ProfiNet

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system requirements

For using the new fieldbus ProfiNet you need the following system components

- **KRC Edition 2005**
- **Systemsoftware V 5.4.x or V 5.5.x**

Fundaments ProfiNet IO

ProfiNet is a ethernet based fieldbus

Device types:

Controller: is a control, which superordinate controls all components of system.

Device: is field device, which is controlled by a controller. A device comprises of several modules and sub-modules. A devices can contain several Controllers (Masters)

A physical device, such as the Robot Control can be controller and/or device. The project planning of communication devices take place exclusively at the controller side.

A project planning can be created with the folling programs and loaded on the contructions groups:

- NCM(Siemens) till firmware 2.0
- Step 7 (siemens) starting from firmware 2.1

ProfiNet components in switch cabinet

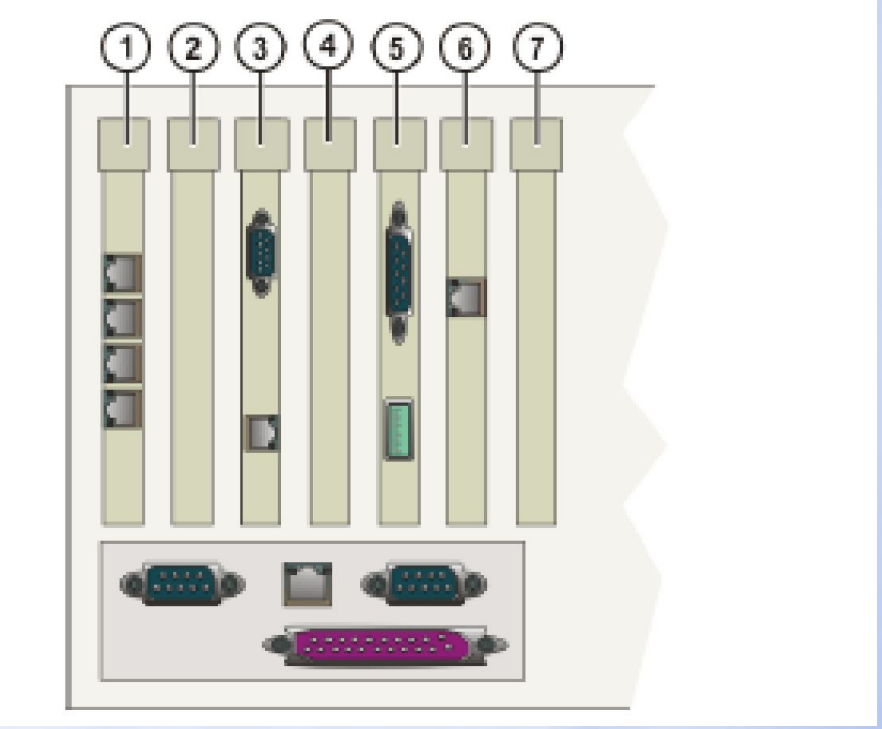
- **Siemens CP1616 in PC**

The PCI-card CP 1616 has the following properties:

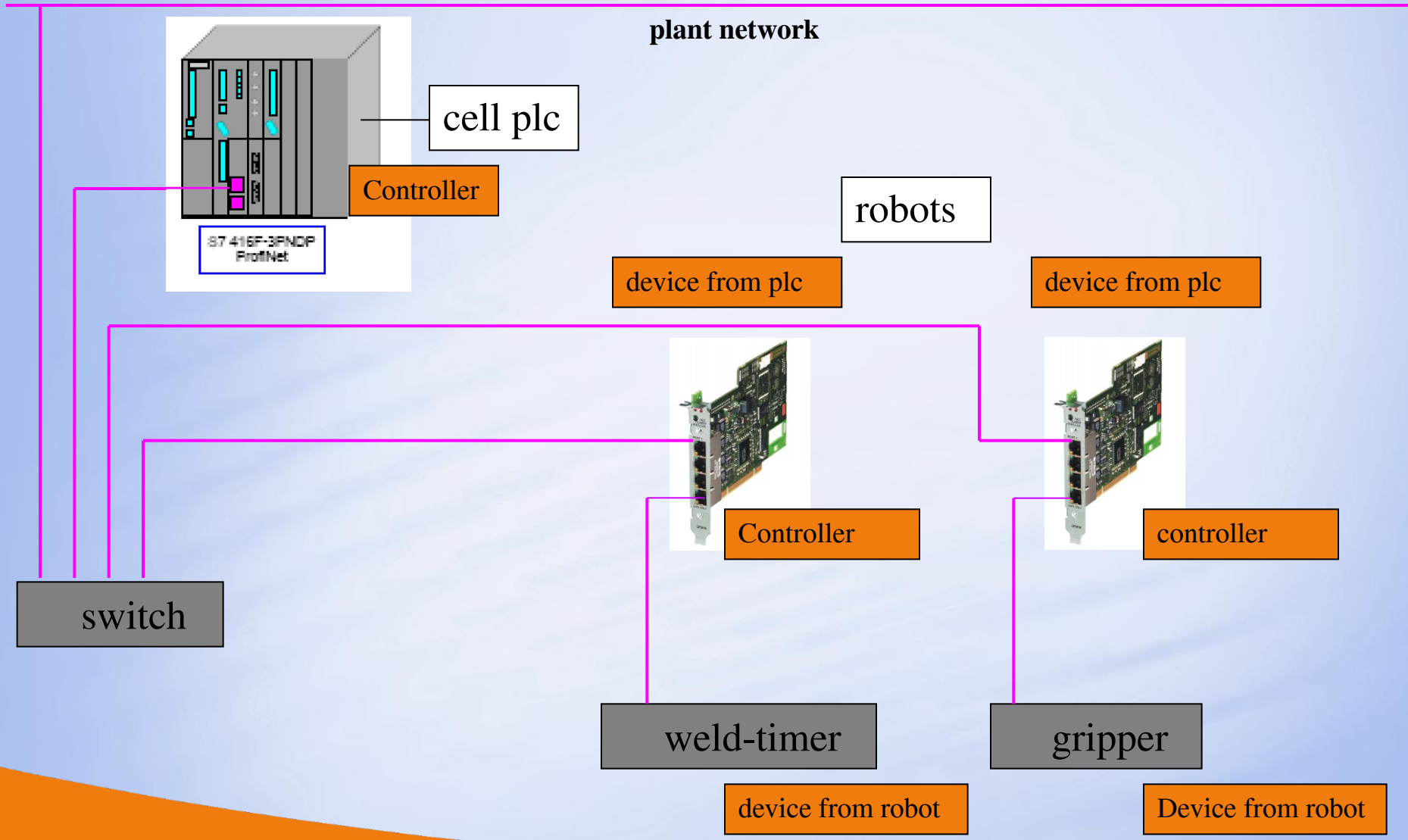
- can be configured and parameterized via the network
- up to 256 devices
- Connections are designed for 10BASE-T and 100BASE-TX
- Data transmission speeds of 10 and 100 Mbit/s in full/semi-duplex mode are supported
- Operation of the CP1616 as Controller and/or Device
- Project planning with NCM 5.4 or Step 7 Software
- Use of acyclic channels
- Use of Profinet IO Communication
- Support of shared devices
- 4 RJ45-connectors for conencting terminals or other network components.
- Intergrated 4-Port-Real-Time-Switch.

placement for CP1616 in PC

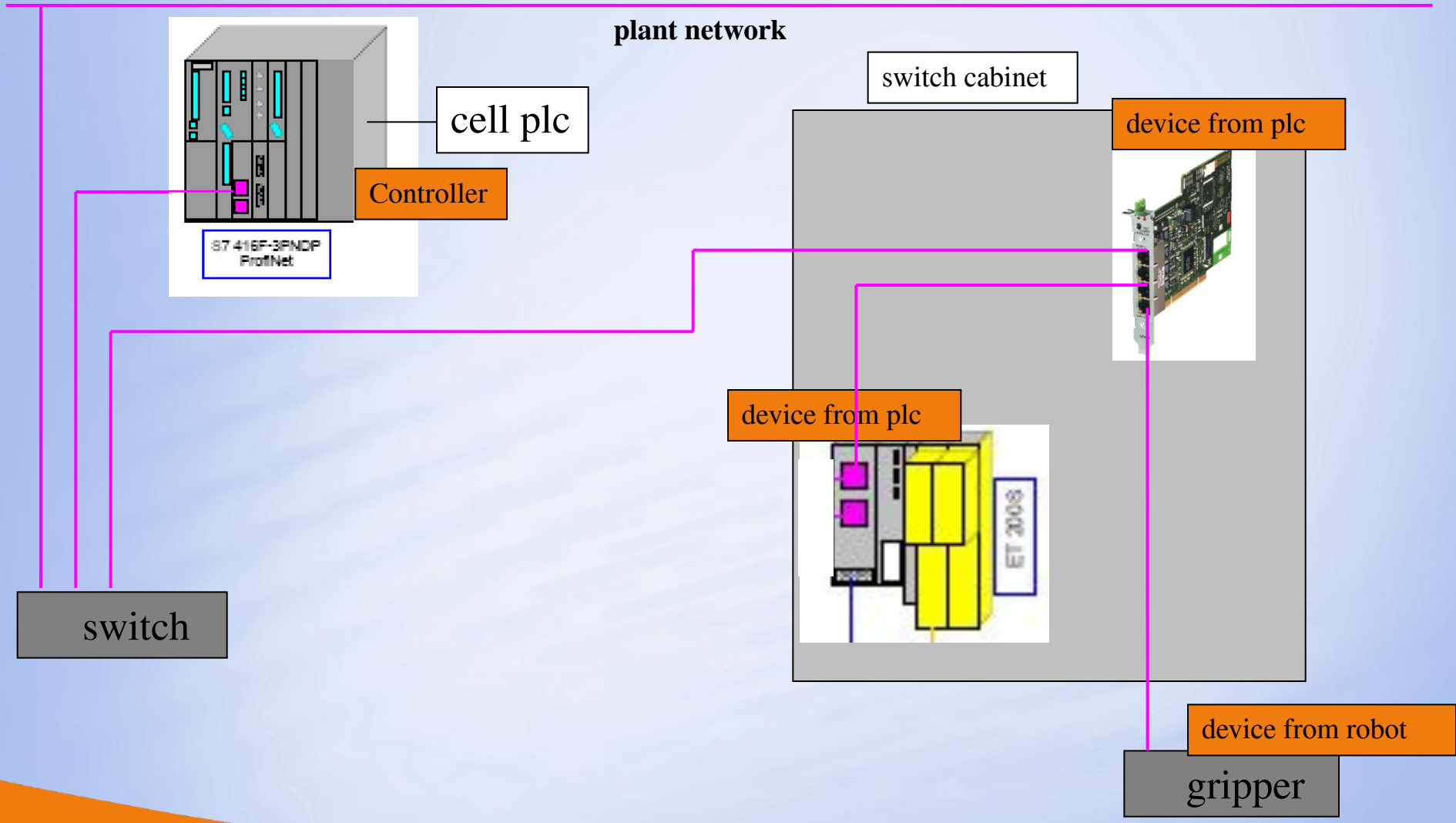
1	PCI CP1616-card ProiNet
2	free
3	KVGA-card
4	DSE-IBS-C33 Aux-card (option)
5	MFC3-card
6	Networkcard (3COM)
7	free



standard assembly in a roboter-cell



standard BMW-switch cabinet



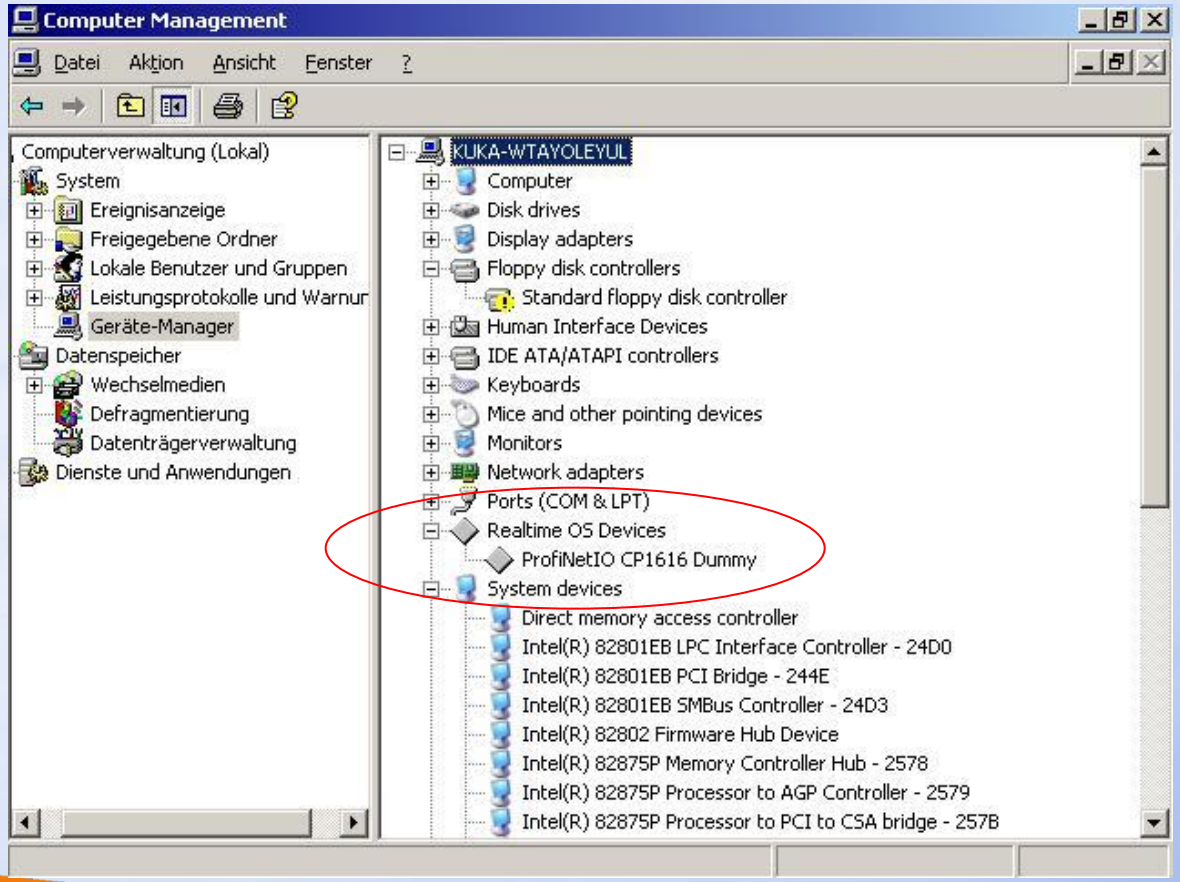
ProfiNet installation

- shutdown Pc
- plug in CP1616
- start pc and stop startup in windows
- start setup.exe

