Application Note

Configuration of S7-300 with CPU315-2 DP

for PROFIBUS-DP Slave

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Index	Date	Chapter	Revision
1	06.01.01	all	Created

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1 Introduction

This manual describes the configuration of an S7-300 PLC with CPU 315-2 DP as a PROFIBUS-DP Slave to connect to a Hilscher PROFIBUS-DP Master. The example describes the configuration for two bytes input and two bytes output.

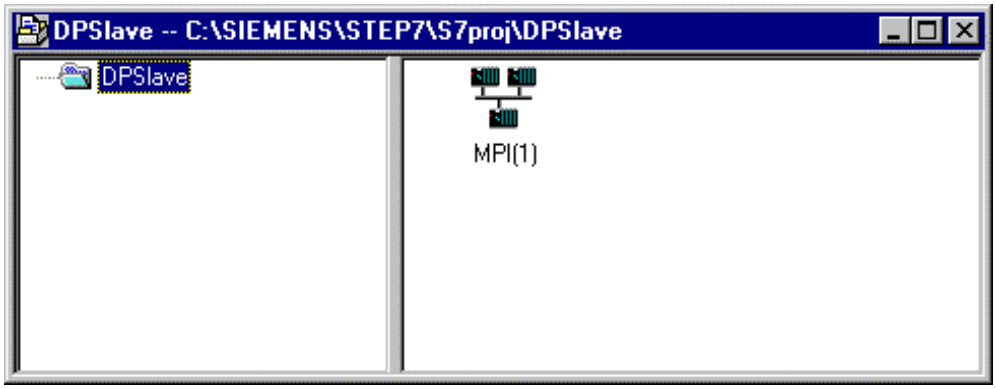
2 Hints and Validity

- This manual describes the S7-300 as a PROFIBUS-DP Slave
- STEP7 Version 5.0 SP 3 under Windows 95 (already installed)
- This manual describes the configuration for a data exchange only. The PLC programer is responsible for the error handling. This is not part of this manual.

3 The PLC S7-300

3.1 Project

The first step is to create a project. To create a project selct menu **File > New**. Enter the name for the project, e.g. DPSlave.



3.2 Stations

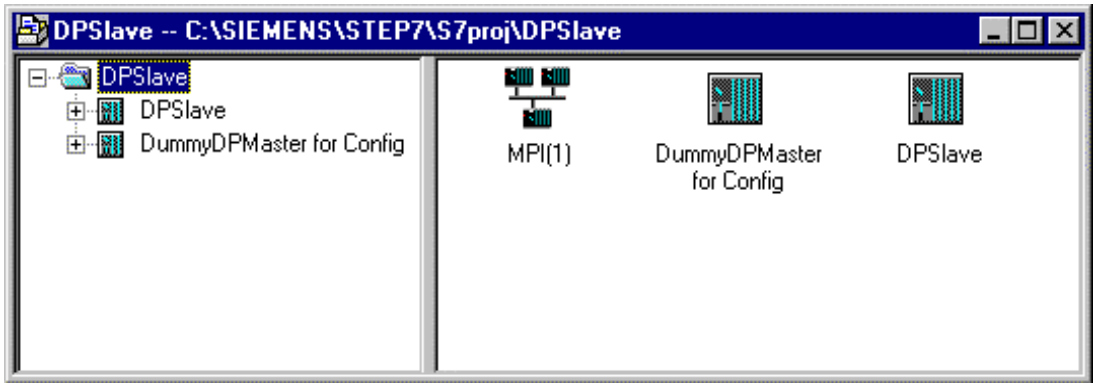
This manual describes the configuration for an S7-300 as a PROFIBUS-DP Slave and a Hilscher PROFIBUS-DP Master.

3.2.1 S7-300 Station 'DummyDPMaster for Config'

Insert a S7-300 station, select the menu **Insert > Station > SIMATIC 300 Station** and name it **DummyDPMaster for Config**. This station is only a 'dummy' station, but necessary inside the STEP7 confguration tool.

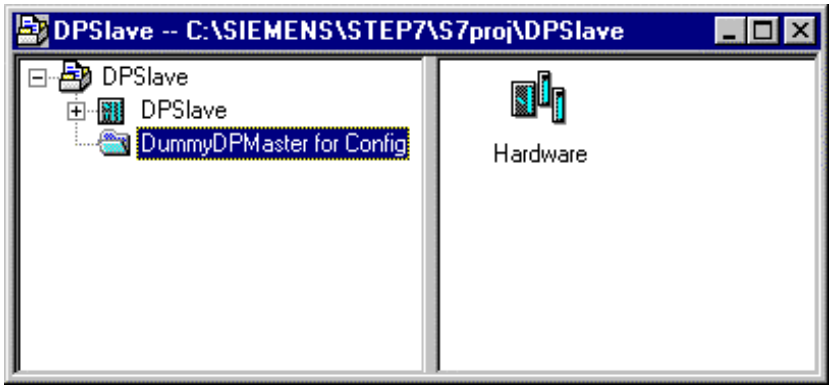
3.2.2 S7-300 Station 'DPSlave'

Insert another S7-300 station, select the menu **Insert > Station > SIMATIC 300 Station** and name it **DPSlave**. This station is the PROFIBUS-DP Slave.



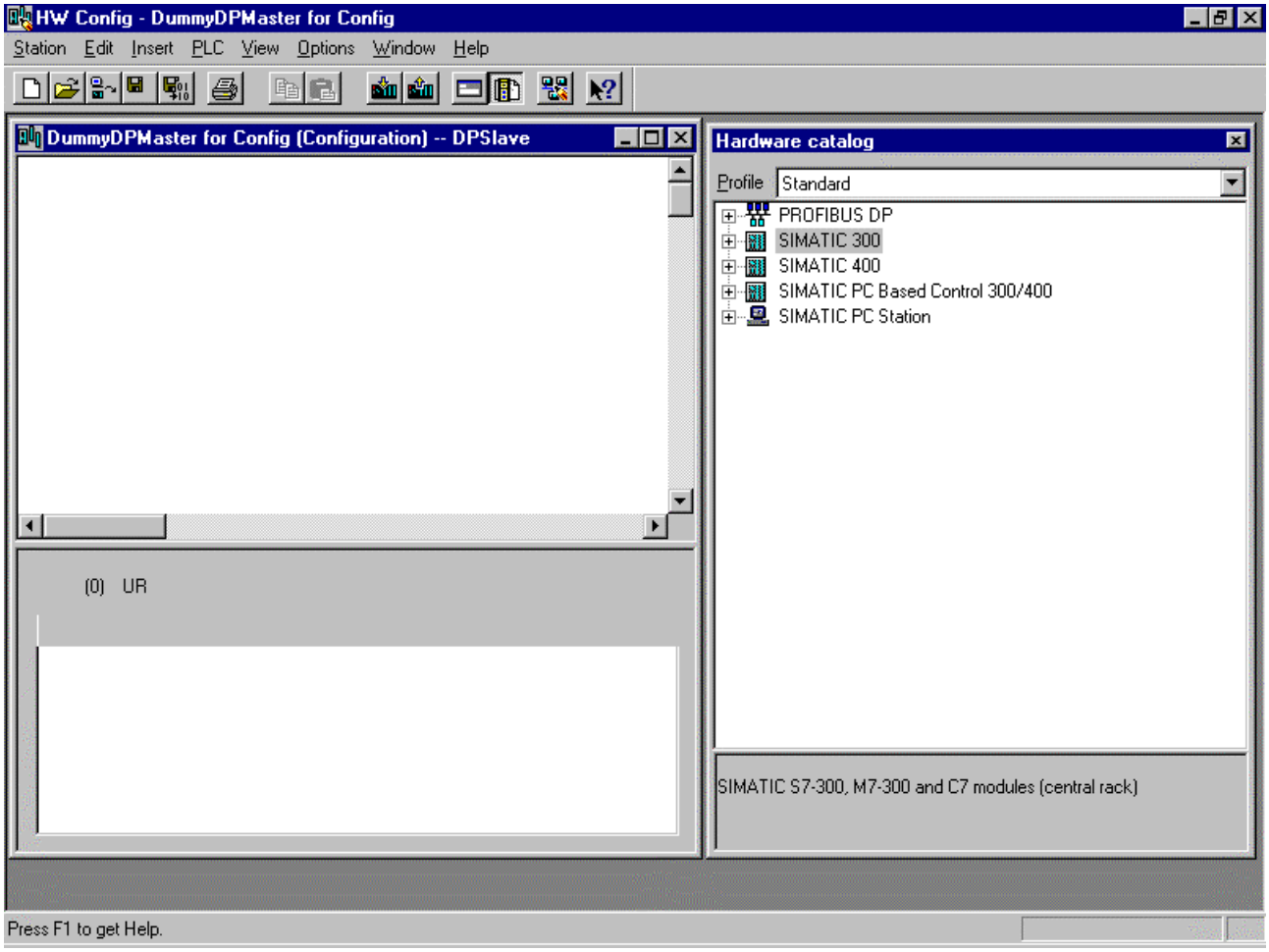
3.3 Hardware Configuration S7 300 Station (DummyDPMaster for Config)

Open the software for hardware configuration of the S7 station. Start with the 'DummyDPMaster for Config'.



