

Translation



Quick Start Guide T-Rex Series

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T-Rex Series



Short Description

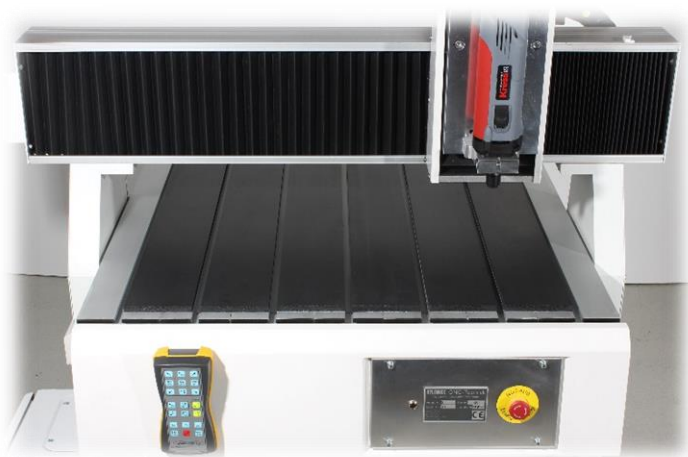
This Quick Start Guide will help you with the initial start-up of the machine.
It also includes optional accessory that is connected directly to the machine or control.
For more detailed information please refer to the individual manuals.

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1 Connectors and cables on the machine



1.1 Connection Panel Machine

D-Sub 9pol. ST	Control line ST
D-Sub 15pol. C	Tangential Tools (to Connection Panel Z-axis)
Neutrik 4pol. X	Motor connection cable X-axis
Neutrik 4pol. Y	Motor connection cable Y-axis
Neutrik 4pol. Z	Motor connection cable Z-axis
Hirschmann 7pol.	HF-Spindle (to Connection Panel Z-axis)
230V Plug	230V Socket Connection Panel Z-axis



Connection Panel Machine

1.2 Mini XLR Jack

The miniXLR jack provides the option of connecting extensions without additional hardware.



Mini-XLR-jack

For example:

Tool length control, Security housings with door switch
3D Buttons

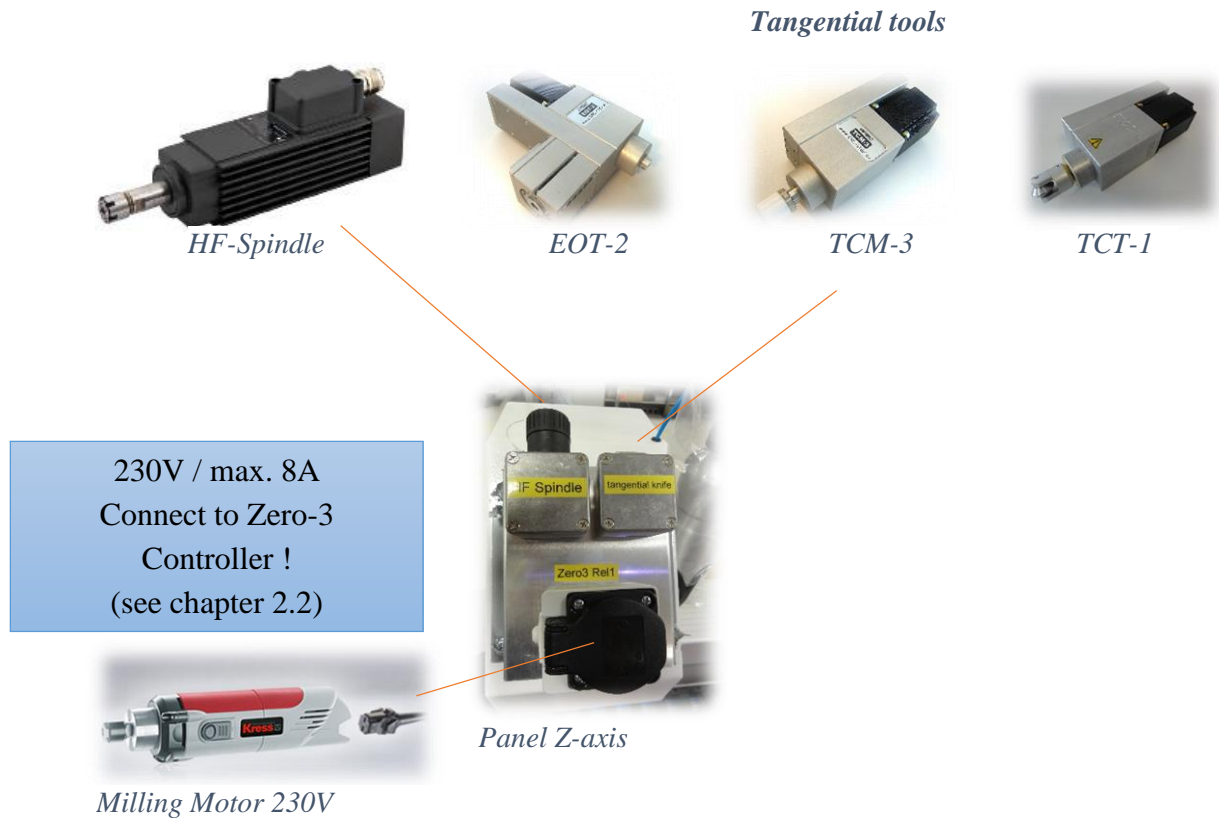
Note:

Concomitant use of this socket and a 4th axis, such as a rotation axis or tangential knife, the connectivity is limited because both the miniXLR socket and the reference switch the 4th axis are found via the PIN15 of the LPT port.

For this combination, we have a solution. To do so, please contact our customer service.

1.3 Connection Panel Z-axis

At the Z-axis various connectivity options for optional accessories are available.