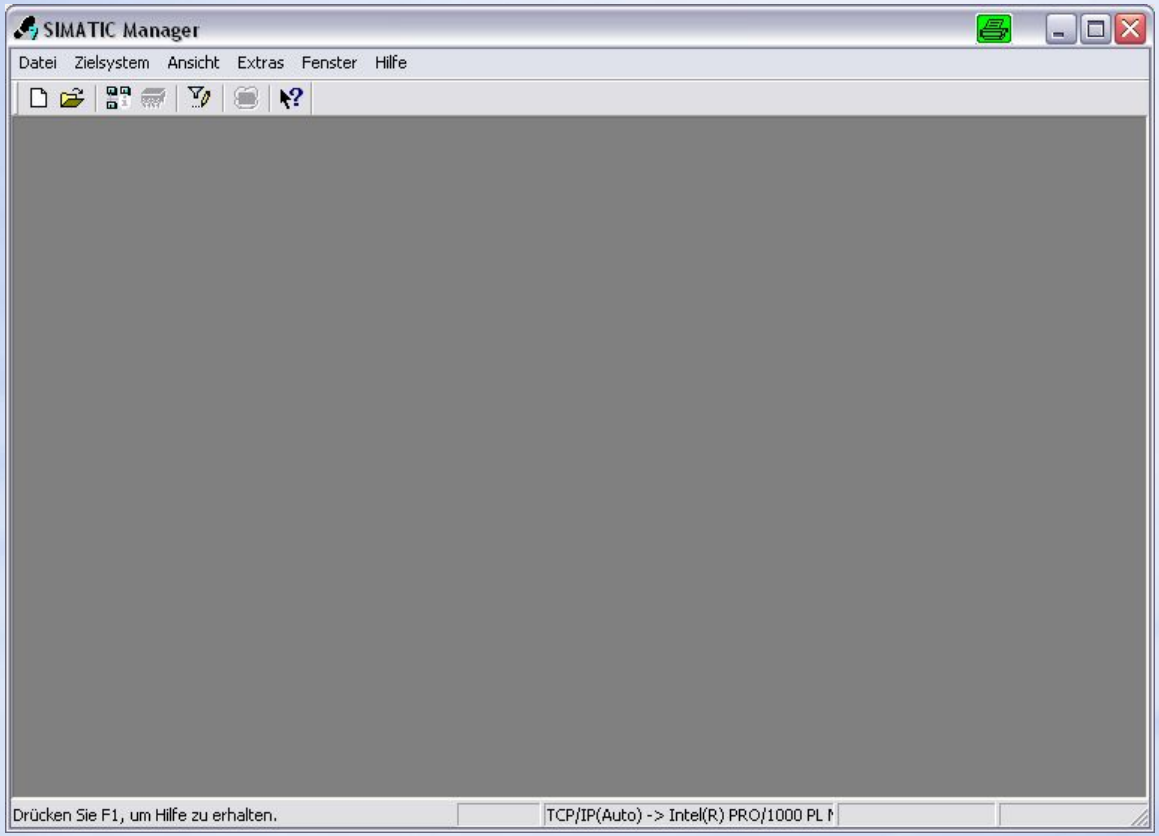
The setup install all components. Drivers for windows and for VxWorks.

Installation from ProfiNet

The setup installed a dummy driver for windows. The driver make the CP1616 unvisible for windows.

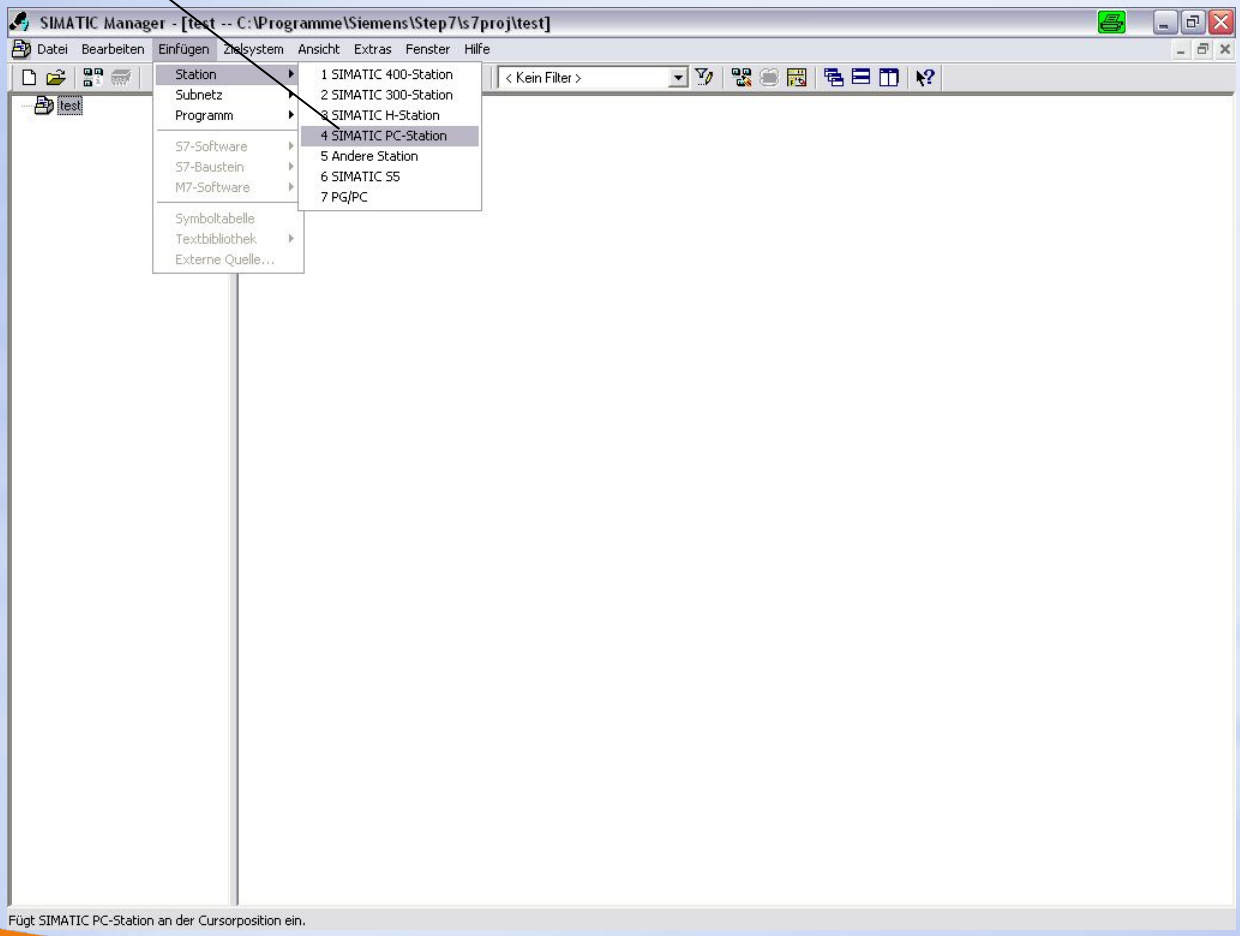


configuration roboter as contoller in Step7/NCM-Manager



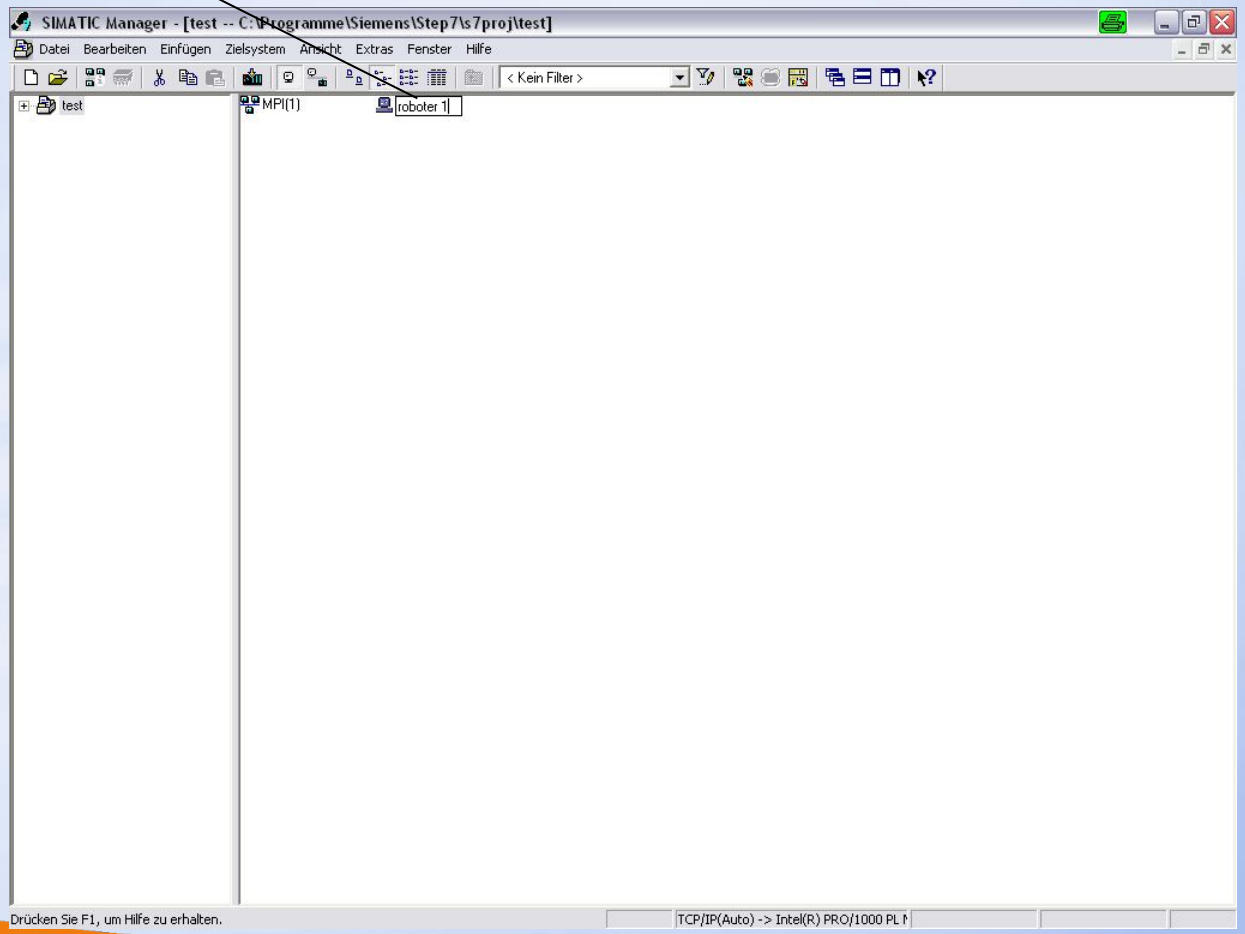
configuration roboter as contoller in Step7/NCM-Manager

insert PC-station



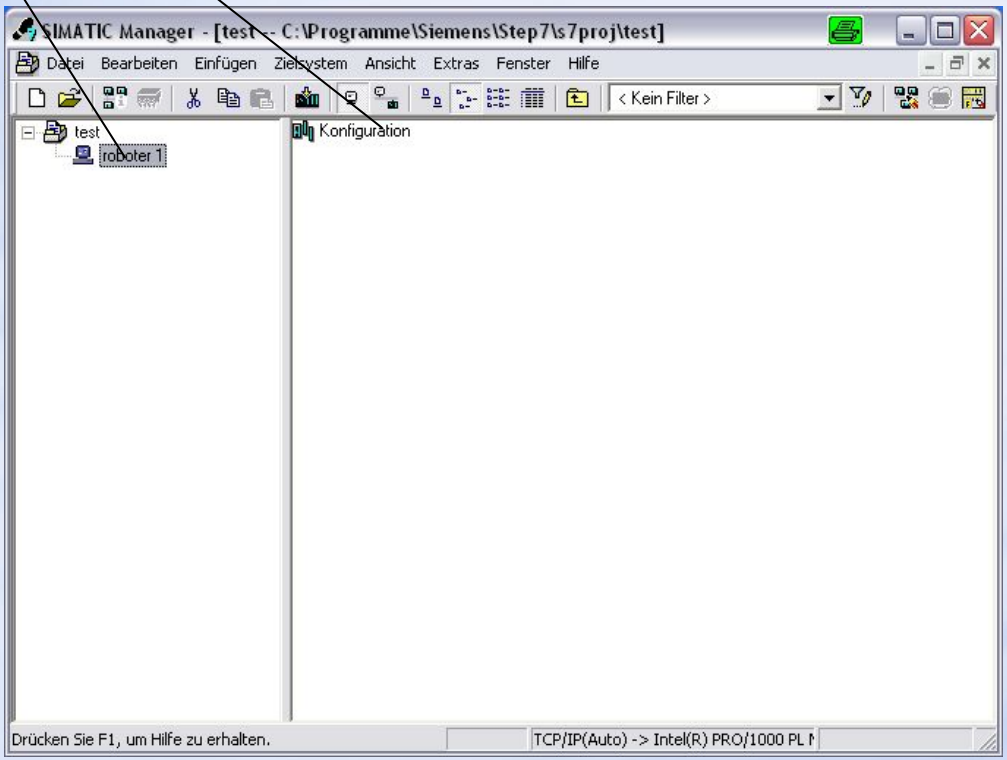
configuration roboter as contoller in Step7/NCM-Manager

