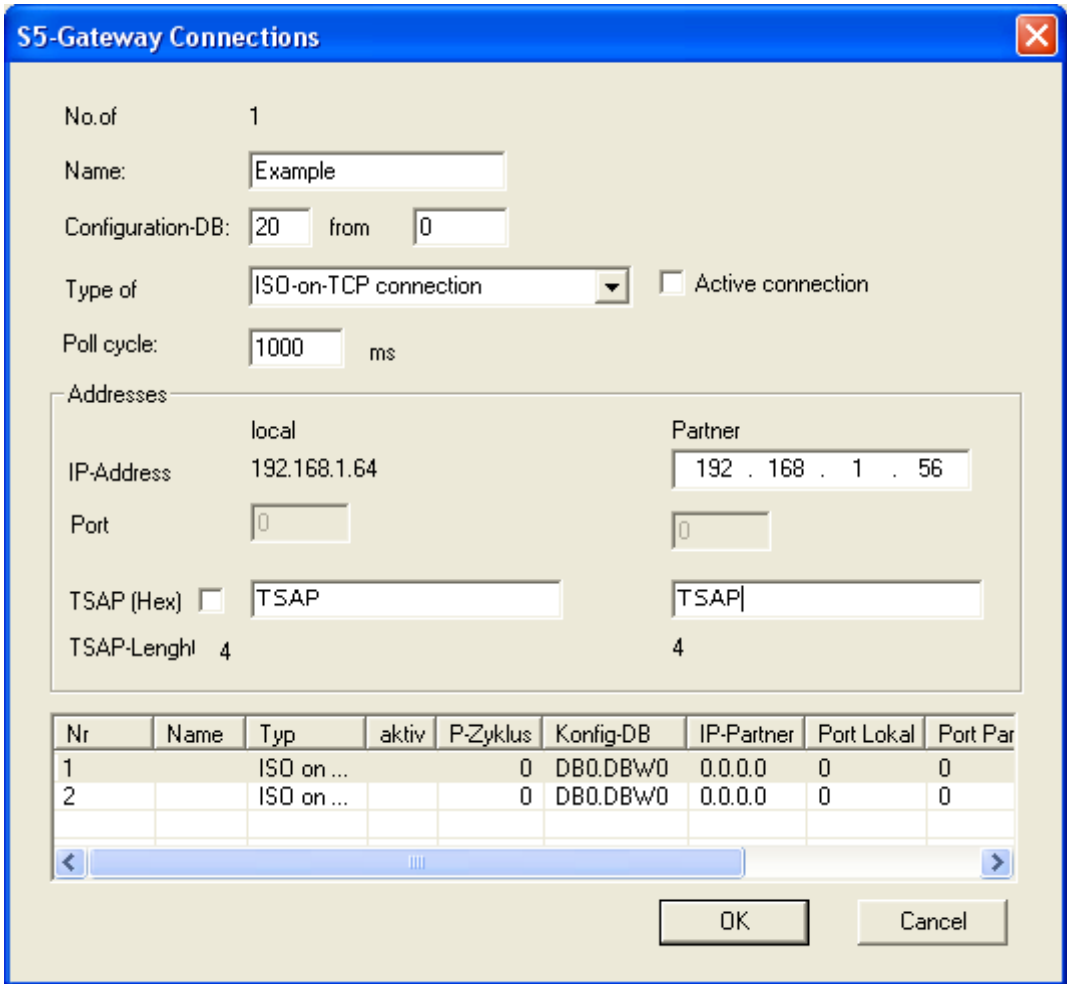
S7-CP to S5 – Gateway communication

Required tools: **S5 - LAN Manager**
Supported from firmware – Version **<u>0.44</u>** of the S5 – gateway

I. S5-LAN configuration

1. Start the S5-LAN Manager and search for your module, mark it and click with the mouse on the button ***"S5 – Gateway – Connections"***. A dialog opens to adjust the connection.



2. At the lower part of the dialog is the connection list located, in which you can select the connection you want to configure.

3. Now you can give the connection a logical name at ***"Name"***.

4. Type the position of the data block at the left input field at "Configuration - DB" (e.g. ***"1"*** for DB1) in and at the right input field the starting data word (e.g. ***"1"*** for DW1) in which the configuration area is located. The example needs the DB20. For the

example DB20 is needed.

5. Select ***"ISO - on - TCP – connection"*** for ***"Type of"***. This option uses the TCP – Port 102.

6. The polling cycle(in ms) states how much time is needed until the S5-Gateway is cyclical reading the connection and checking, if something needs to be done. If 0 is declared here it will read from the SPS nonstop.

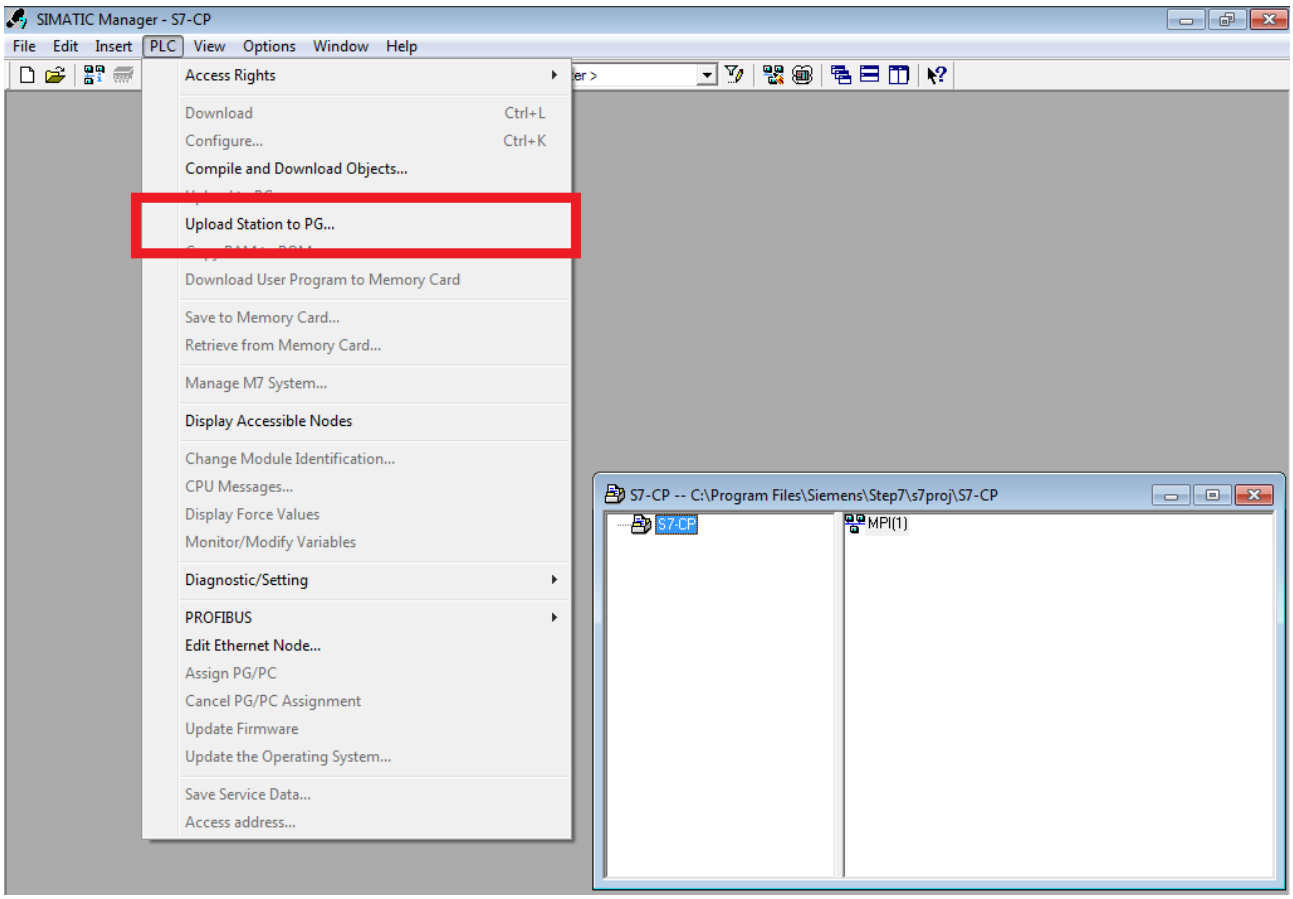
7. At the address section you can only type the IP – address of the partner in. The IP– address of the of the S5 – Gateway Module still needs to be configured with the S5-LAN Manager.

8. You can set the ***"TSAP"*** (Transport – Service – Access – Point) for both devices. It consists of 16 chars and represents the identification of the connection, which is needed if several connections with an IP – address are existing. (Since firmware version **0.45** of the S5 – Gateway it's possible establish a connection with every TSAP).