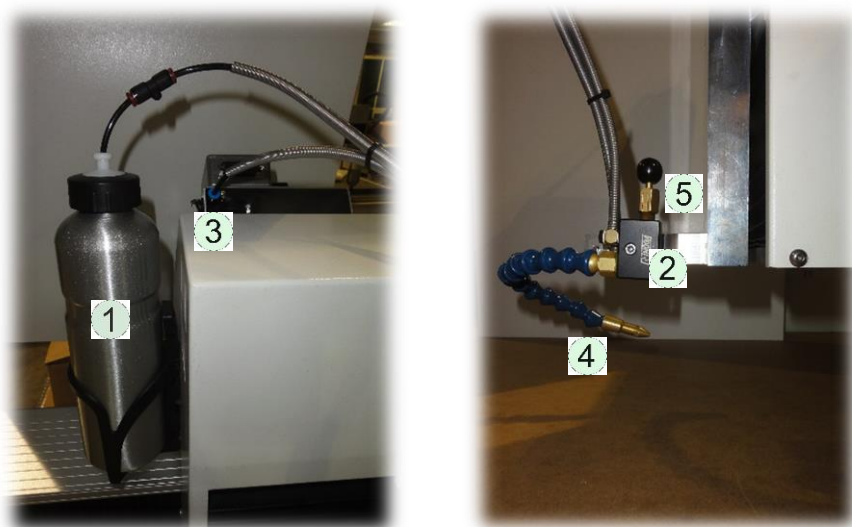
Note socket:

This socket can be connected to an external power supply, or alternative directly to the machine control Zero-3.

Then there is the possibility to turn off the power by software. (see chapter 2.2)

1.4 Noga Minimum lubrication system

The Noga minimal lubrication system allows the processing of materials which make cooling necessary. For the operation of a compressor is required with min. 2.5 bar.



Noga-Minimalmengenschmierung

- | | |
|---|-----------------------|
| 1 – Coolant container | 2 – control valve |
| 3 – Air connection Z axis | 4 – adjustable nozzle |
| 5 – Manual On / Off (with the hex screw you can adjust the amount of air) | |

1.4.1 control box with solenoid valve

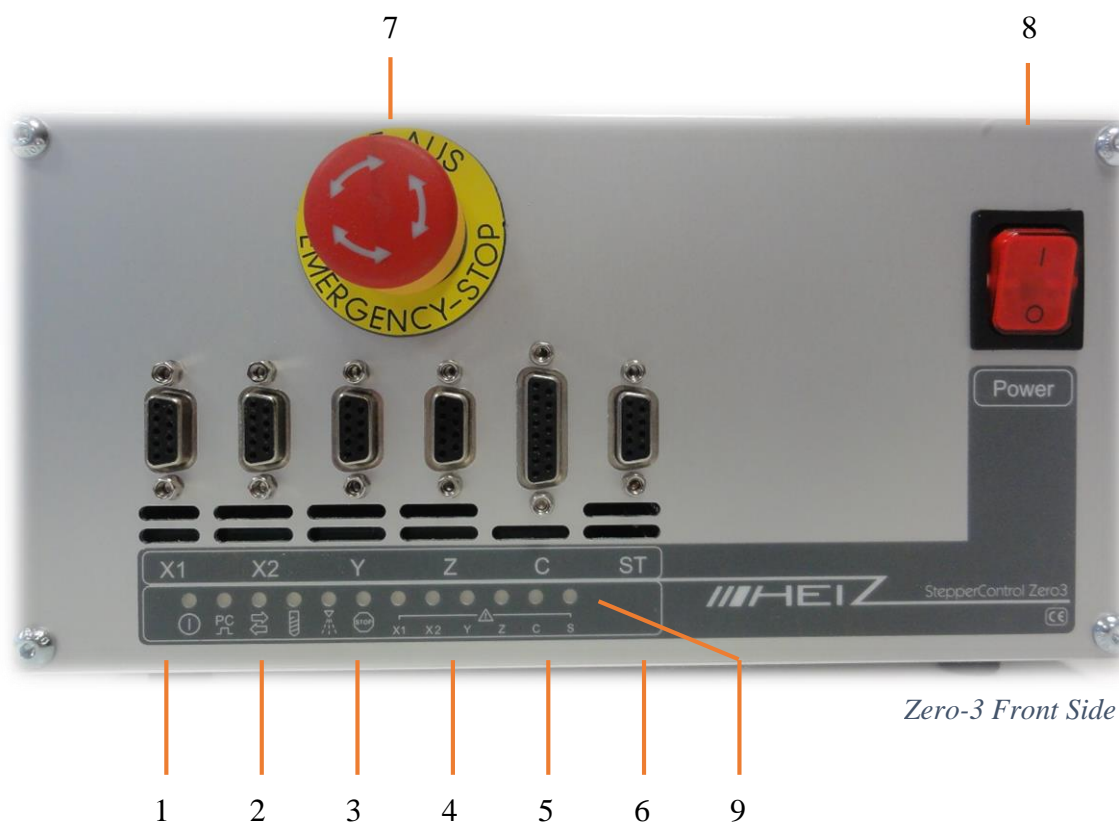
The control box for the Noga system is located on the back of the machine. The system is automatically switched on and off via software, when connected to the Zero-3 Control.