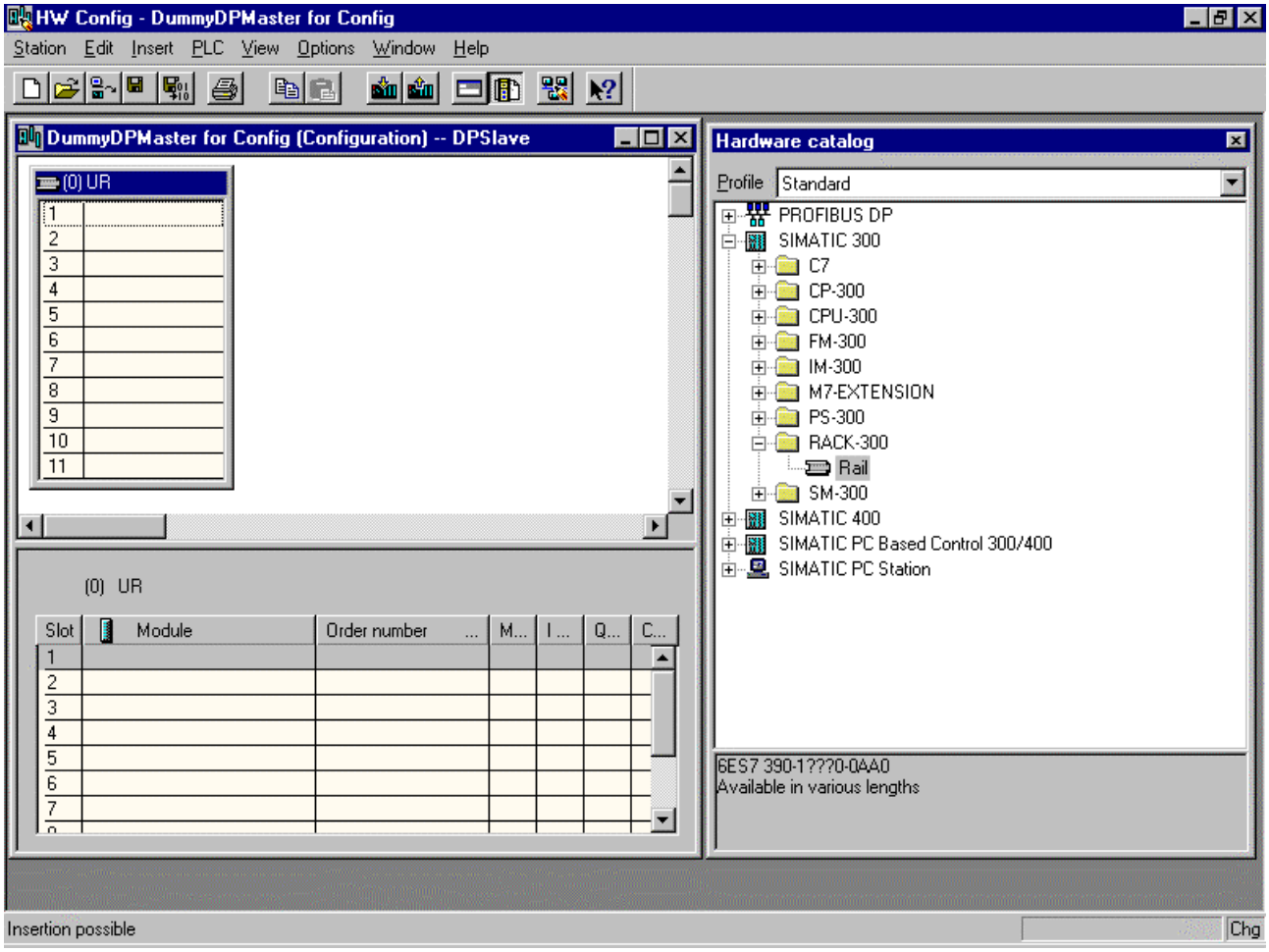
Select the icon Hardware. Then select the menu **Edit > Open Object** or double click the Hardware icon to start the Hardware Configurator.

Select the menu **View > Catalog**.

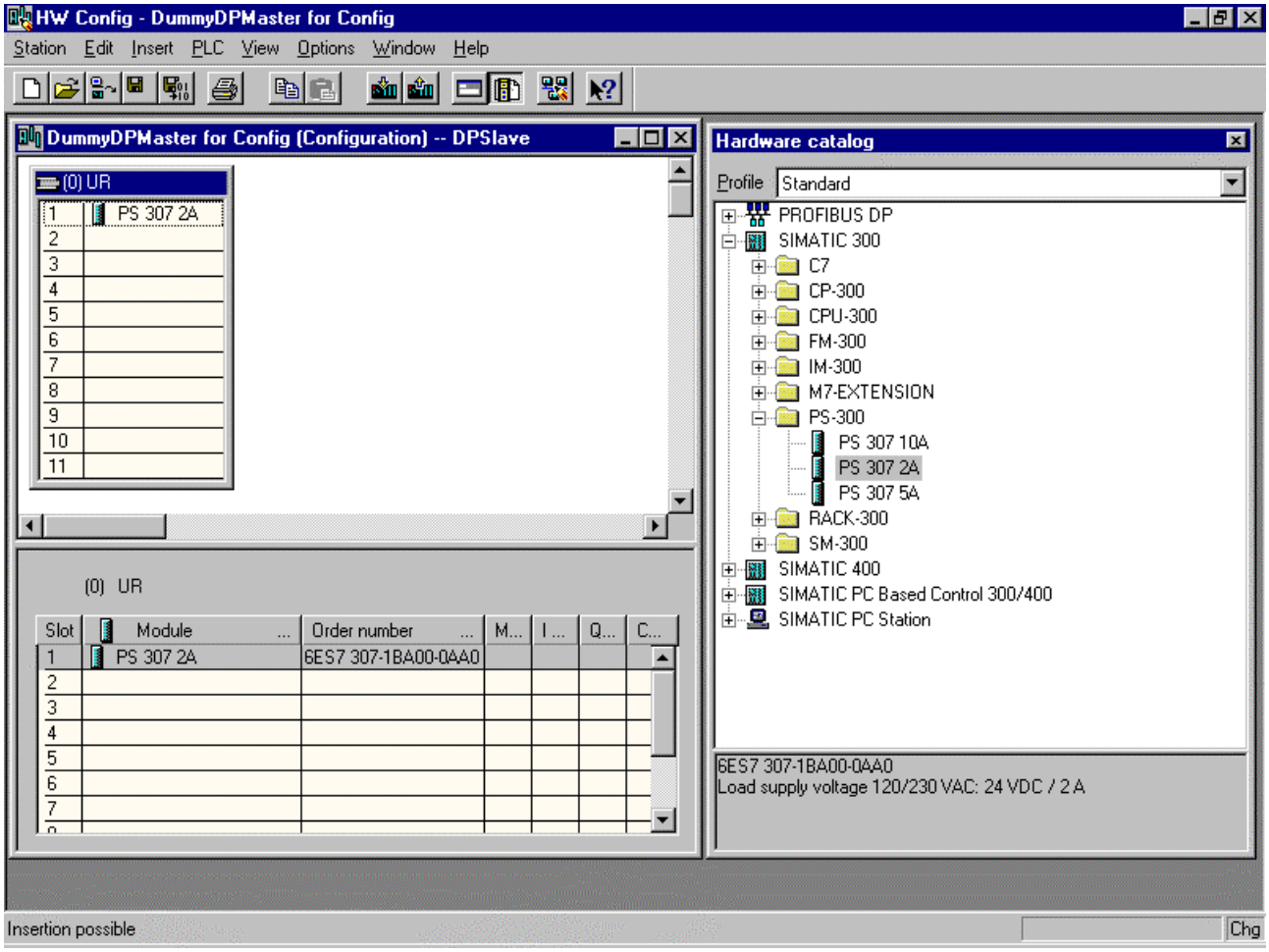


Select now step by step the hardware components of the S7 300 station.