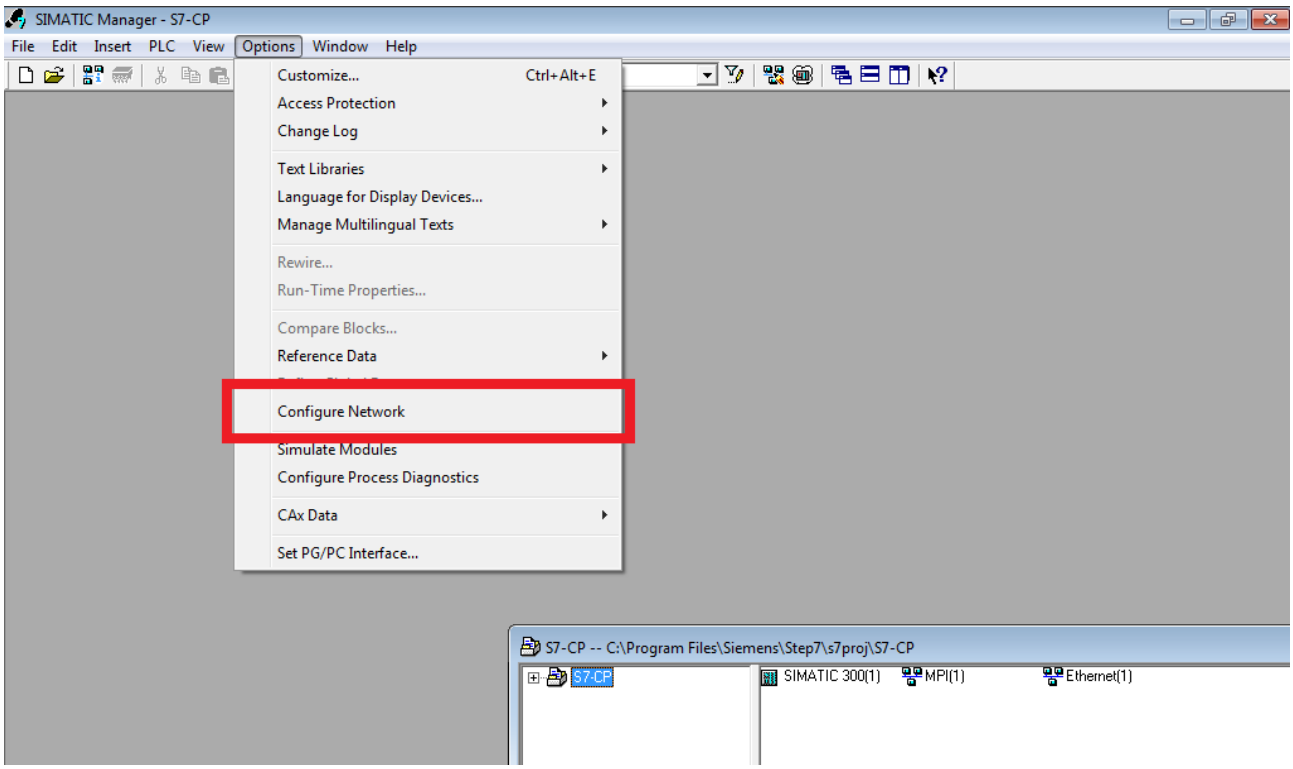
The communication over S5 – Gateway is configured now.

II. S7-CP set up

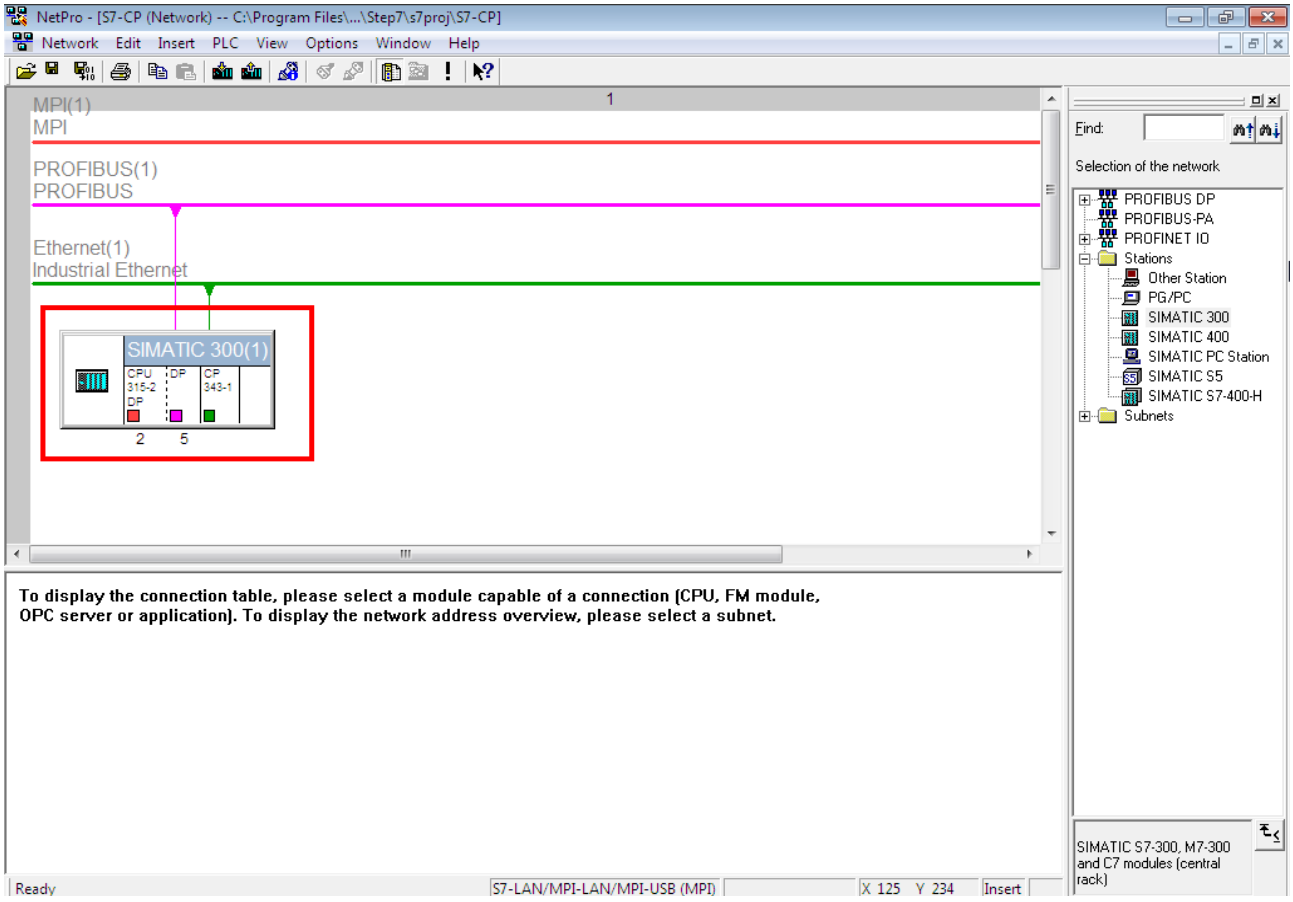
1. Start your programming software and upload your station into the software.



2. Open via ***"Options"*** and ***"Configure Network"*** the ***"NetPro"*** window, where you can set up stations and subnets.

