# WinPC-NC...?

# ...How does it work?

*Explanation on the WinPC-NC parameters and its basic operations for cutting and engraving lasers*

|   |   |
|---|---|
|   | Starter |
| X | Light |
| X | USB |
| X | Professional |

This quick guide will show you the settings on how to obtain optimal engraving and cutting results with your laser. *WinPC-NC*'s unique technology provides comprehensive options on modifying designs for your laser.

The required settings and parameters may vary depending on the manufacturer and type of laser. If you have any questions about the parameters and its operation for a special laser, please feel free to send us a message.

This quick guide only contains explanation for the available parameters. We provide other short instructions with more detailed information on how lasers can be used. The available instruction can be downloaded from our website and contain the topics installation and quick start, instructions for the gray scale and cutting test.



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## Activation of the technology function laser

In order to display the lechnology functions on the laser, which can be found on the Technology Menu, laser technology must be activated first. This can be done in the **Basic Settings-Equipment**.
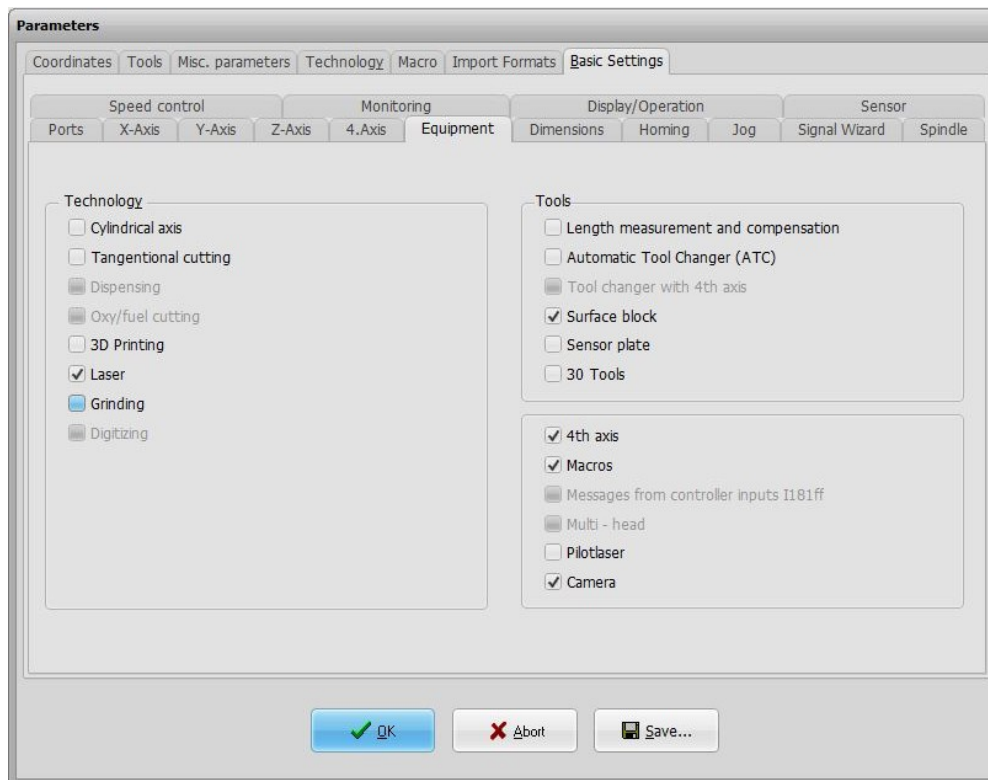


You can finde more information on how to connect your laser to your machine and how to assign the necessary pins in the Signal-Whizard in the quick start guide for installing the laser.