3.3.1 The Rail

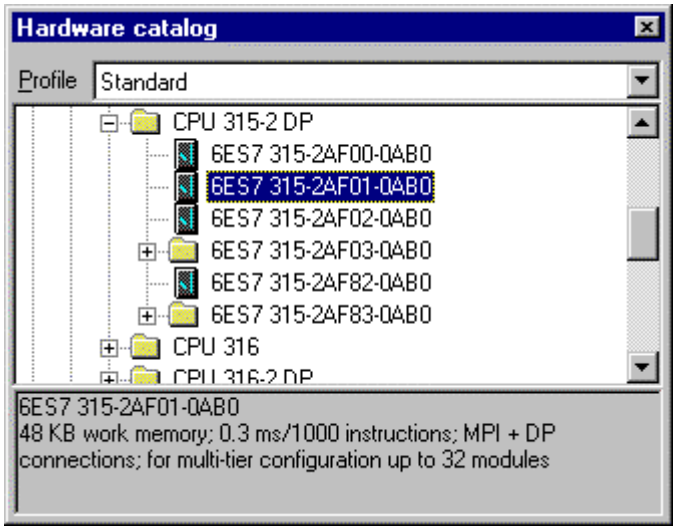


3.3.2 The Power Supply

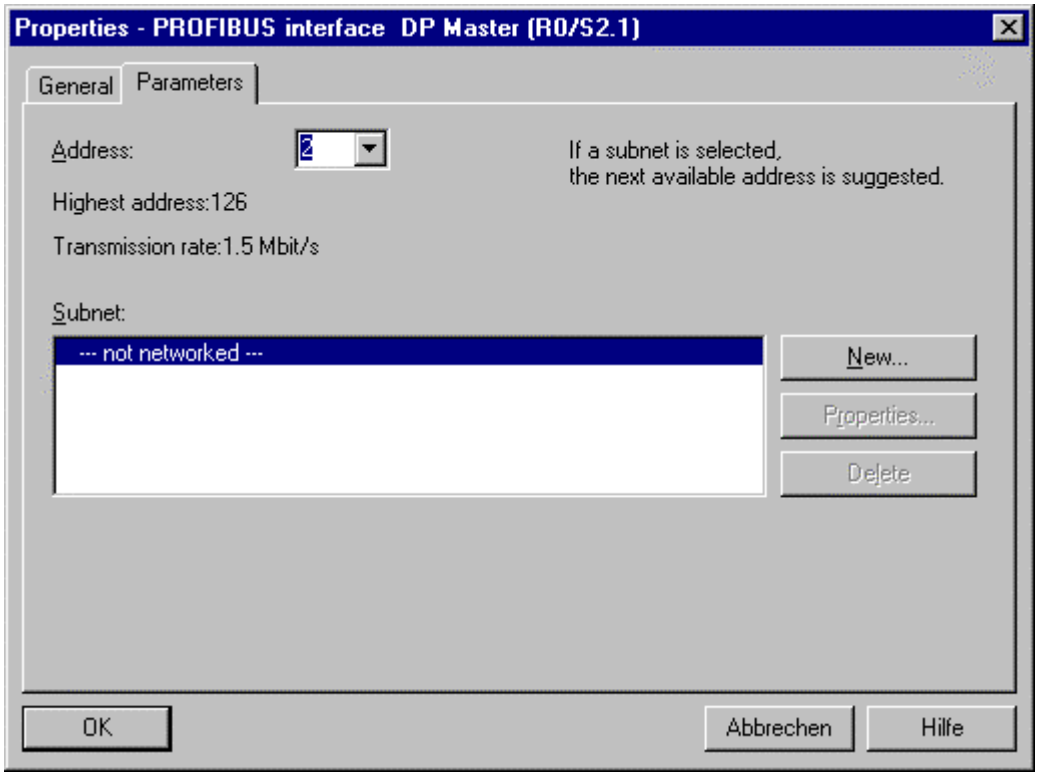


3.3.3 The CPU (DummyDPMaster for Config)

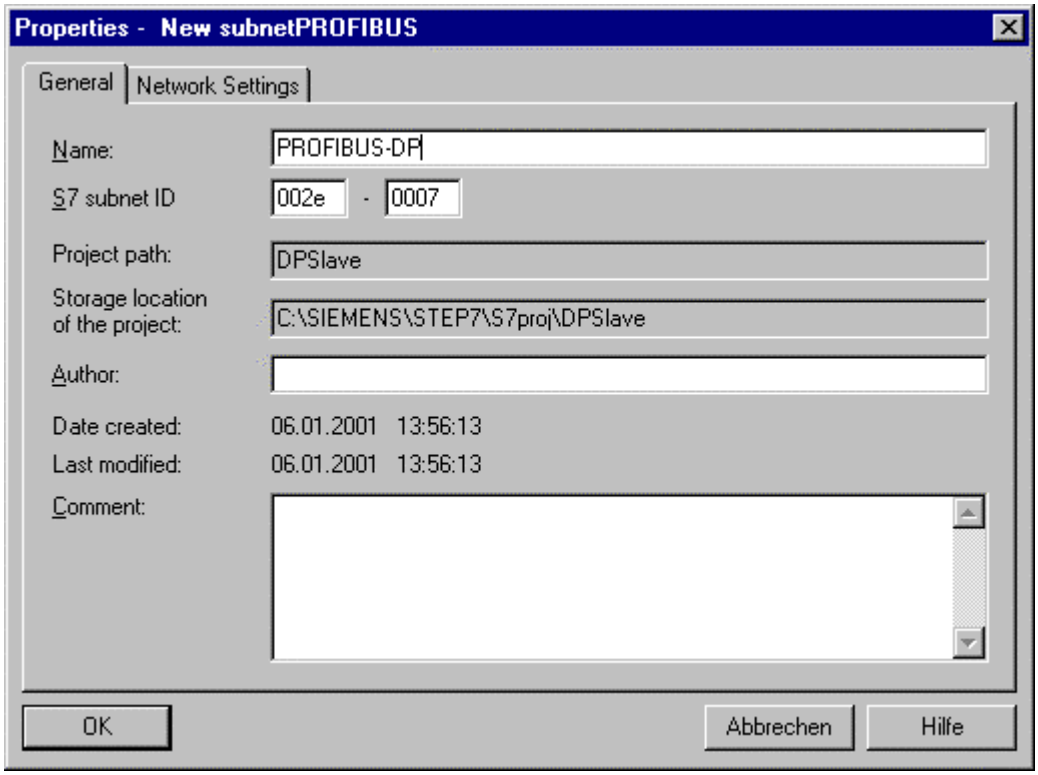
Select for example CPU 315-2DP.



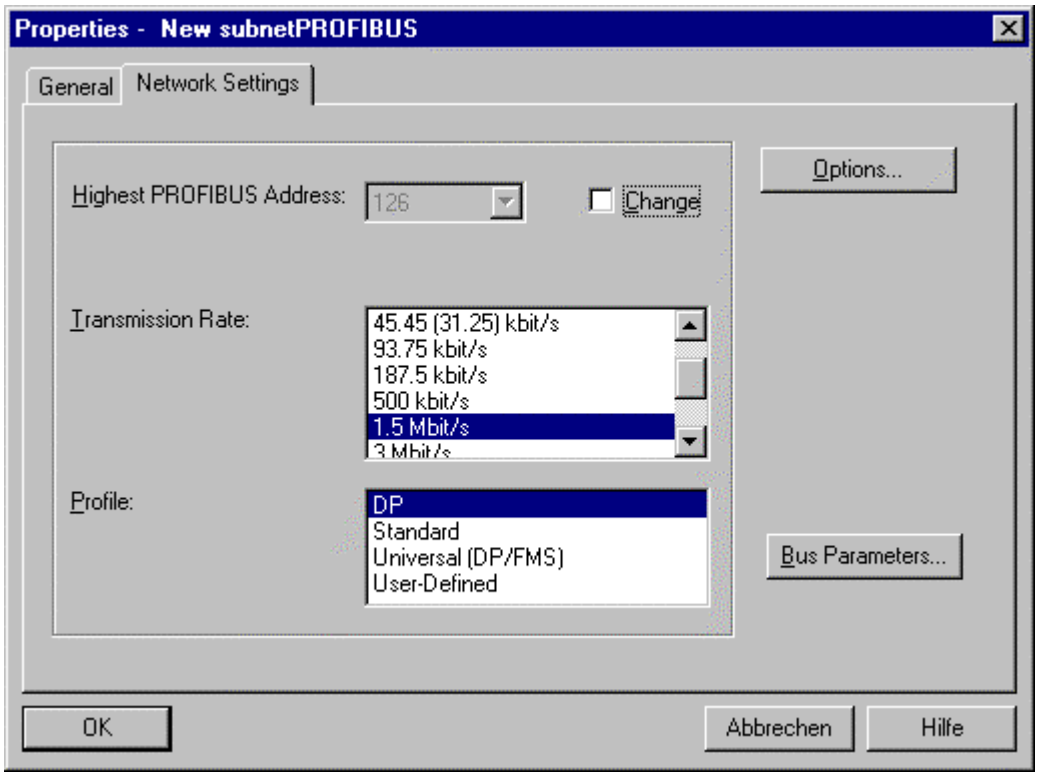
Because this CPU type is usable for PROFIBUS-DP the following window appears.



Press **New**.



Set the **Name**, e.g. PROFIBUS-DP, then select **Network Settings** to open the following window.

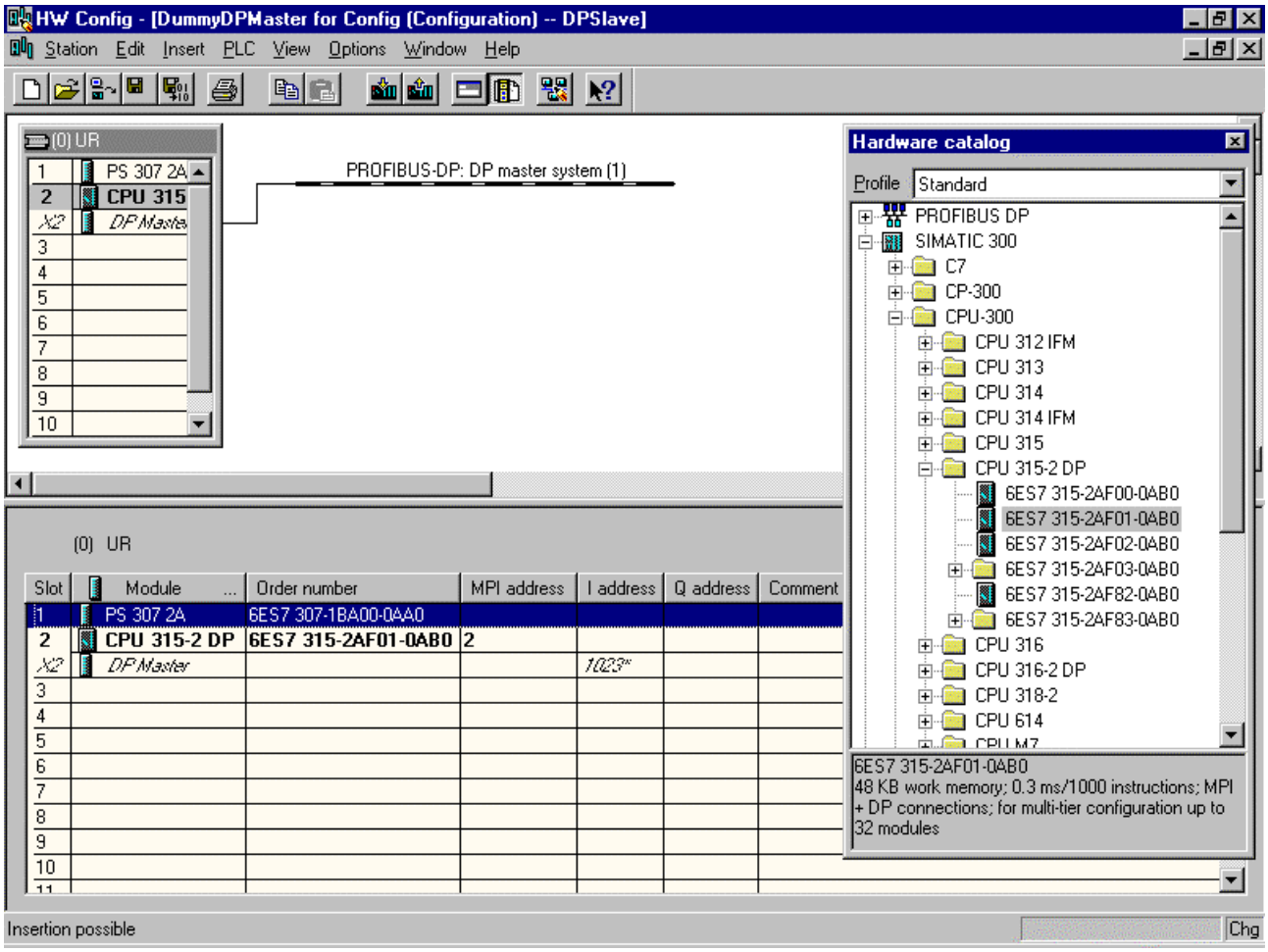


Select the **Transmission Rate**, e.g. 1.5 Mbit/s.

