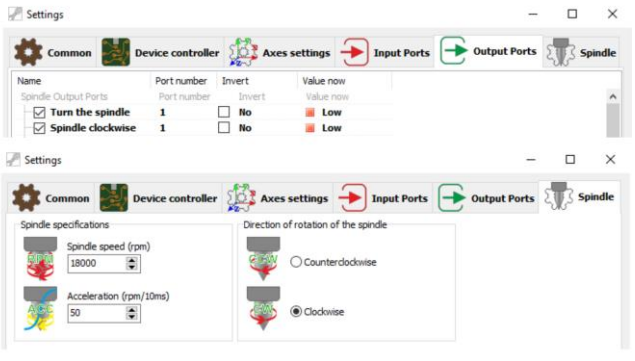


1 - Stepper motor control interface.

2 - Common IO output interface.

3 – Spindle Control Output Port.

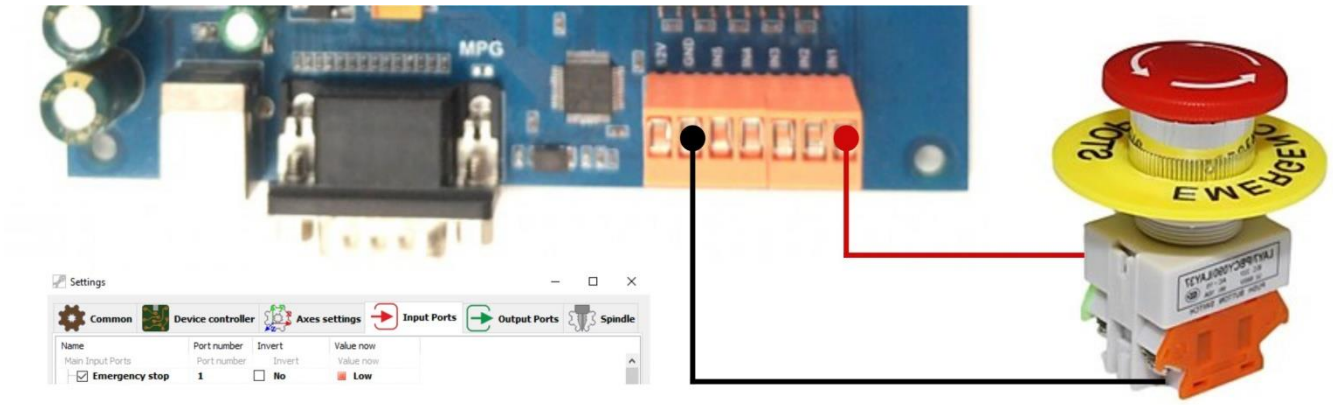




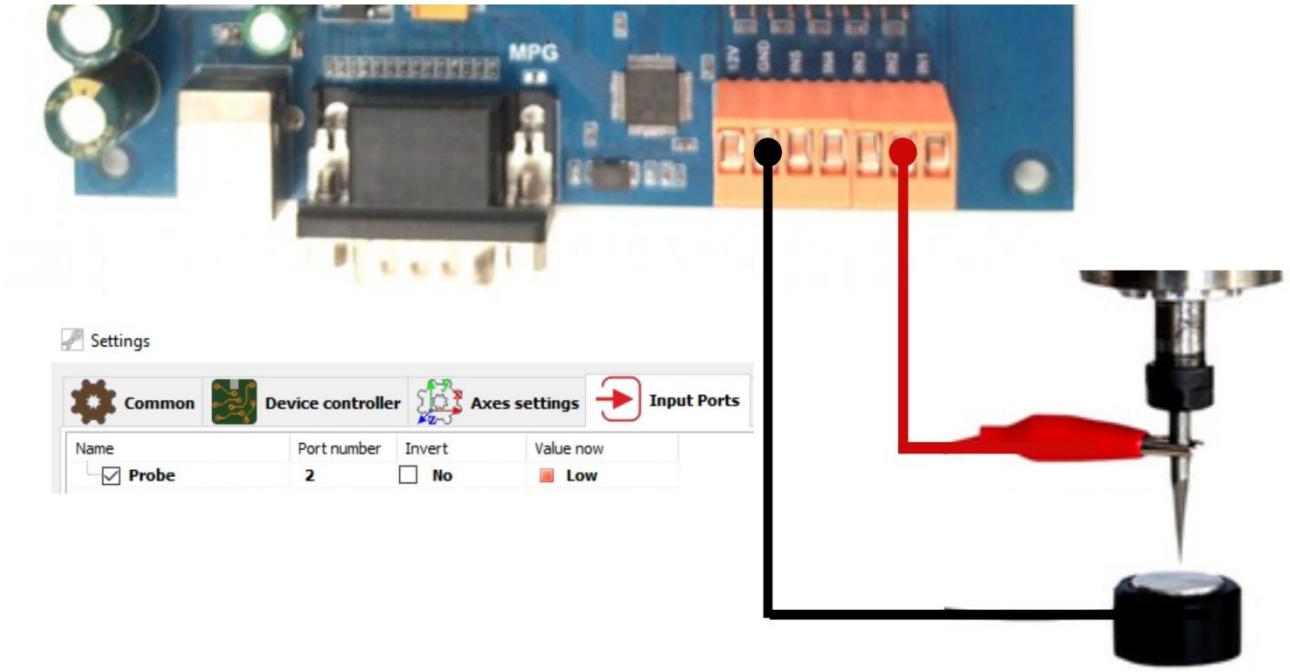
4 - USB Port.

5 - MPG Interface.

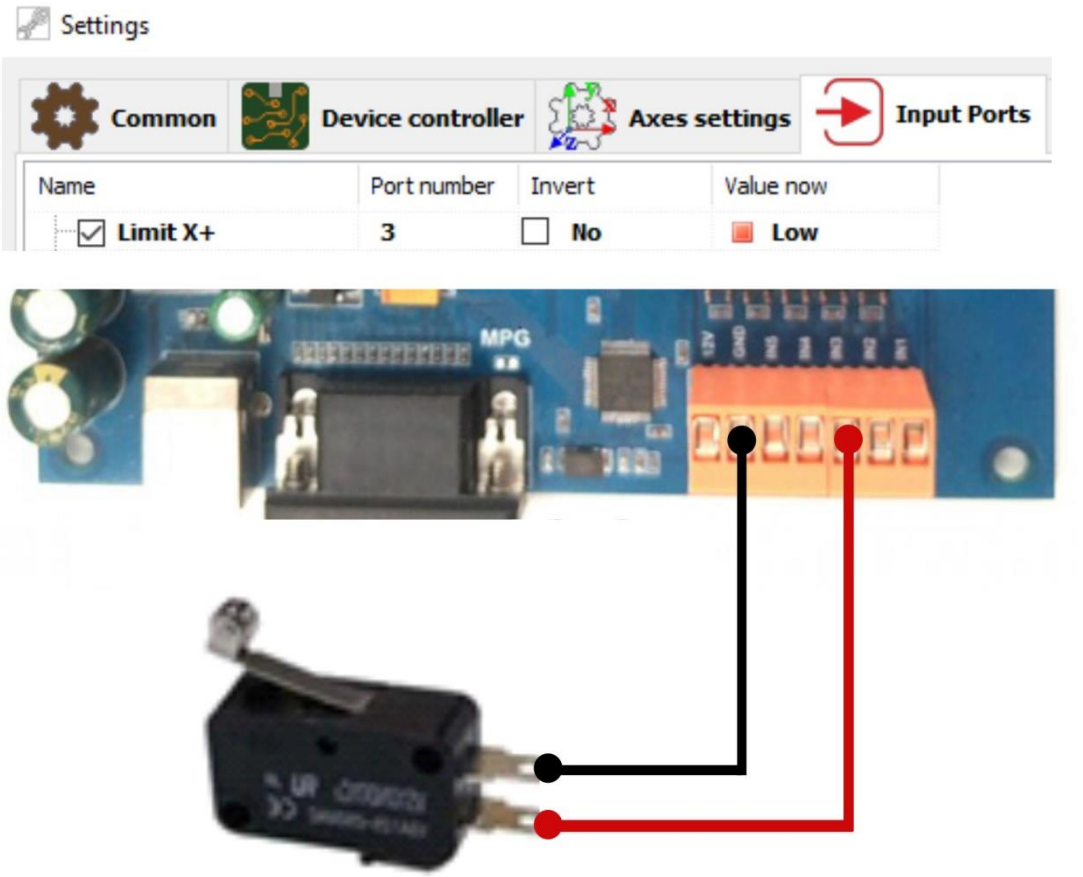
6 - Input Ports. Estop input connection.



