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Documentation *ncNET module*

Overview of the technical details, pin assignment and
the ethernet communication.





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Functional description

The **ncNET** module is the necessary additional hardware for using **WinPC-NC NET**. Software and hardware are always supplied in one package.

The **ncNET** module provides two 25-pin interfaces for controlling a CNC machine or CNC mechanic. All signals on the **ncNET** module have a 5V TTL level, unless otherwise specified.

The **ncNET** module requires a separate power supply. The connection is described in a separate chapter.

The connections of the **ncNET** module are fully compatible with the **ncUSB** module, **nc100** adapter, the LPT1 interface of the **CNCCON** axis controller or the LPT port connection of **WinPC-NC Economy** or **Light**.



Power supply

The **ncNET** module must be supplied externally with a stabilized voltage.

A The external power supply can be provided by an existing power supply unit.

Alternatively, you can find a suitable power supply unit in our online store, which can be connected directly to the K2 connector:

<https://www.lewetz.net/red/ncnetnte>

The **ncNET** can be supplied either via a 5V DC voltage or a 12V-36V DC voltage.



Warning:

The power supply unit for supplying the ncNET module must have protection against overload and short circuit.

Power supply with 5V DC at connector K1

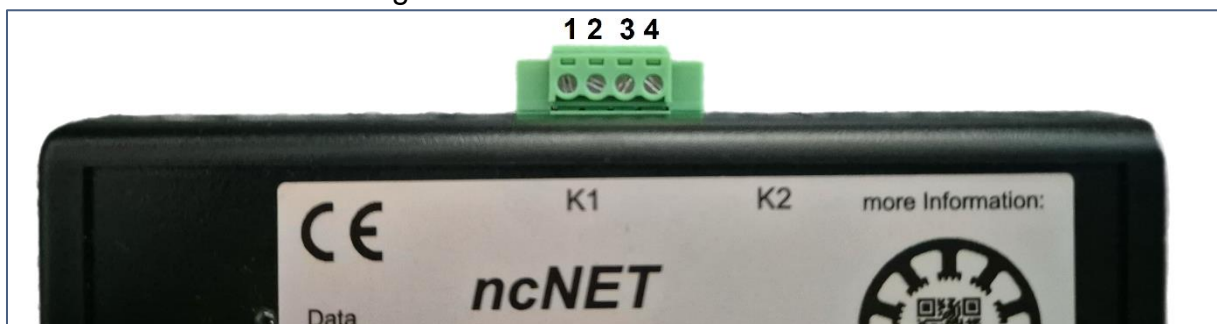


Warning:

A 5V DC voltage or a DC voltage between 12-36V can be applied to connector K1 of the **ncNET** module.

Only one voltage can be connected to the **ncNET** at one time.

We recommend a stabilized power supply with 5V and 1A output current. The connection is made via the green screw terminal.



+5V: Connector K1 Pin 3

GND: Connector K1 Pin 4



Power supply with 12-36V DC at connector K1 or K2



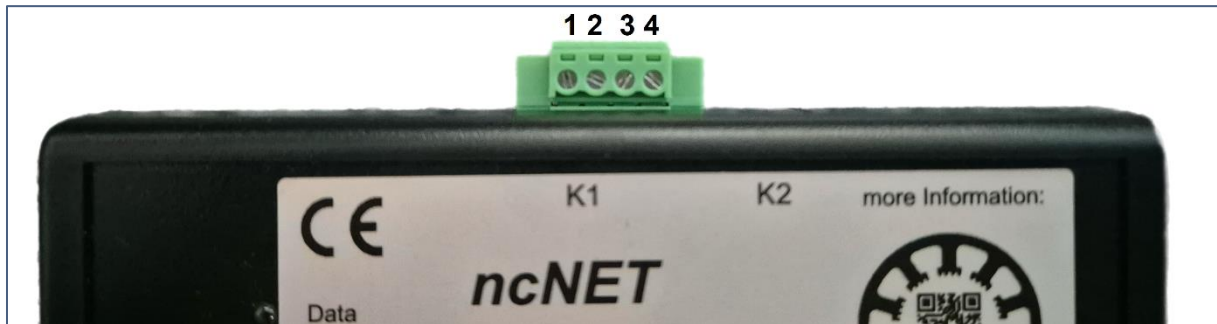
Warning:

A 5V DC voltage or a DC voltage between 12-36V can be applied to connector K1 of the *ncNET* module.