Rename station name



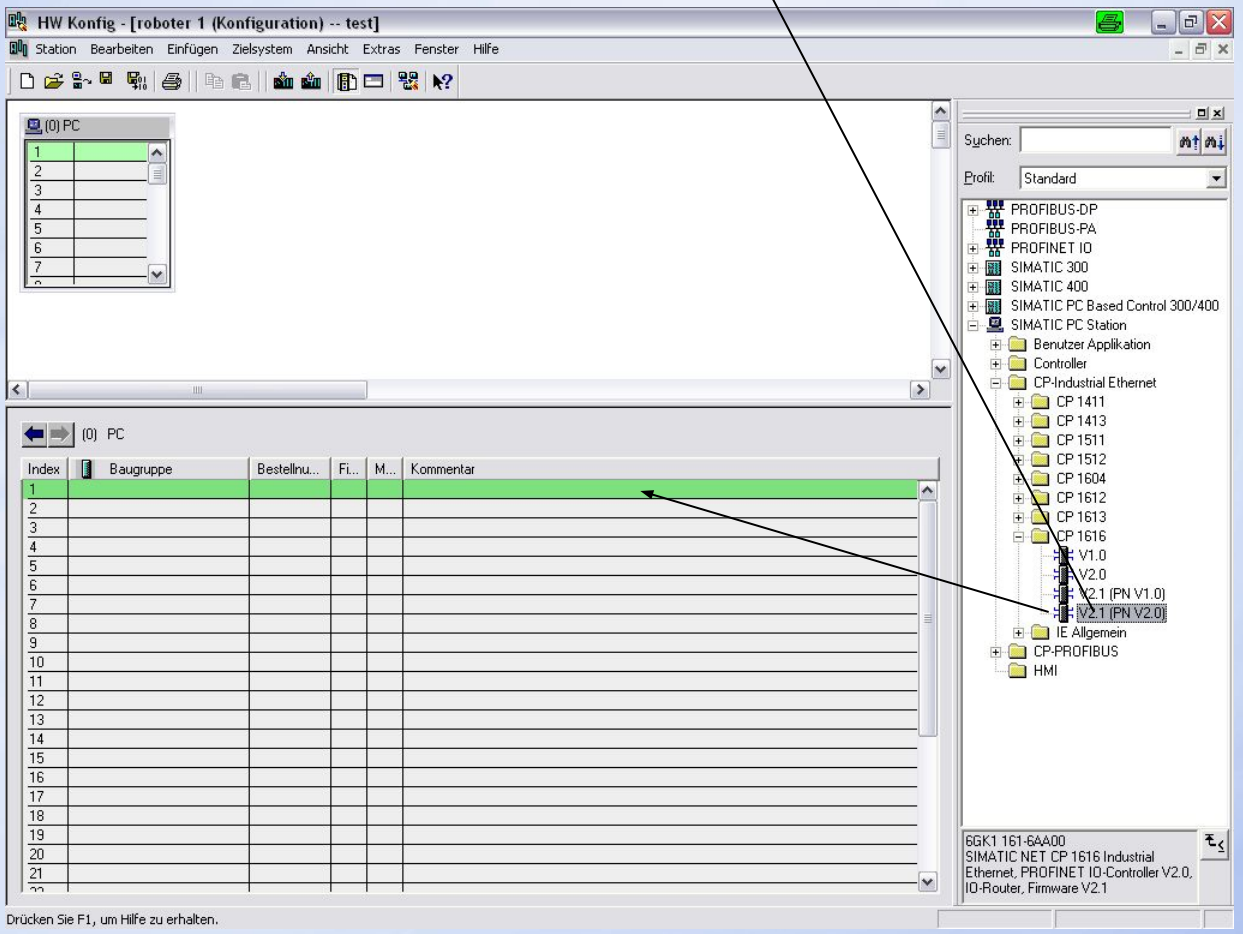
configuration roboter as contoller in Step7/NCM-Manager

Open station on left side and make double-click on Configuration



configuration roboter as contoller in Step7/NCM-Manager

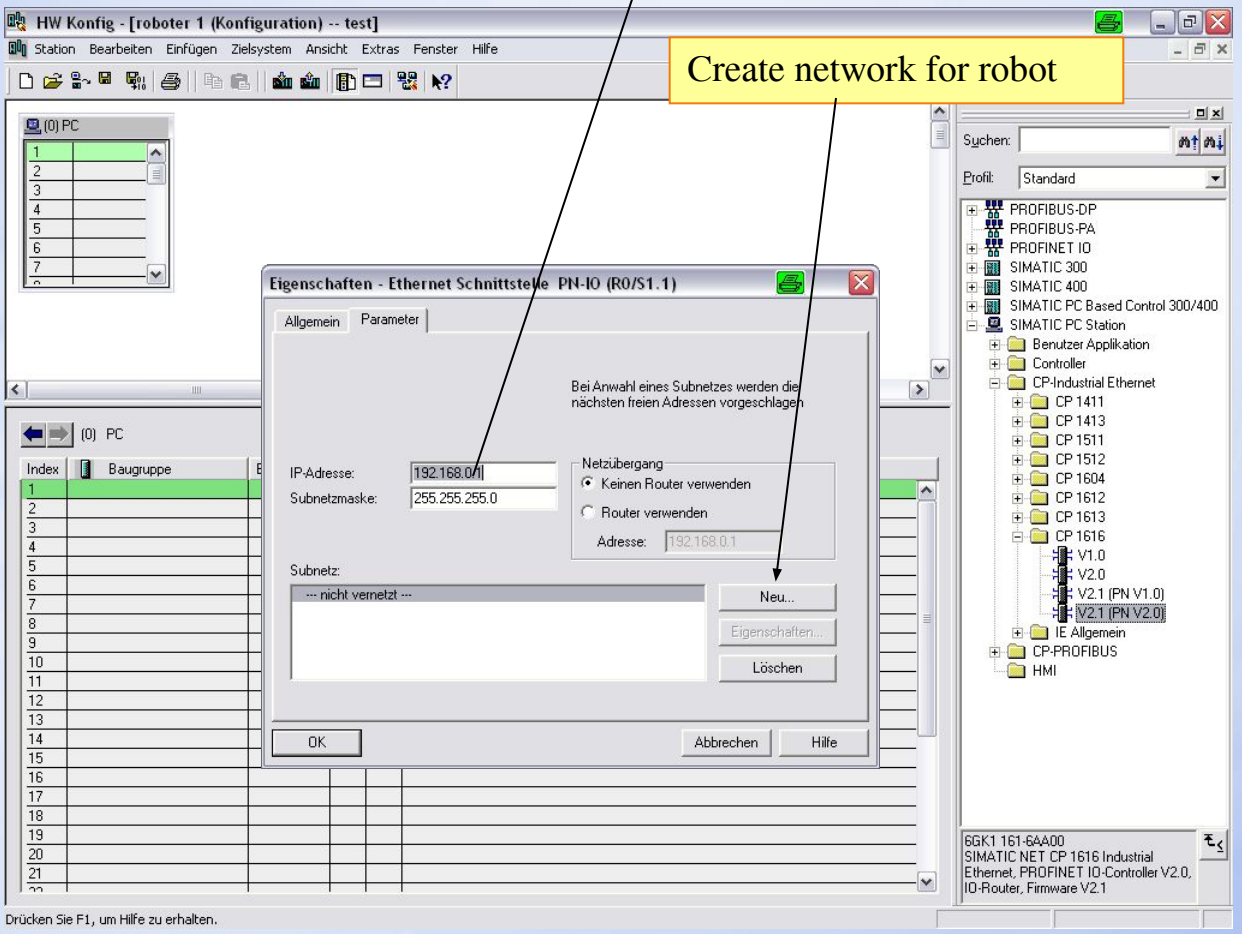
Select CP1616-V2.1 and drop it into slot1 from pc-station