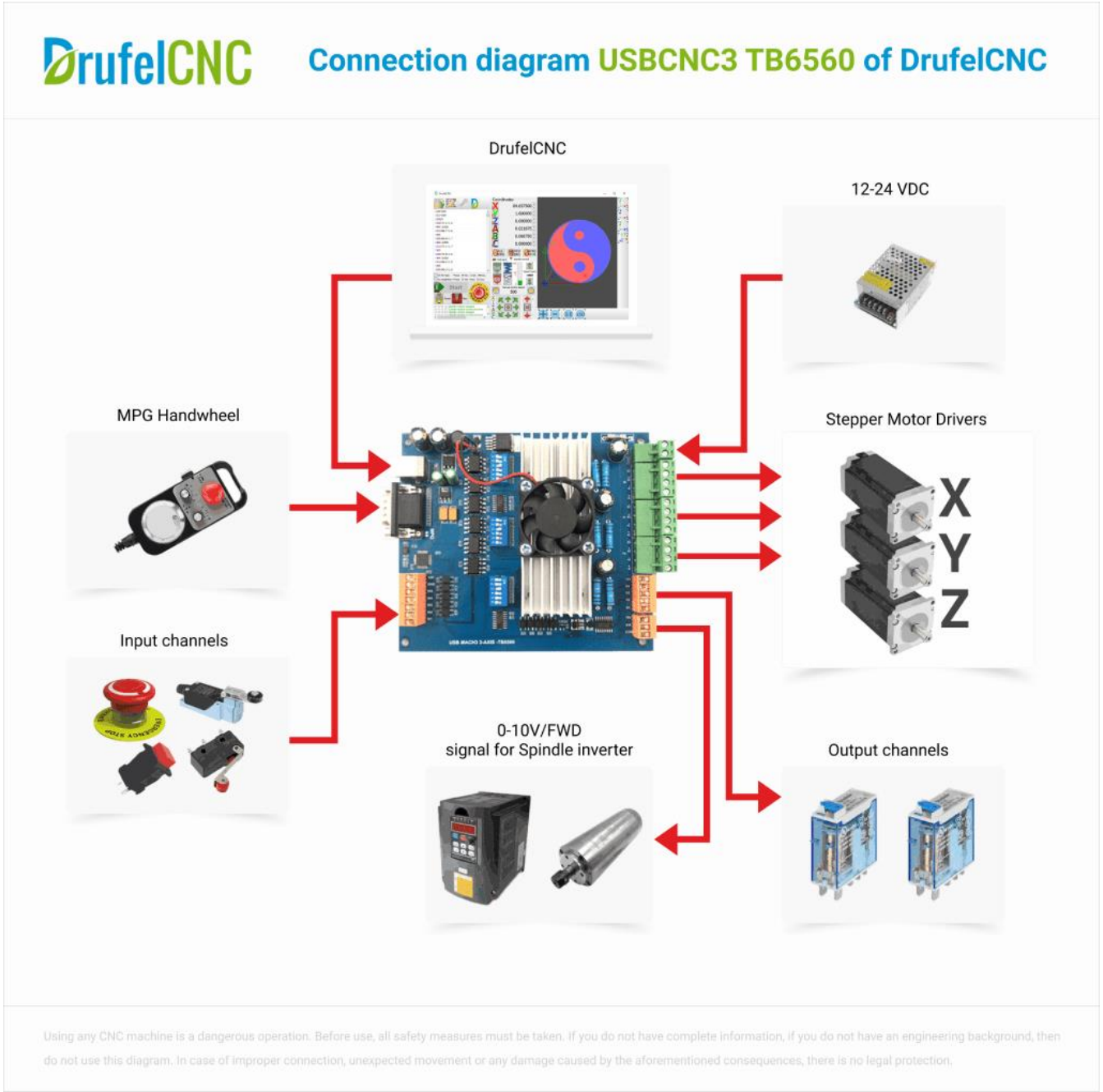
Probe input connection



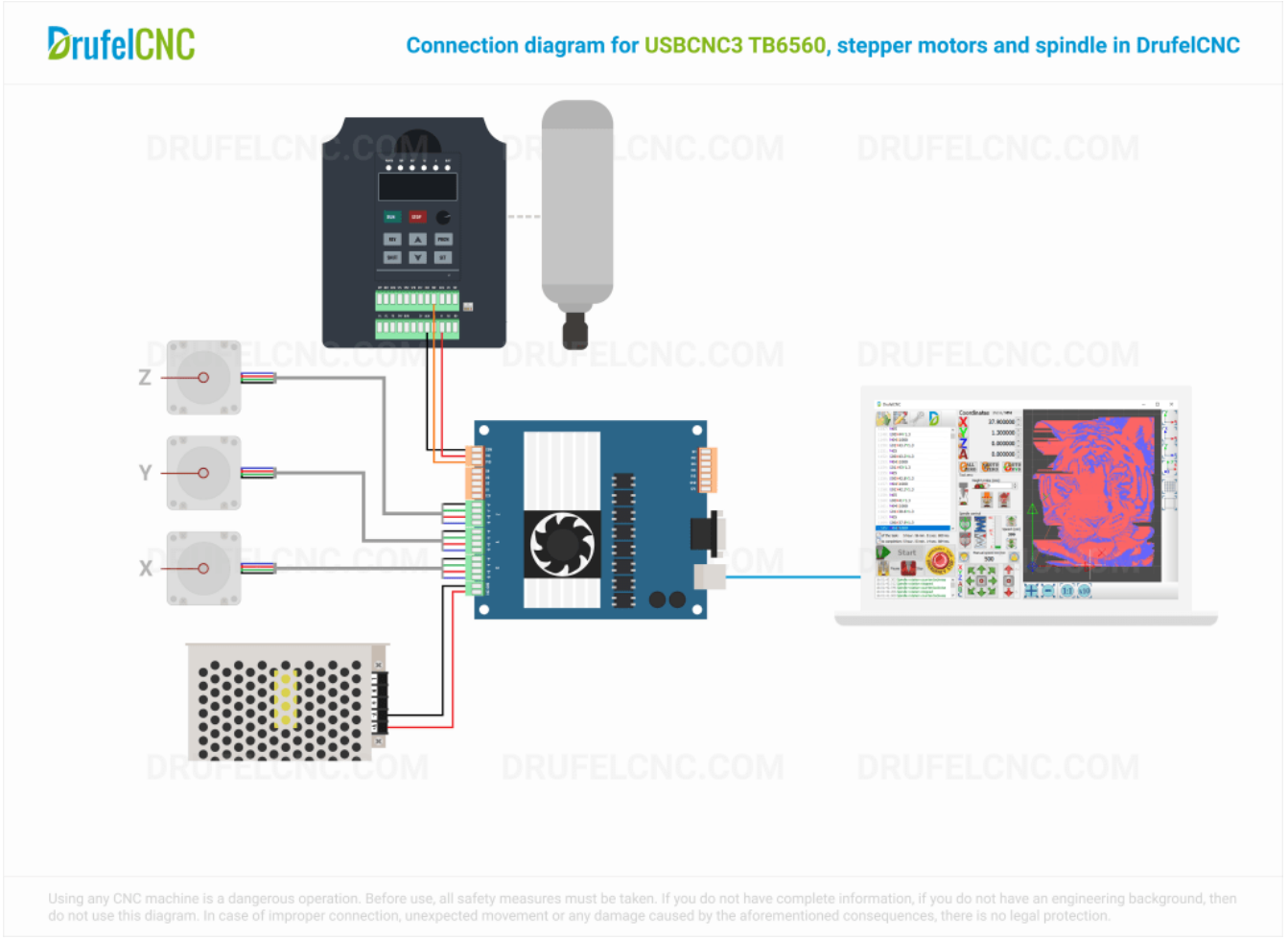
End switch input connection



3. Basic connection diagram



4. Connection diagram stepper motors and spindle



5. Installing DrufelCNC

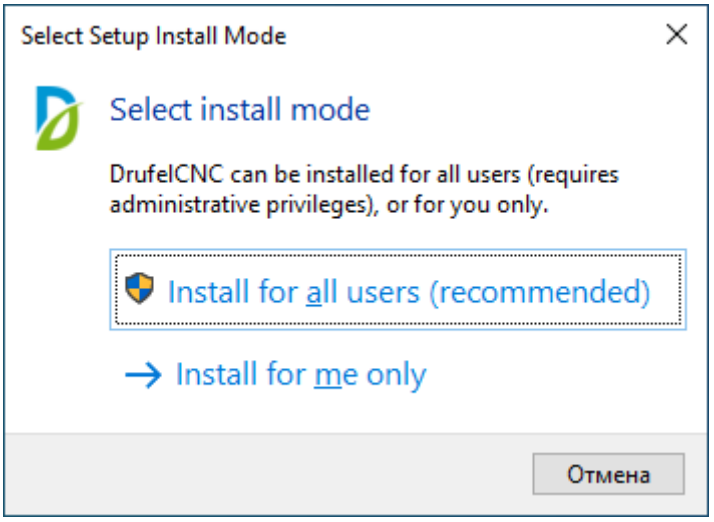
To install the program you need to download the installation files on the official website www.drufelcnc.com. You can use one of the following files:

- DrufelCNC_installer_x64.exe, DrufelCNC_installer_x32.exe - this installation file will automatically install DrufelCNC on your computer documentation and examples of g-codes;
- DrufelCNC.zip - archive with DrufelCNC x32 and x64 with examples and documentation.

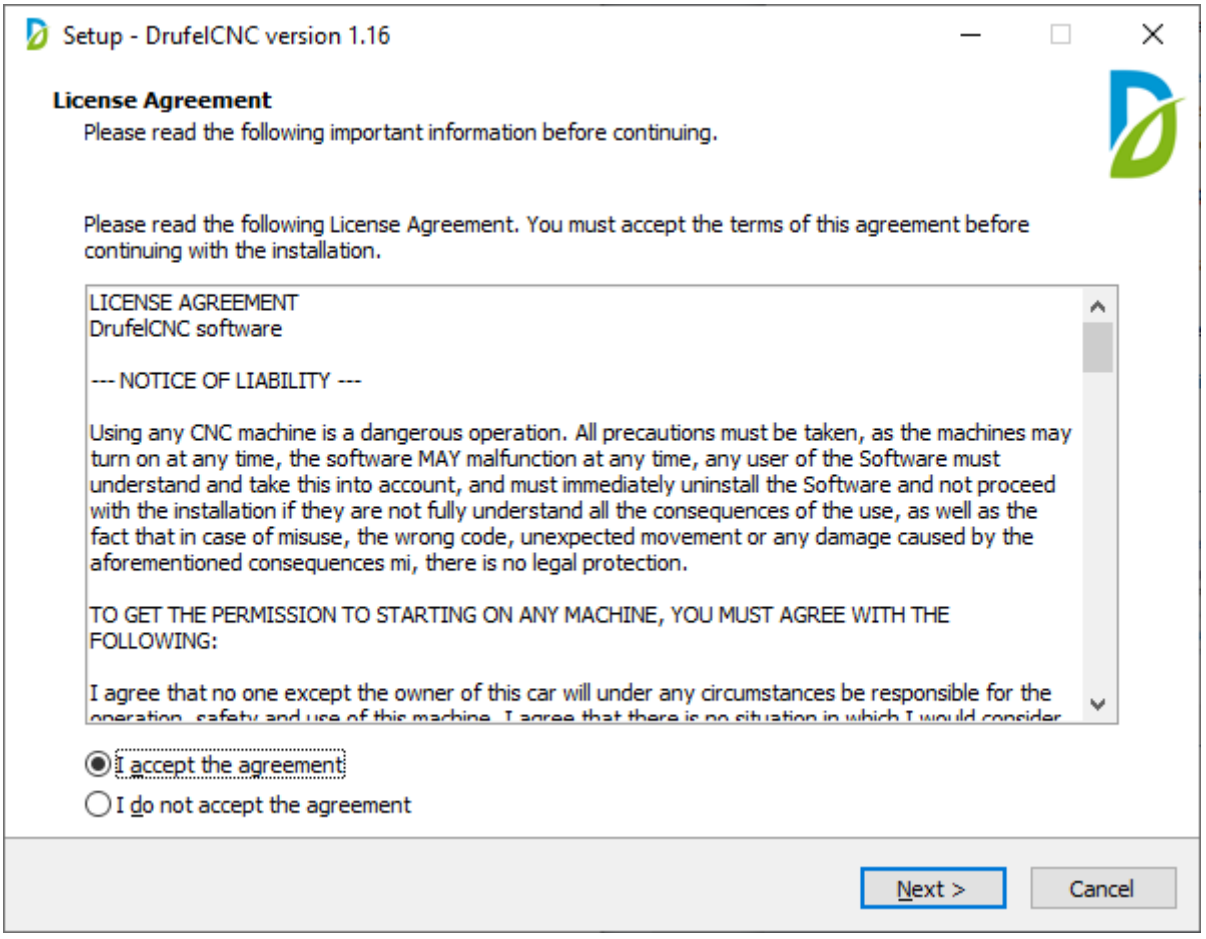
Run the desired file and follow the installation instructions.