# Parameters of the Technology Function Laser of version 3.40
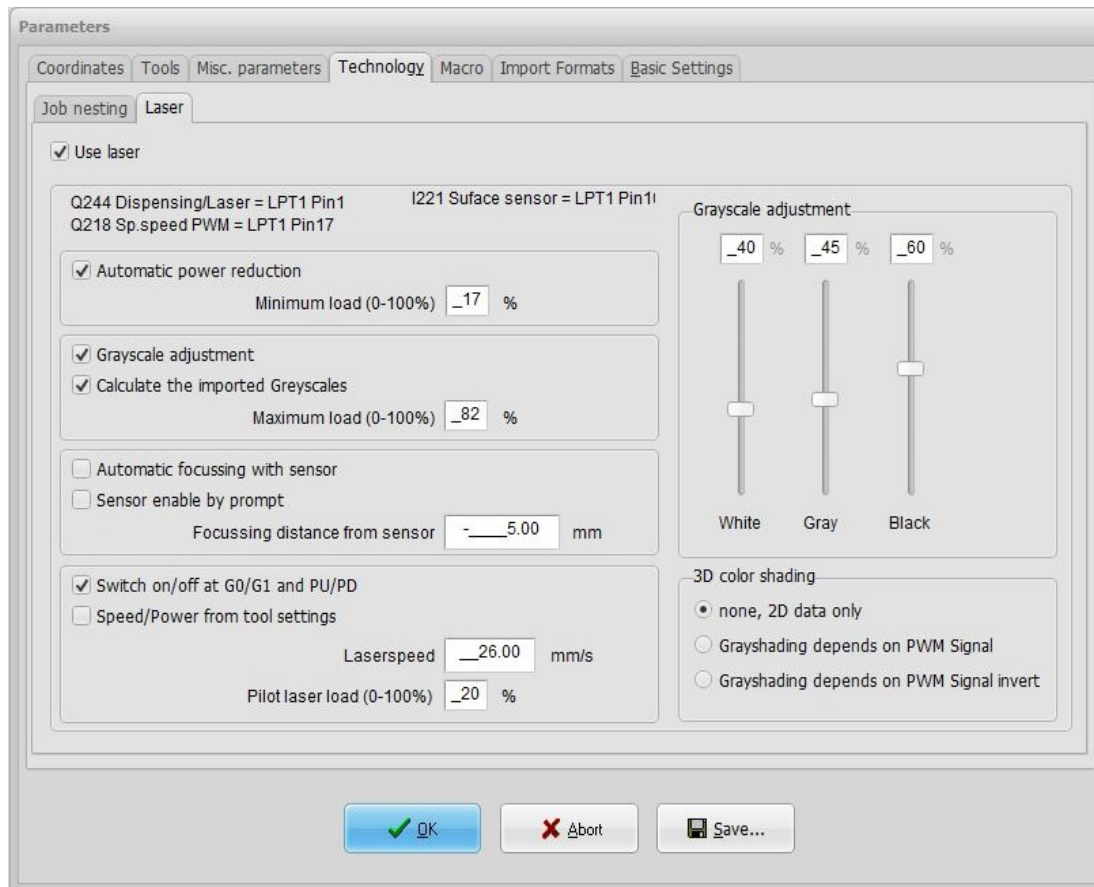


**Use laser**

To use and activate the laser functions, check this box.

**Q244, Q218, I221**

The required signals to drive the laser are displayed here. To set up right pin assignment for the laser and its functions, refer to the quick start guide for installing the laser.
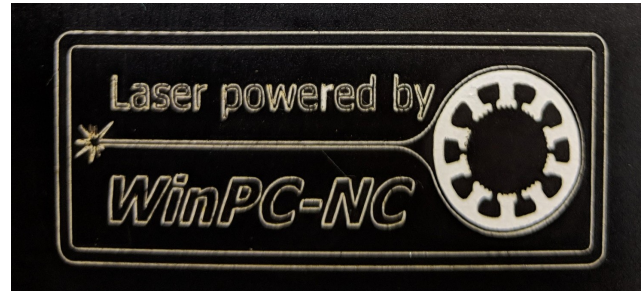
## Automatic power reduction and Minimum load

**WinPC-NC** performs an interpolation of the laser power depending on the current speed of your machine. The corresponding checkbox must be checked to activate this function. Laser power is automatically reduced during braking and slower driving to ensure that the work piece will not be burned.

| Without automatic reduction | with automatic reduction |
|---|---|



The used material will determine if a reduction to 0% laser power is necessary and desirable. The minimum power can be entered here, which is used as minimum speed for the automatic power reduction. This is beneficial if the laser does not perform any seen marks on the working piece with 0%-20%. The minimum load should be set to 20%.

This reduction takes place additionally to the power values or spindle speeds in the loaded nc file.