- | |
|--|
| 1 – 230V power supply (at Rel.2 of Zero-3) |
| 2 – Air output to Z axis |
| 3 - silencer |
| 4 – Air connection (min. 2.5 bar) |

2 Connections to the Zero-3 stepper motor controller

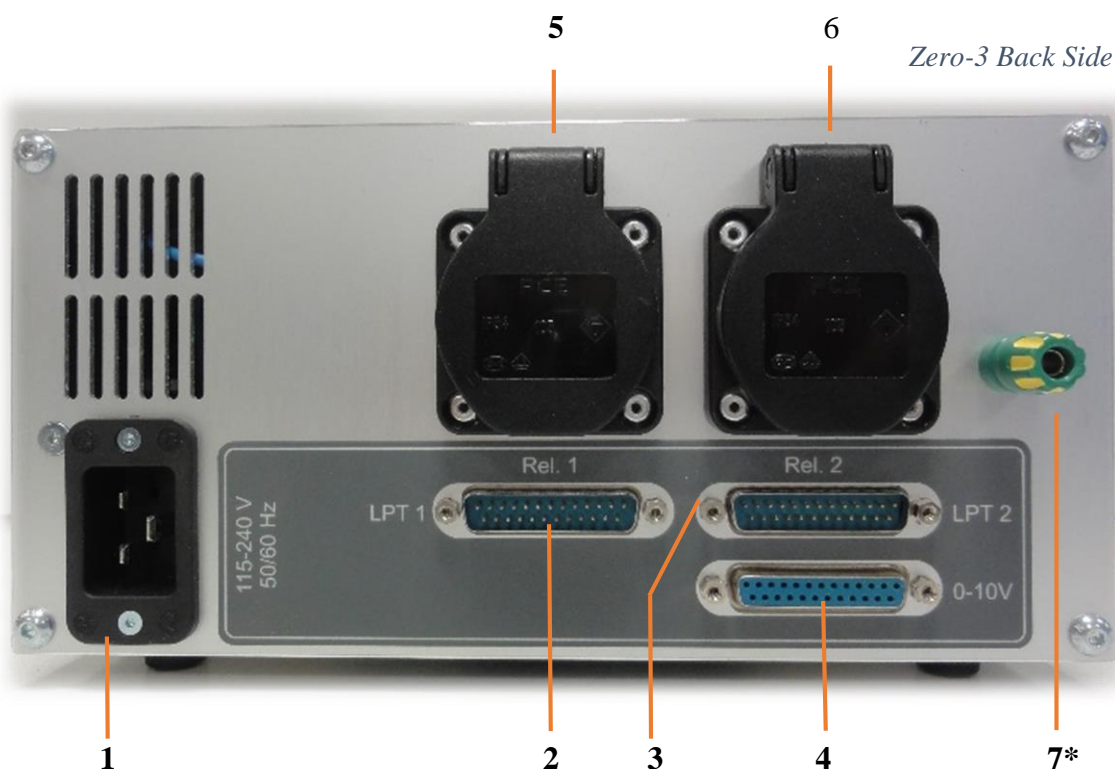
2.1 Front side



Front side Overview

- 1 Connector D-Sub 9pol. for motor X1
- 2 Connector D-Sub 9pol. for motor X2 (not use for T-Rex)
- 3 Connector D-Sub 9pol. for motor Y
- 4 Connector D-Sub 9pol. for motor Z
- 5 Connector D-Sub 15pol. for 4th axis (Rotary axis / tangential knife)
- 6 Connector D-Sub 9pol. for Control line ST
- 7 Emergency-stop-button
- 8 Power-button
- 9 Status-LEDs

2.2 Back side



Overview back side

- 1 power supply (115-240V input voltage)
- 2 LPT1 input
- 3 LPT2 input
- 4 LPT2 output (0-10Volt Edition)
- 5 Socket 1 (115-240V depending on input voltage - switchable via relay 1)
- 6 Socket 2 (115-240V depending on input voltage - switched via relay 2)
- 7 Ground (* only High-Z series > 03/2015)

Note on the sockets 1 + 2:

The two sockets are with two relays switchable. Thus, the consumer connected to it can be switched on and off via software.

This guarantees also that the power supply is interrupted at faults and in emergency case.

The maximum power consumption per outlet may not exceed 8A.

The current consumption of the two sockets together may not exceed 13.5A.

3 Connecting the machine to the Zero-3 control



Zero-3 Front Side



Connection cable of the machine

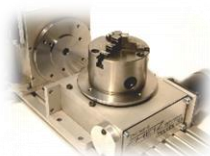
- Make sure that the control is turned off.
- Connect all 5 cables with the Zero-3 controller.
- Make sure that you back up all connections with the knurled screws from loosening.

4 Connection possibility of a 4th axis

On the C-terminal of the zero-3 control another step motor can be operated as the fourth axis. In addition to this port, a 12-24V supply for an oscillation motor and the connection for a further reference switch are supplied.