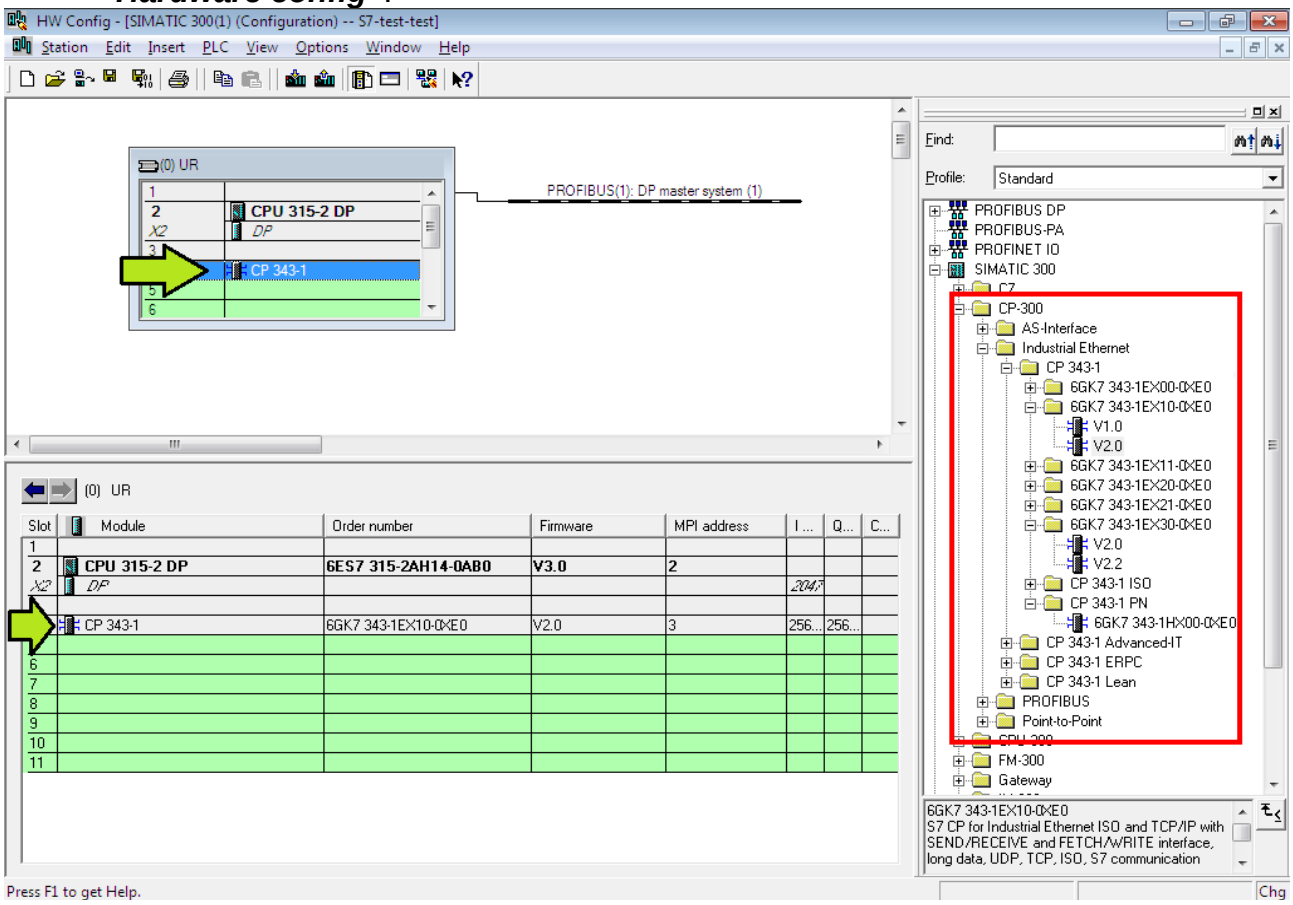


3. If you execute a double click on your projected S7 the ***"Hardware config"*** opens itself.

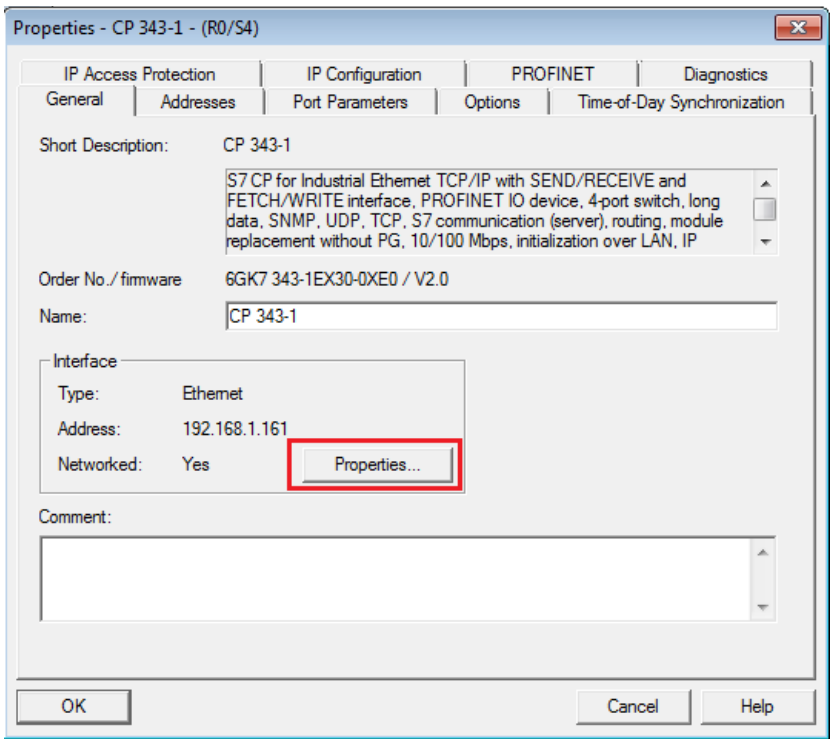


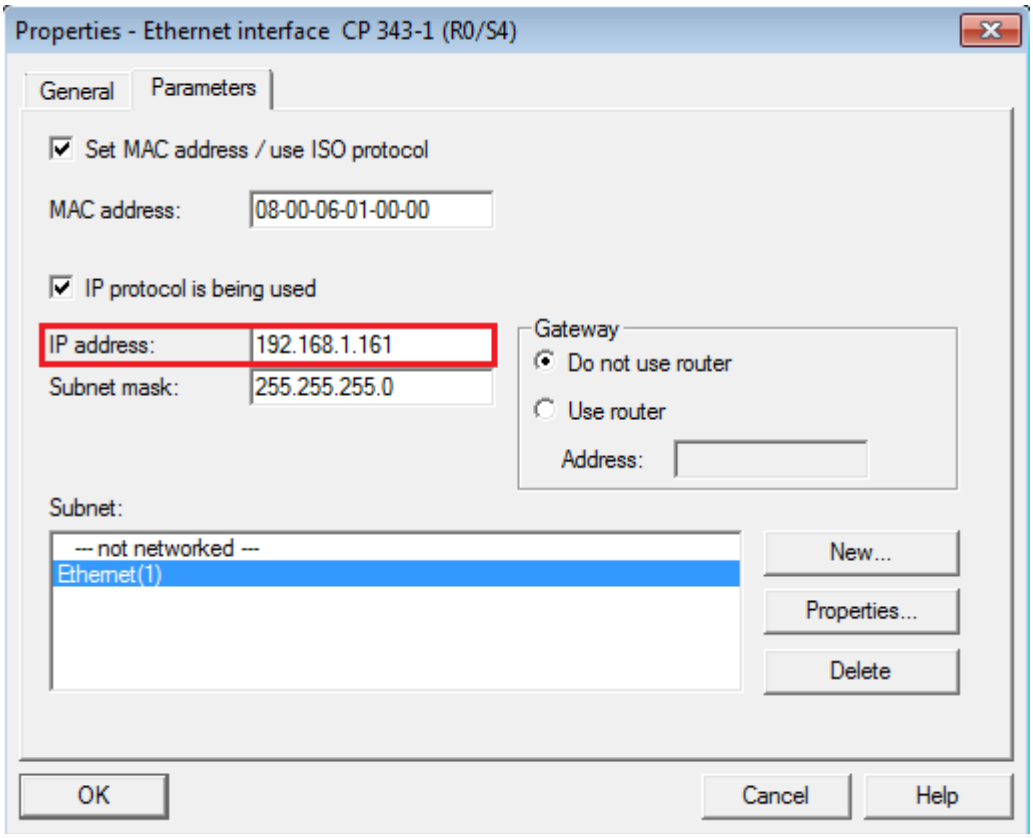
4. You can select your CP in the library at the right side of the ***"Hardware config"*** and

put in your rack starting with slot 4. Save and compile your settings and close the ***"Hardware config"***.

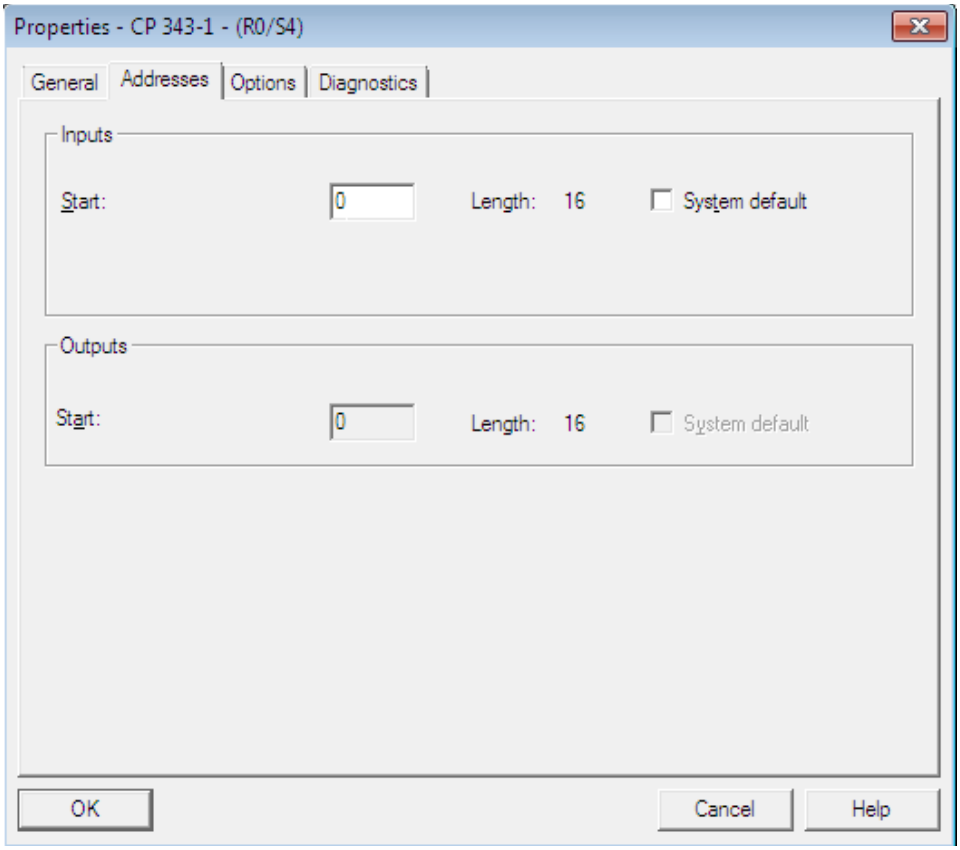


5. Open the Object Settings with a right click on your projected CP. At ***"General"*** you're able now to connect it at Interface with the Ethernet network and set an IP address up.