Only one voltage can be connected to the *ncNET* at one time.

We recommend a stabilized power supply with an output voltage between 12V and 36V and 1.5A output current.

The connection is made via the green screw terminal.



+12-36V: Connector K1 Pin 2

GND: Connector K1 Pin 4

Alternatively, the power supply can also be connected to socket K2 using a coaxial power connector.



A coaxial power connector with 5.5/2.1mm or 5.5/2.5mm is required, positive pole inside.



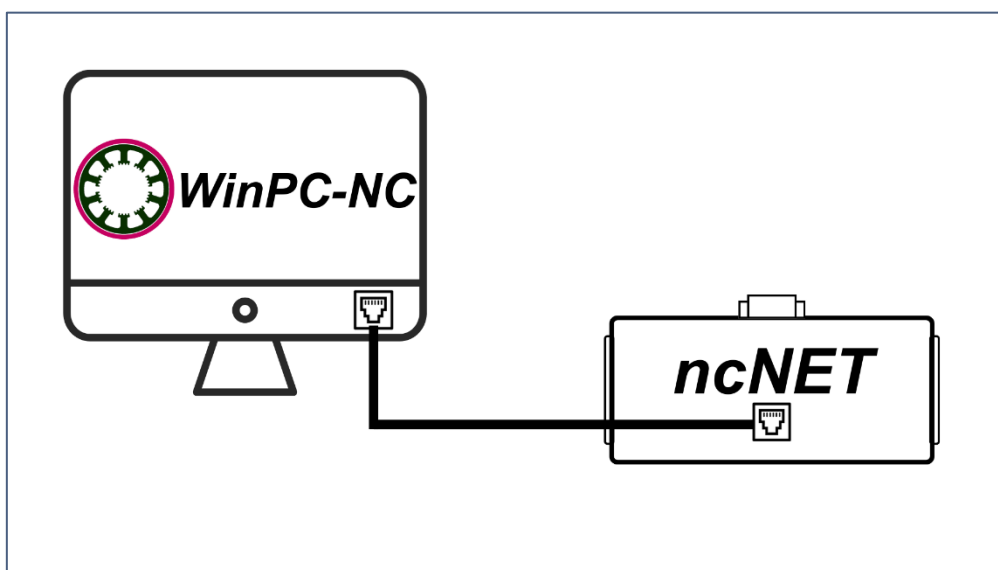
Network connection

WinPC-NC NET uses a communication protocol at the lowest level of the network architecture for communication. This ensures that communication is sufficiently fast for the real-time requirements of CNC machining.

In addition, the use of this protocol means that no configuration is required on the control computer or network. The Ethernet port also does not have to be exclusive for **WinPC-NC** communication and a second Ethernet port is not required on the control computer. Integration into an existing network is possible without any problems.

Connection directly to the control computer

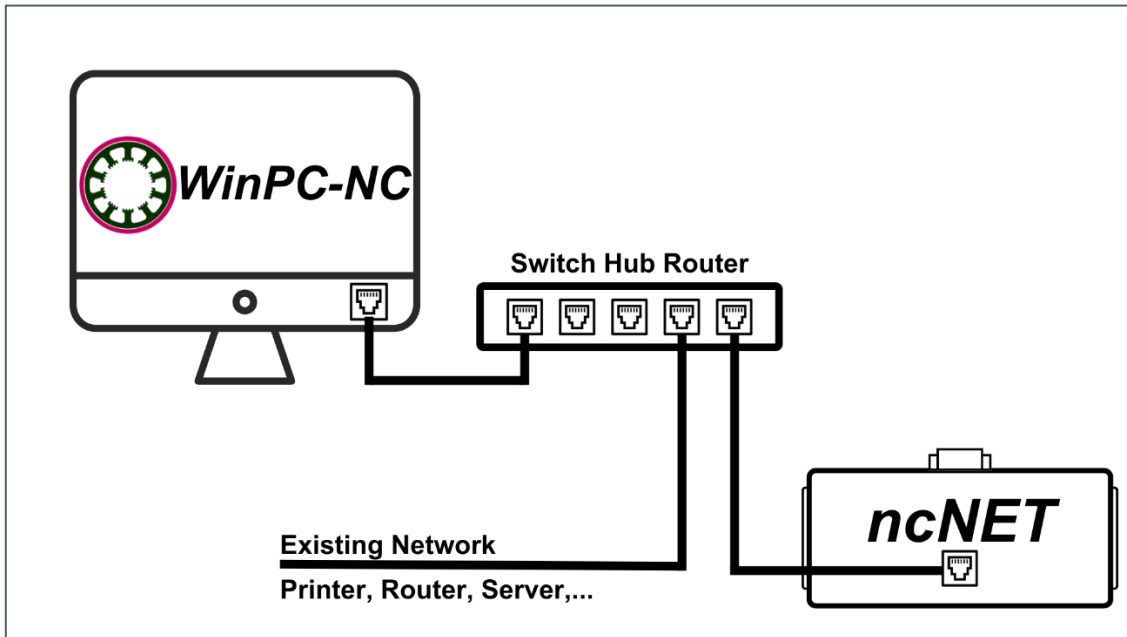
The **ncNET** module can be connected directly to the free Ethernet port of the control computer.