Zero-3 Front Side



Rotation Axis



TCM-3



EOT-2



TCT-1

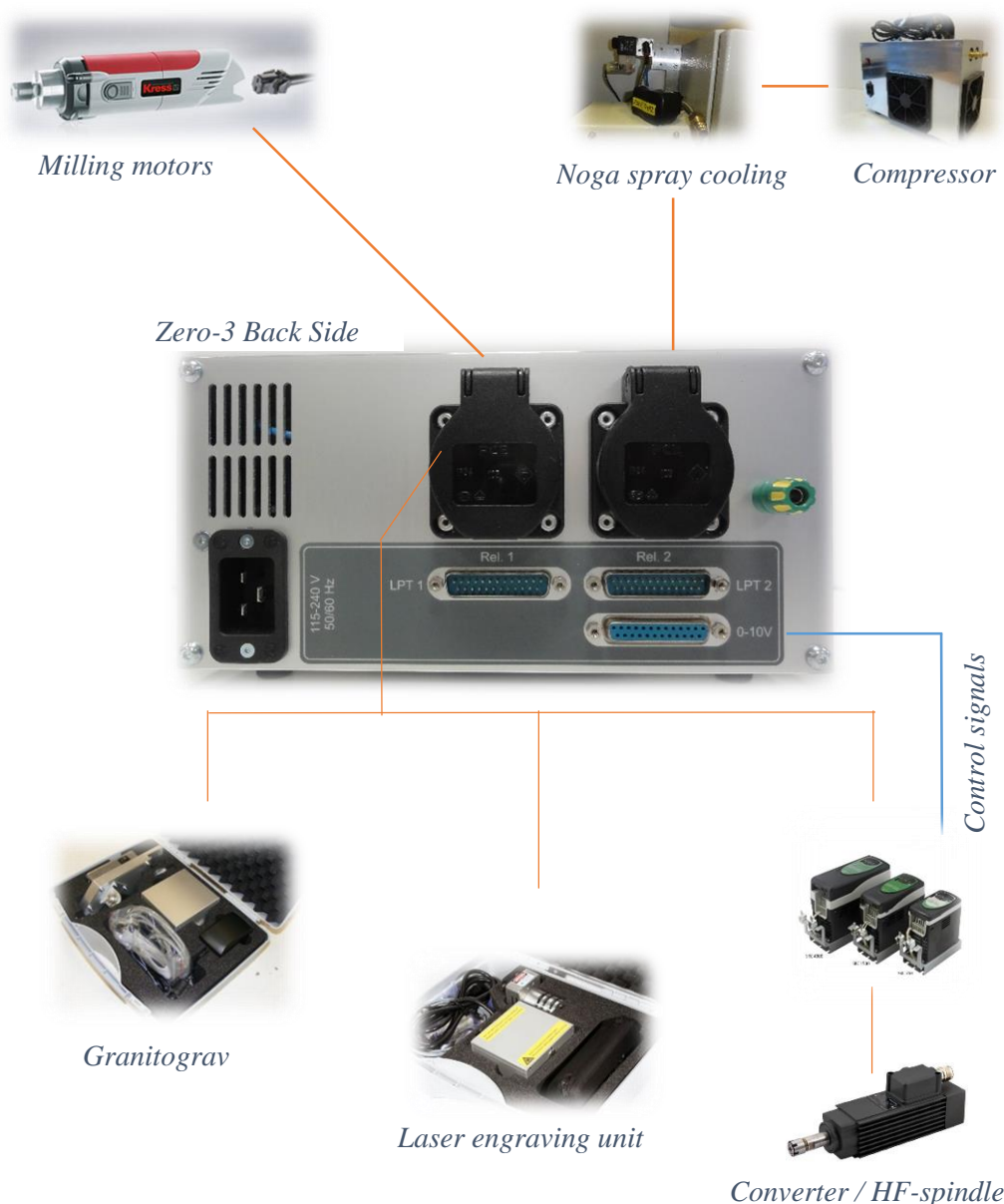
- Make sure that the control is turned off.
- Connect the supplied power cable to the C-socket of the controller.
- Make sure that you back up all connections with the knurled screws from loosening.

5 Connection options of optional accessories

The accessories at this point we just cover briefly the connection to the machine to the controller and if necessary to the additional hardware interface (depending on the software).

For more detailed information please refer to the individual manuals.

5.1 Overview Connection and power supply via Zero-3 control



5.2 Milling motors

Milling motors by Kress:

Art. 211105 Kress 1050FME-1 / 1050 W / 5.000 - 25.000 R/min

Art. 211110 Kress 1050FME / 1050 W / 10.000 - 29.000 R/min

Art. 211100 Kress 800FME / 800W / 10.000 - 29.000 R/min - 110Volt (for USA)

Our recommended milling motors Kress; can be attached directly to the Z-axis in the designated tool holder (Ø43mm).

The milling motor itself contains an on and off switch and setting wheel for the speed. *A speed control via software is not possible here.*

However, the milling motor can be turned on/off via the relay socket 1 (Rel.1) Zero-3 control via software or program.

- Make sure that the control is turned off.
- Connect the power cord to the socket 1 (Rel.1) Zero-3 controller.

Of course, milling motors by other manufacturers can be connected in this way.

You should also read the notes from chapter 2.2 for max. current consumption.

5.3 Noga spray cooling with solenoid valve

Art. 350100 Noga spray cooling - without solenoid valve for manual operation

Art. 350110 Noga spray cooling - automatic control via solenoid valve

Art. 310250 Vacuum pump / compressor -0.7 bar / 2.5-3.0 bar

The Noga spray cooling requires an air pressure of min. 2.5 bar. from a compressor. This should be designed for continuous operation. For this application we have a small, handy pump in the program (see above).

Via solenoid valve, the air supply from the compressor can be automated by software or program. This is recommended by us. This has the advantage that lubrication is only done when it is necessary.

- Make sure that the control is turned off.
- Connect the power adapter to the socket 2 (Rel.2) Zero-3 controller.

5.4 Inverter and HF spindles

The output from the software WinPCNC PWM signal for the spindle speed is converted by the zero-3 into an analogue control signal and outputted to the 0-10Volt LPT2 output.

Thus you can connect an inverter to operate a HF spindle directly to the Zero-3 controller.

- Make sure that the control is turned off.
- Connect the power cable of the inverter to the power outlet 1 (Rel.1) Zero-3 controller.
- Connect the "control cable" of the inverter with the LPT2 output of the controller.
- Make sure that you back up all connections with the knurled screws from loosening.
- Observe the notes from page 6 for max. Power consumption.

Caution:

Inverter and HF spindles that have higher performance, can also be used, but require an external power supply!

Please feel free to contact our Customer Service.

5.5 Granitograv and laser engraving unit

Art. 230100 Granitograv CNC-Module

Art. 220500 Laser engraving unit

With this accessory, there is an additional control box that needs to be powered. For this purpose, each power supply can be connected to the Zero-3 controller. As a result, the accessory is disconnected from the power in emergency case!