Select the **Profile**, e.g. the profile DP.

Close the window by pressing **OK**.

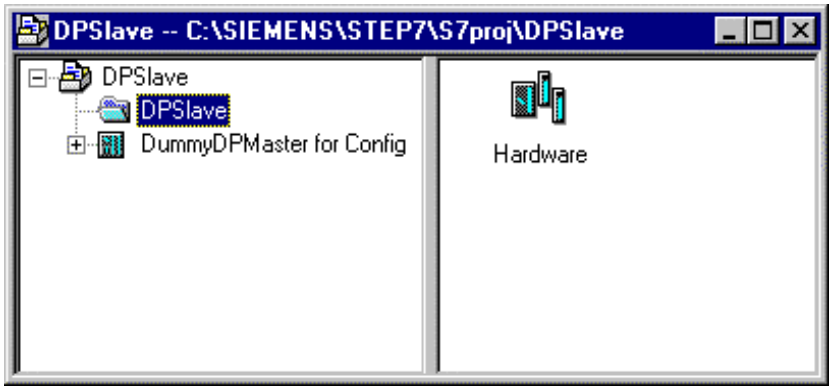
Press several times **OK** to reach the following window.



Save the current settings by selecting the menu **Station > Save**.

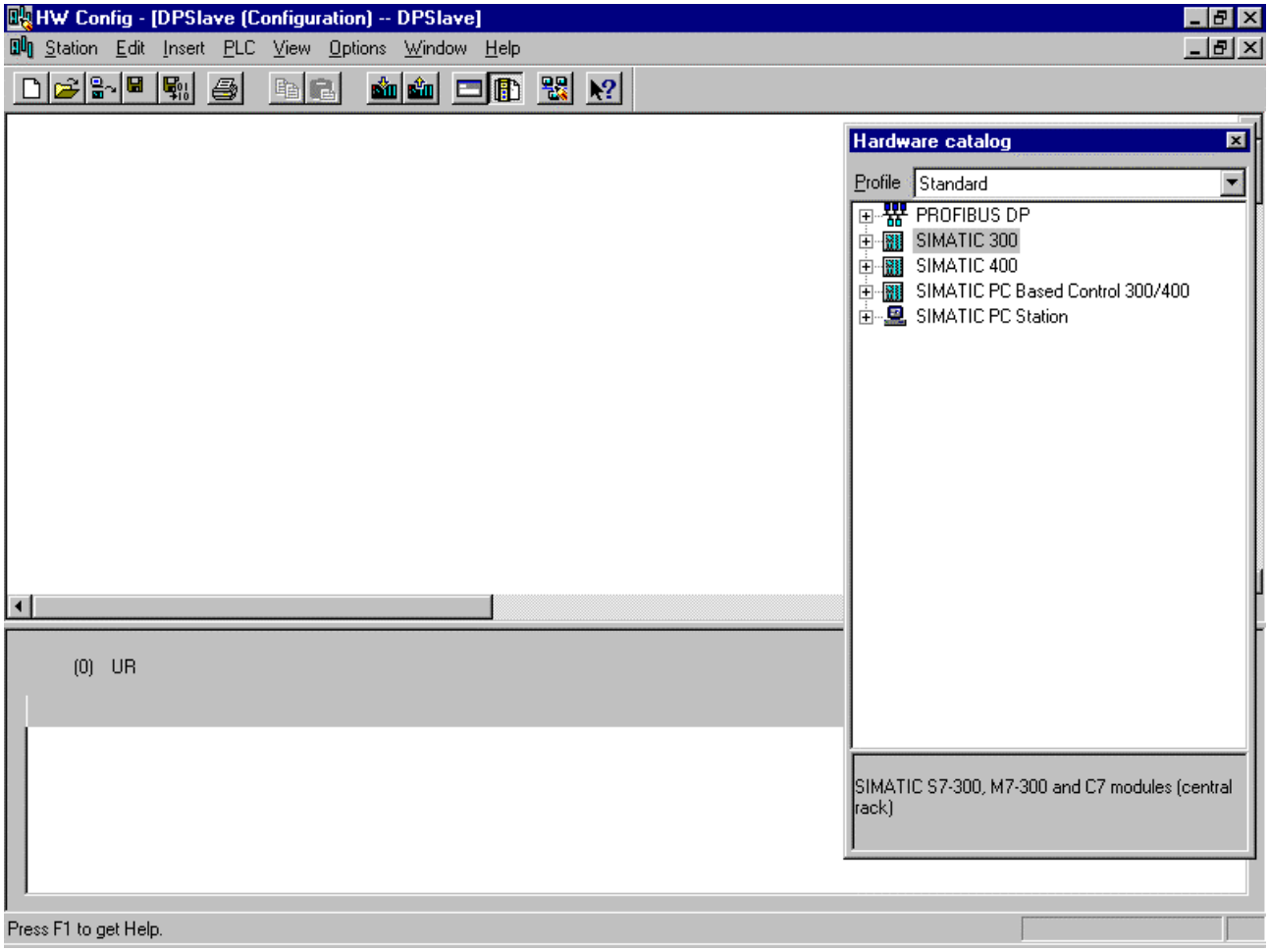
3.4 Hardware Configuration S7 300 Station (DPSlave)

Open the software for hardware configuration of the S7 station. Start with the 'DPSlave'.



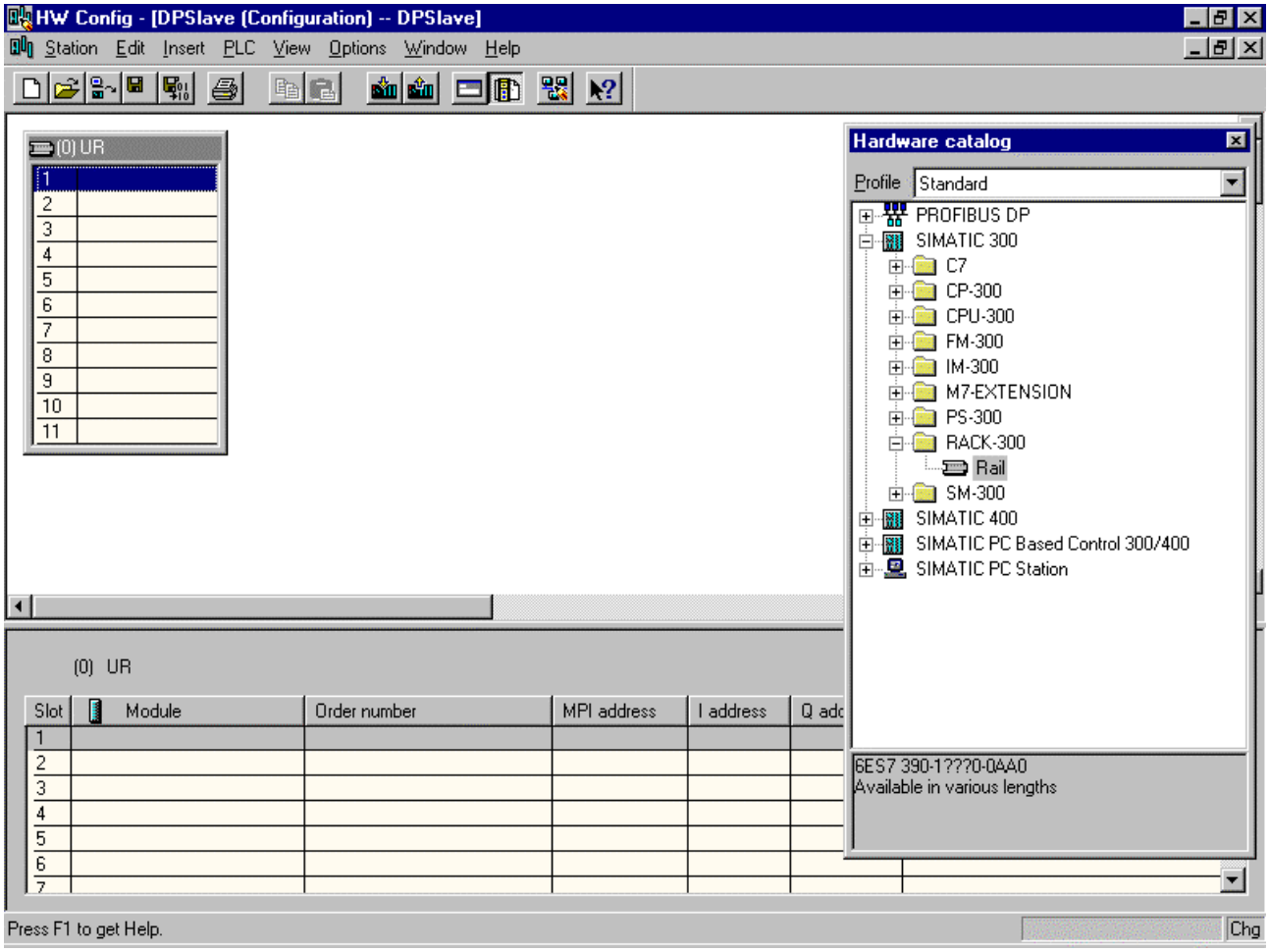
Select the icon Hardware. Then select the menu **Edit > Open Object** or double click the Hardware icon to start the Hardware Configurator.

Select the menu **View > Catalog**.