configuration roboter as contoller in Step7/NCM-Manager

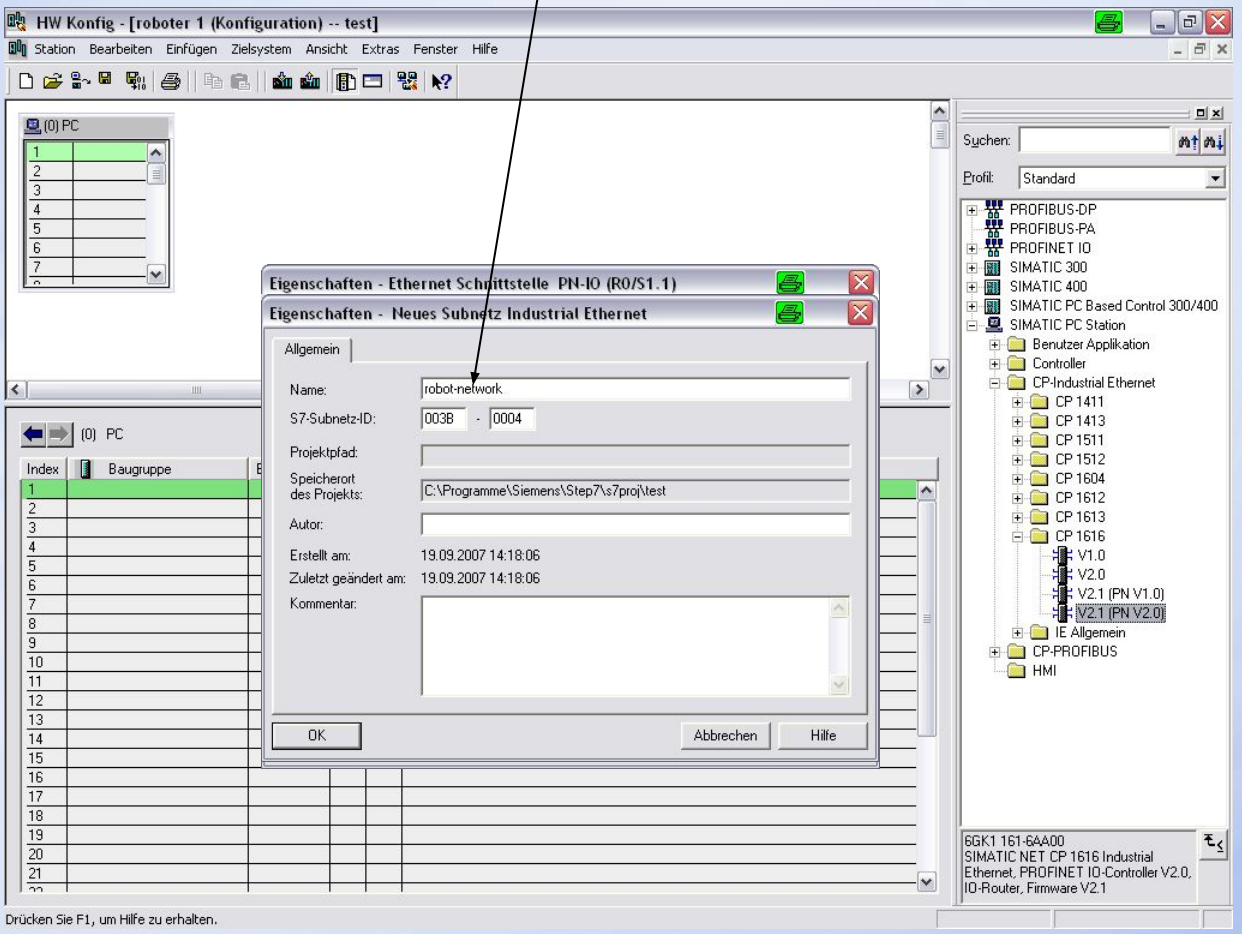
define ip adress for the cp1616

Create network for robot

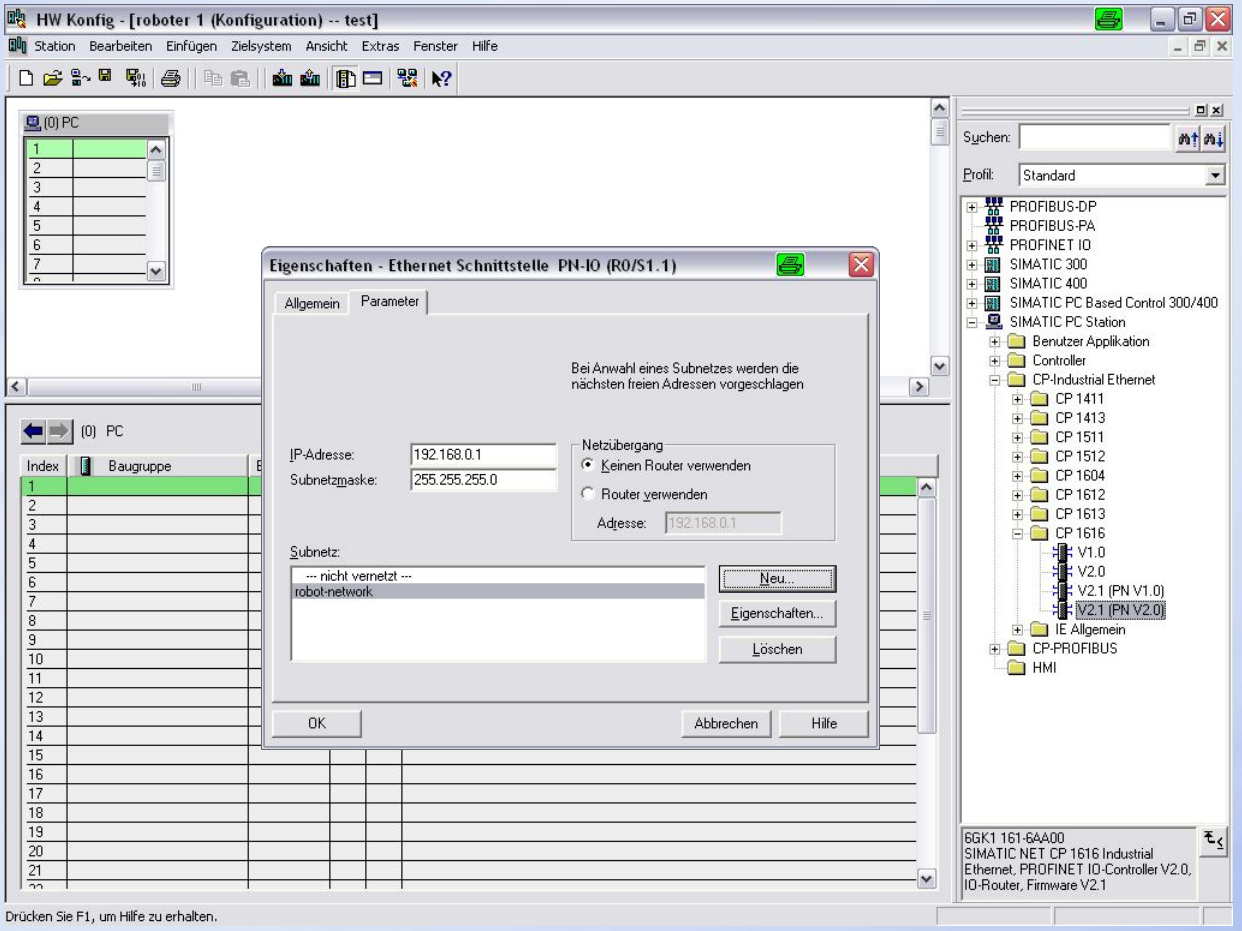


configuration roboter as contoller in Step7/NCM-Manager

create name for profiNet network



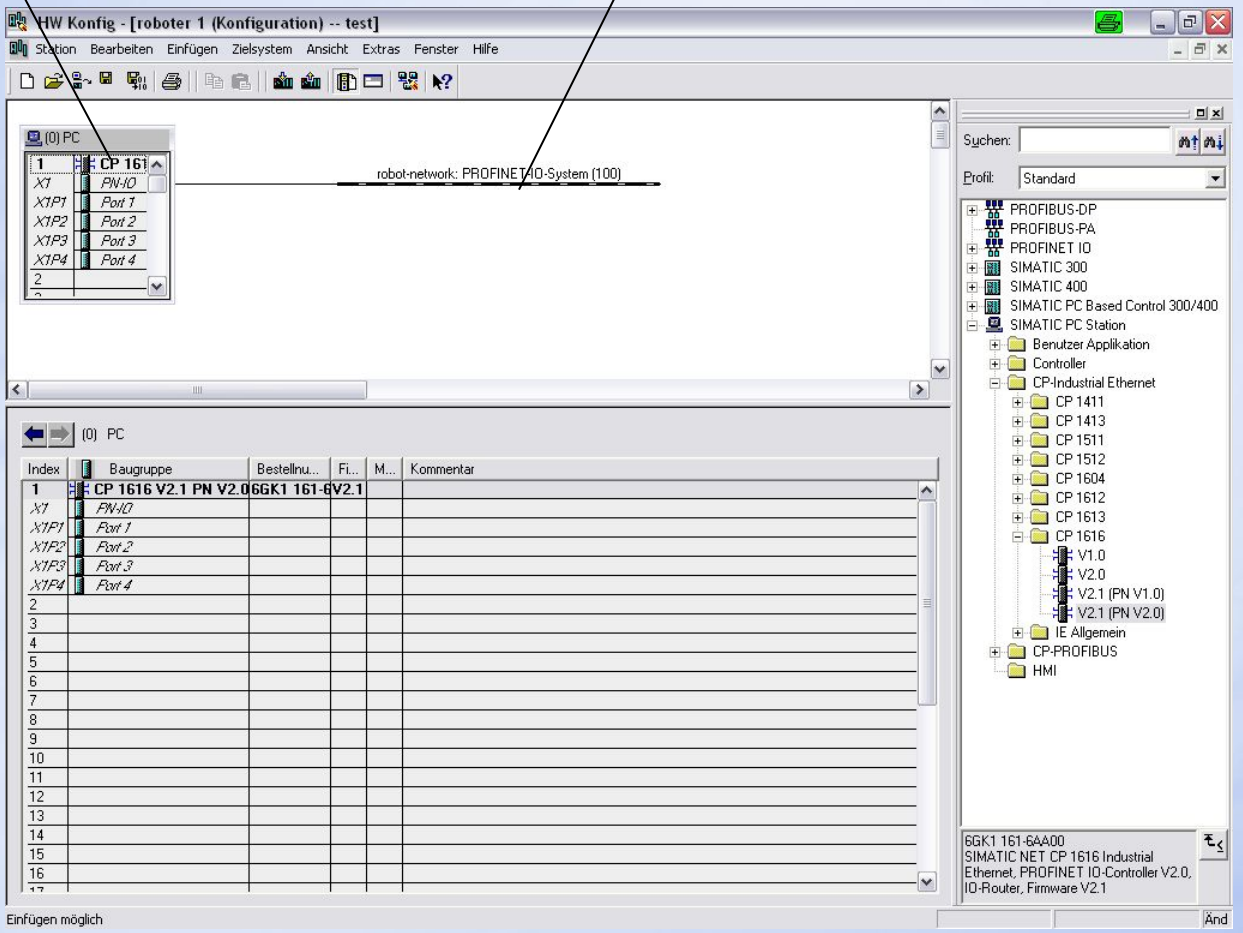
configuration roboter as contoller in Step7/NCM-Manager



configuration roboter as contoller in Step7/NCM-Manager

CP1616 with ports

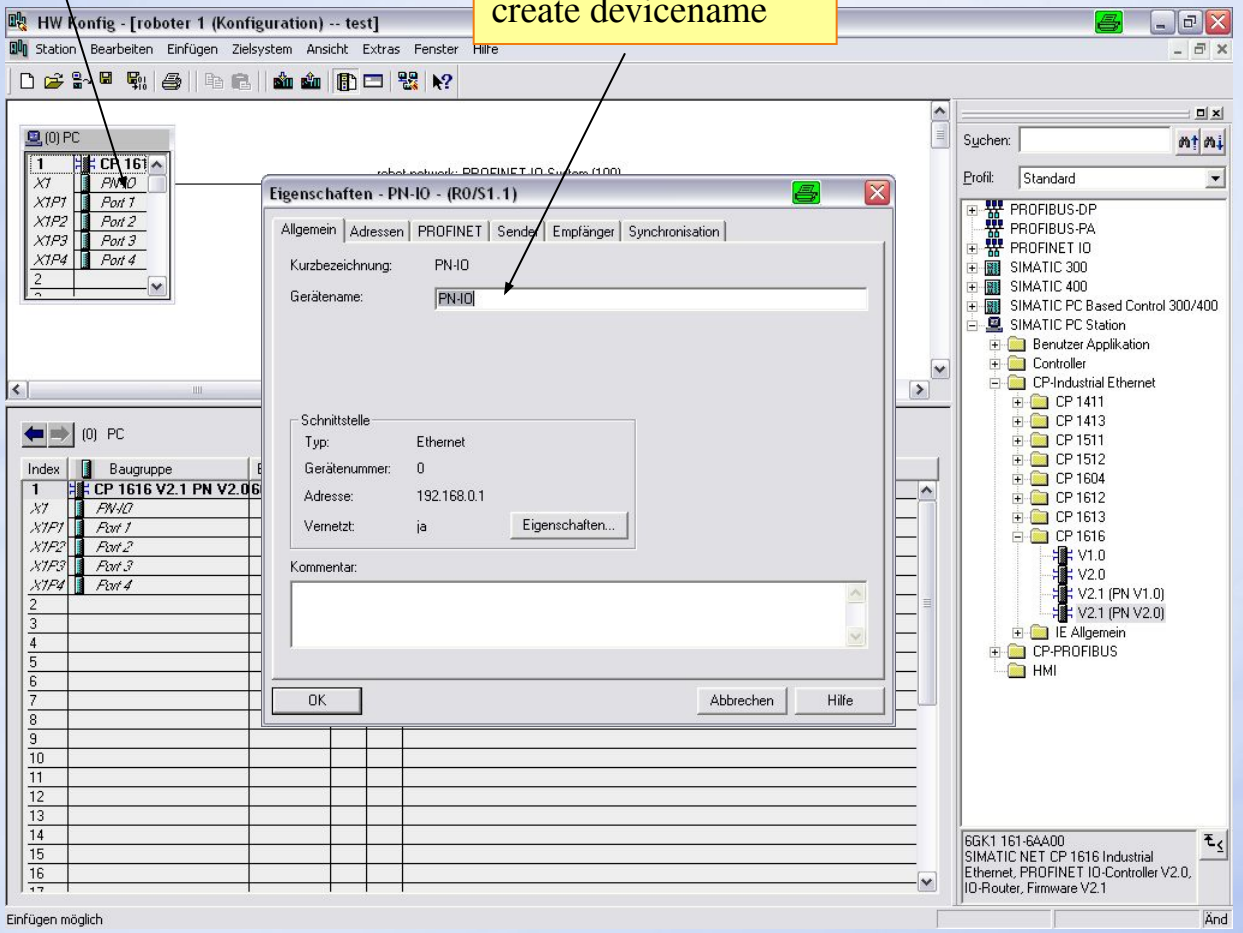
Robot network



configuration roboter as contoller in Step7/NCM-Manager

Make double-click on PN-IO

create devicename



configuration roboter as contoller in Step7/NCM-Manager

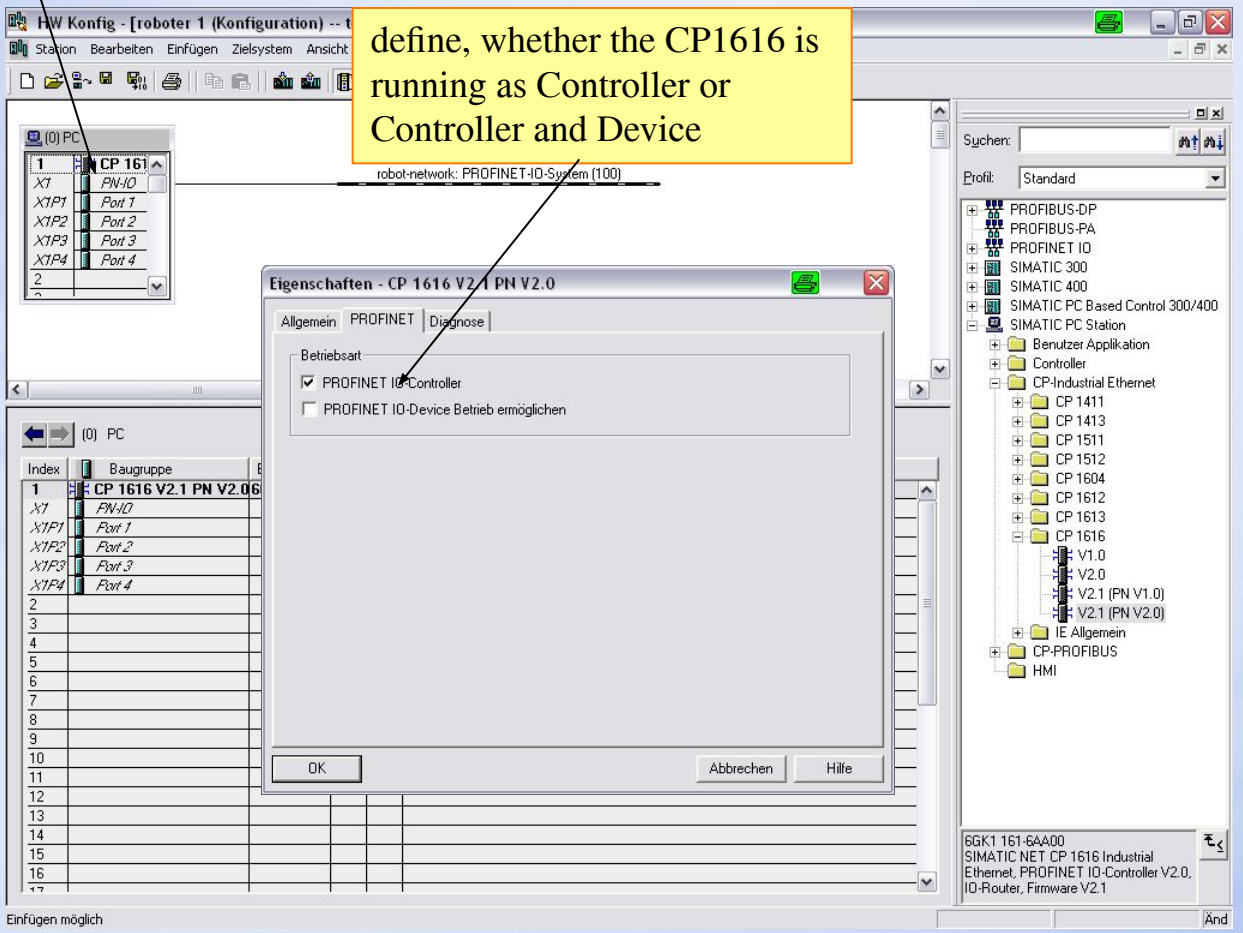
very important

For all devices on bus you must define a devicename. The devicename must be unique. The devicename is to define in the configuration and online over the network, directly on the SM-card on the profiNet-device.

The devicename must be the same in the configuration and on the SM-card.