## Grayscale adjustment

By activating the grayscale adjustment function the grayscale input field on the right hand side of the parameter window will be displayed. The values entered here will be considered for the laser power calculation in **WinPC-NC**. The grayscale function allows further compensation of the nonlinearity of the laser diode to achieve better results. Values for the grayscale adjustment can be entered on the right hand side of the parameter field. The values can be set from a previous run or can be determined with the laser test function. To find out how to adjust the gray scale level, refer to the quick start guide for the laster test functions.

## Scaling of the imported Grayscale / Calculate the imported Grayscales

The values to control the laser will be between 0%-100% on default.

**WinPC-NC** uses the spindle speed information in the nc file if the parameter has been deactivated. However, only values ranging from 0-100 are considered during the job. Any value larger then 100 is automatically equated to 100% laser power. Since this setting is not very ideal, **WinPC-NC** performs automatic scaling when loading the nc file if this parameter is active. Nc files containing spindle speeds between 0-100 are considered as such and no scaling takes place.

Job files with spindle speeds between 0-255 with at least one speed value greater than 100 will be scaled to 0%-100% automatically.

Job files that contain spindle speeds greater than 255 are automatically scaled that the highest contained speed value is equated with 100% and the remaining values be interpolated.

When creating your job files, be sure to set the spindle speed values between 0-100 and this parameter is not relevant for you. Furthermore, this parameter is enabled by default and should only be disabled if automatic scaling is not desired.

### Maximum load

This parameter specifies the maximum laser output power in percentage in which the file is processed. It must have a value between 0%-100%. This is specially designed for materials that needs a very small laser intensity or for lasers with a high laser output power. The value entered here is automatically included in the calculation of the gray scale adjustment. The laser power now becomes linear between the minimum power and the maximum power interpolated. This happens depending on the spindle speed values specified on the nc file. Additionally the current machine speed can be considered for the power calculation with the previous described parameter automatic power reduction.

### Automatic focussing with sensor and Focussing distance from sensor

This checkbox activates the automatic Z zero point finding function. This can either be done through a surface sensor placed on the work piece or a sensor used on the laser. After **WinPC-NC** detects the activation of the sensor, it automatically reverses the value of the parameter Focussing distance from sensor. This value must be set to match the height of the focus point of the laser. If a flying surface sensor is placed on the work piece to determine the zero point, the height of the sensor can be deducted from the value of the parameter Focussing distance from sensor.

### Sensor enable by prompt

This parameter must be activated, if the surface sensor or sensor for automatic Z zero finding must be placed on the work piece before the measurement. Now **WinPC-NC** waits before the start of the measurement until the user acknowledges the positioning of the sensor and before the job start until the user acknowledge that the sensor is removed.

## Switch on/off at G0/G1 and PU/PD

Selecting this parameter enables or disables the automatic control of the laser through **WinPC-NC**. This parameter should be set if the nc file does not include the correct commands that will turn off the laser during empty runs. In GCode files, the output for the laser is switched on with M10 command and switched off with M11 command. If this parameter is activated, switching the laser on and off are based on the G-commands. In this case, the laser is off at G0 moves (empty runs) and on at G1, G2 and Gx moves. For HPGL files the pen-up and pen-down commands are used to control the laser. For DXF files, the empty runs are used to switch the laser on and off.
Enabling this parameter prevents errors that may arise with using certain postprocessors. This parameter should be activated if the laser is switched on during empty runs. Activating the parameter is suitable for troubleshooting as compare to using other outputs e.g. **Q242 Spindle** or **Q243 Cooling**.

## Speed/Power from tool settings

If that checkbox is activated **WinPC-NC** does not use the laser speed and power values from the technology page but takes the value from the Tools parameters. You can enter a value for each tool there and can select the desired values by using the corresponding tool in the nc file.

## Laserspeed

The parameter Laserspeed can either be entered directly or be determined during the speed test. How to find the right laser speed for the used material with the **WinPC-NC** laser speed test function is explained in the quick start guide for the laser test functions.

The value entered here corresponds to the maximum speed used to calculate the speed dependent power reduction and to the maximum speed used during the working process.

## Pilot laser load

The mounted laser can easily be used as a pilot laser with **WinPC-NC** to measure the work piece X-, Y- zero point before starting the job. The desired percentage value for the pilot laser must be entered here. The pilot laser is only used as a marker to align the machine and must be kept as low as possible. It must be adjusted in that way, that a activation of the pilot laser does not affect the underlying material or anything else.

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