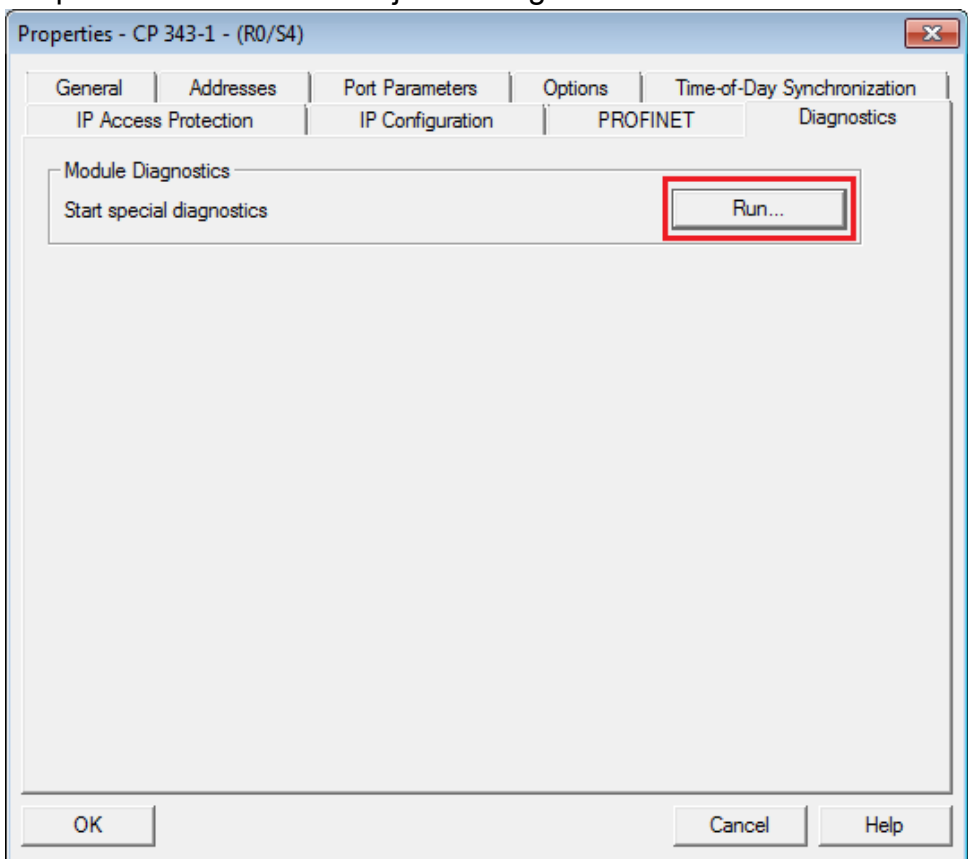




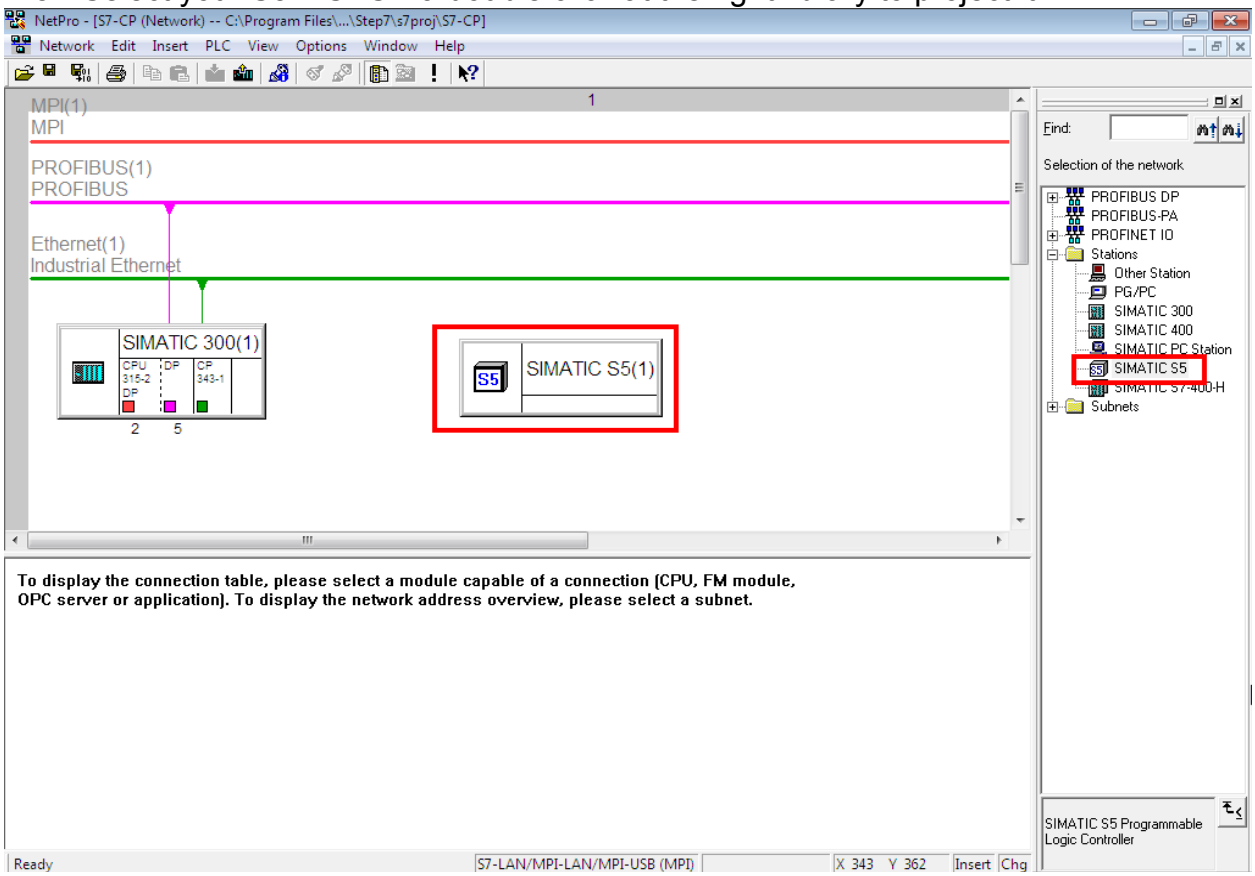
6. At ***"Addresses"*** you can set up the ***"Start"*** and the ***"Length"*** of the inputs and outputs.



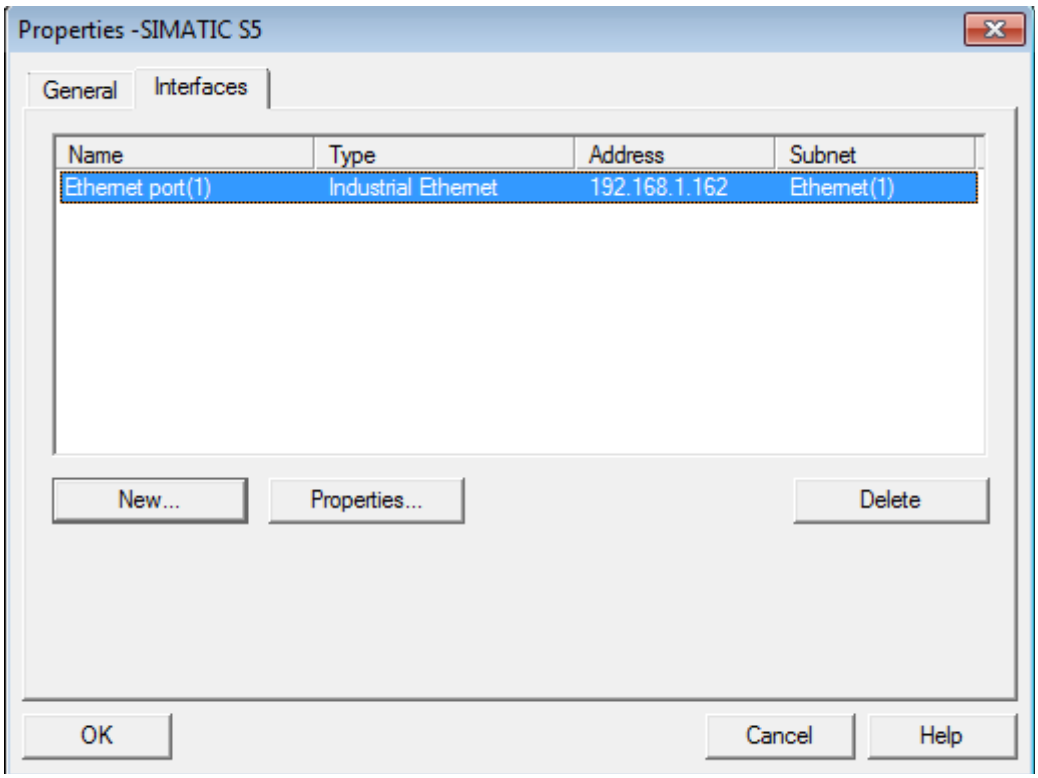
7. The Diagnostics part can open a diagnose window, which we'll need later to check our setup. You can close the Object settings for now.