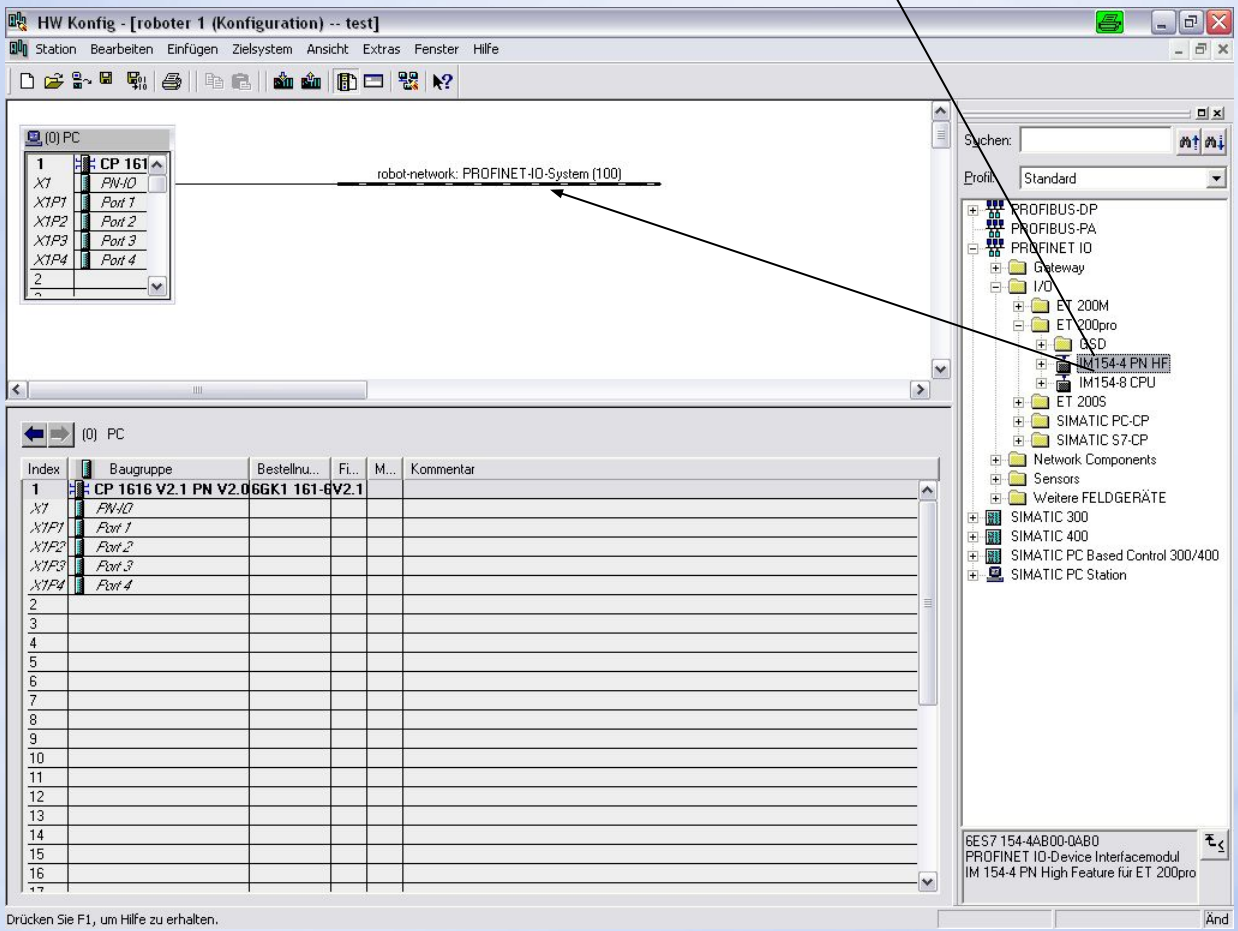
configuration roboter as contoller in Step7/NCM-Manager

Make double-click on Slot 1



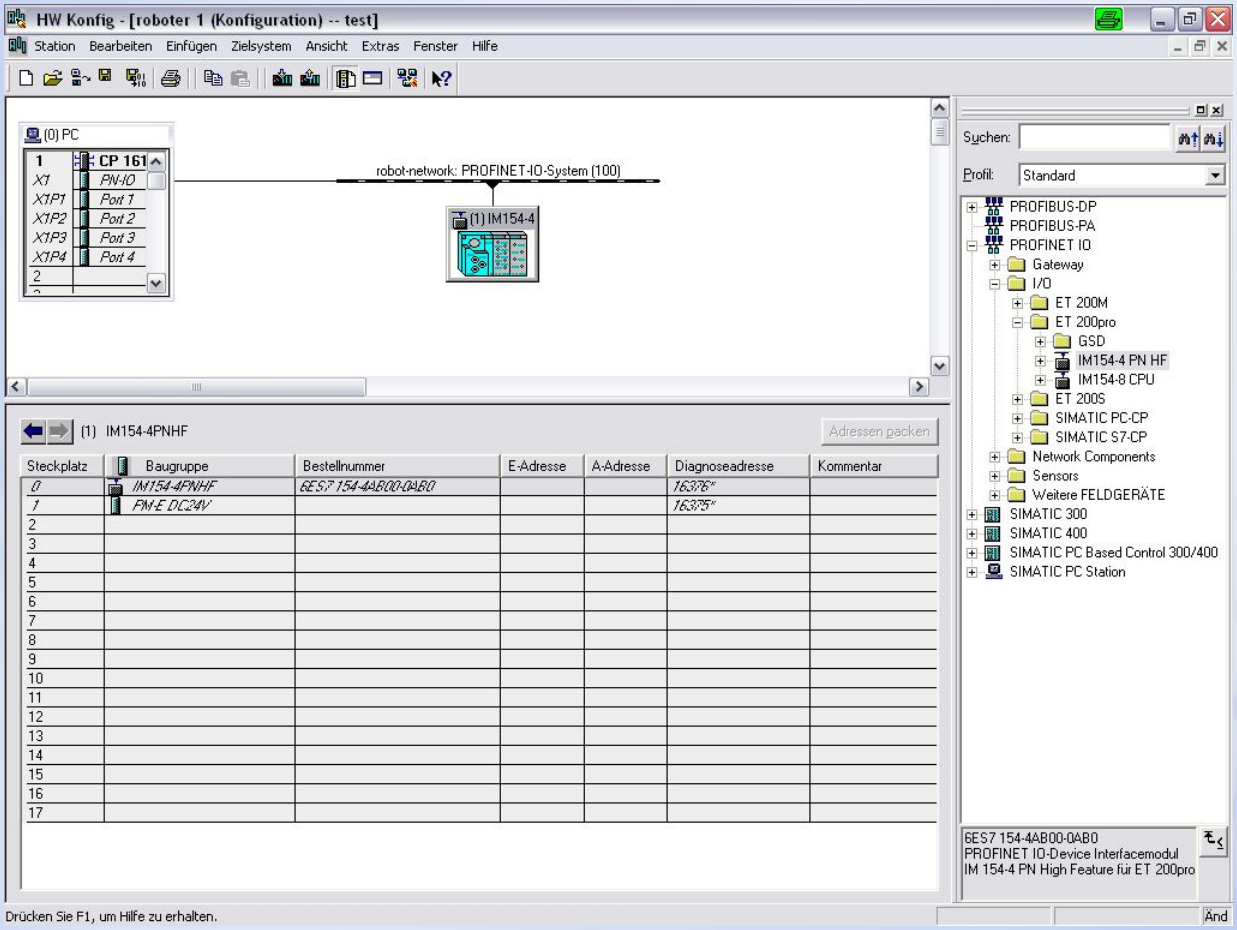
configuration roboter as contoller in Step7/NCM-Manager

add IO-device to
robot-network

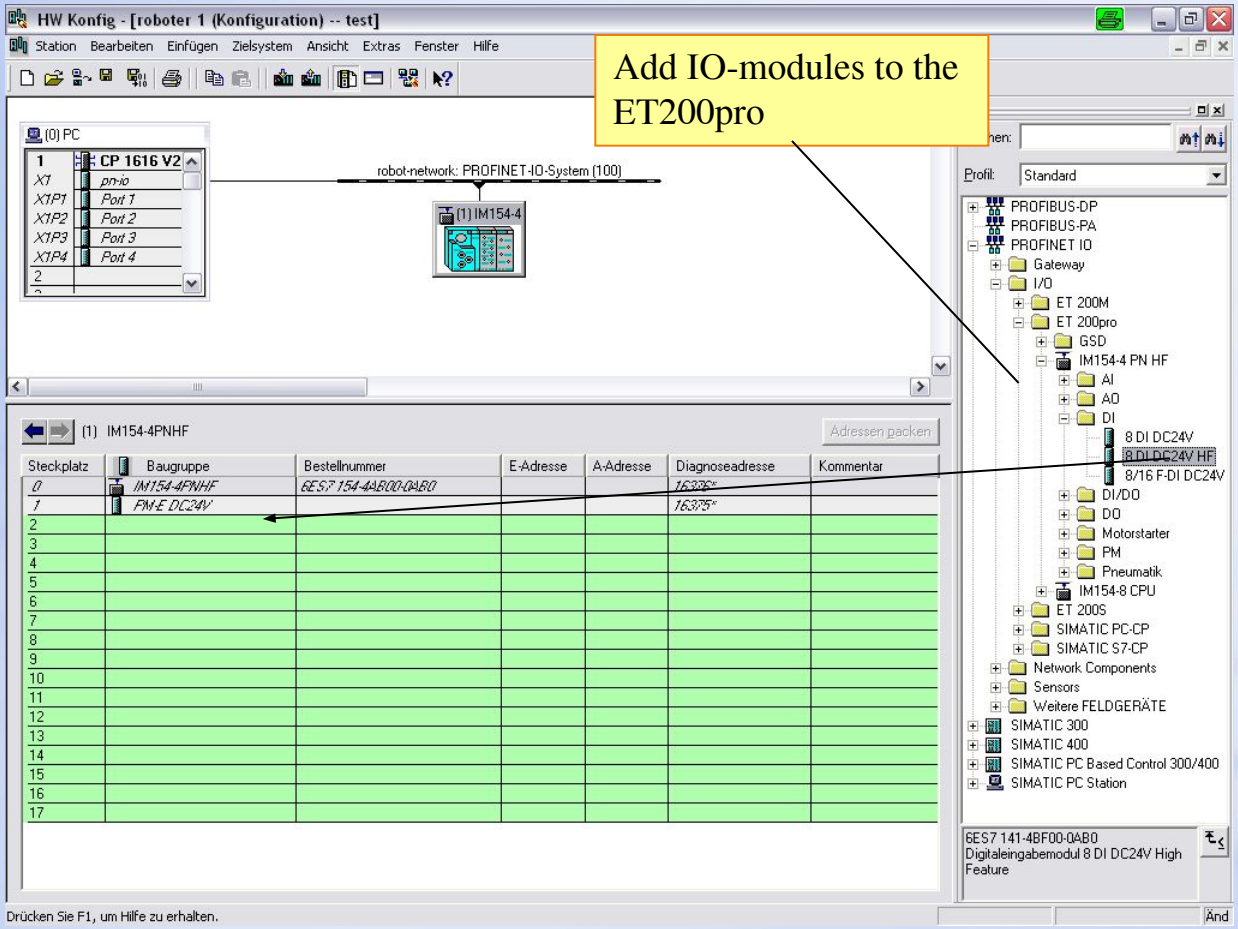


configuration roboter as contoller in Step7/NCM-Manager

add IO-device to robot-network



configuration roboter as contoller in Step7/NCM-Manager



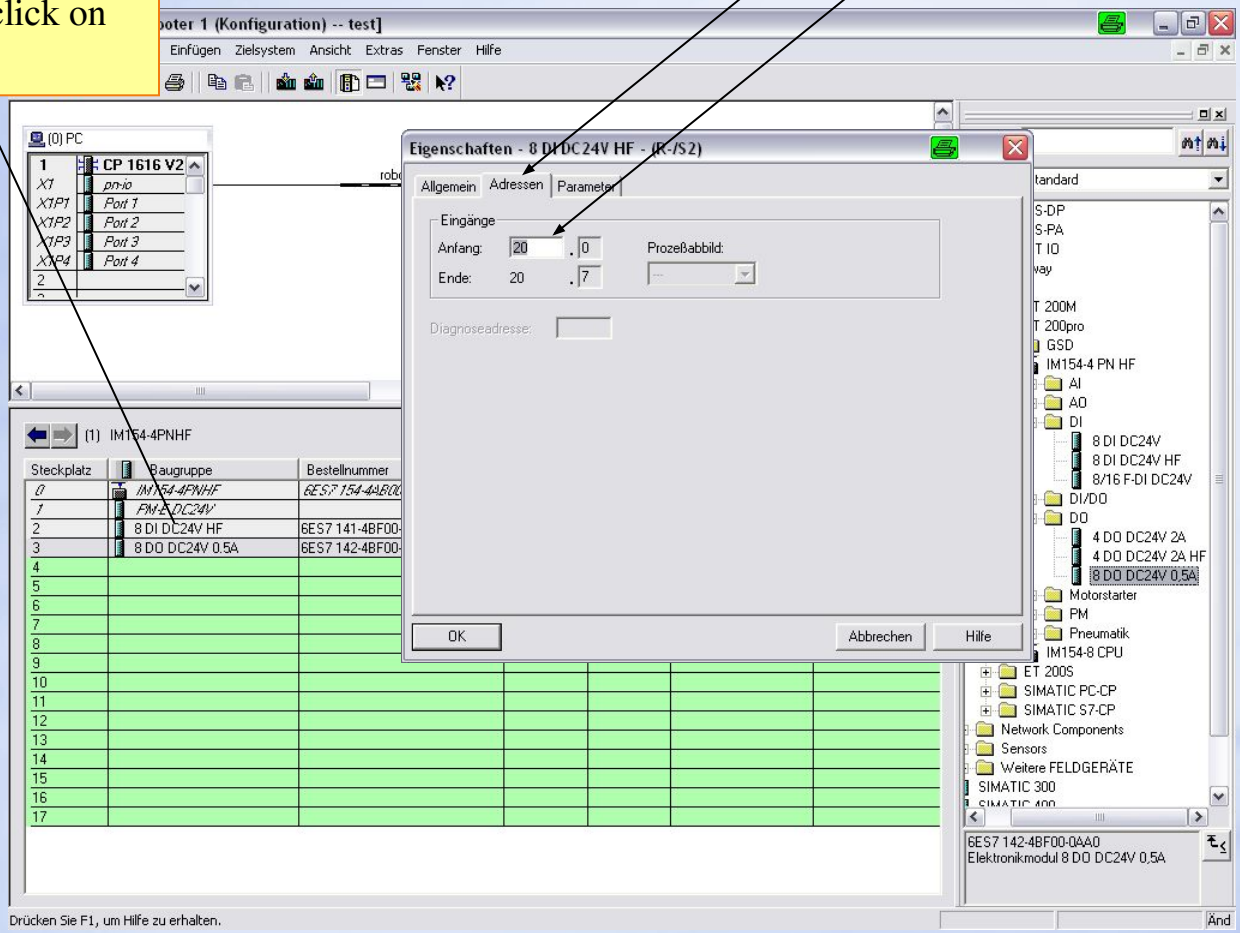
configuration roboter as contoller in Step7/NCM-Manager