Description of the installation process

1. *Start the installation process.* In this installation window you need to select the program installation mode.

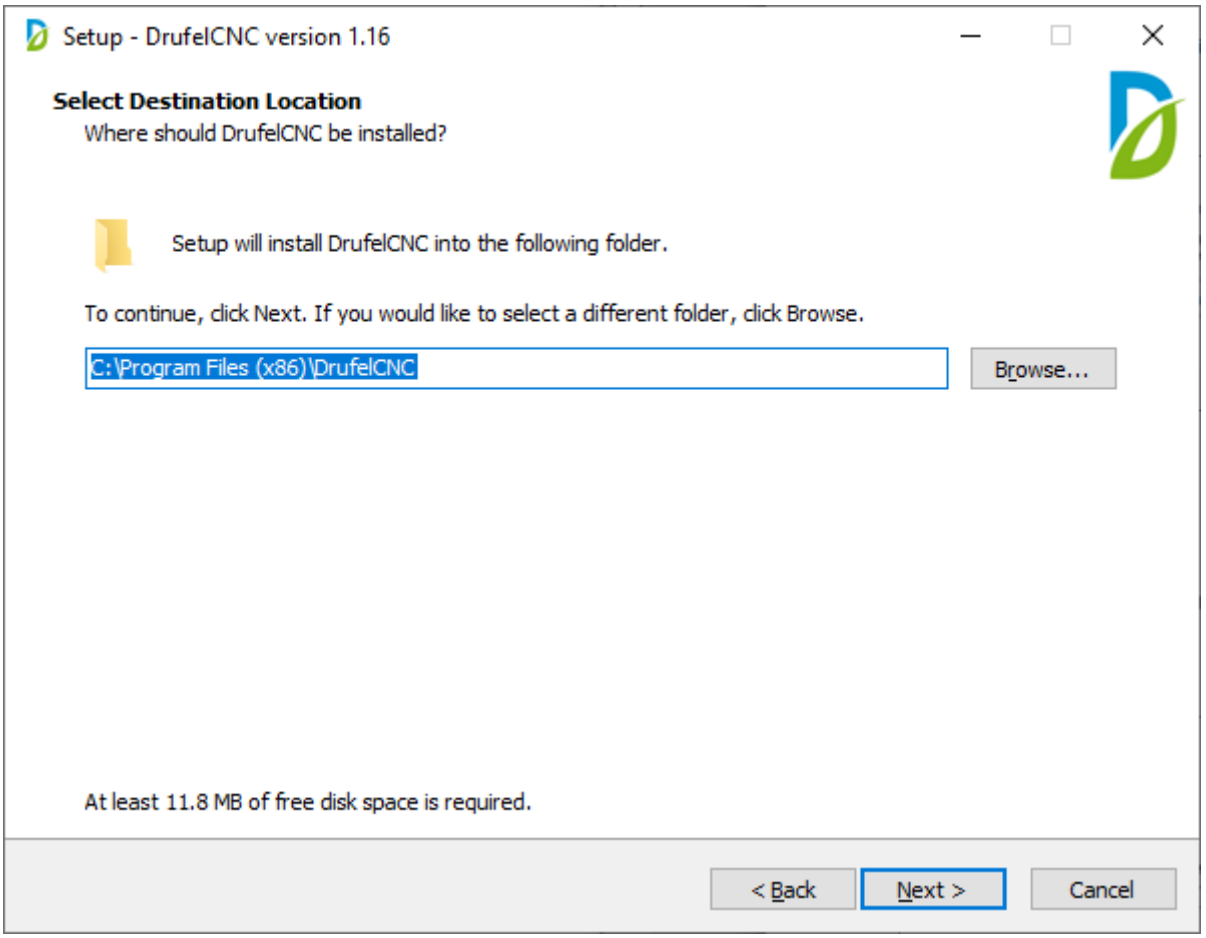


2. *License Agreement.* The License Agreement installation window contains the text of the license agreement for the use of the DrufelCNC software product. Please read the agreement and select "I accept the terms of the license agreement". To continue the installation, click "Next." During the entire installation process, to return to the previous installation step, click the Back button. To exit the installer, click Cancel.

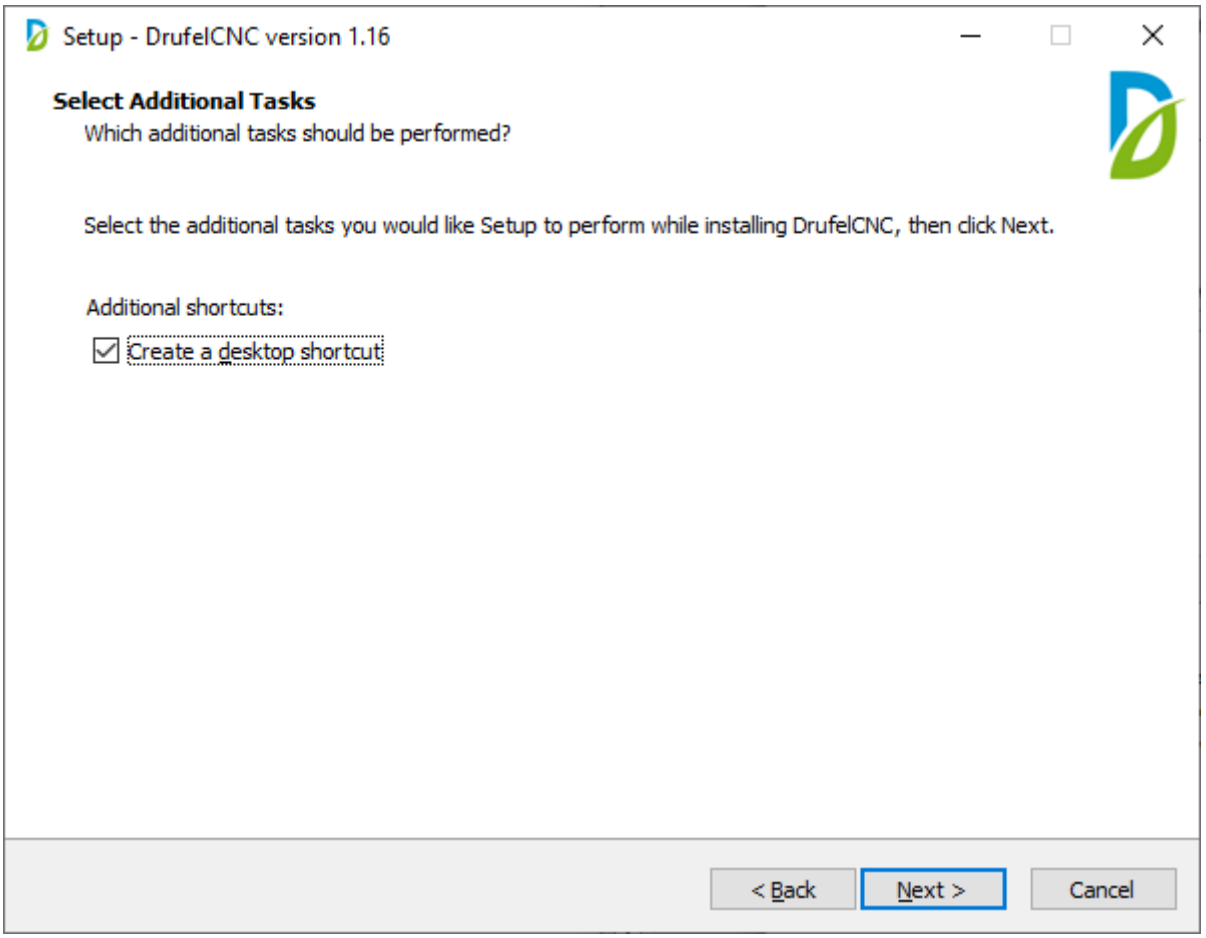


3. *Select the directory in which the installation will be made.* At this stage of the installation, you must specify the directory in which DrufelCNC will be installed. The default installation directory is "C:\Program Filies\DrufelCNC".