- Make sure that the control is turned off.
- Connect the power supply of the respective control box with the socket 1 (Rel.1) of the Zero-3 controller.

Please note for operation the associated manuals with more detailed information!

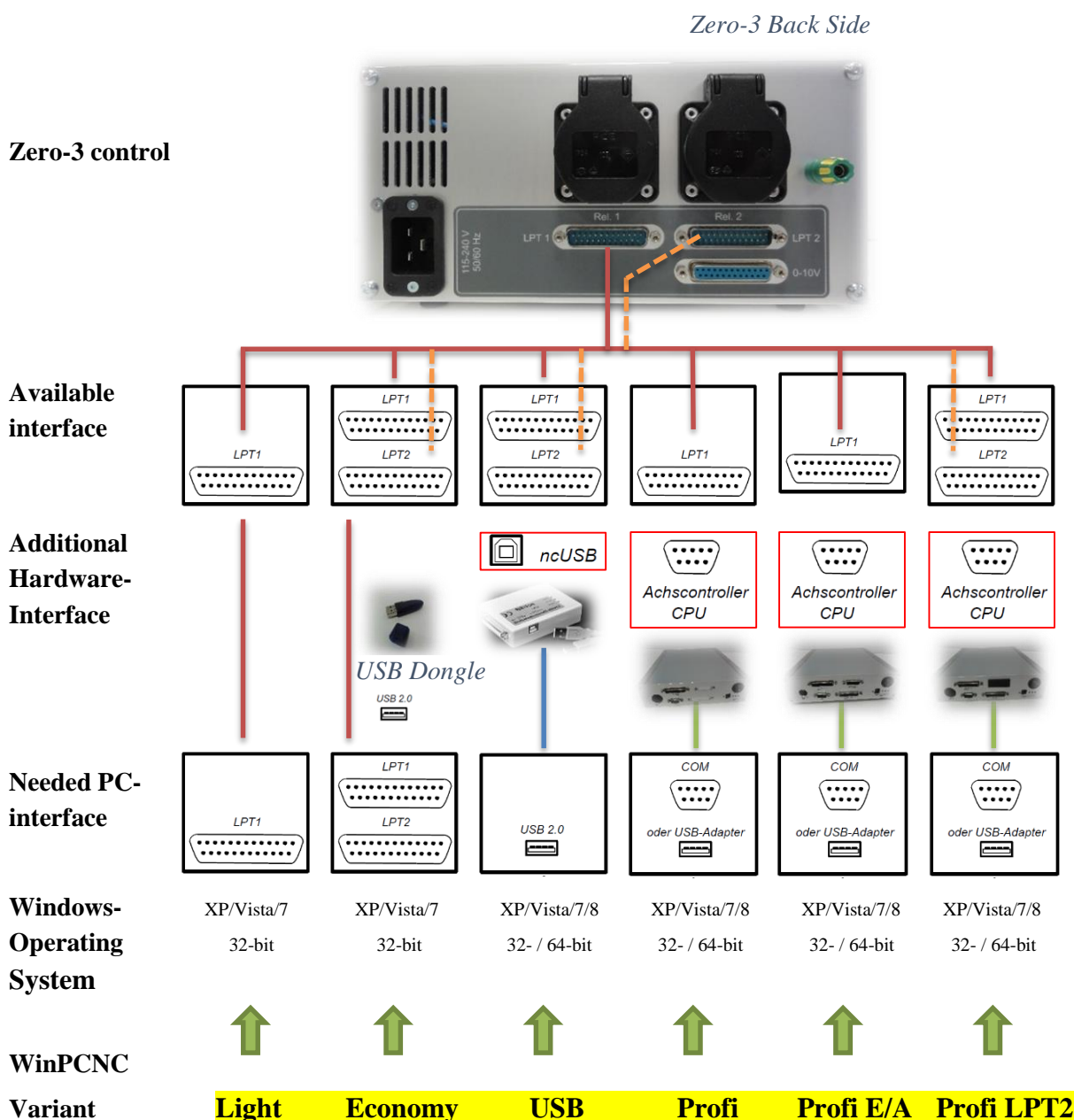
6 Software installation

6.1 WinPCNC

WinPCNC is a convenient and comprehensive 3/4-axis NC control under Windows for milling, drilling, engraving, dosing, and more.

Different variants with graded functions and prices provide the right solution for beginners and model makers, as well as semi-professional use or for demanding industrial plants.

Here is an overview of all WinPCNC versions:





The additional hardware ncUSB (WinPCNC USB) and the USB dongle (WinPCNC Economy) should be connected only after installing the software to the PC. The required drivers are installed and the hardware can be detected correctly afterwards.

6.1.1 Installation

Now, let us start the initial installation of the software WinPCNC .

Install the software from the supplied CD into the directory specified for it. After installation, you may have to restart the PC.



6.1.2 Connecting the computer to the Zero-3 control

The connection of the computer to the Zero-3 controller depends on the software and the associated additional hardware. (see page 12)

- Make sure that the control is turned off.
- Depending on the software, connect the supplied connection cable to the PC and the controller. Secure all cables against loosening!
- For WinPCNC variants Light and Economy there is no additional hardware interface, the LPT cable is connected directly to the controller.
- In the other variants of the PC is connected to the additional hardware interface. This is then connected via LPT cable to the controller.
- In all variants, the LPT2 port is only used for optional accessories, and some machines extensions.