define IO-adress of the new modules

make double-click on the modul

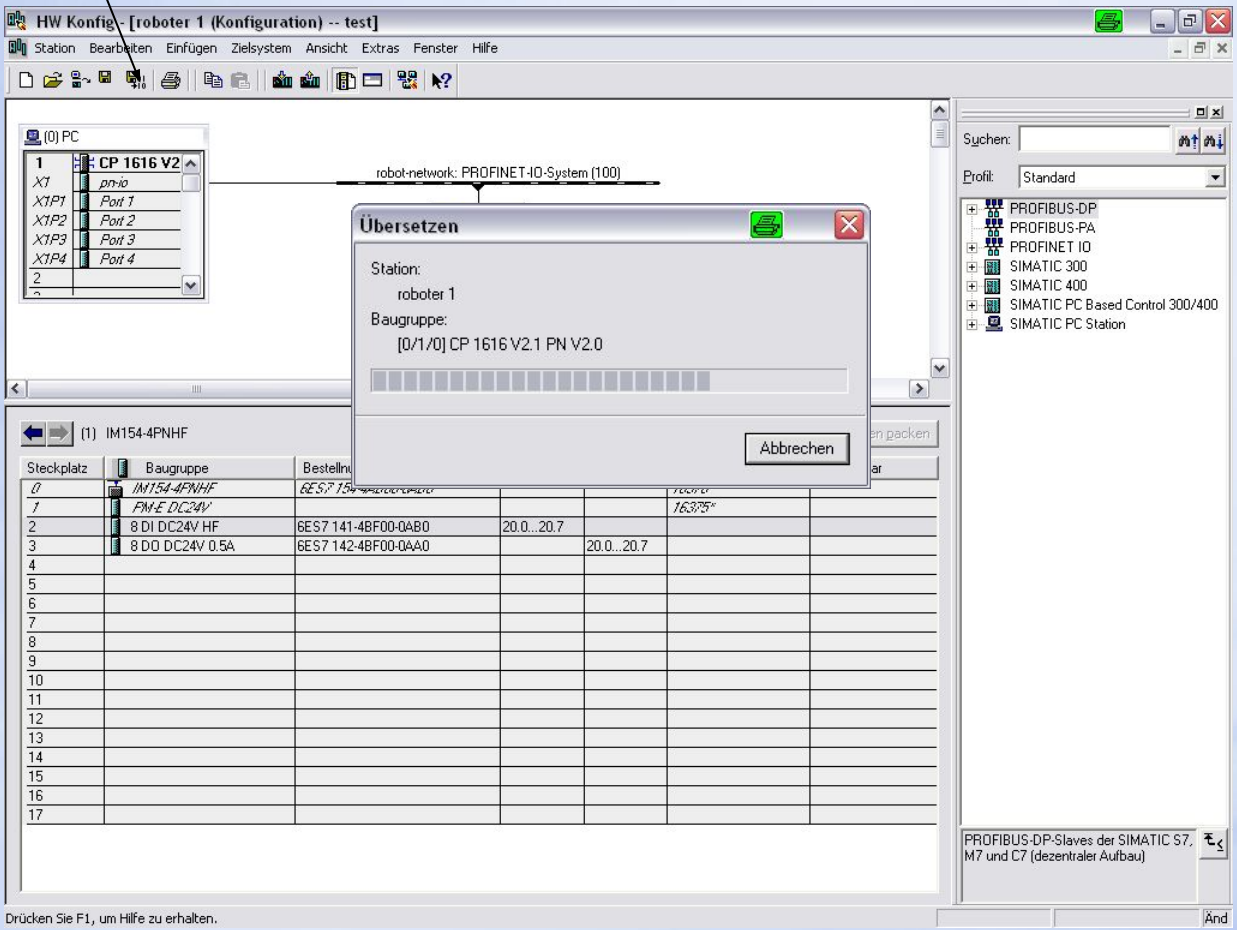
Select adress tab

modul



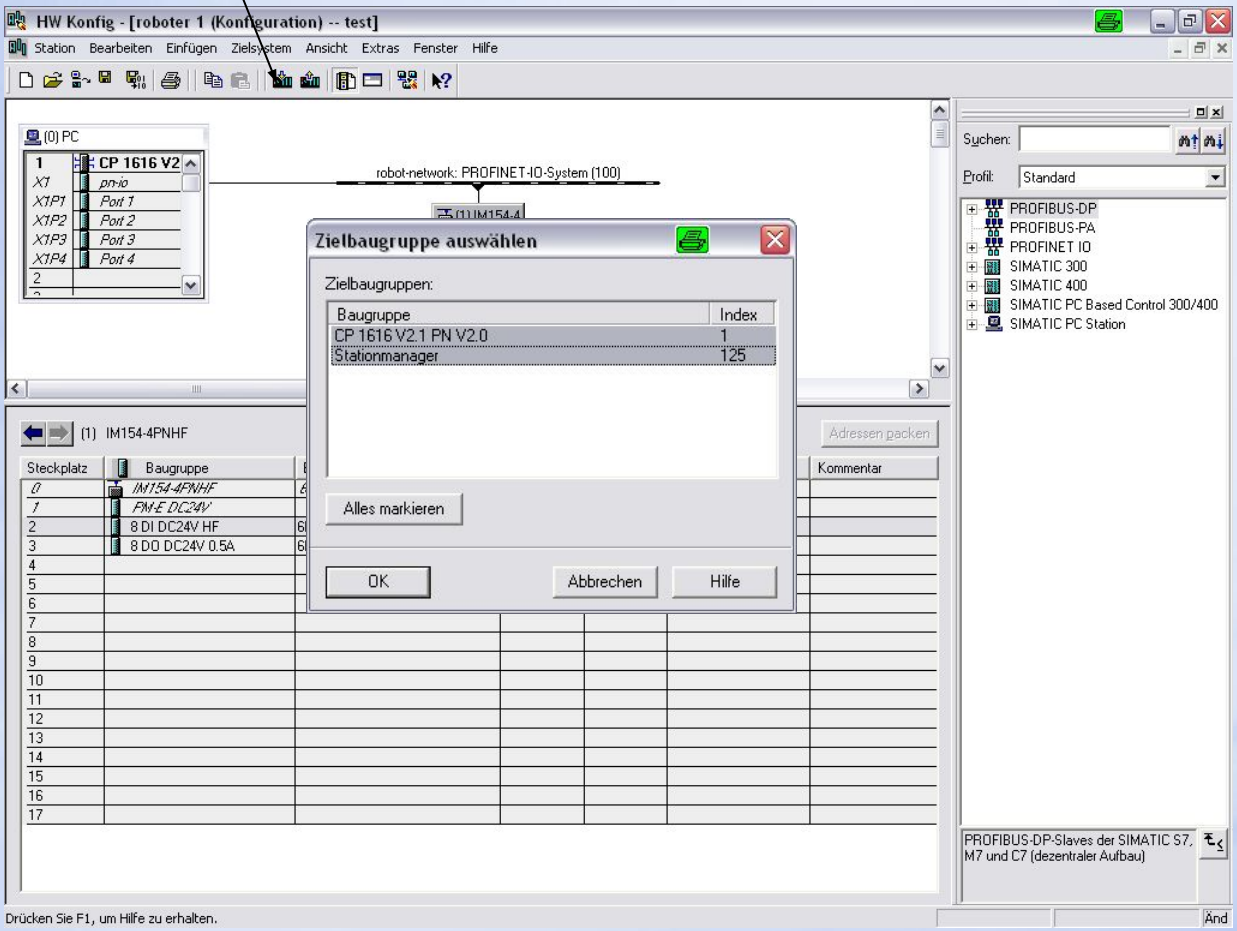
configuration roboter as contoller in Step7/NCM-Manager

Save und compile the configuration at the end.



configuration roboter as contoller in Step7/NCM-Manager

Send configuration to cp1616



Configuration on robot

PnioDrv.ini (C:\KRC\Roboter\Ini\PnioDrv.ini)

Activate the requested mode

1= enable

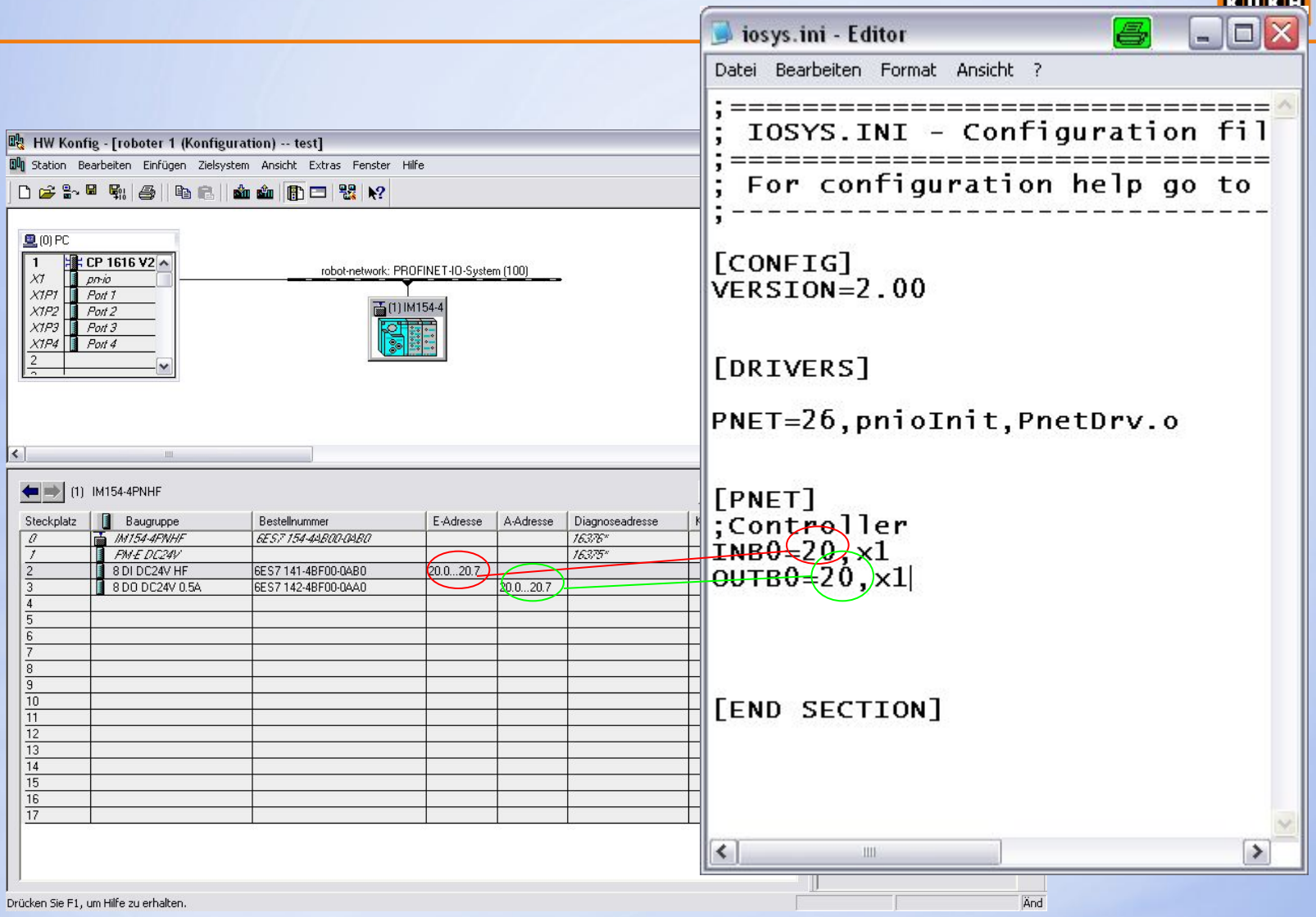
0 = disable

pnioDrv.ini - Editor

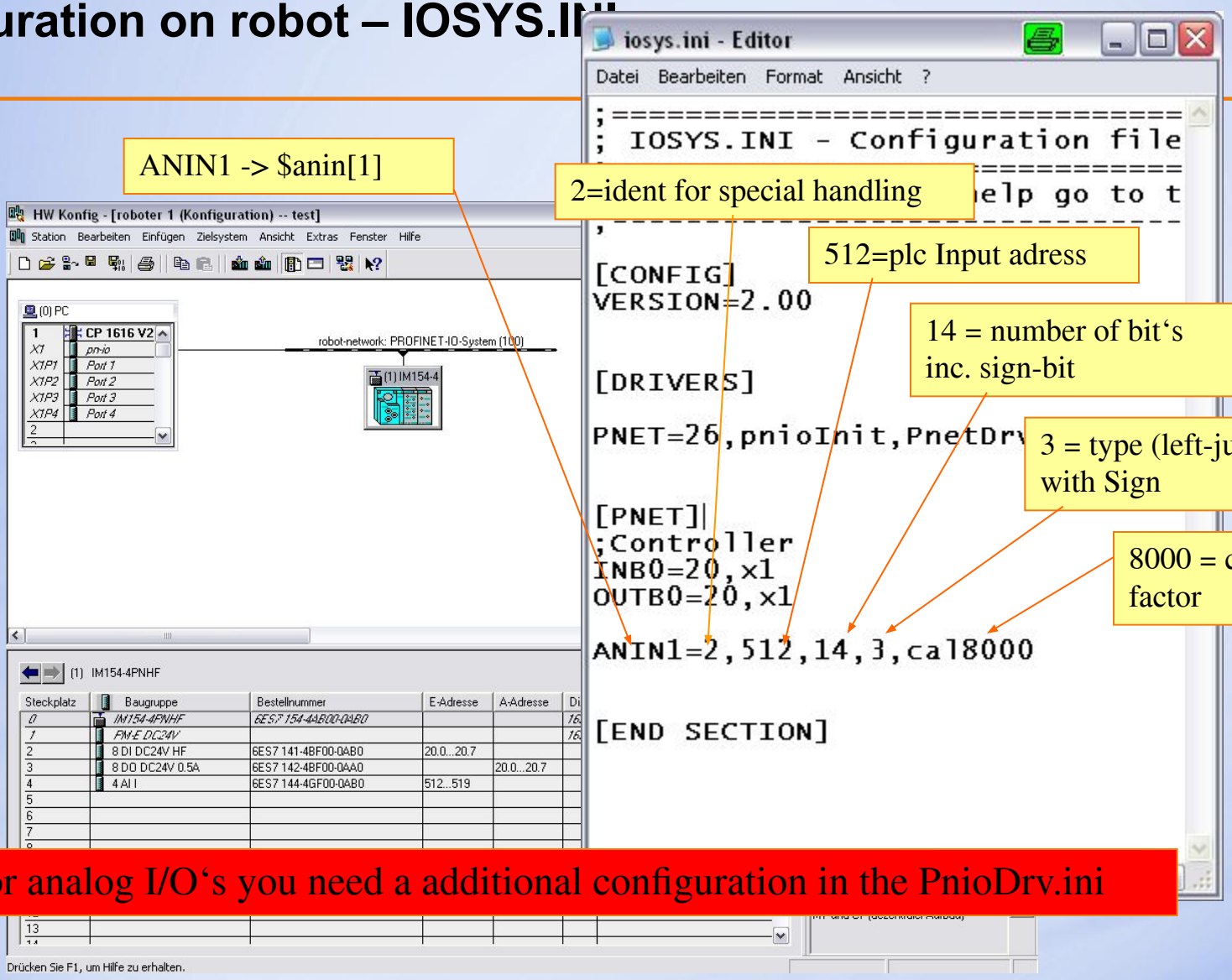
Datei Bearbeiten Format Ansicht ?

```
[CONFIG]
DEBUG=1
ENABLECONTROLLER=1
ENABLEDEVICE=0

[ANIN]
; Name = Profinetadresse, Gesamtbreite des Moduls, Offset im Modul,
; ANIN1 = 512,4,0,2,TRUE

[ANOUT]
; Name = Profinetadresse, Gesamtbreite des Moduls, Offset im Modul,
; ANOUT1 = 512,4,0,2,TRUE

[SWAP]
; IN oder OUT = Profinetadresse1, Profinetadresse2, ...
; SWAPWORD_IN=13
; SWAPWORD_OUT=13
```