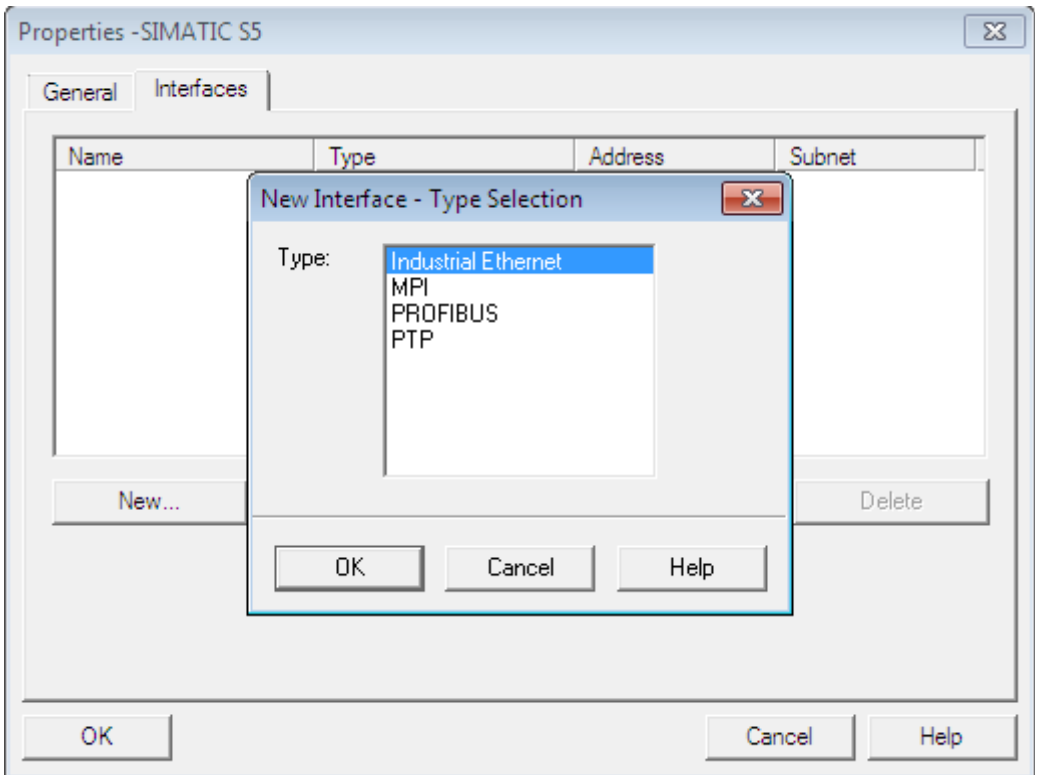


8. Select your S5 – SPS via double click at the right library to project it.

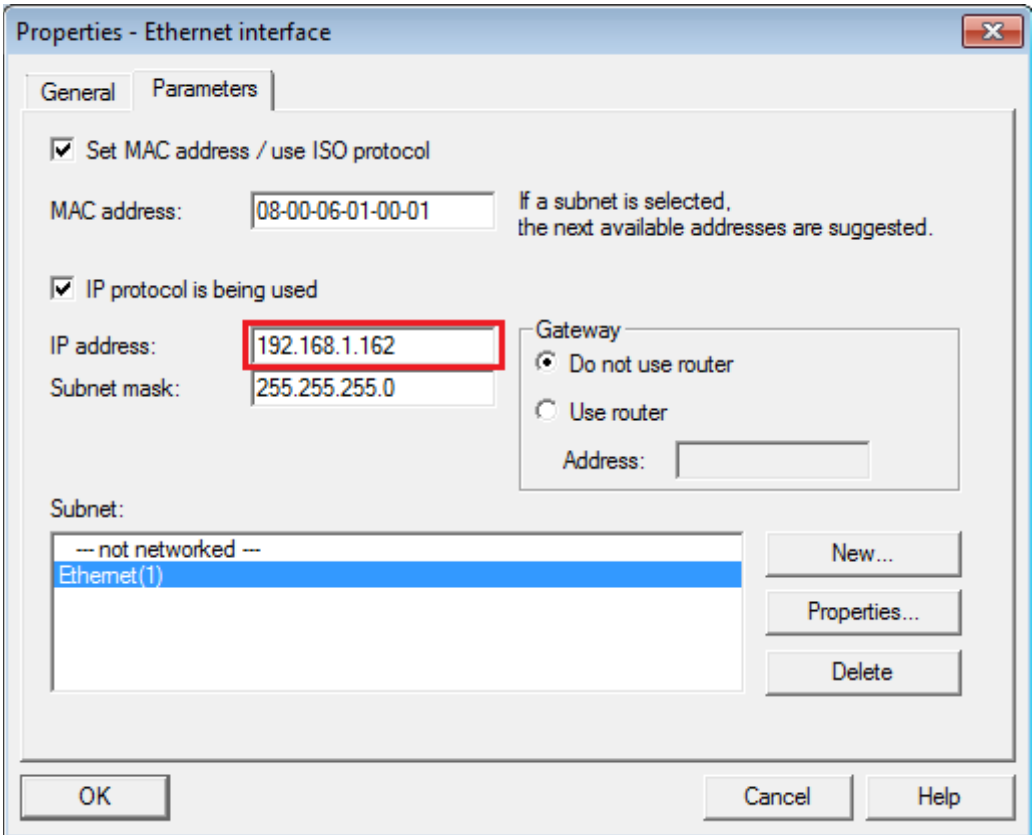


9. If you right click on your S5 you have to open its Object Properties at Interfaces where you project an ***"Ethernet"*** with the steps that will follow now.

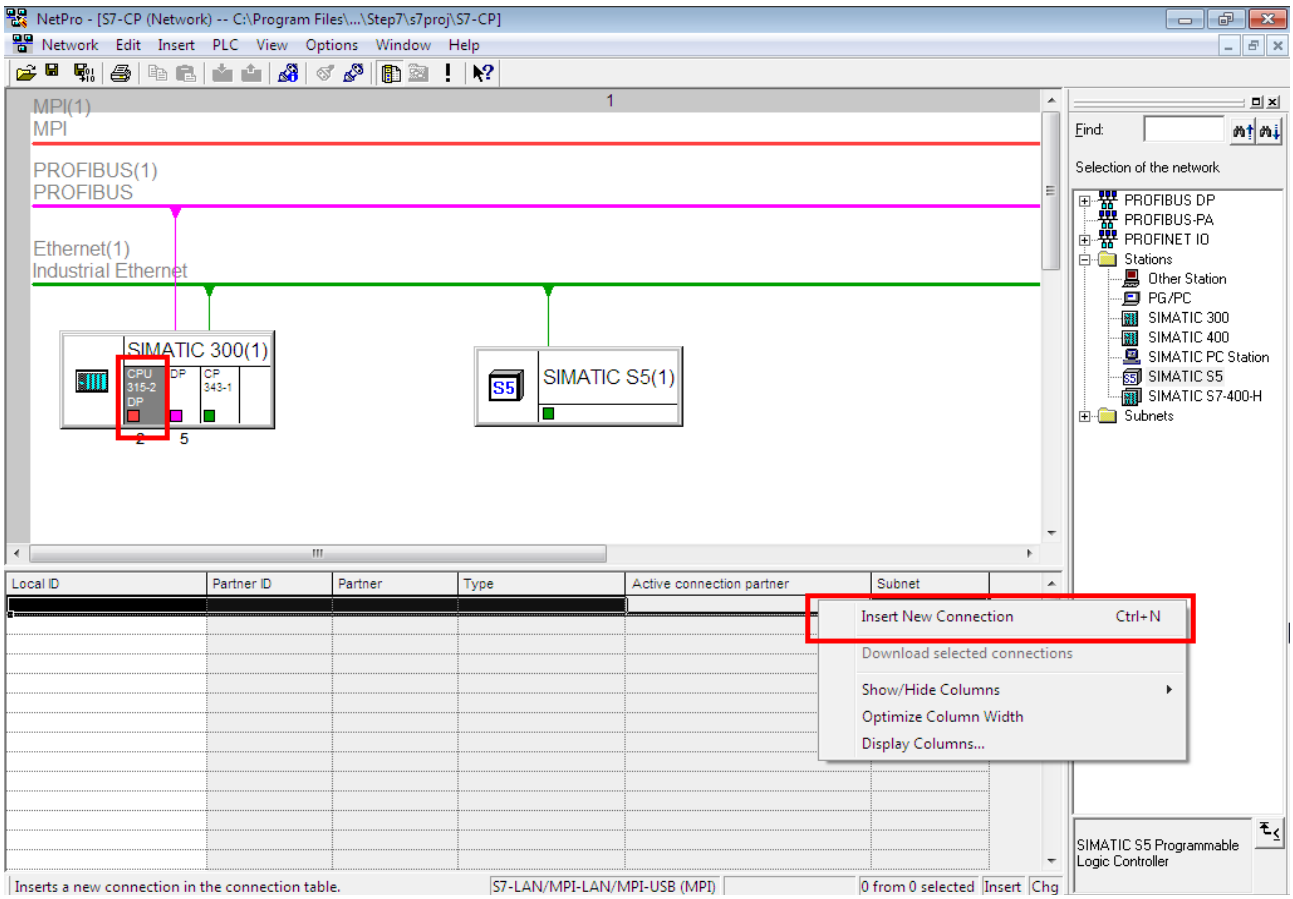




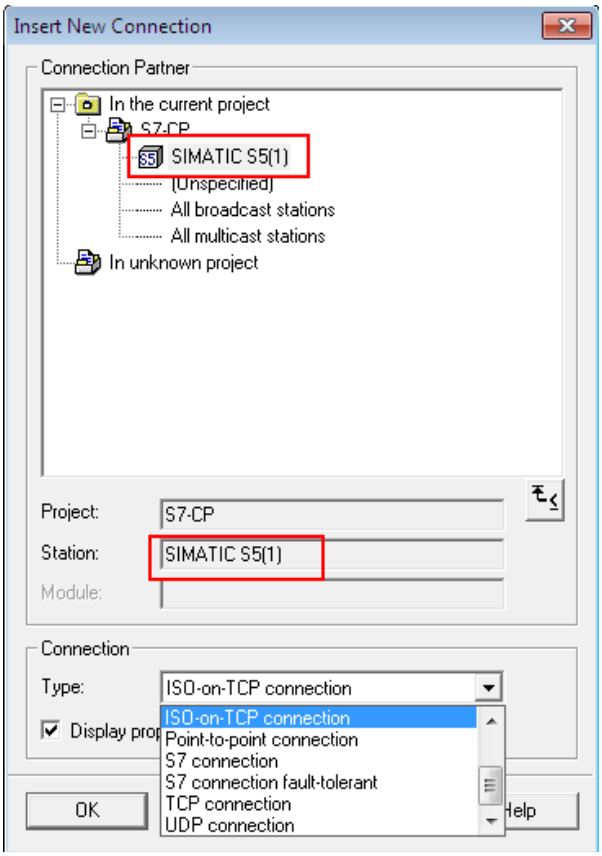
10. Type the IP of your S5 – LAN gateway in at ***"Parameters"*** and confirm everything with OK so the Object Properties are closed again.



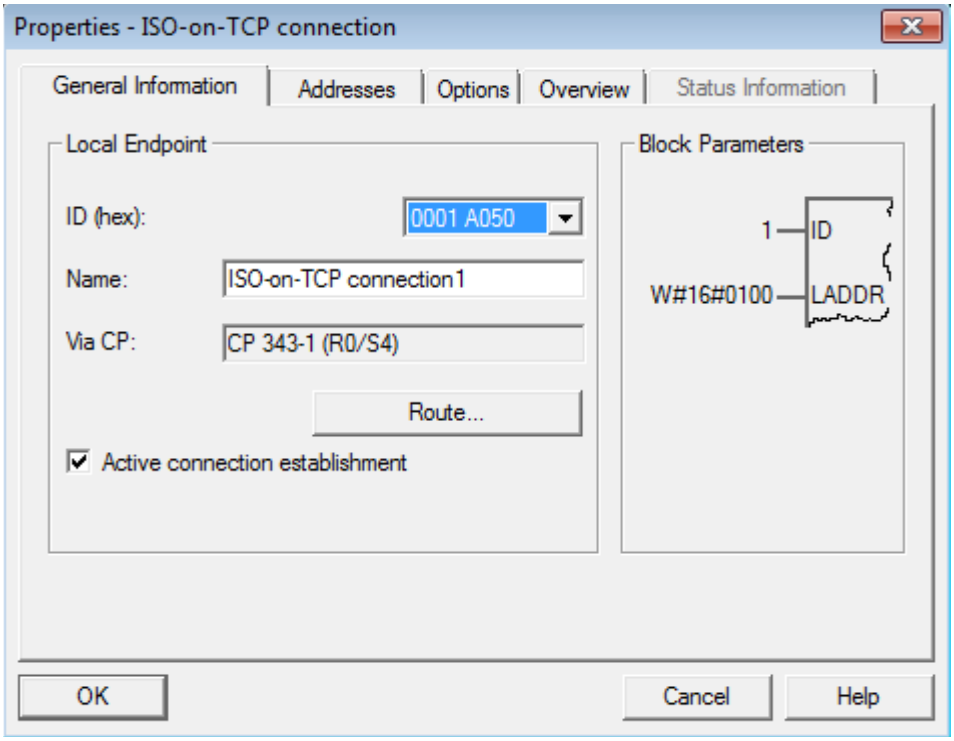
11. Mark your CPU that's projected in you S7 by clicking. You can generate a new connection now by double clicking below on your connection table.