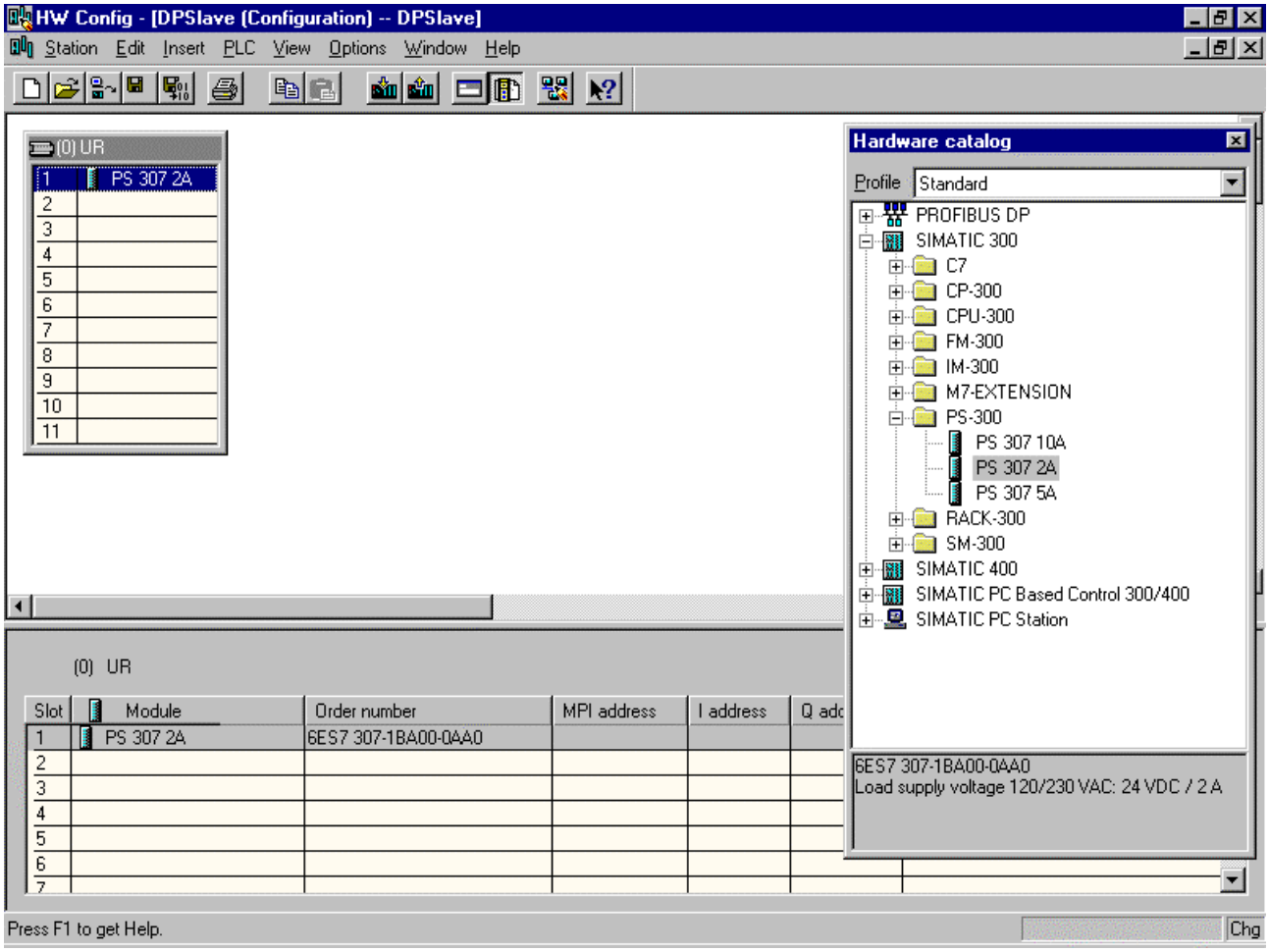


Select now step by step the hardware components of the S7 300 station.

3.4.1 The Rail

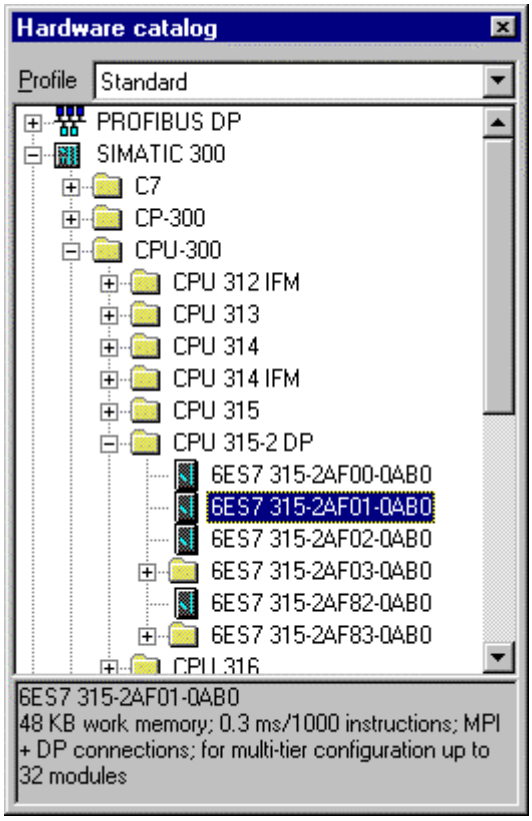

HW Config - [DPSlave (Configuration) -- DPSlave]
Station Edit Insert PLC View Options Window Help
(0) UR
1
2
3
4
5
6
7
8
9
10
11
Hardware catalog
Profile Standard
PROFIBUS DP
SIMATIC 300
C7
CP-300
CPU-300
FM-300
IM-300
M7-EXTENSION
PS-300
RACK-300
Rail
SM-300
SIMATIC 400
SIMATIC PC Based Control 300/400
SIMATIC PC Station
6ES7 390-1???0-0AA0
Available in various lengths
(0) UR
Slot
Module
Order number
MPI address
I address
Q adc
Press F1 to get Help.
Chg

3.4.2 The Power Supply

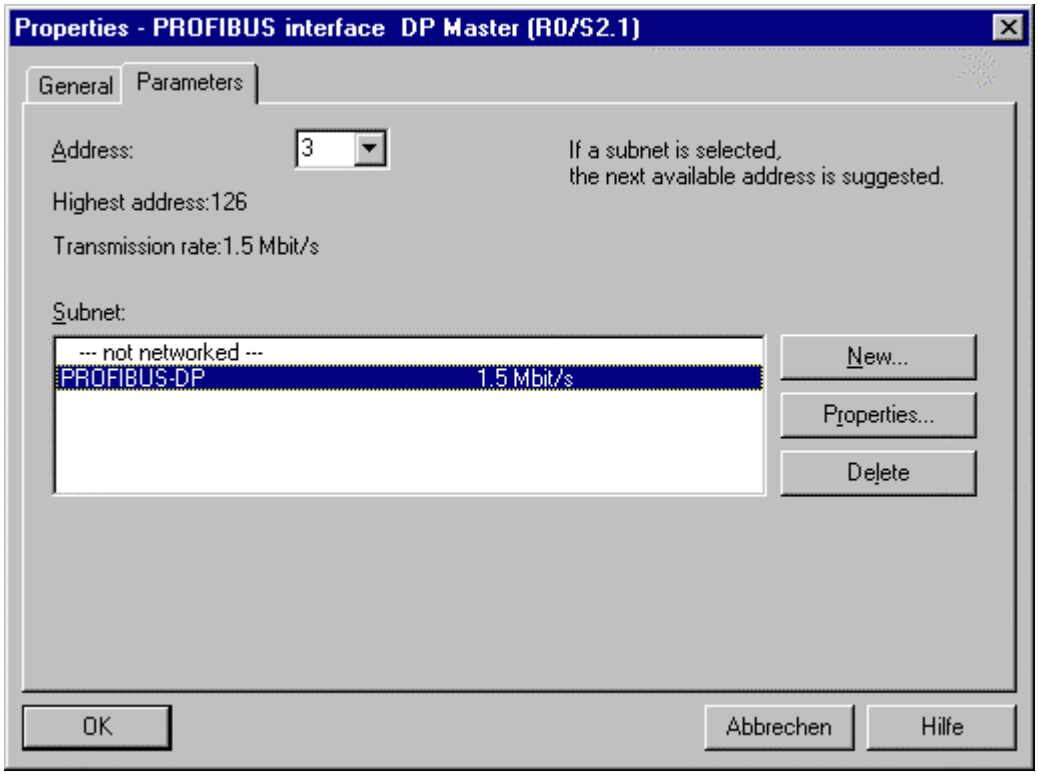


3.4.3 The CPU (DPSlave)

Select for example CPU 315-2DP.