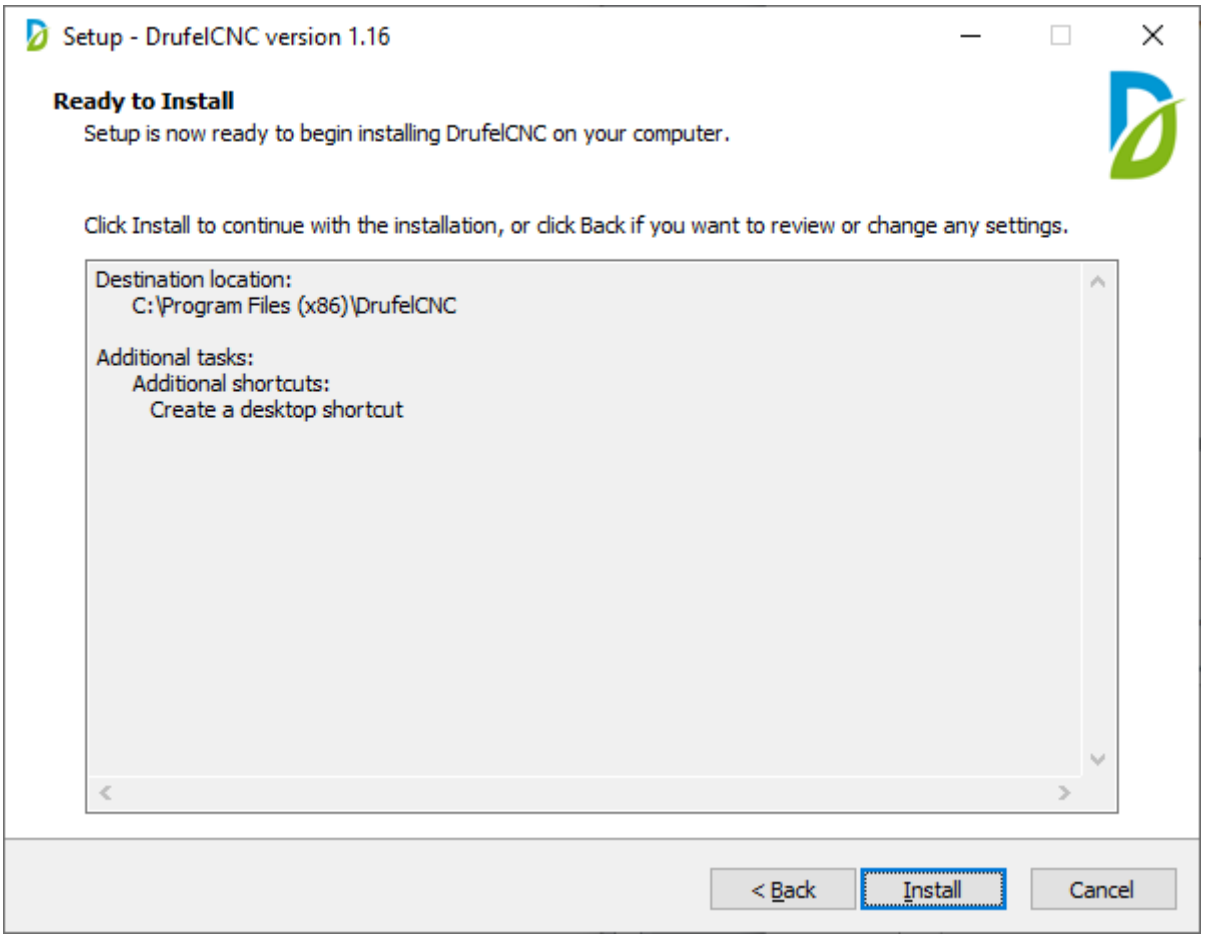
If you wish, you can specify any other path. Depending on the version of Windows, the default path may be different. To continue the installation, click "Next."

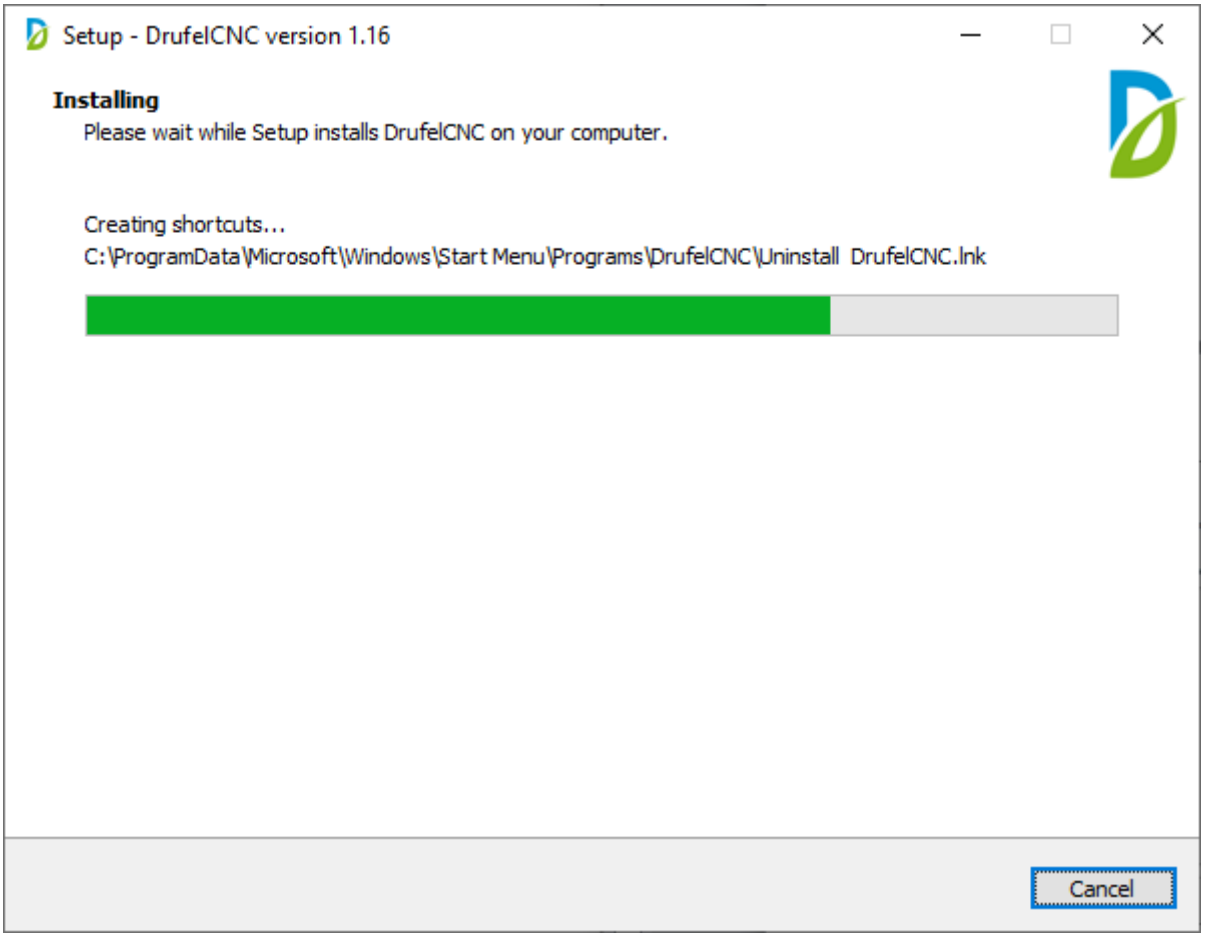


4. *Selection of additional installation parameters.* At this stage of installation, it is necessary to determine the need to create program shortcuts on the desktop. By default, a program shortcut will be created. To continue the installation, click "Next."

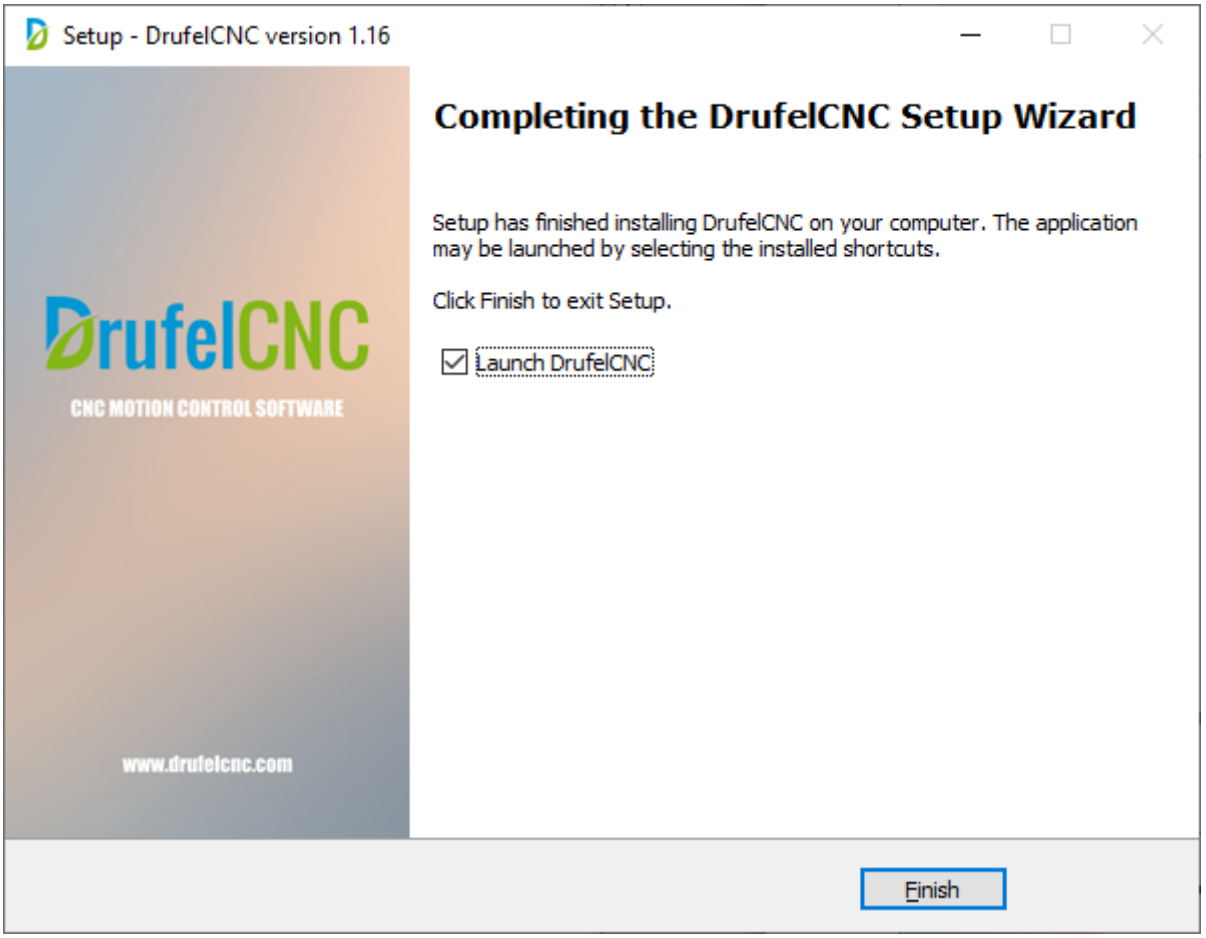


5. *Preparing for installation.* A window with information about the selected installation type, selected components and installation directory will be displayed. Check the information and click "Install."