Connection via network -hub, -switch, -router

The **ncNET** module can also be integrated into an existing network. It must be ensured that the network devices between the control computer and **WinPC-NC** are unmanaged network devices or have unmanaged forwarding function.



We offer a suitable network switch with 5 ports that has been tested for use with **WinPC-NC** in our online store:

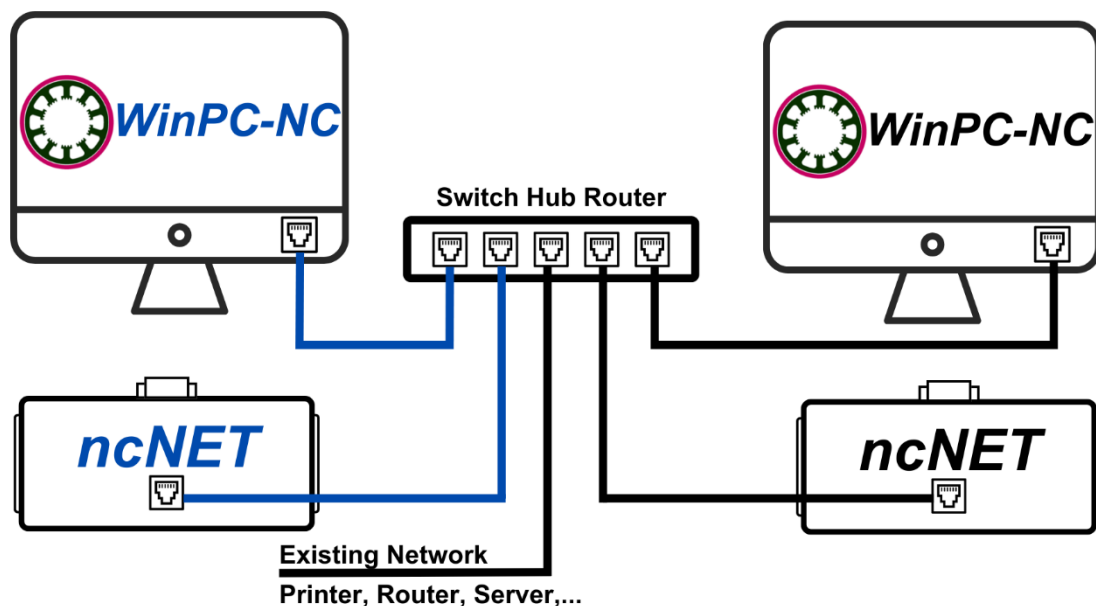
<https://www.lewetz.net/red/switch>

When using larger networks, we recommend connecting the control computer and the **ncNET** hardware via a separate switch, as shown in the diagram above. The connection to the rest of the network can then also be made via this switch.