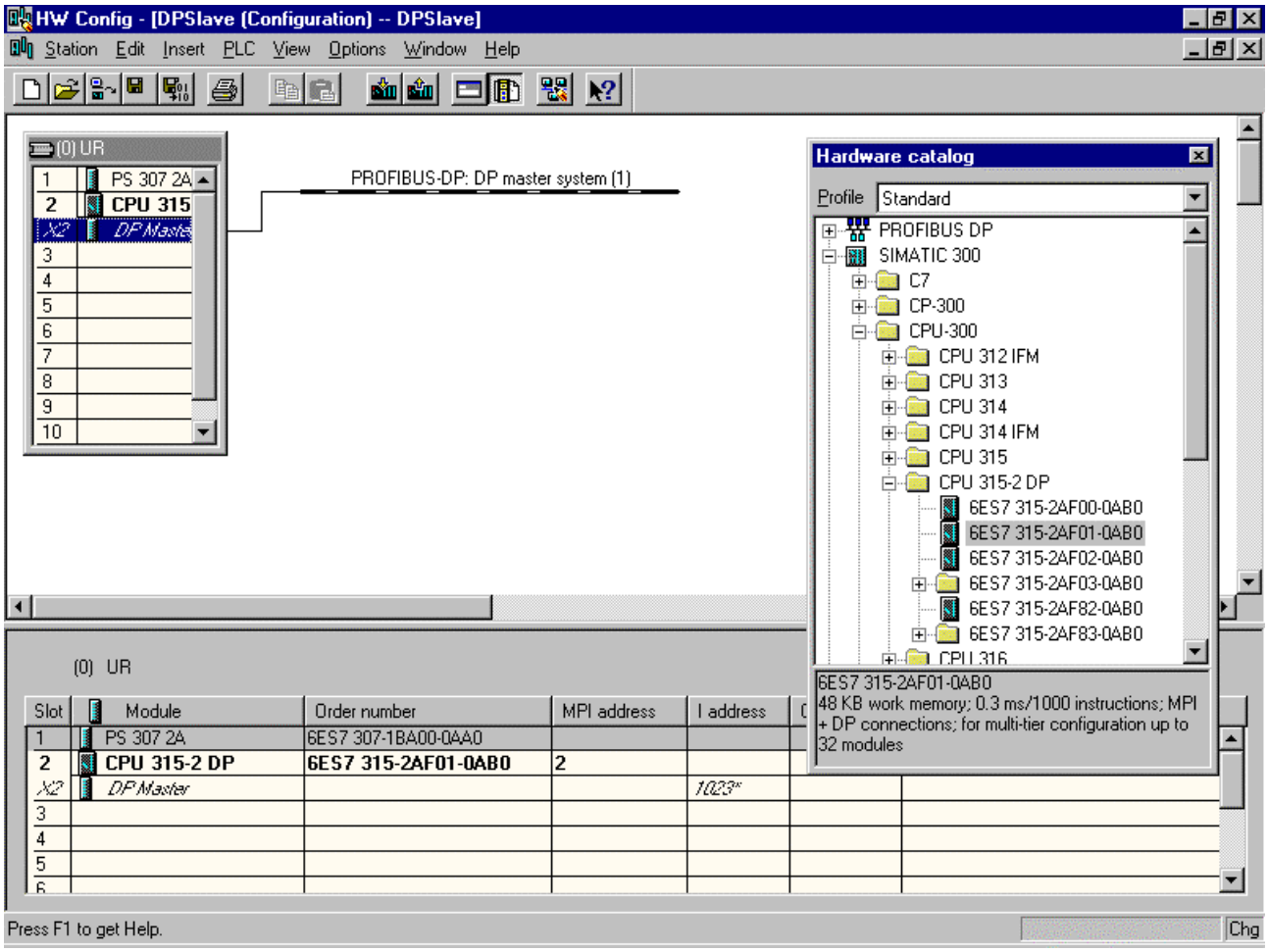


Because this CPU type is usable for PROFIBUS-DP the following window appears.

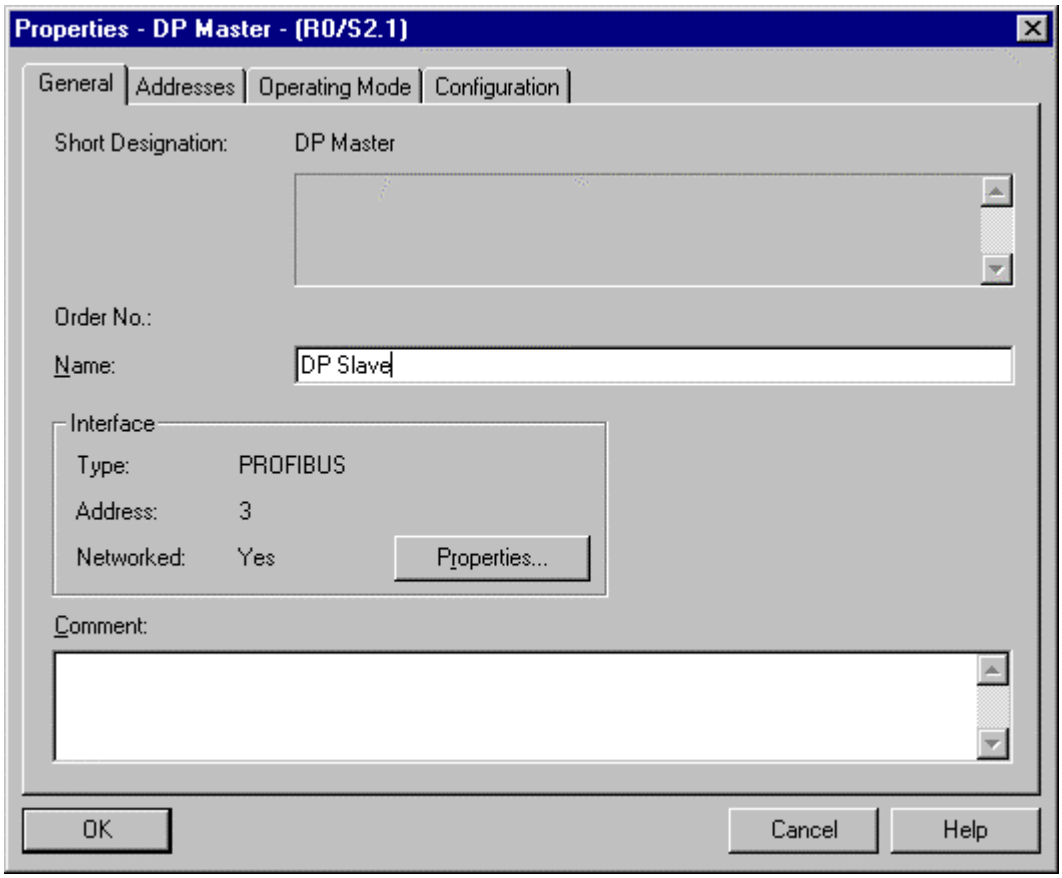


Set the Station **Address**, e.g. 3. Select the **Subnet** PROFIBUS-DP that was created before.

Press several times **OK** to reach the following window.

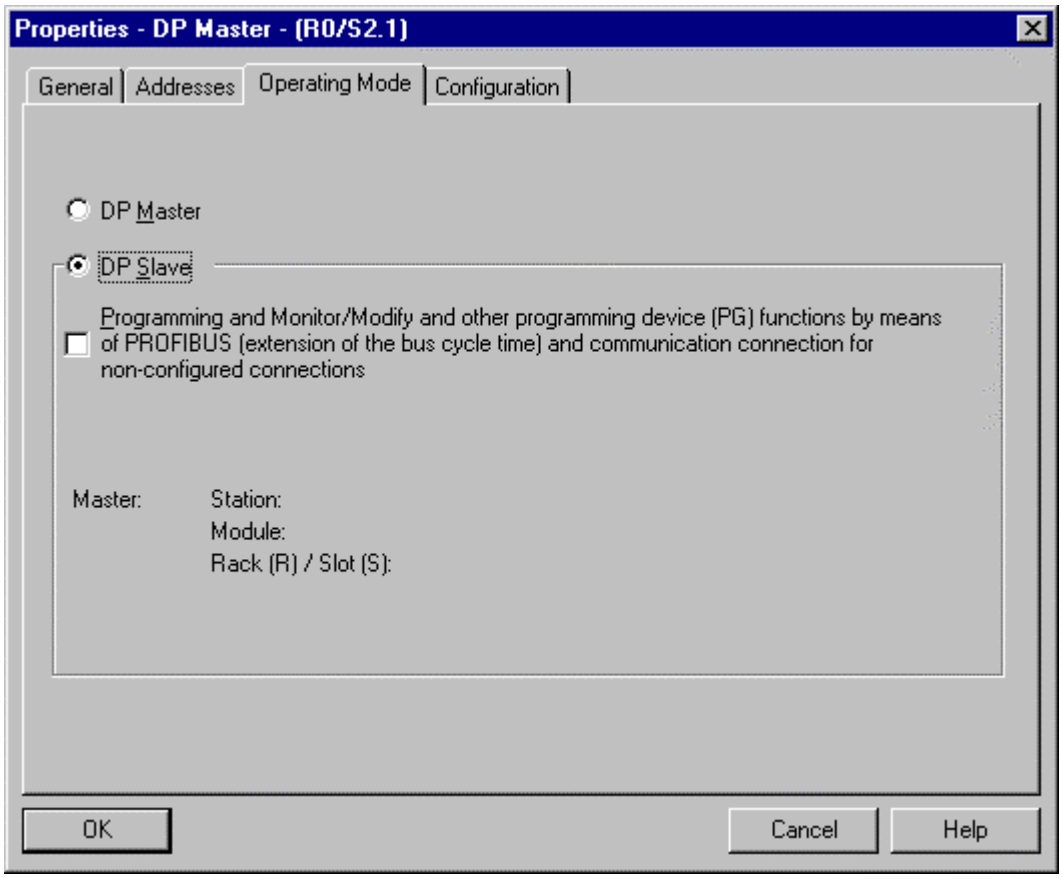


Then select **X2 DP Master** and then select the menu **Edit > Open Object** or double click the icon **X2 DP Master** to open the following window.



Set the **Name** to DP Slave.

Select **Operating Mode** to open the following window.