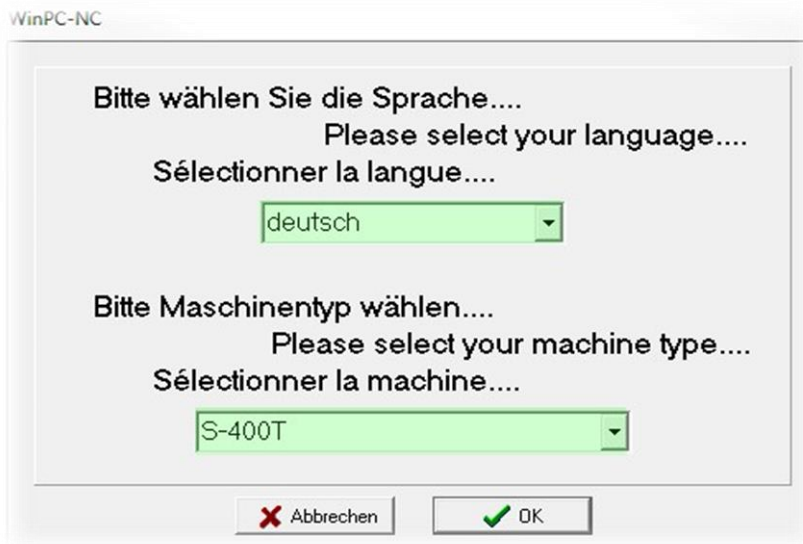
The additional hardware (ncUSB, USB dongle) is now recognized and installed by Windows.

6.1.3 Configuration

Start the software WinPCNC.

From the Start menu choose language and machine type.

The specification of the correct type of machine is very important because the software automatically loads all important parameters for the selected type of machine.



The communication between PC and Zero-3 is controlled depending on the software version on the LPT, USB or serial interface.

In WinPCNC USB installation and configuration is complete. In this version WinPCNC determines the interface automatically.

With other versions yet the interface or port address of the PC must be determined on which the communication runs.

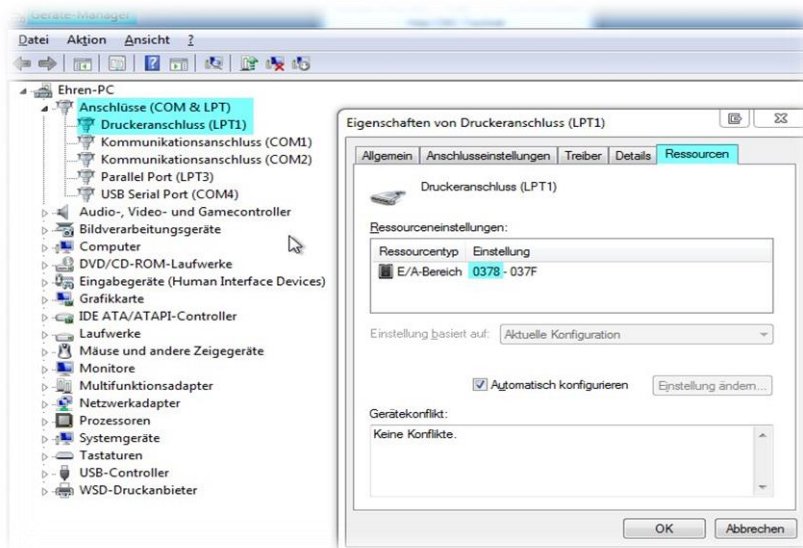
6.1.4 Determination of the LPT interface (Light and Economy)

With the variants "Light" and "Economy" the LPT port or the port address must be entered in WinPCNC (see page 17).

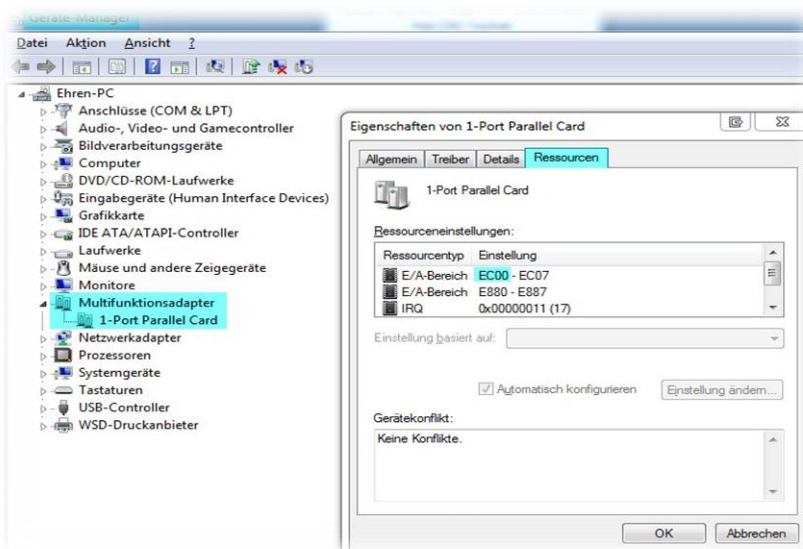
Some computers have multiple LPT ports, so that the right one first has to be found out. If the interfaces are not marked on the PC, you need to find out which interface you have connected to the control.

How do you find out the correct port address of the LPT port?

In the Device Manager of the PC all available interfaces are listed.



Standard interfaces, see Ports (COM & LPT)



Use interfaces on expansion cards (interface cards), it may be that this is a multifunction adapter or similar in the Device Manager!

Select the interface to which you have connected to the machine. Go to the properties of the interface (eg with double-click) and look under Resources after the port address (I / O area).

This is the first entry (4-digit hexadecimal) as seen in the screenshots.

When using 2 LPT ports (only Economy) please repeat with both connected interfaces !

This port address (es) you must now enter in WinPCNC (see 6.1.6).

6.1.5 Determination of the COM interface (Professional)

For all "professional" versions the COM interface must be entered in WinPCNC (s. Page 17).