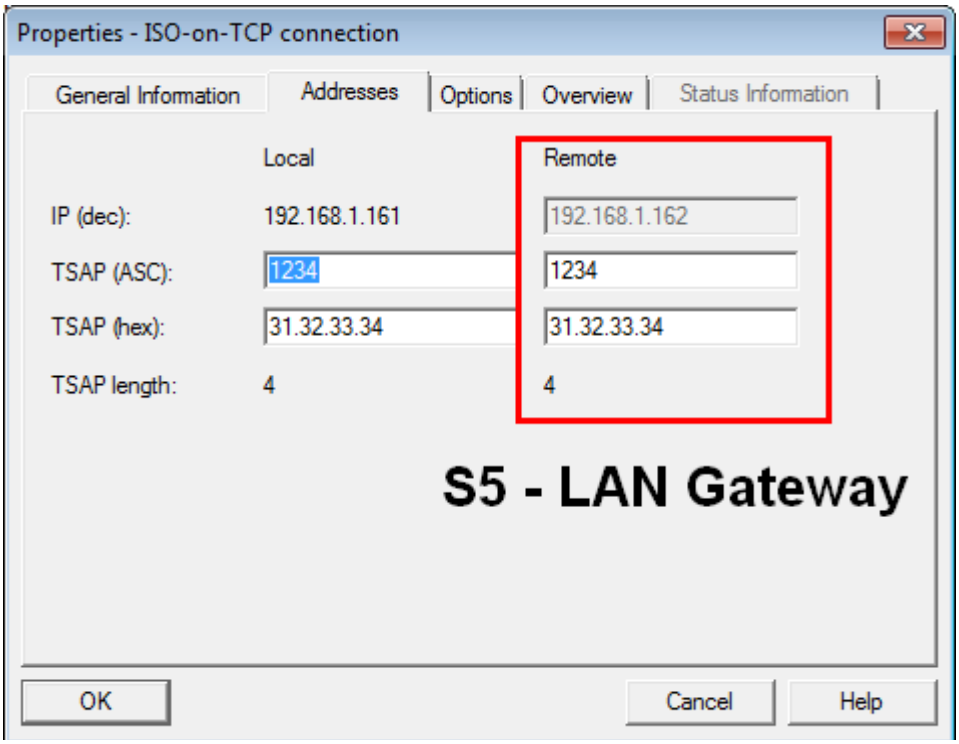
12. Select the S5 – SPS that got projected earlier and ***"ISO-on-TCP-Connection"*** as Connection Type.



13. By confirming with OK the properties of the connection will open, where you have to set up the ***"Active connection setup"*** checkbox at ***"General Information"***.



14. At ***"Addresses"*** you have to set up the same ***"TSAP"*** that you already have set up in your S5 – LAN Manager for your S5 – LAN gateway.



III. Load blocks into the SPS

1. Start your programming software and open the S5D – file ***„S7- CpanS5 – Gateway“*** .

2. Establish a connection to your S5 – Gateway module and load all blocks (OB1, FB55 and FB56) into the SPS. The blocks DB20 and DB100 are generated automatically.

3. Open the S7P – file ***”S7-CPanS5 – Gateway“***.

4. Establish a connection with your S7 – SPS and load the blocks (OB1, FB1, FC5, FC6 and DB10) into your SPS.

IV. Starting the sending cycle

S7 – control:

At the following example the DB10 is getting used as configuration – DB. M0.0 controls the sending and the receiving. If **M0.0** equals **"1“** 20 bytes of the DB10 starting with DW0 are getting sent and granting access to the receive buffer DB10, starting with DW100 and the length of 20 bytes.

```
CALL "AG_SEND"
ACT :       =     M0.0
ID :        =     1
LADDR :     =     W#16#0
SEND :      =     P#DB10.DBX0.0 BYTE 20
LEN :       =     20
DONE :      =     M15.0
ERROR :     =     M15.1
STATUS:     =     MW11
O           M     15.0
O           M     15.1
R           M     0.0
SPB         noER
L           MW    11
noER:       SET

CALL "AG_RECV"
ID : = 1
LADDR :     =     W#16#0
RECV :      =     P#DB10.DBX100.0 BYTE 20
NDR :       =     M20.0
ERROR :     =     M20.1
STATUS:     =     MW21
LEN :       =     MW23
```

```
O           M     20.0
O           M     20.1
S           M     0.0
```

S5 – control:

At the following example the DB20 is getting used as configuration – DB. M10.0 controls the sending and receiving. If **M10.0** equals **"1“**, 20 bytes of the DB100 starting with are getting sent. **M12.0** granting access to the receive buffer starting with DW100 for 20 bytes.

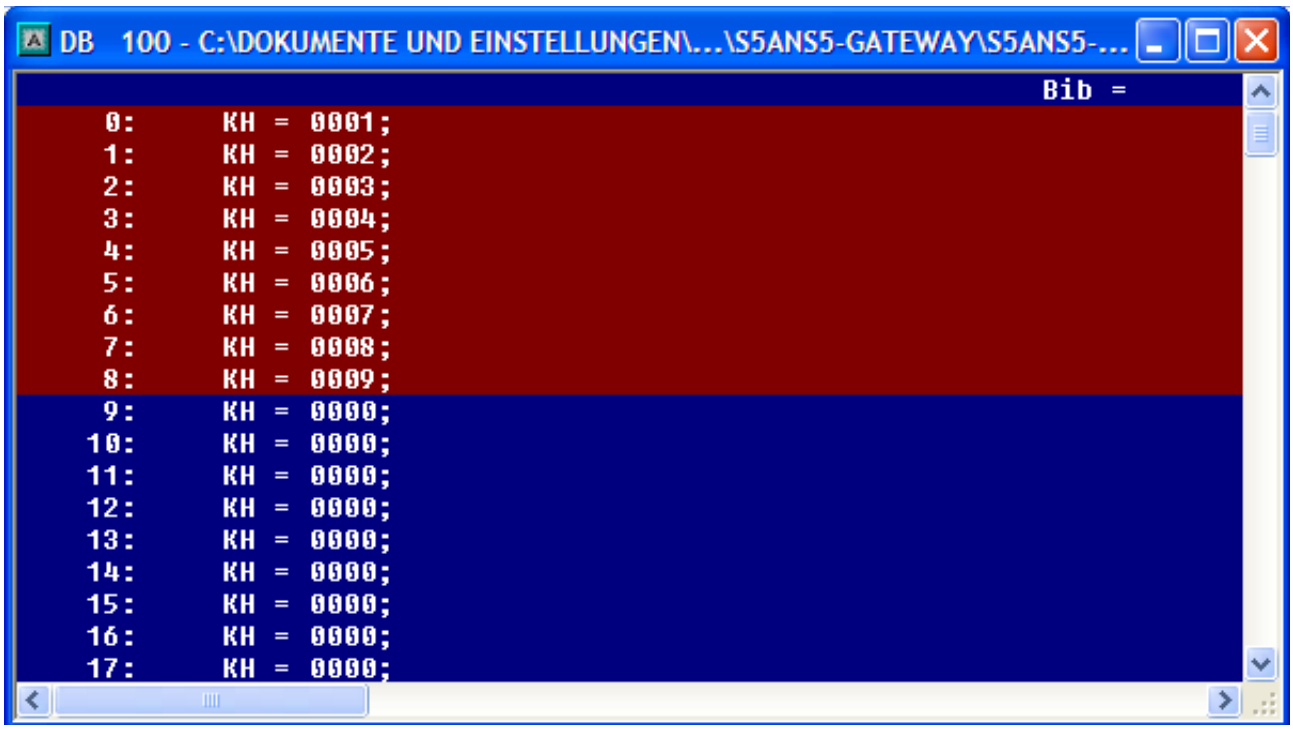
```
      :SPA   FB    55
Name  :S5L_SEND
JDBN  :      KF    +00020
JDBW  :      KF    +00000
STYP  :      KC    D
SDBN  :      KF    +00100
SBEG  :      KF    +00000
SLEN  :      KF    +00020
ACT   :      M     10.0
LEN   :      KF    +00020
DONE  :      M     11.0
ERR   :      M     11.1
STAT  :      MW    20
      :
      :SPA   FB    56
Name  :S5L_RECV
JDBN  :      KF    +00020
JDBW  :      KF    +00000
RTYP  :      KC    D
RDBN  :      KF    +00100
RBEG  :      KF    +00100
RLEN  :      KF    +00020
ACT   :      M     12.0
LEN   :      MW    24
NDR   :      M     13.0
ERR   :      M     13.1
STAT  :      MW    22
```

Set the inputs E8.0 and E9.0 to **„1“** to start the cycle.