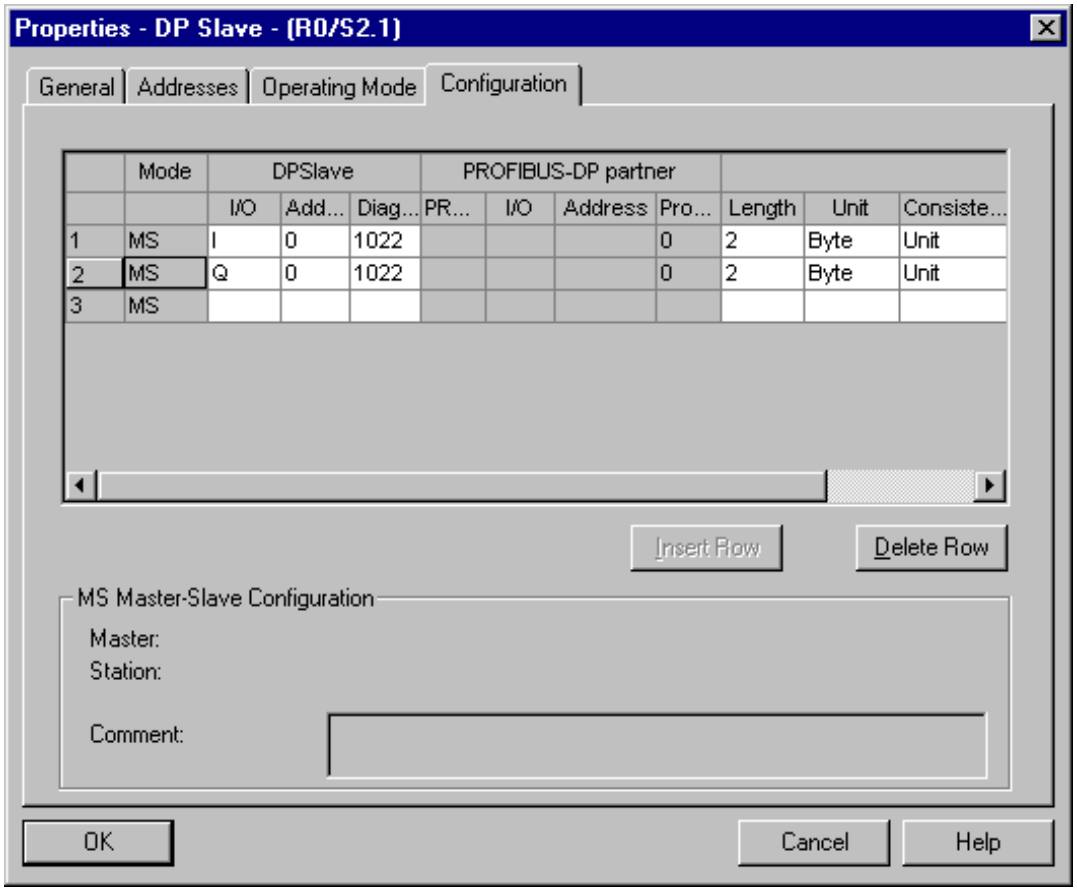


Set the operating mode to **DP Slave**.

Select **Configuration**.

Set as Module 1: Input 2 bytes (unit).

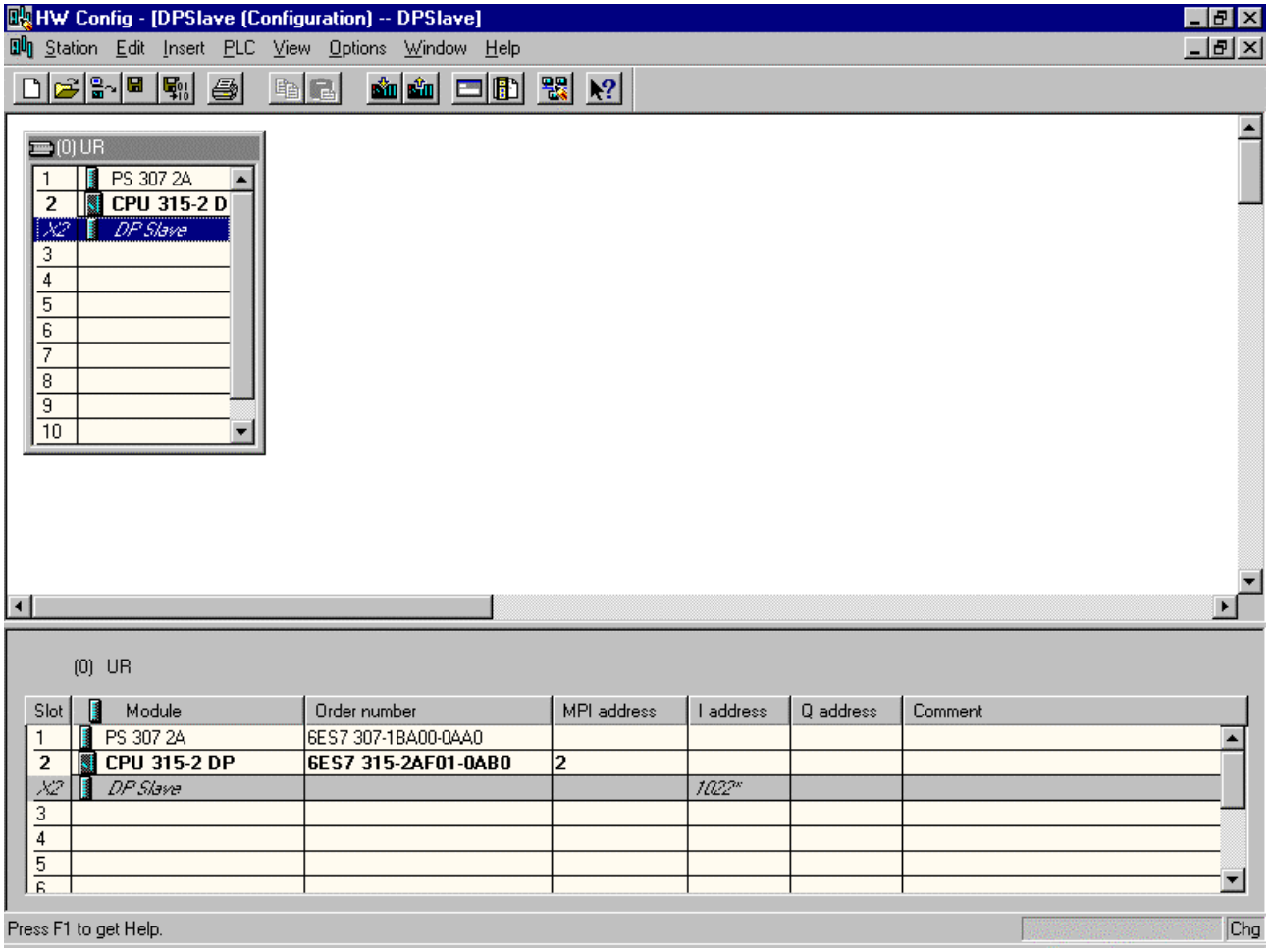
Set as Module 2: Output 2 bytes (unit).



Press **OK**.

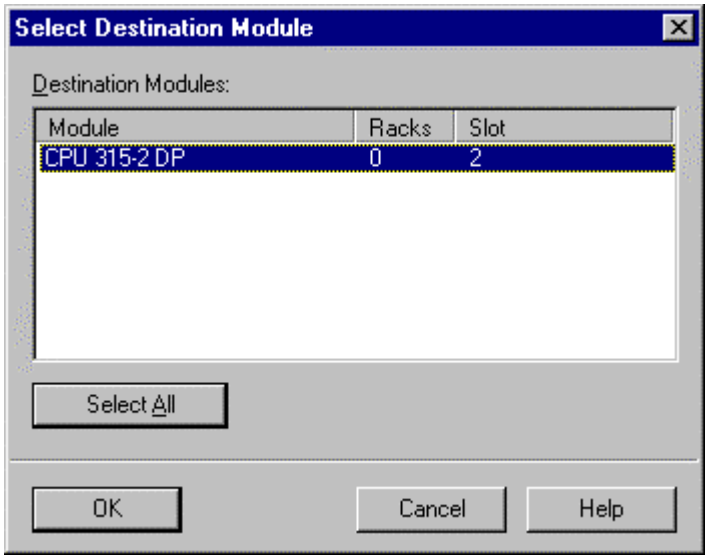
The adresses for the input and the output are related to the addresses inside the S7.

Note: The length of the process data module are limited to max. 32 bytes or 16 words per module. The number of modules and the number of the total process data depends on the used CPU type.

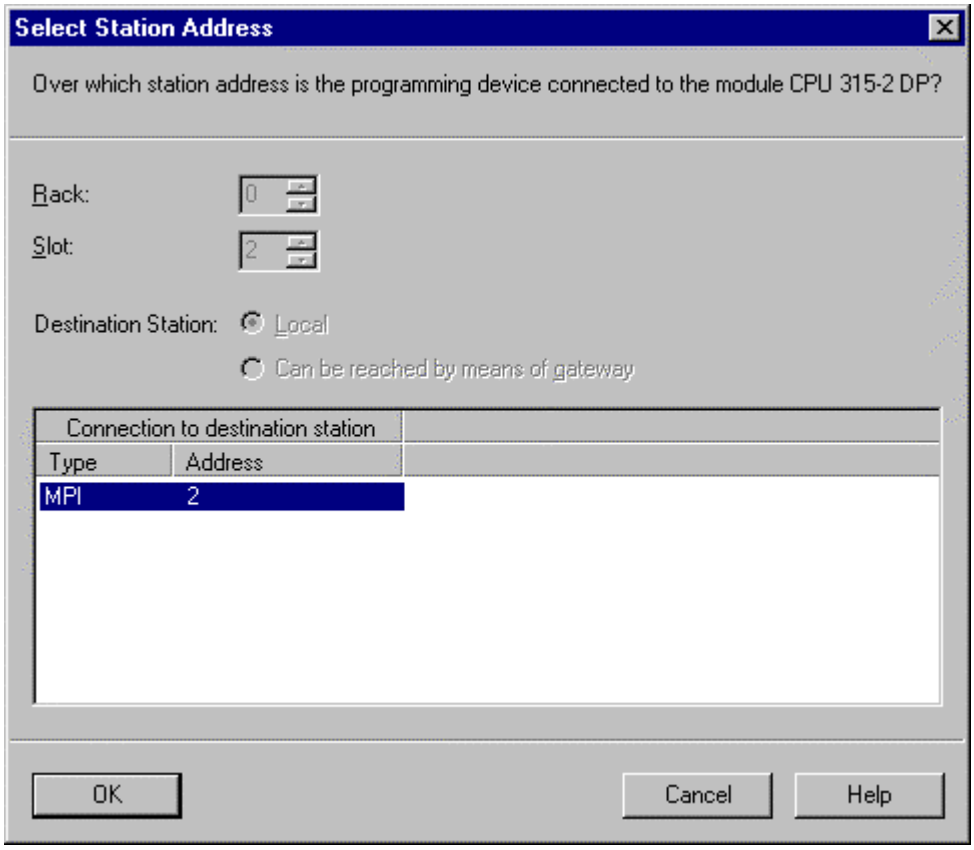


3.4.4 Download the Hardware Configuration

Select the menu **PLC > Download to Module**.



Select All and press **OK**.