Some computers have multiple COM interfaces so that the right one first has to be found out. If the interfaces are not marked on the PC, you need to find out which interface you have connected to the control.

If the PC has no COM port, it is possible to work with a USB / Serial converter . This adapter then emulates a COM interface. (see below COM4)

Art. 400305 Digitus DA-70156-VPR2.0 USB to Serial Converter

In the Device Manager of the PC all available interfaces are listed.



*Standard interfaces, see Connections
(COM & LPT)*

*Here you can see, for example, a PC with three COM ports
(COM1, COM2, COM4).*

The machine is connected in this case to COM4.

In WinPCNC you must then select COM4 (see 6.1.6).

*The COM4 interface is provided via the USB / Serial
converter. This is indicated by the entry USB Serial Port
(COM4).*

6.1.6 Entry of the determined interface / port address in WinPCNC

The determined values can now be entered in WinPCNC.

In the variants Light and Economy, the identified port address (blue) must be entered.



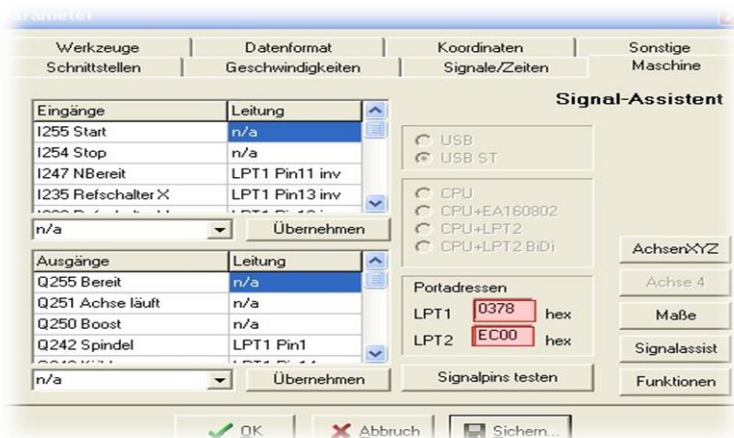
For professional the correct COM port (yellow) must be selected.

6.1.7 Entry LPT2 port (only Economy)

If you need more inputs and outputs for machine extensions, you can use the second LPT port.

This must be entered for the economy version in WinPCNC.

For the variants USB and professional this is not necessary!



The LPT1 port address you have already registered. (s. above) The LPT2 port address, you must enter, under Parameters - machine- signal Assistant .

Caution:

After each parameter setting in WinPCNC Always press the "Save" button.

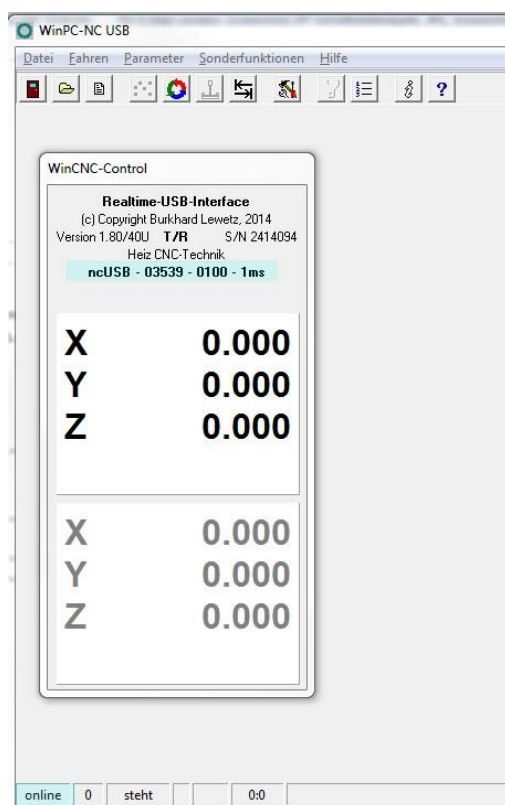
6.1.8 check the efficiency

If the interfaces are correctly entered, all the hardware is connected, turn on the Zero-3 control and possibly additional hardware.

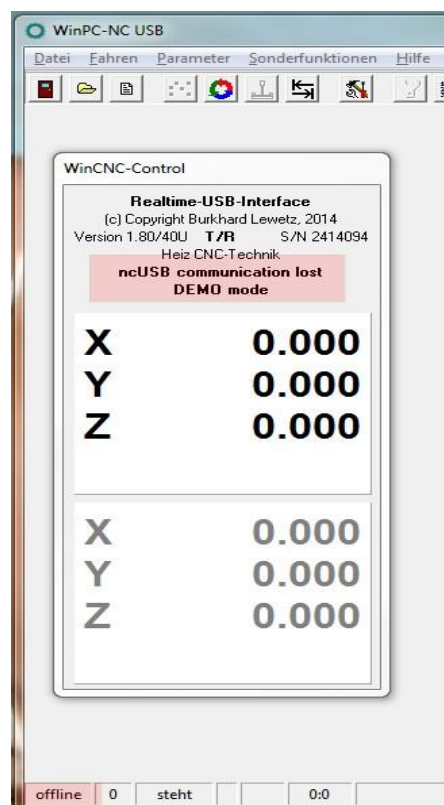
Start the WinPCNC software.

When starting, the window WinCNC control opens. Here you can see proper operation using the example USB. The hardware is detected and displayed.

Right



Wrong



In the left example, the communication is taking place, the machine is online. The software can now be used.

If there is still no communication possible (s.right), please make sure you have selected the correct interface. You may need to connect the controller to another available port or alternative change the port address or COM interface in WinPCNC.

Please read the handbook by WinPCNC.