V. Testing of the structure

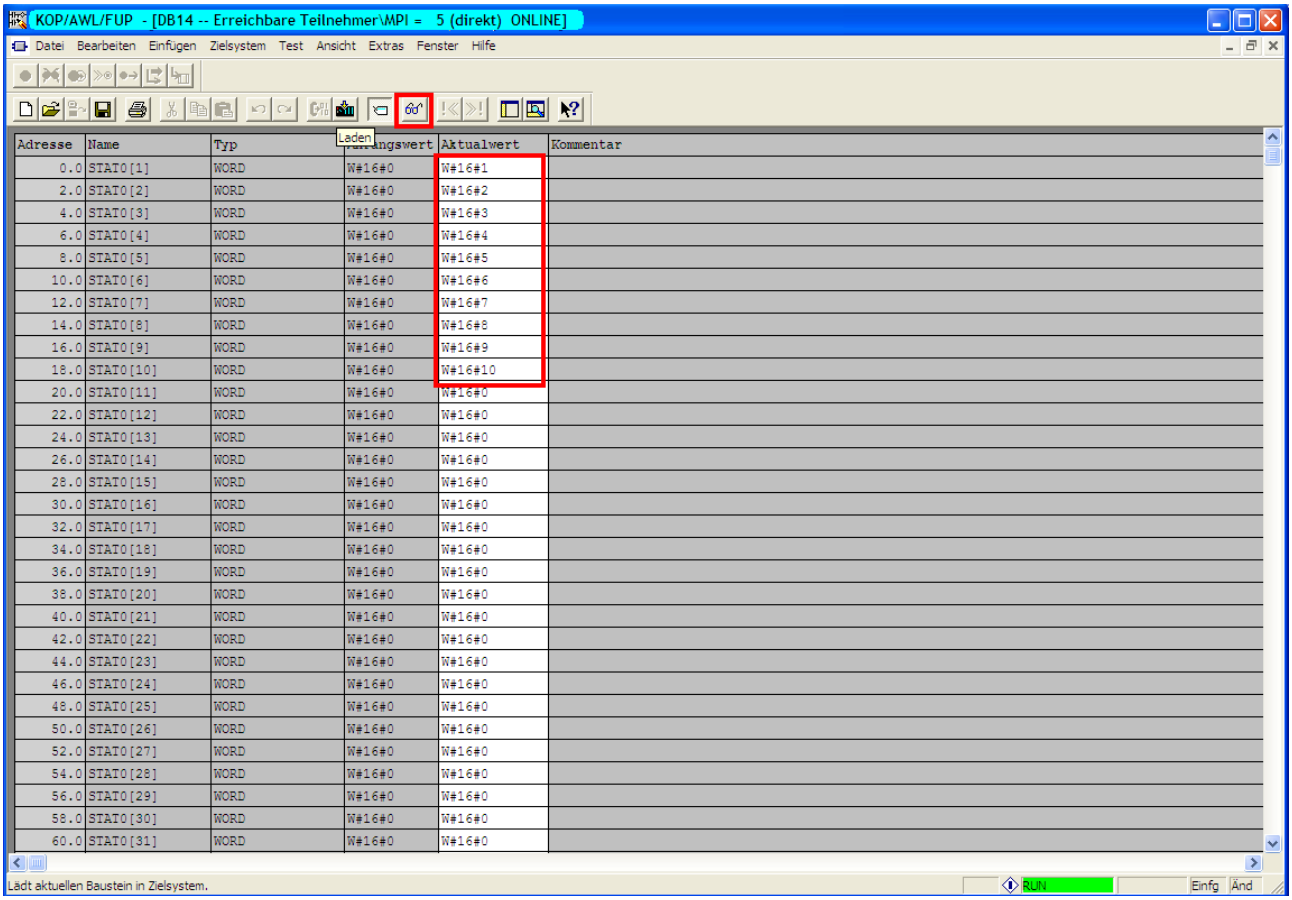
1. Open the DB100 of your S5 – SPS and type in any value for the first 20 bytes.

   g.e.: (1; 2; 3; 4; 5; 6; 7; 8; 9)

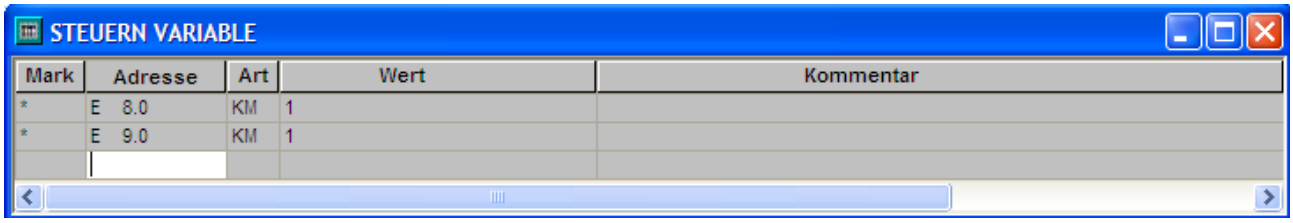


2. Open the DB10 of your S7 – SPS and type in any value for the first 20 bytes and start the cycle, so you later can see changes of the values at the communication immediately.

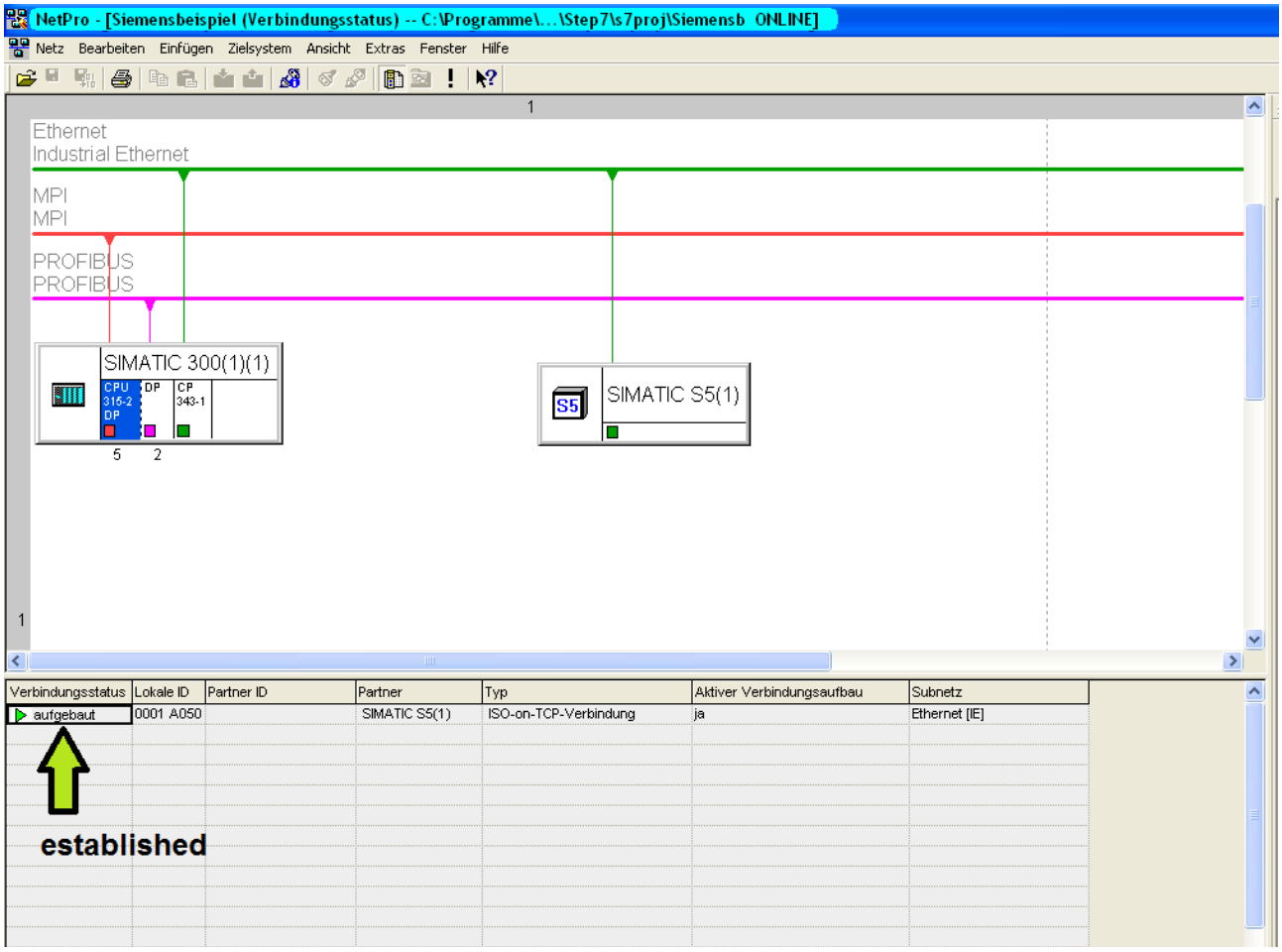
   g.e.: (1; 2; 3; 4; 5; 6; 7; 8; 9)