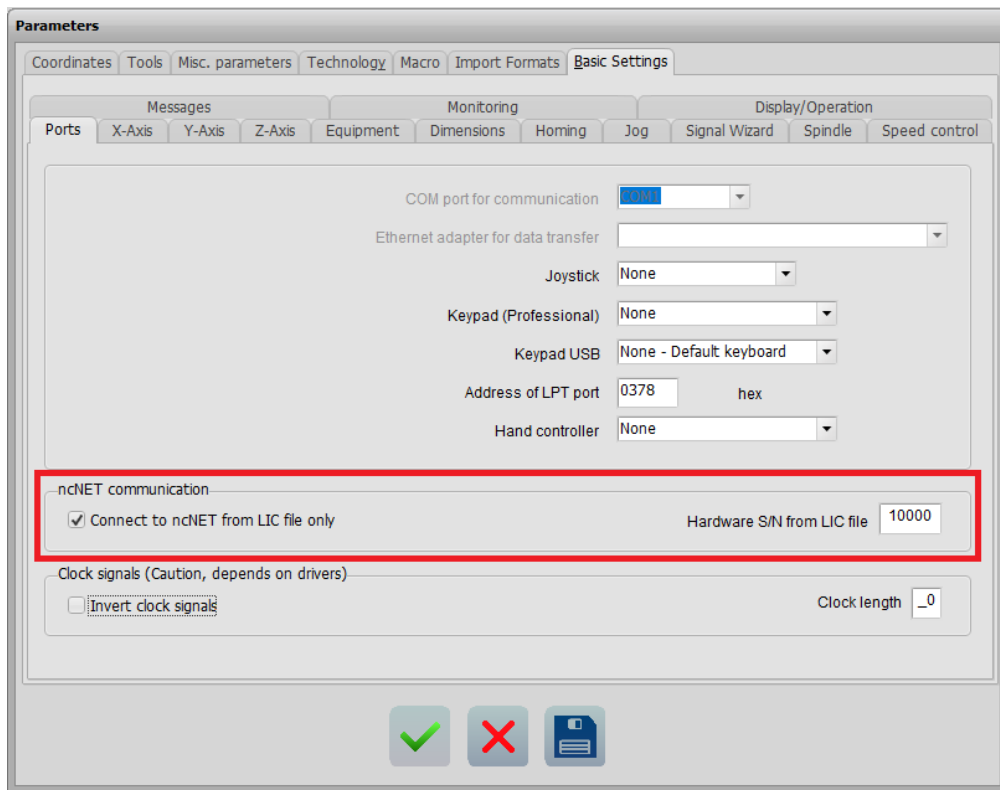


Use of multiple *ncNET* and *WinPC-NC* instances in the same network

In production, several machines and their workstations are often connected via the same company network. The use of several **WinPC-NC NET** instances and the corresponding **ncNET** modules in the same network is also possible without any problems.



By default, **WinPC-NC** always connects to the first available **ncNET** module in the network. To enable an exact assignment of the **WinPC-NC** instance to the corresponding **ncNET** module, the checkbox “**Connect to ncNET from LIC file only**” must be activated in the parameters under Basic Settings-Ports. The change to the settings is applied by clicking on Save. **WinPC-NC** is then closed and restarted.



WinPC-NC now always connects to the **ncNET** module whose serial number is specified in the WinPCNC.LIC license file. This number is also displayed in the “**Hardware S/N from LIC file**” text box in the parameter dialog for checking purposes.

This setting is also made in the second **WinPC-NC** instance on the same or another computer. The LIC file of the second **ncNET** module is then used here.



Notice:

If the correct serial number of the **ncNET** module is not shown in the text box, you are using a wrong LIC file that does not match this **ncNET** module.



Notice:

If the “Connect to **ncNET** from LIC file only” checkbox is activated, the corresponding **ncNET** module must be available in the network. Otherwise, the error message “NET hardware not found” is displayed.



Connection of our 3D-Probe and Z-Probe

Our **3D-Probe** and **Z-Probe** can be connected directly to connector K1 of the **ncNET** module.