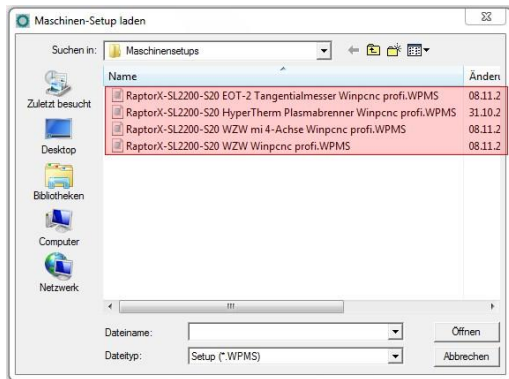
The examples described herein refer to our recommended software WinPCNC. With alternative software such as Mach3 etc. the situation is similar.

6.1.9 Load and save machine parameters

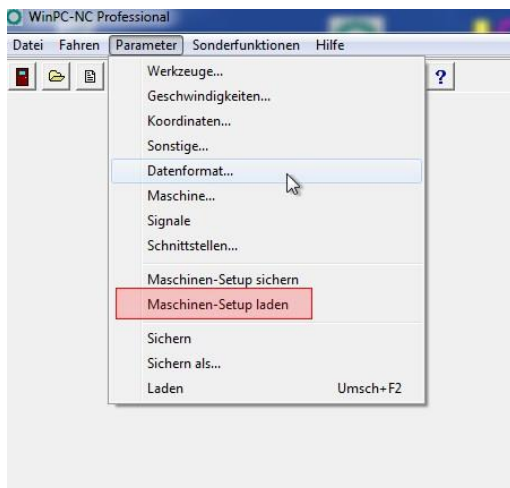
We have already programmed the software for you and saved the settings as machine parameters, depending on the ordered accessories. A backup copy is on the USB stick.

e.g. (depending on order!):

1. Operation Tangential knife
2. Operation plasma cutting
3. Operation milling with rotational axis
4. Operation milling without rotational axis



To load these settings, follow these steps:



In "Parameters / Load machine setup" you can select and upload the desired file.

Similarly, you can save changes to your settings!

Keep in mind that you overwrite existing settings if you have not previously created a new file under a different name!

TIP:

Do you want to make changes to the settings in WinPCNC? Then save the "current" settings under a different name and then make your changes.

This ensures that you do not overwrite any existing settings (they are perhaps still needed !?)

6.2 ConstruCам 3D

6.2.1 Installation

The software ConstruCам 3D is a comprehensive CAD / CAM program. It works seamlessly with the software WinPCNC.

ConstruCам is available to download on our website.

<http://www.cnc-step.de/images/attachments/Downloads/ConstruCам/ConstruCам%2070340.zip>

Save the download to your computer and unzip the archive file in any folder. The software must not be installed.

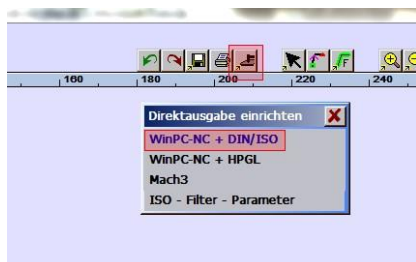
To unlock the software we will send you the necessary instructions and the unlock code.

In our Preconfigured computers this is, of course, already done!

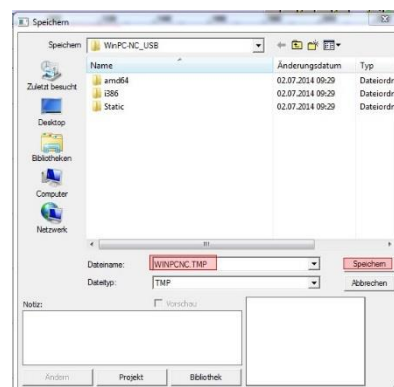
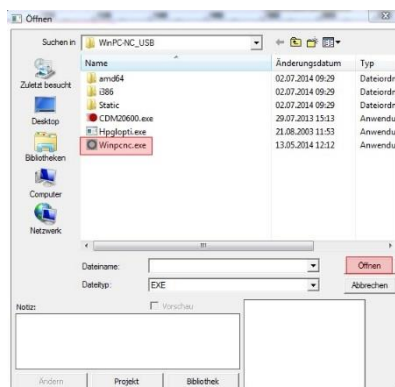
6.2.2 Interaction with WinPCNC

ConstruCам 3D delivers the finished milling data directly to WinPCNC. **For this purpose WinPCNC must be open in any case!** This function must be set up only once.

Click the Direktmill button and select "WinPCNC +DIN/ISO".



The program now requires the WinPCNC path. This is normally found automatically and only needs to be confirmed. Confirm once the WINPCNC.EXE and then the WinPCNC.TMP.



For details please refer to the help files in ConstruCам 3D.

6.3 Other Software

For special applications it may be useful to use "special software" instead of ConstruCAM 3D. This then provides special functions.

e.g.	Filou NC12	for plasma cutting (smooth start of contours)
	Filou DeskProto MultiAxis 6.1	for rotation axes

For further information please refer to the respective documentation.

7 Customer service

For technical information, please contact our Technical Customer Service:

Address	CNC-STEP e.K. Siemensstraße 13-15 D-47608 Geldern	
Phone	+49 (0)2831/91021-50	(Mo. - Fr. 07.00 am - 3.00 pm)
Mobile	+49 152 22345755 Only in urgent cases	(Mo. – Thu. 3.30 pm - 6.00 pm)
Fax	+49 (0)2831/91021-99	
E-Mail	support@cnc-step.de	
Web	<i>www.cnc-router-store.com</i>	

If you have questions, please contact our customer service via e-mail or phone. We advise you gladly.

Numerous suggestions and information can be found on our website:

www.cnc-router-store.com