Setup - DrufelCNC version 1.16
Ready to Install
Setup is now ready to begin installing DrufelCNC on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\Program Files (x86)\DrufelCNC
Additional tasks:
Additional shortcuts:
Create a desktop shortcut
< Back
Install
Cancel


Setup - DrufelCNC version 1.16
Installing
Please wait while Setup installs DrufelCNC on your computer.
Creating shortcuts...
C:\ProgramData\Microsoft\Windows\Start Menu\Programs\DrufelCNC\Uninstall DrufelCNC.lnk
Cancel

6. *The final stage of installation.* At the last stage, the installation program will report the result and will offer to start the programs depending on the type of installation selected earlier. By default, you can run the program. To complete the installation, click Finish.

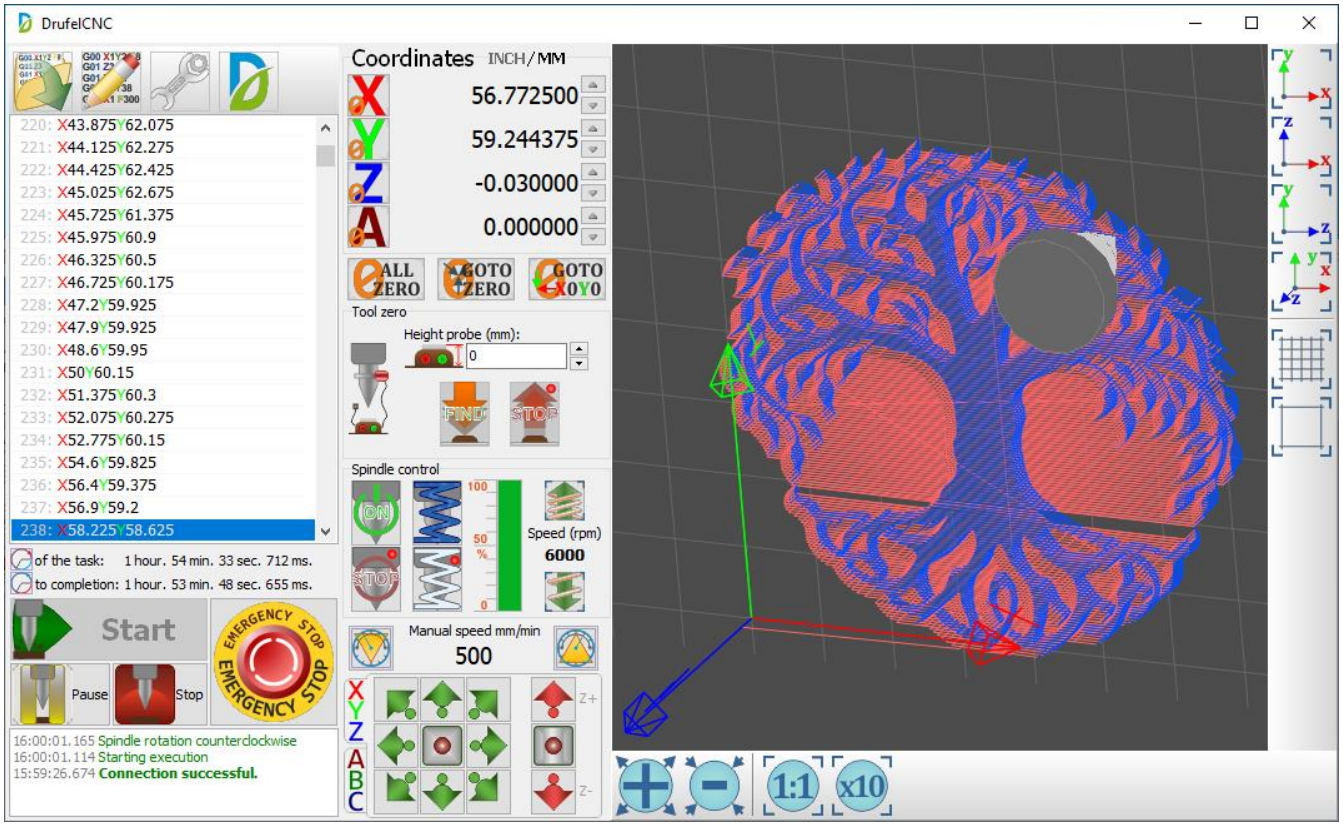


6. Run the program

To run the program, use the version depending on the bitness of your operating system:

- DrufelCNCx32.exe - version for 32-bit operating systems
- DrufelCNCx64.exe - version for 64-bit operating systems

The main window of the program.



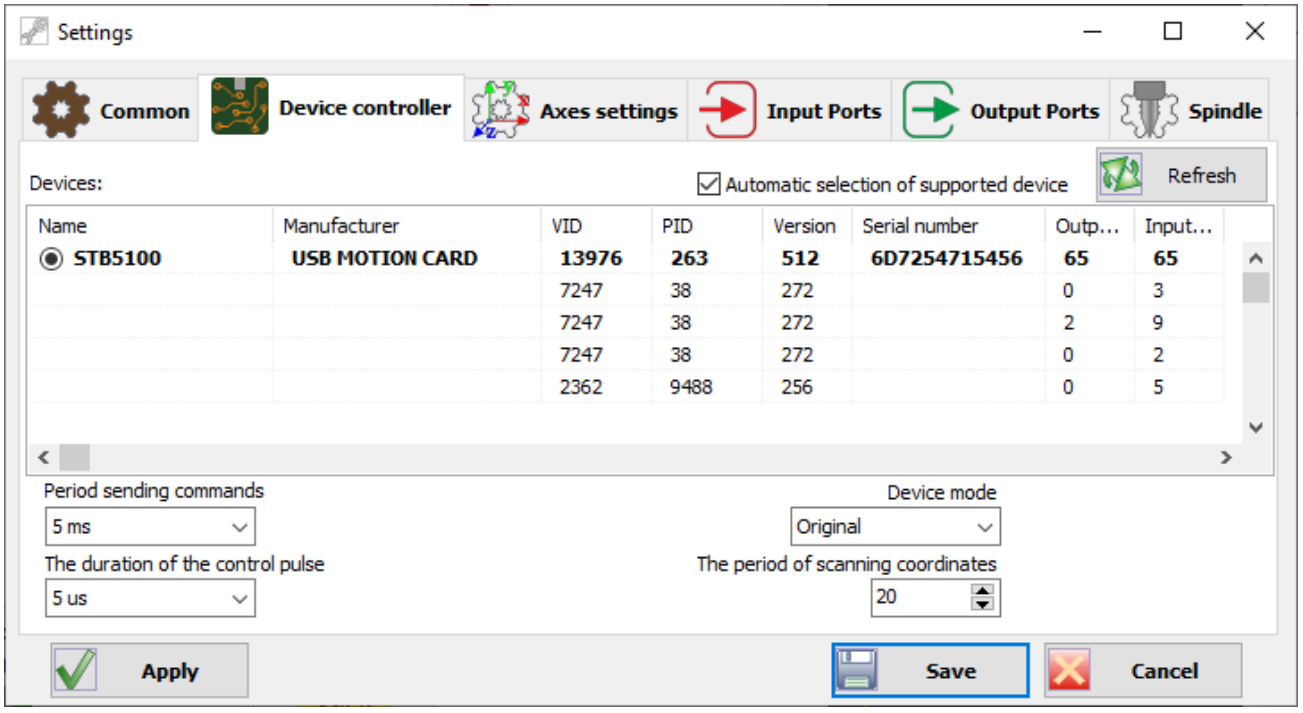
In the lower left corner displays the status of the connection to the USB controller, and other informational messages.

7. Customization

To configure DrufelCNC you must click on the button with the image of the key  . Next, go to the section of settings that interests you.

a. Controller Configuration

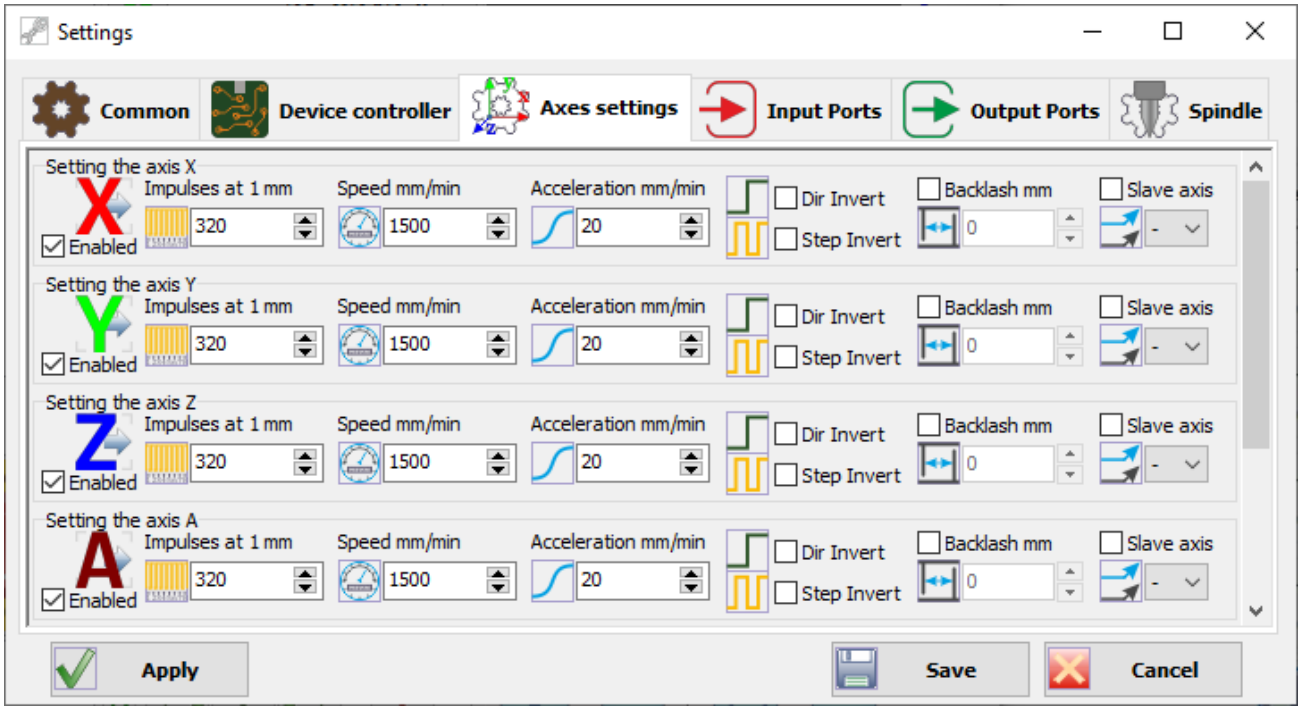
In the window that opens, go to the "Device Controller" tab.