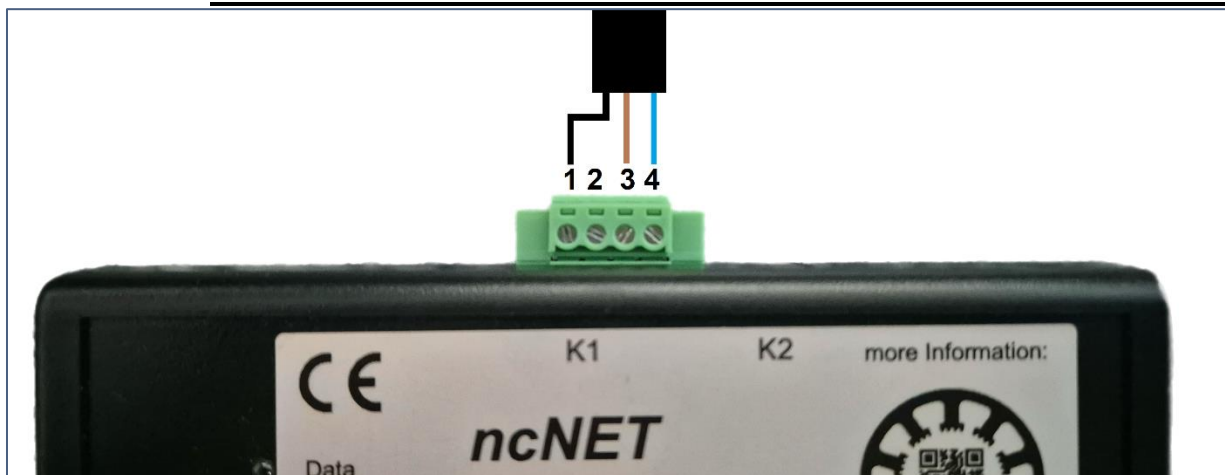


Warning:

The connections K1 pin 1 and LPT2 pin 15 are connected to each other in the **ncNET**.

If the probe is connected to connector K1, it must be ensured that the LPT2 Pin15 connection is open and not connected.

Otherwise, the **ncNET**, the probe or the hardware connected to LPT2 may be damaged.



Connection cable 3D-Probe / Z-Probe	Function 3D-Probe / Z-Probe	Pin K1
Brown	Power supply 5V	3
Blue	Power supply GND	4
Black	Switching output	1

In the **WinPC-NC NET** signal wizard, the input I221 Probe must then be assigned to line LPT2 pin15 under Parameter Basic Settings-Signal wizard.

Detailed instructions can also be found in the documentation for the **3D-Probe** and **Z-Probe**.



Pinning LPT1 and LPT2



Notice:

All signals have a 5V TTL level.

Inputs are overvoltage-proof up to 38V



Notice:

The clock and direction signals of the 4 axes are fixed.

All other input and output signals can be freely assigned in the *WinPC-NC* signal wizard.

LPT1

Pin	Type	Function
2	Output	Direction Motor X
3	Output	Clock Motor X
4	Output	Direction Motor Y
5	Output	Clock Motor Y
6	Output	Direction Motor Z
7	Output	Clock Motor Z
8	Output	Direction Motor 4
9	Output	Clock Motor 4
1	Output 1	e.g. Spindle on/off
14	Output 2	e.g. PWM signal
16	Output 3	e.g. Coolant on/off
17	Output 4	e.g. Toggle signal
10	Input 1	e.g. Homing switch X
11	Input 2	e.g. Homing switch Y
12	Input 3	e.g. Homing switch Z
13	Input 4	e.g. Machine not Ready
15	Input 5	free
18-25	GND	Signal ground (0V GND)



LPT2

Pin	Type	Function
2	Output 9	free
3	Output 10	free
4	Output 11	free
5	Output 12	free
6	Output 13	free
7	Output 14	free
8	Output 15	free
9	Output 16	free
1	Output 5	e.g. Job active
14	Output 6	e.g. Dispensing/Laser
16	Output 7	e.g. THC Ignition
17	Output 8	free
10	Input 1	z.B. THC Arc Good
11	Input 2	z.B. THC Up
12	Input 3	z.B. THC Down
13	Input 4	free
15	Input 5	free
18-25	GND	Signal ground (0V GND)

Technical overview ncNET

Power supply voltage	5V DC or 12-36V DC
Power consumption 5V DC at K1	< 350mA
Power consumption 12-36V DC at K1 oder K2	< 350mA
Input circuit	Internal Pull-Up Overvoltage-proof up to 38V DC
Maximum switching current per output with simultaneous loading of all outputs	12mA
Dimension with connector K1	142mm x 75mm x 28mm
Dimension without connector K1	142mm x 67mm x 28mm



Additional information / Question

We offer an optional adapter for mounting the **ncNET** module on a top-hat rail or mounting plate. You can find it with the following link:

<https://lewetz.net/en/ncNET-Mounting-Adapter/SW10115>

Further information on the use of **WinPC-NC** can be found in the short instructions on our homepage under the tab **FAQ-How to with WinPC-NC**

WinPC-NC is also supplied with a comprehensive manual. This can be found on our website under the Service-Download tab.