Configuration on robot – IOSYS.INI



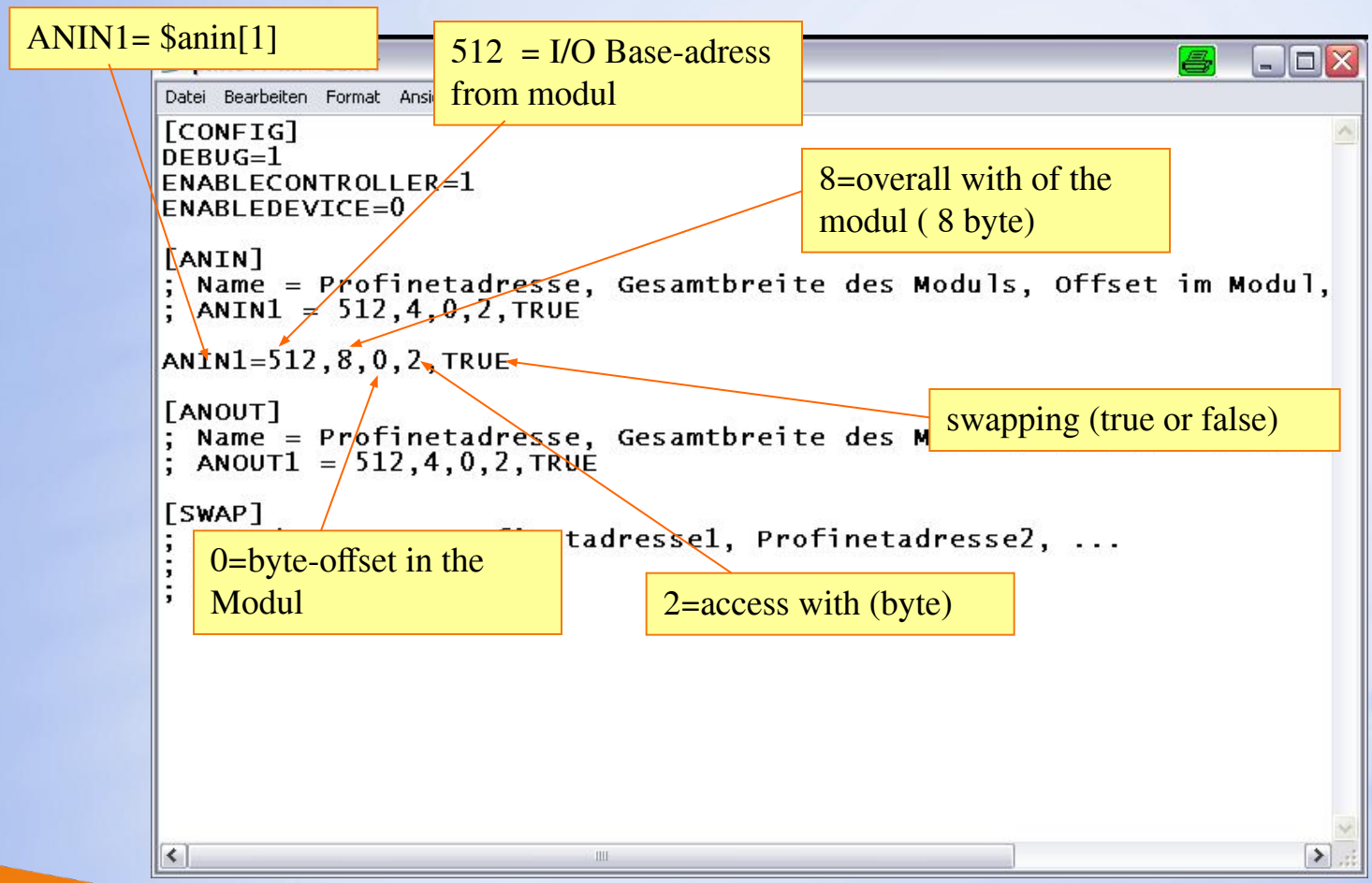
Configuration on robot – IOSYS.INI



For analog I/O‘s you need a additional configuration in the PnioDrv.ini

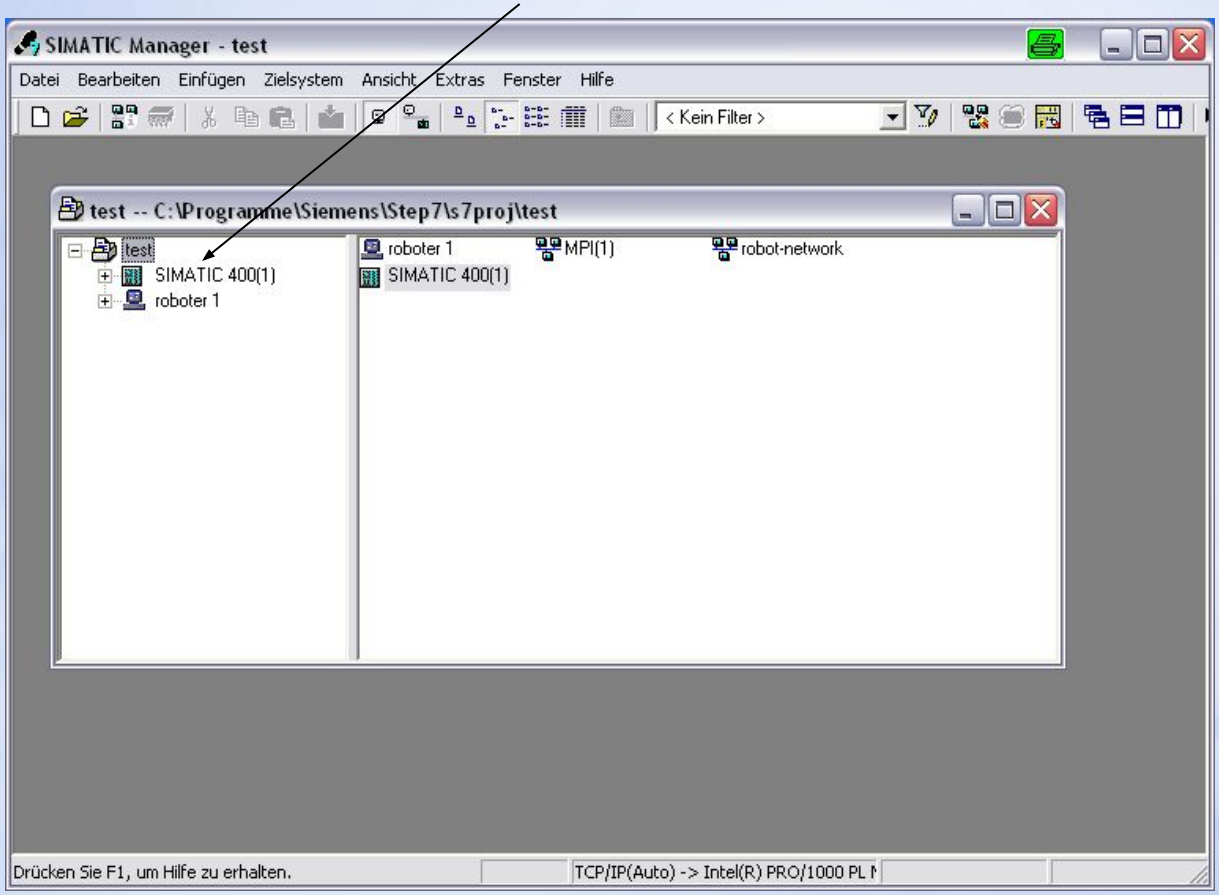
Configuration on robot

PnioDrv.ini (C:\KRC\Roboter\Ini\PnioDrv.ini)