In the hardware section, you must select a controller by setting a point in the radio button block opposite the USB controller. Save the settings.

b. Axis Setup

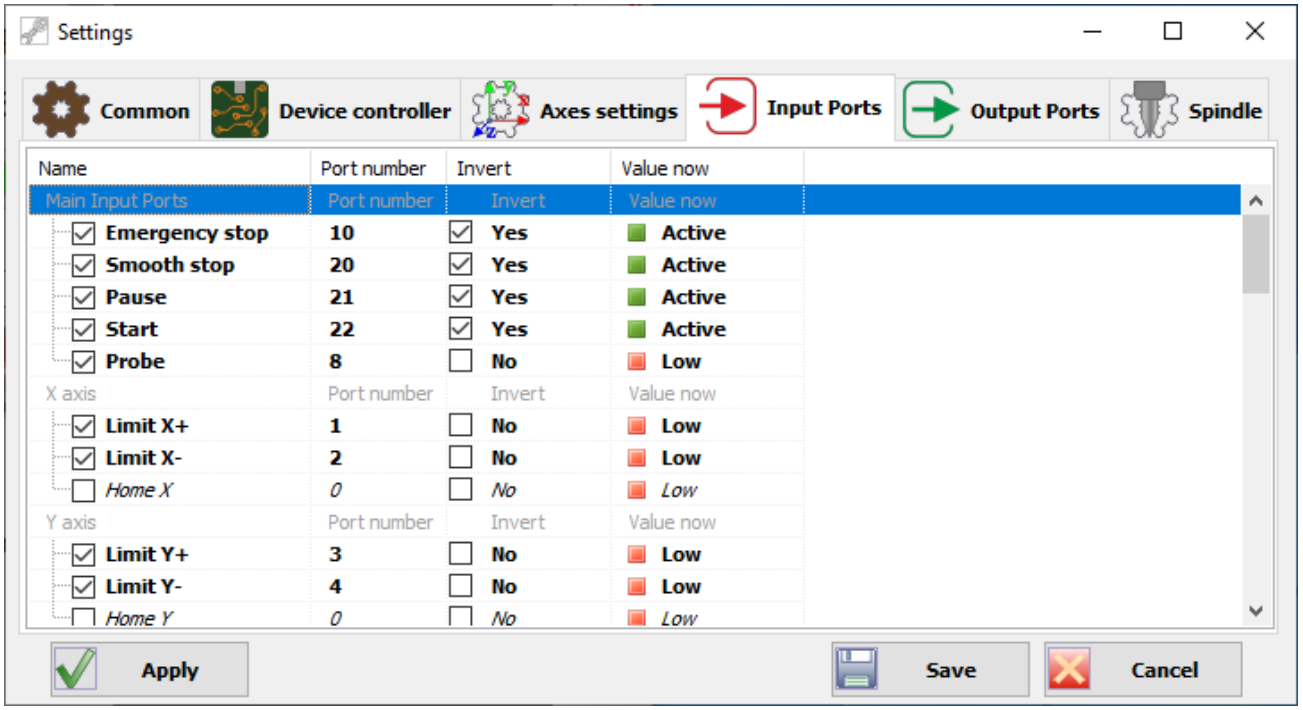
To configure a stepper motor or servo drive, go to the Axis Settings tab.



Set the required number of pulses for each axis. Save the settings. If necessary, specify the submission of the axes. Use the inversion setting to change the direction of rotation of the motor.

c. Configure Input Ports

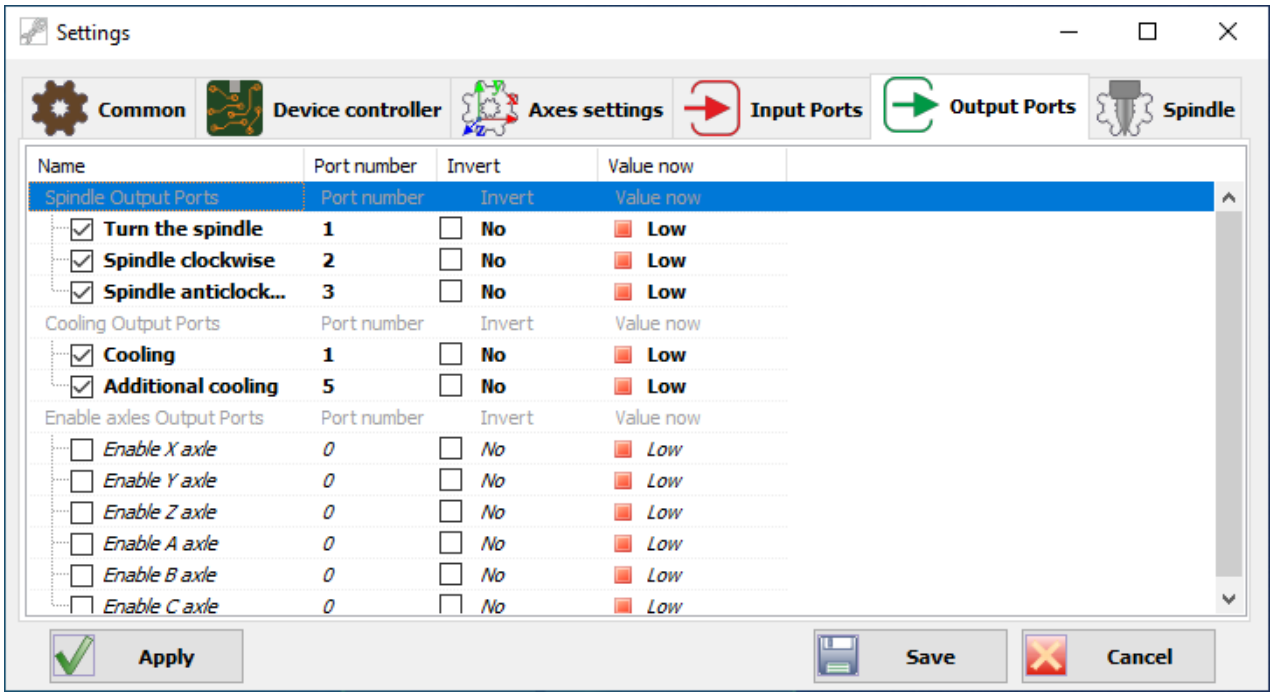
To configure input ports, go to the Input Ports tab.



Set the input port numbers according to the configuration of the machine and the CNC controller. Save the settings.

d. Configuring output ports

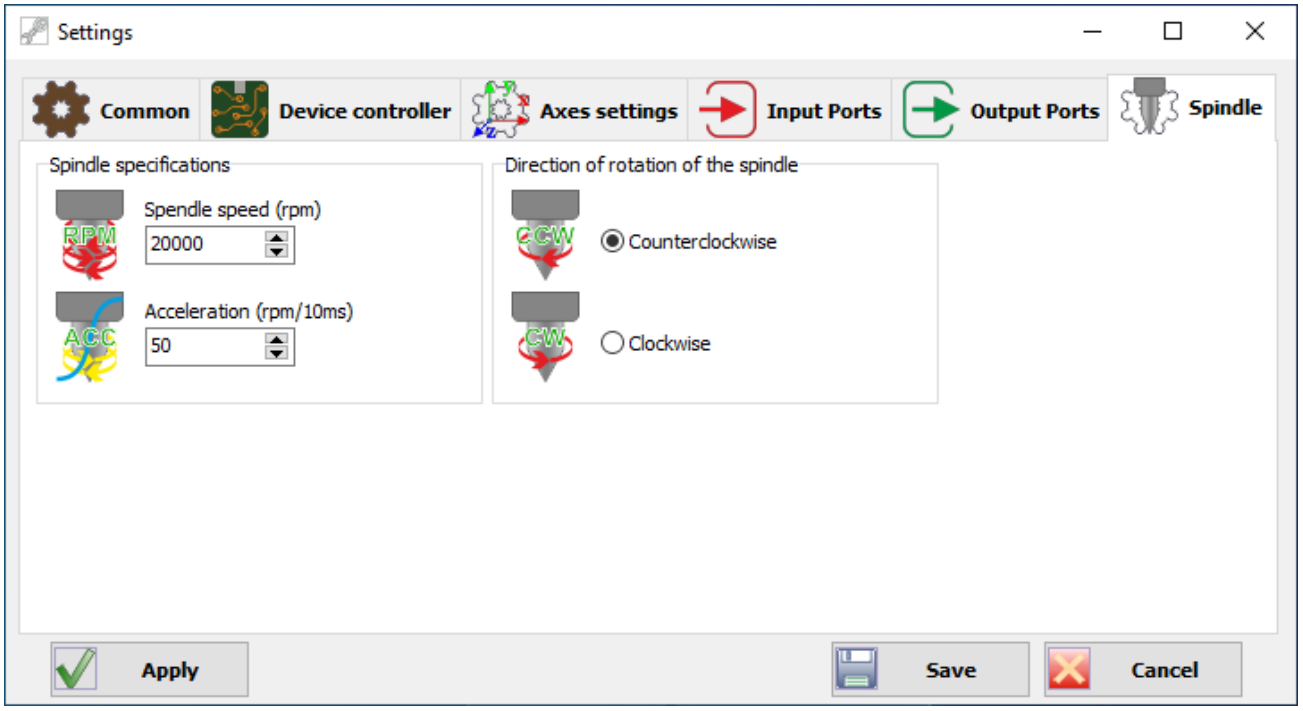
To configure output ports, click the Output Ports tab.



Set the output port numbers according to the configuration of the machine and the CNC controller. Save the settings.

e. Spindle adjustment

To configure the spindle parameters, you need to go to the "Spindle" tab.