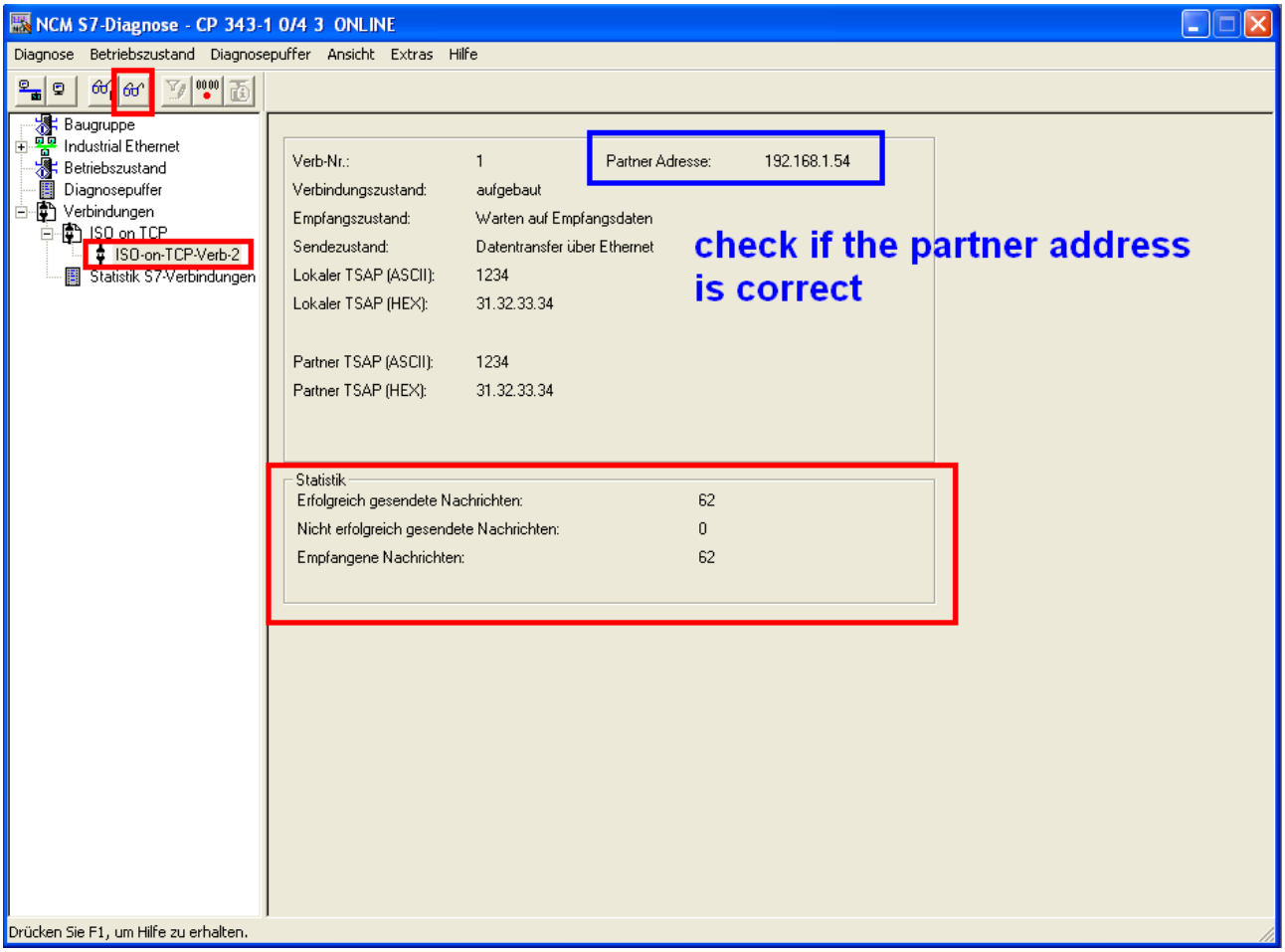
3. Save your blocks and set the values of your inputs E8.0 and E9.0 in your S5 -SPS to **„1“** and start the cycle.



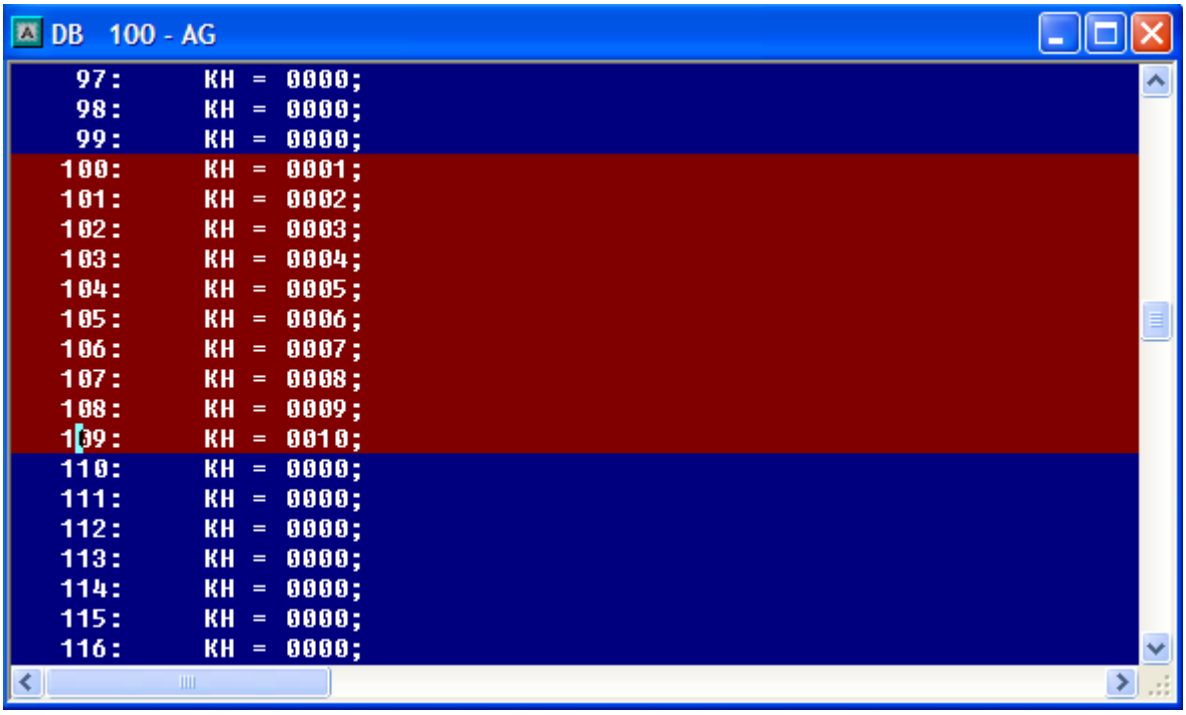
4. Open your ***“NetPro“*** window again and again mark your CPU. Activate the ***"connection status“.*** The connection status of your connection should be established below now.



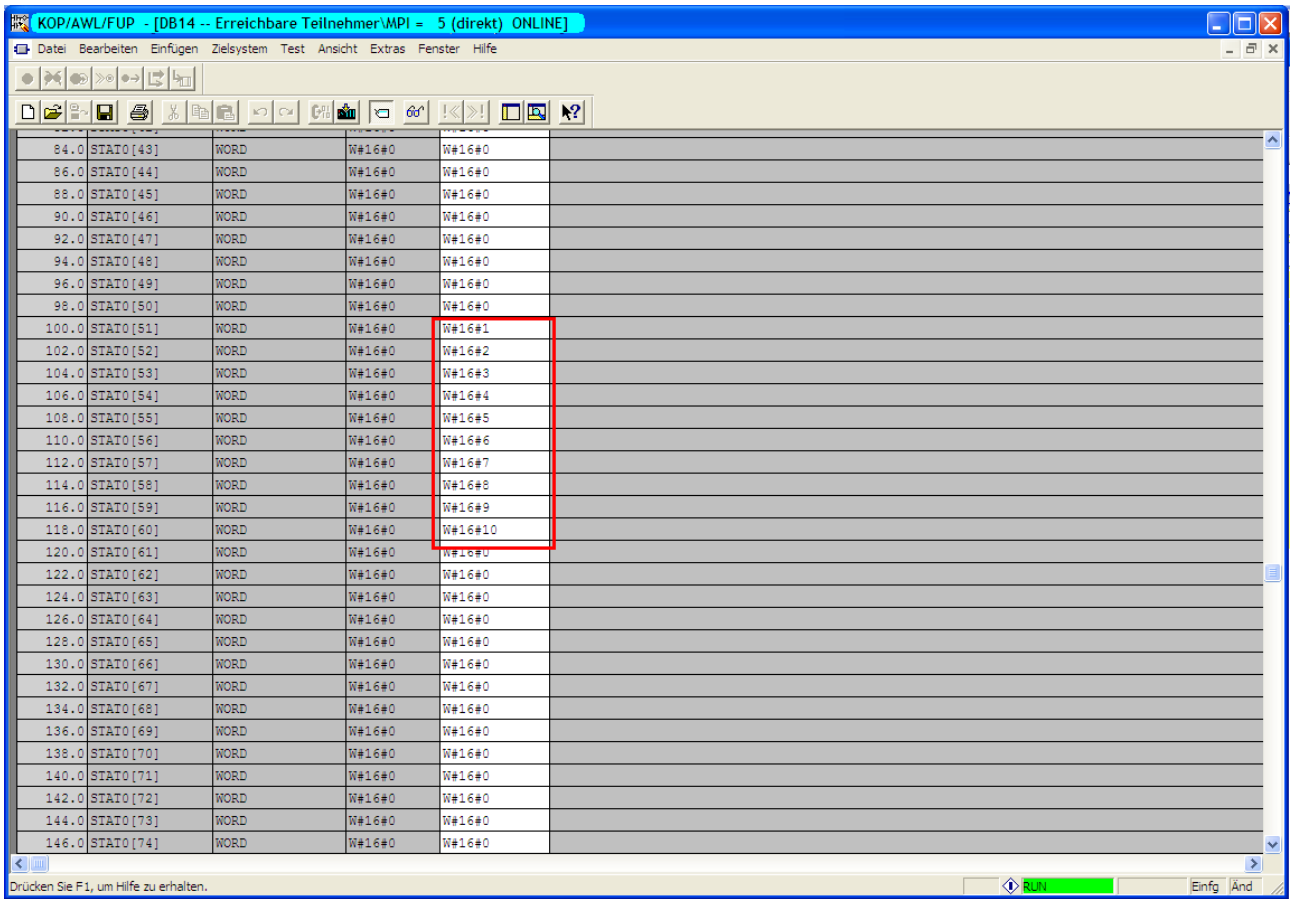
5. Open like mentioned before the ***"Diagnose window"*** at the object properties of the "***CP".*** Start the ***"Cyclical Actualization"*** and watch at your ***"ISO-on-TCP-Connection"*** the statistic where the sent and received messages are getting count. That helps to check, if your connection is established and working.



6. Open the DB100 of your S5 – SPS and the DB10 of your S7 – SPS and check, if the values of the 20 bytes that you have configured for each SPS in the DB100 and DB10 starting with DW0 match with the ones starting with DW100. If that's the case the communication between S5 and S7 have been processed with success.



The marked bytes should be the same, like the ones that you have configured in the DB10 of the S7 – SPS starting with DW0.



The bytes starting with DW100 should be the same, like the ones that you have configured in the DB100 of the S5 -SPS starting with DW0.