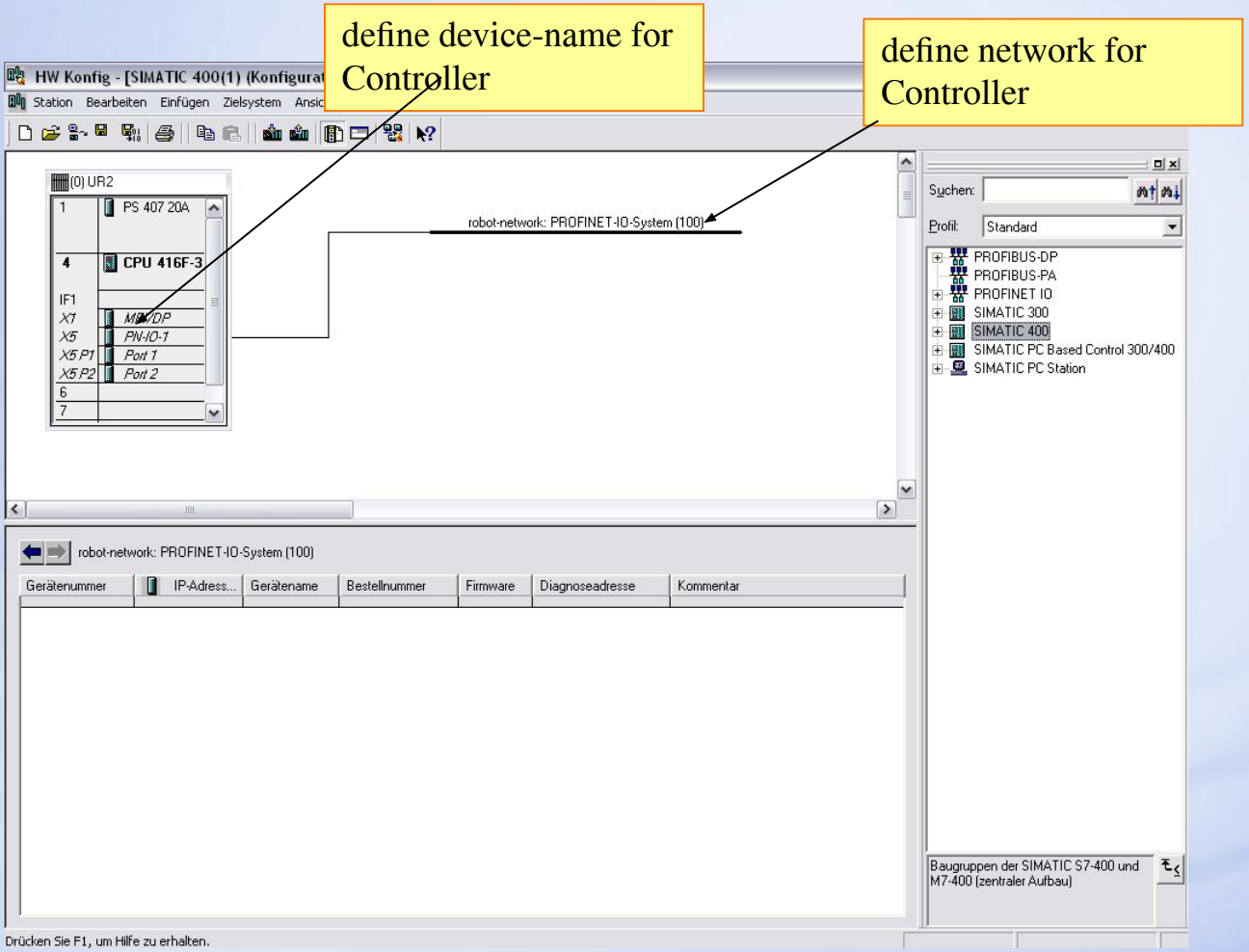


configuration roboter as device in Step7/NCM-Manager

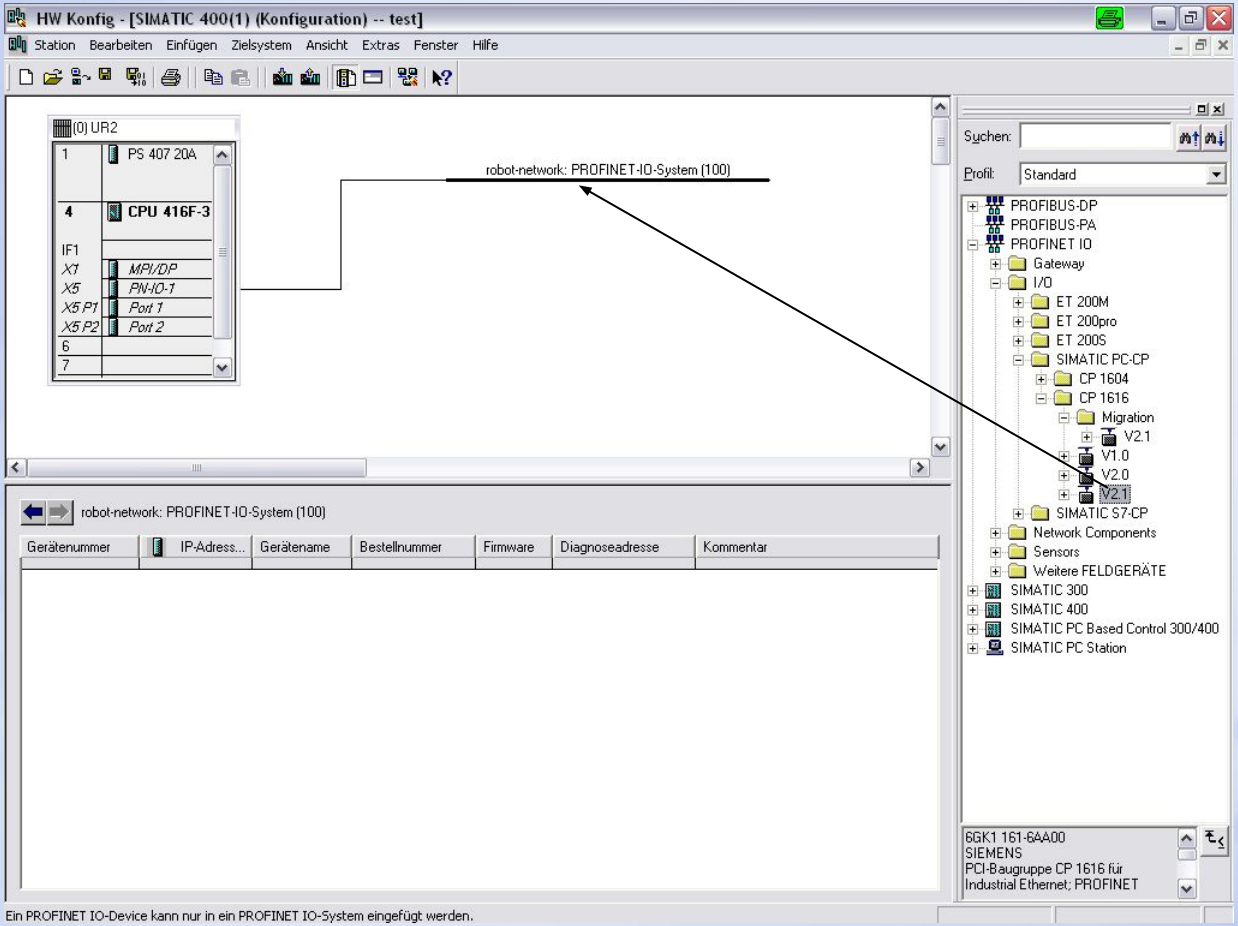
add Controler



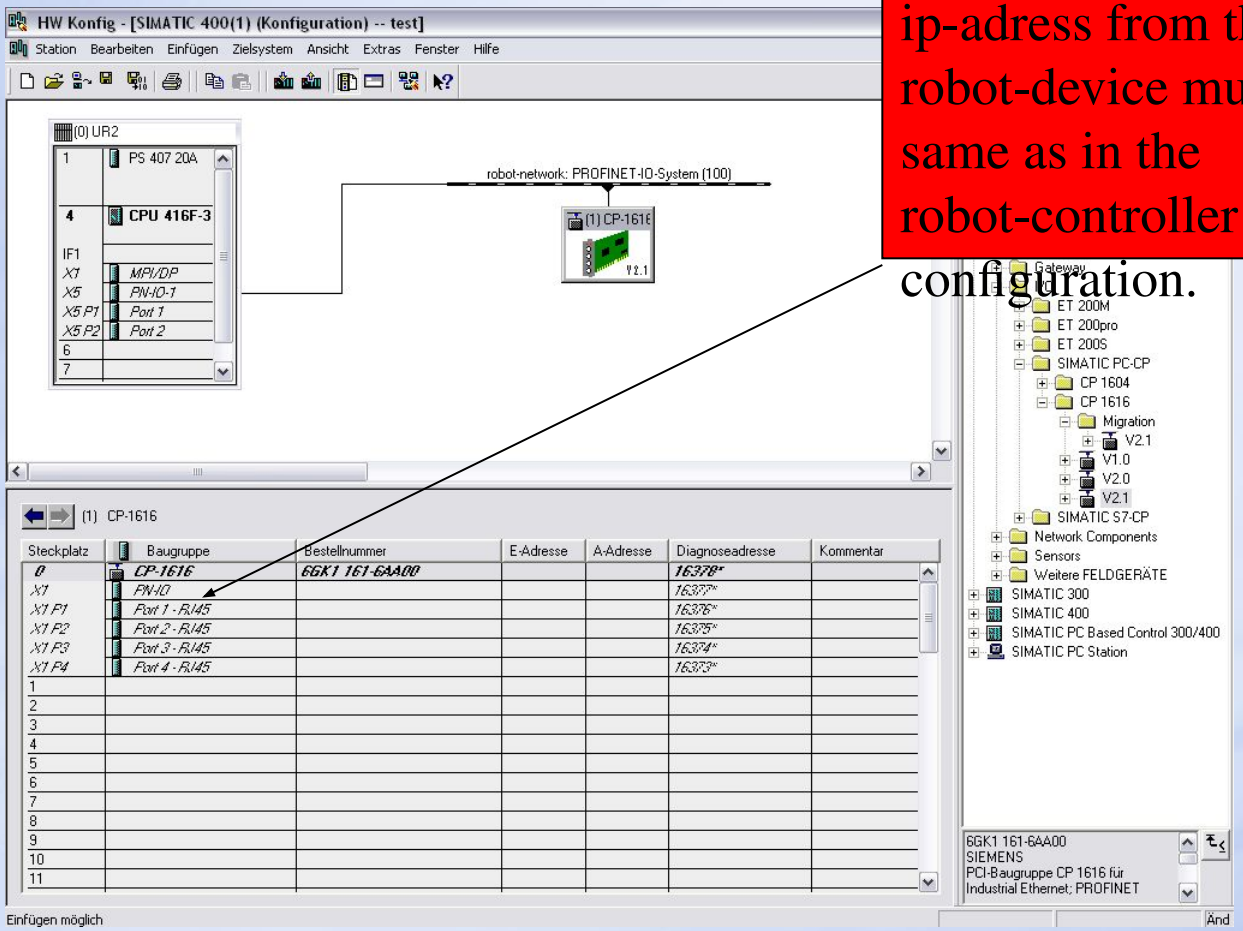
configuration roboter as device in Step7/NCM-Manager



configuration roboter as device in Step7/NCM-Manager

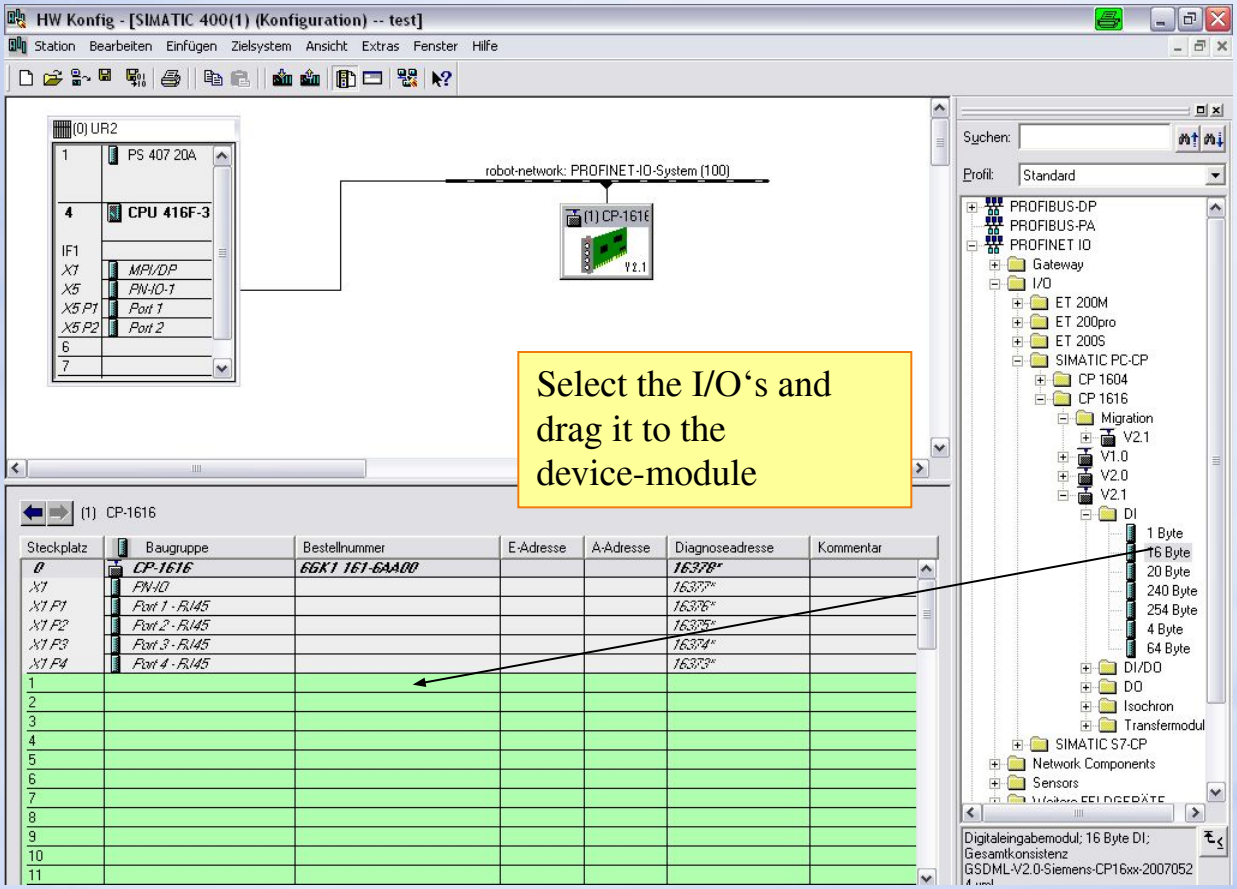


configuration roboter as device in Step7/NCM-Manager

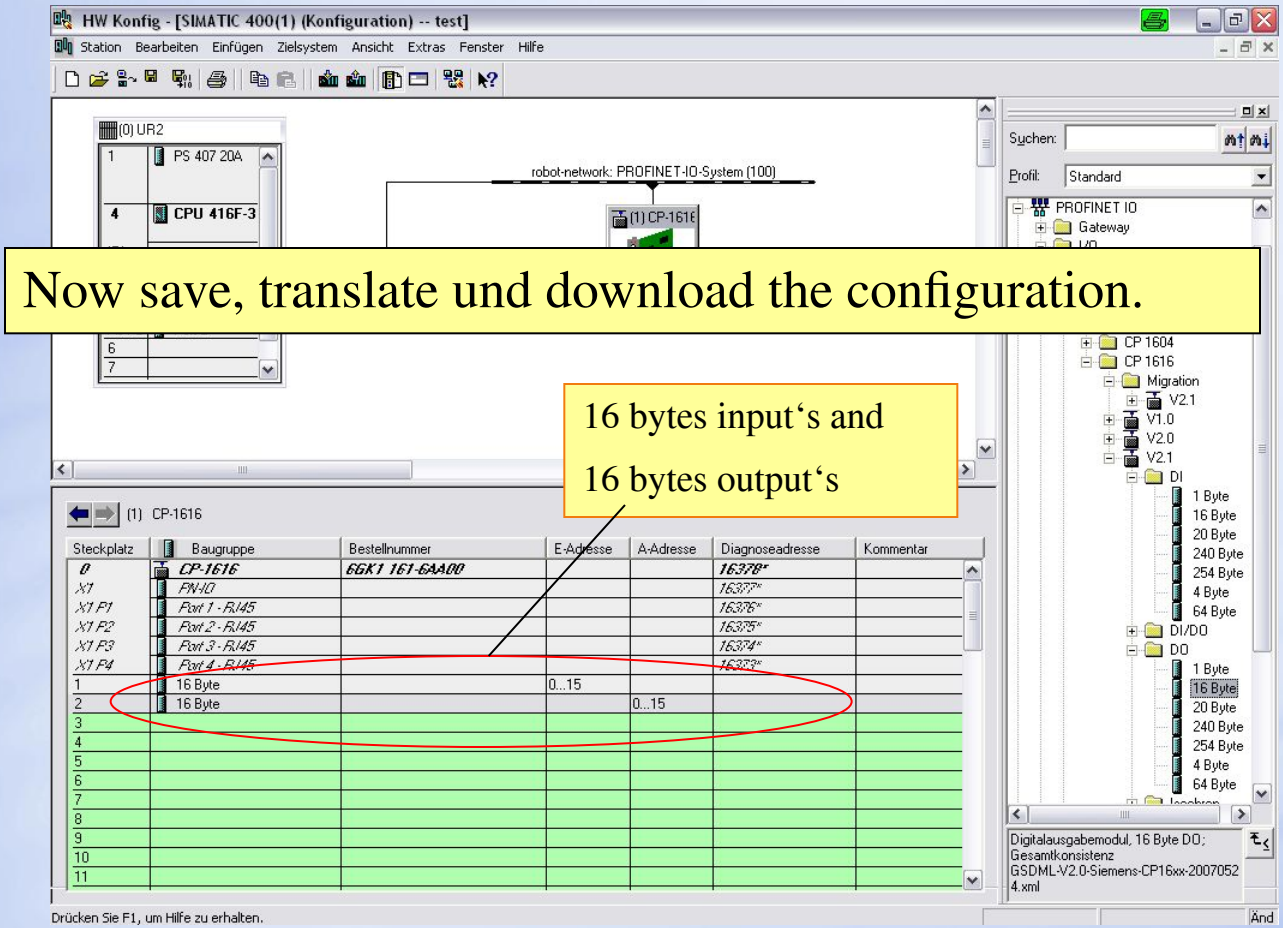


The devicename and the ip-adress from the robot-device must be the same as in the robot-controller configuration.

configuration roboter as device in Step7/NCM-Manager



configuration roboter as device in Step7/NCM-Manager



configuration roboter as device in iosys.ini

very important:

device-Input read from controller-output !

device-output write to controller-input !