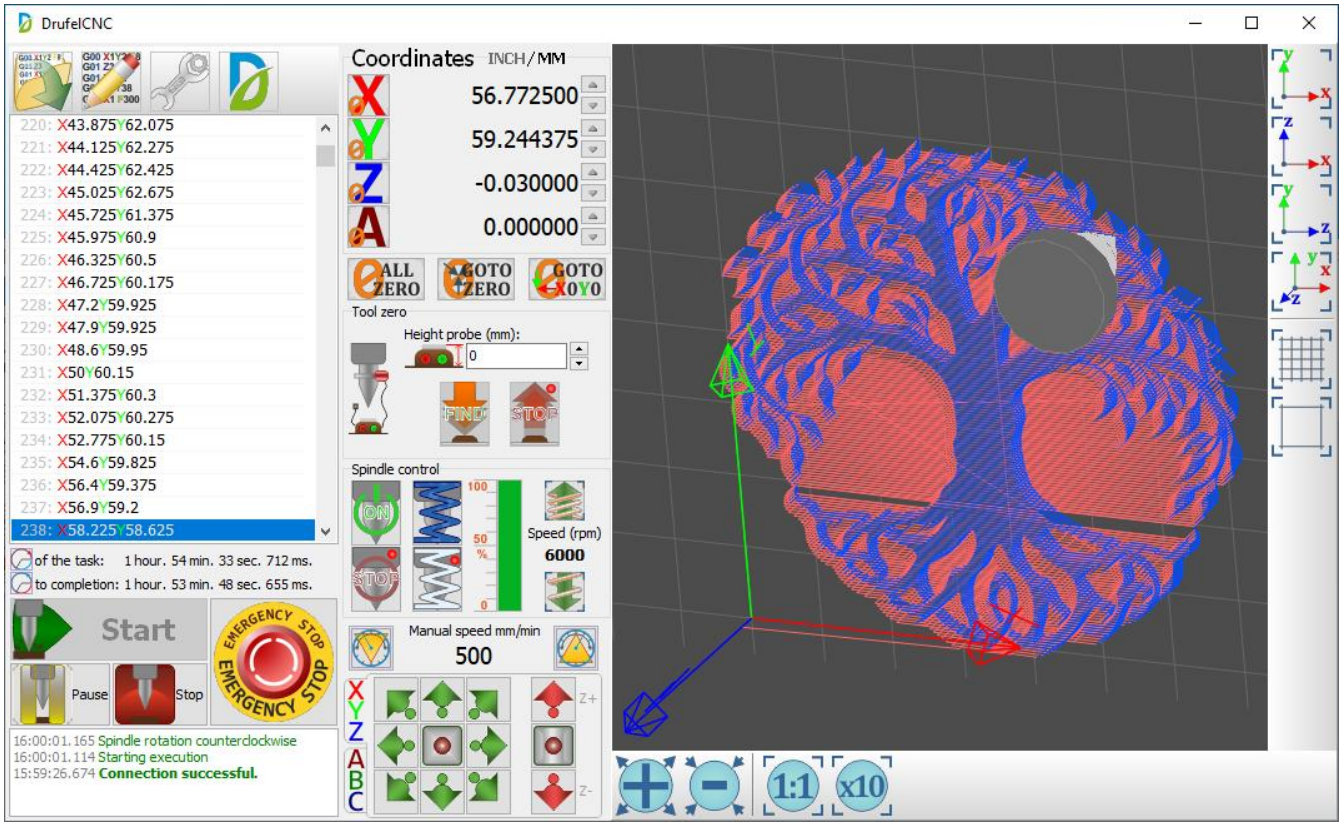


Set the speed and acceleration parameters according to the spindle specification. Set the default spindle rotation direction. Save the settings.

8. Run the control program (G-code)

To run the control program in the language of G-code, you must click on the button with the image of the folder  , then select the file.

If the file is recognized successfully, the three-dimensional model of the file will be displayed in the right part of the main window.



To start processing, click "Start" 

.

9. Search tool zero

To begin searching for a tool zero, set the height of the sensor used. Next, click 

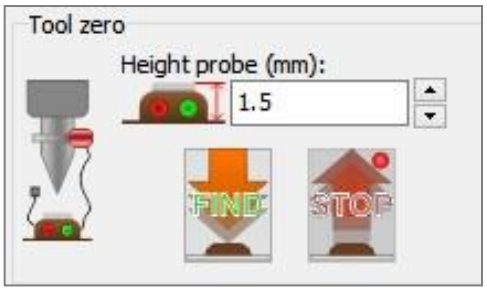
. Wait until the end of the process.

First you need to configure the input port number for the probe. The Z axis is assigned according to the value found and the height of the probe.

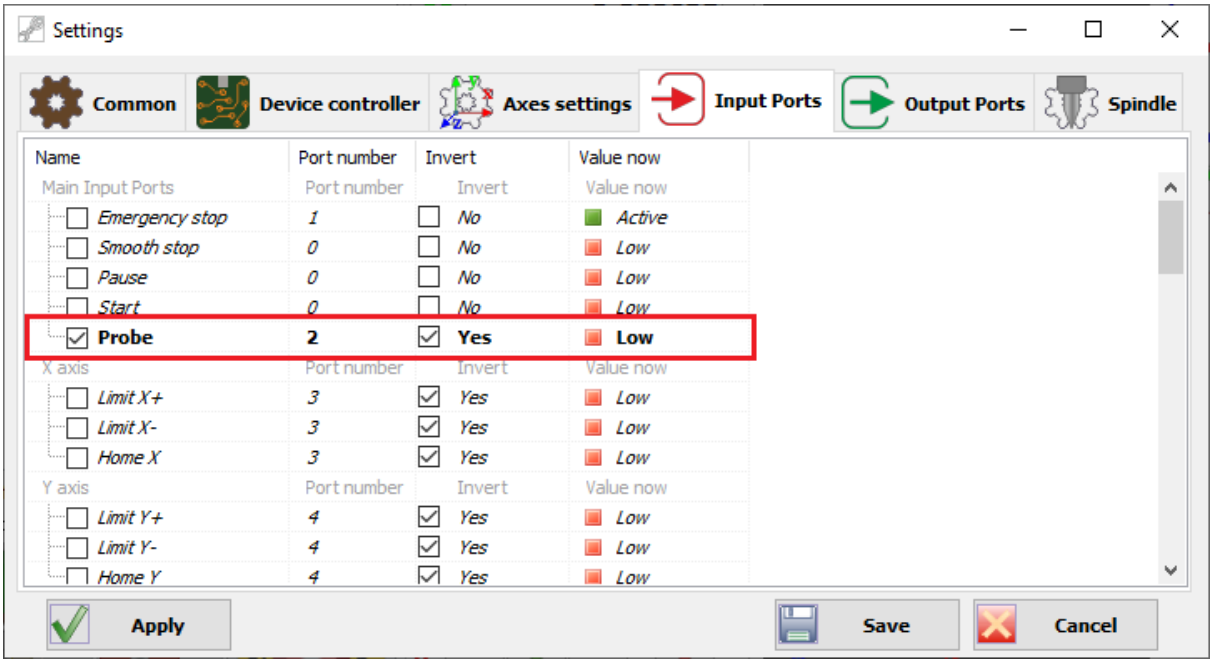
After completing the tool zero search, the tool will return to its original position.

To cancel the tool zero search, click 

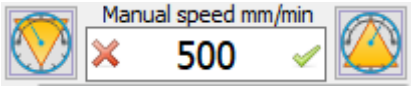
.



For the tool zero search to work correctly, you must set the input port number in accordance with the port number on the controller where your probe is connected.



10. Manual control

This field 

sets the speed of movement of the instrument during manual operation.

 - Speed reduction button.

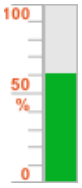
 - Speed increase button.

For manual control, press the corresponding joystick button 

11. Spindle control and cooling

- Spindle power button.

- Spindle off button.



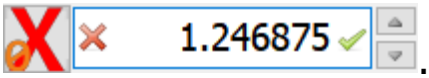
To set the spindle speed, click on the progress bar area.


- Button to increase the rotation of the spindle.


- Button to reduce the rotation of the spindle.

12. Assignment of coordinates

To reset the x-axis, click the button  . To reset the remaining coordinates, click on similar buttons.

To set your own X coordinate axis, click the digital value of the X coordinate axis. 

. In the field that appears, enter the desired value and click on the button ✓. To cancel the entry, click ✕.

Use the buttons to set more accurate coordinates  . To set the values of the remaining coordinates, use the same action algorithm.

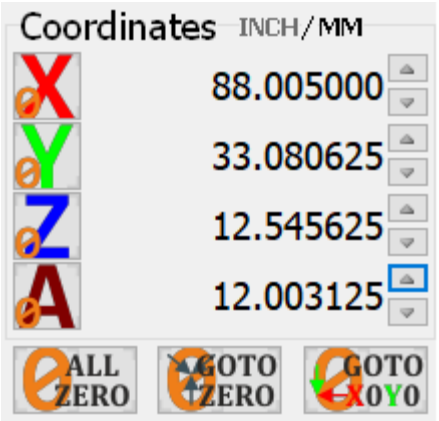
To reset all coordinates, click on the button 

.

To move the tool to zero coordinates, click 

. To go to the coordinates X0 and Y0, click on the button 

.

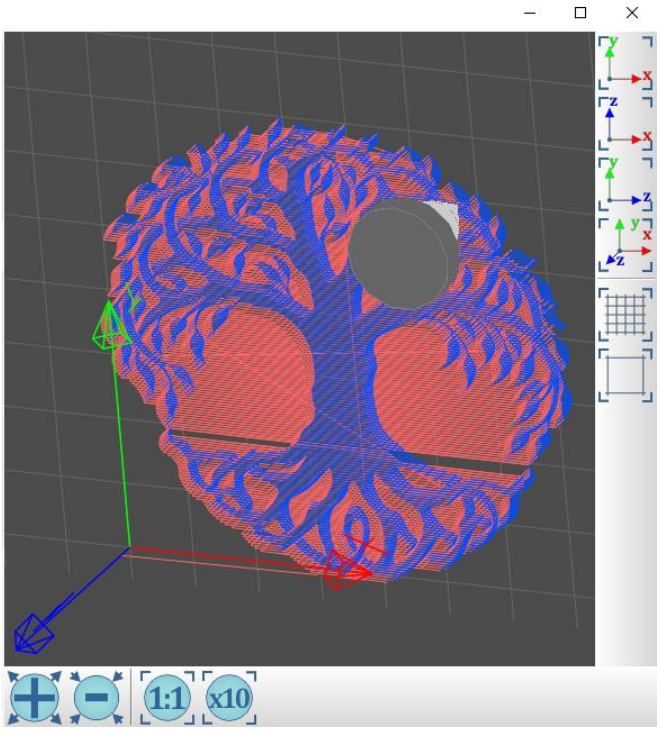


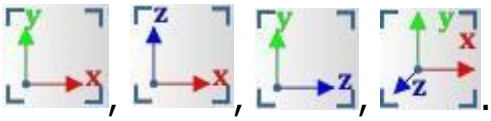
The default system of units is millimeters. To set the units in inches, click on Coordinates INCH/MM. To set the system of units in millimeters, click on Coordinates INCH/MM.

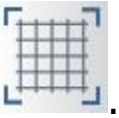
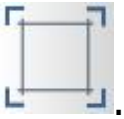
The current coordinate system is highlighted in black.

13. Display 3D model

The code you downloaded is displayed as a 3D model on the right side of the application window.



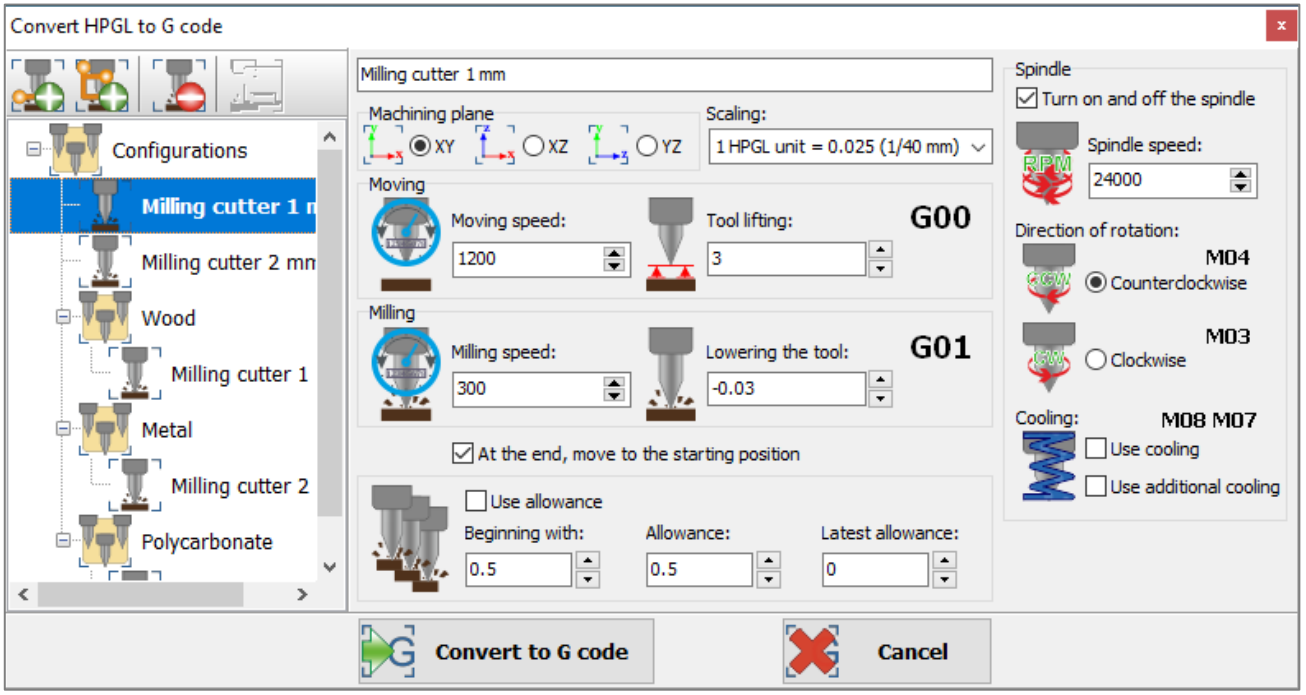
To rotate the 3D model, move the mouse pointer to the display area of the 3D model. Right-click and hold to move the mouse pointer. You can also use additional buttons.  . To zoom the 3D model, use the mouse wheel or  . To move the model in the plane, use the left mouse button.

To turn on the grid, click on the button  . In order to turn off the grid, click on the button  . Grid enabled by default.

14. Opening HPGL files

To open files in HPGL format, you must click on the button with the image of the folder  , then select the file.

In the window that opens, you must select the parameters for converting HPGL to G-code.

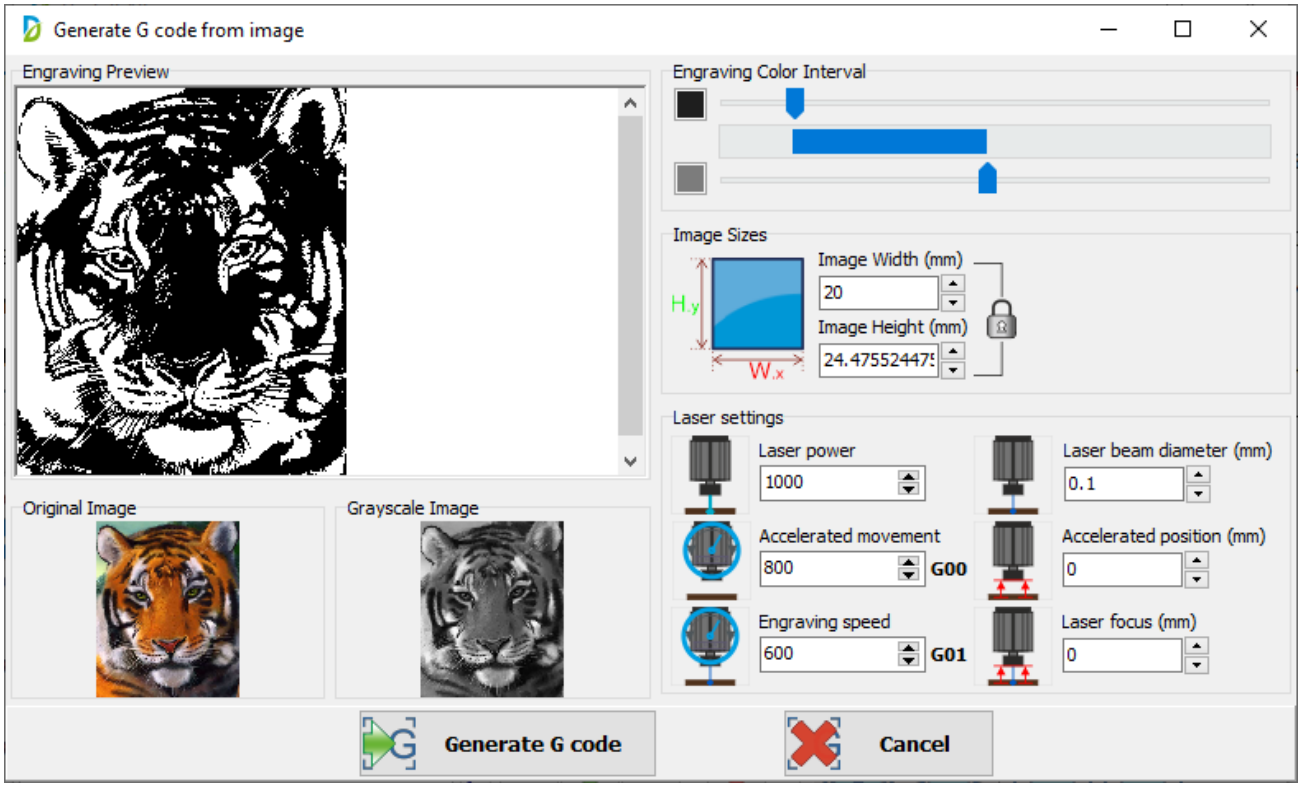


After successful conversion, you will see a three-dimensional model of the file.

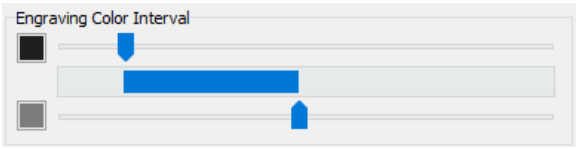
15. Generating a G-code from an image

To open a file in the format (png, jpeg, gif, bmp), you must click on the button with the image of the folder  , or select the necessary file and transfer it to the G-code field.

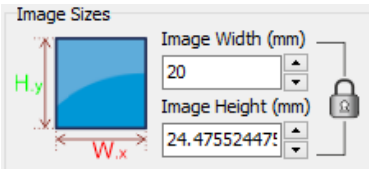
In the window that opens, you must select the options for converting the image into a G-code.



In the engraving color interval block, you can adjust the color interval.



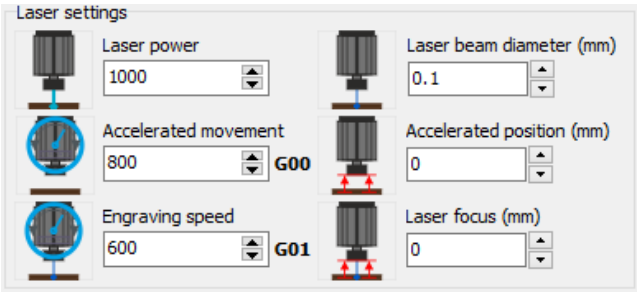
In the Image Sizes block, you can adjust the image size.



 - proportional image resizing.

 - not proportional image resizing.

In the Laser Settings block, you can configure the laser settings.



 - laser power setting

 - accelerated motion setting (G00)

 - engraving speed setting

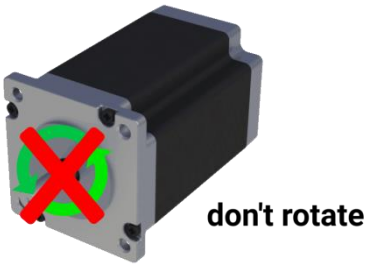
 - laser beam diameter adjustment (mm)

 - accelerated position adjustment (mm)

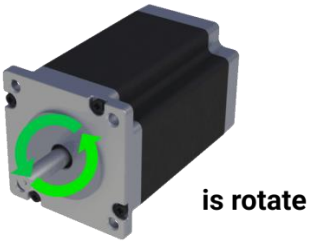
 - laser focus adjustment

16. Stepper motors

If your stepper motors don't rotate



Turn on Step Invert ☑ Step Invert



If you doubt the correct connection of ENA + ENA- then temporarily do not connect it. Make sure your motors spin. The default ENA port is activated on most stepper motor drivers.