Press **OK**.

The Download Window shows Module currently beeing processed [0/2/0] CPU 315-2DP.

3.4.5 Save and Exit the Hardware Configurator

Select menu **Station > Save** and the select the menu **Station > Exit**.

The set the PLC into RUN mode.

4 The Hilscher DP Master

Before you start make sure that you have the right GSD file for the S7 300 CPU. You can download this file via the GSD library on www.profibus.com.

4.1 SyCon PROFIBUS Project

Start the System Configurator SyCon.

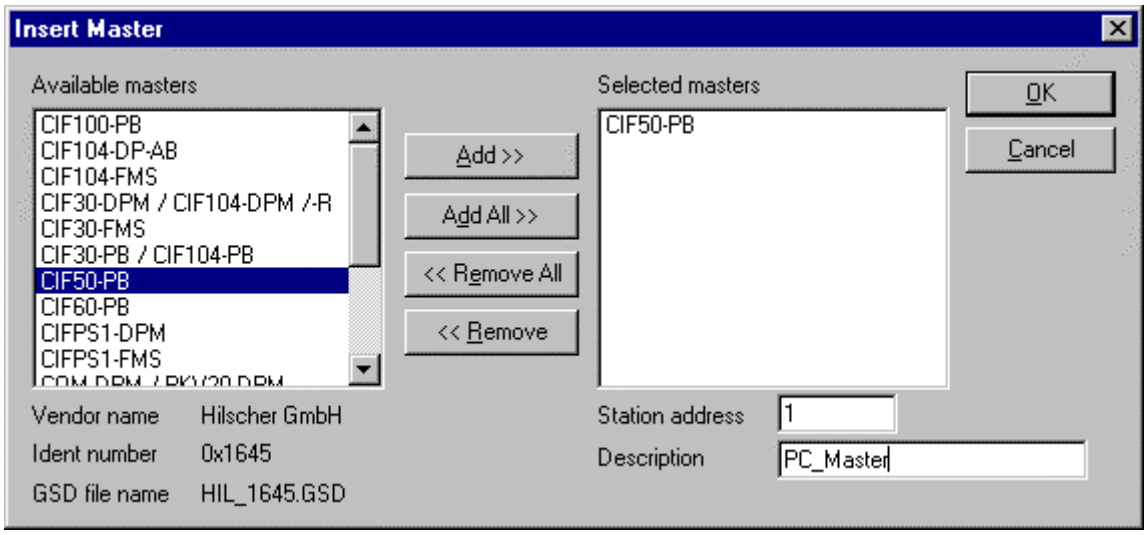
Then select **File > New** or **File > New > PROFIBUS**.

4.2 Insert the GSD file for the S7-300

Select the menu **File > Copy GSD**.

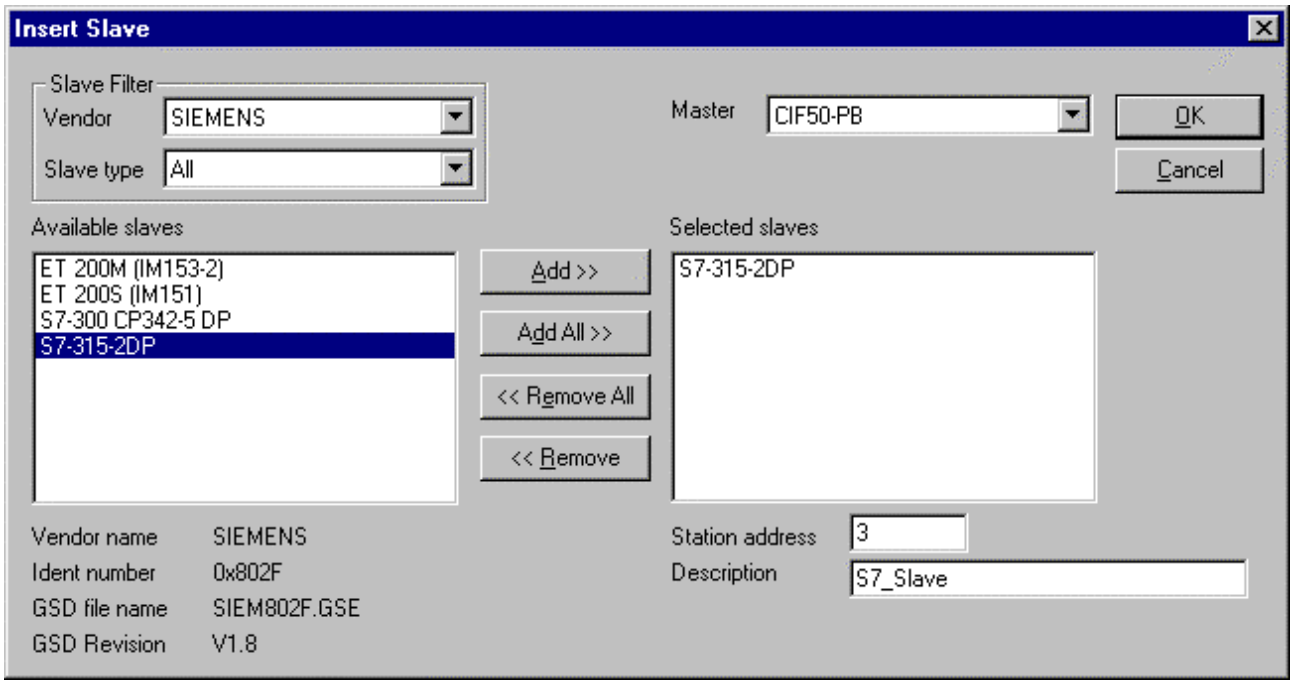
4.3 Insert the DP Master

Select the menu **Insert > Master** and insert the master that you want to use, e.g. CIF 50-PB. Assign the **Station adress**, e.g. 1.

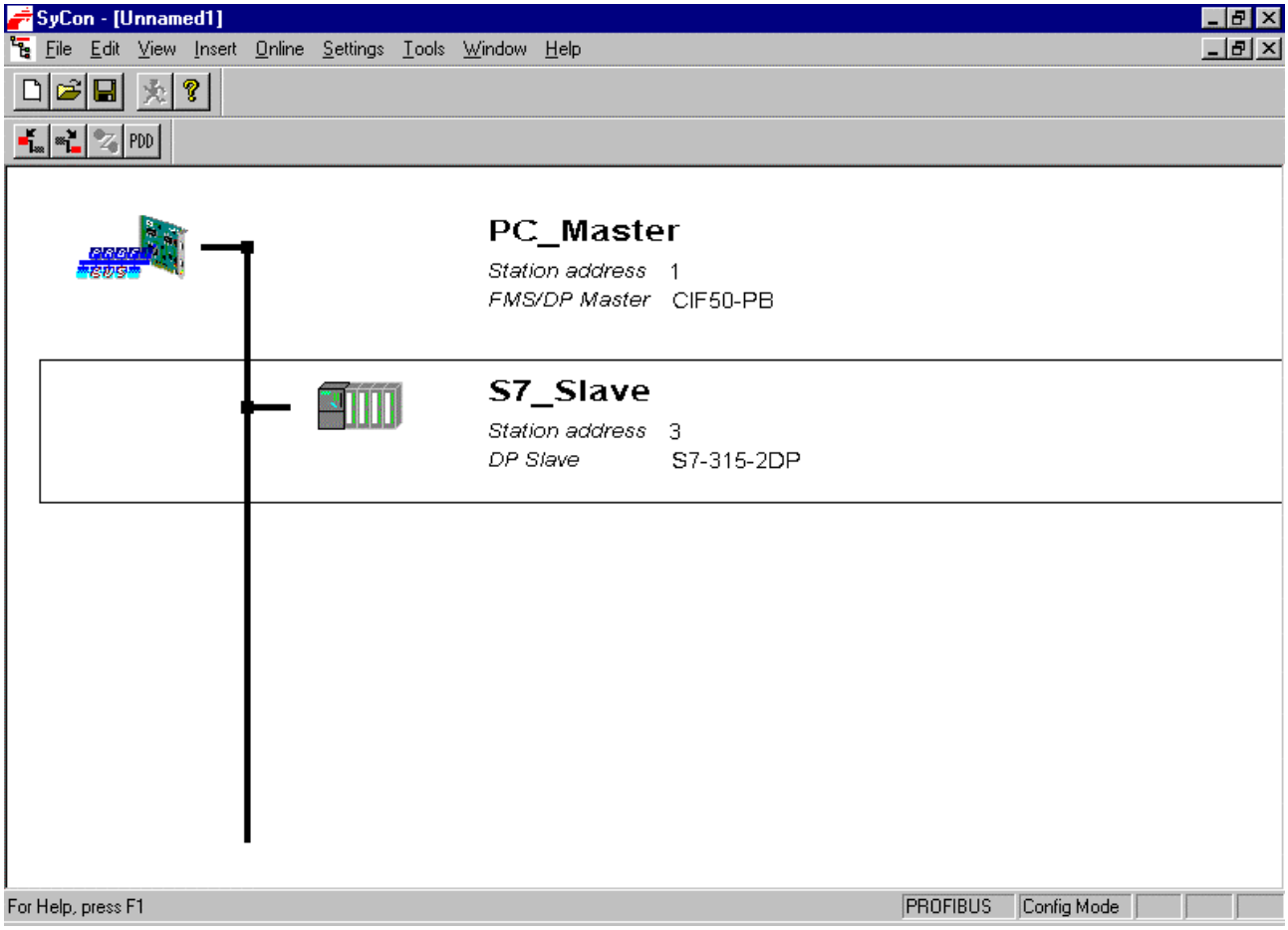


4.4 Insert DP Slave

Select the menu **Insert > Slave** and insert the Siemens DP Slave, e.g. S7-315-2DP. Assign the **Station adress**, e.g. 3.



This results in the following bus layout.



Click the symbol of the Slave with the left mouse button and then choose the **Settings > Slave Configuration** menu.

or

Open the Slave configuration window by means of double clicking on the PROFIBUS-DP Slave device.

Select step by step the modules, e.g.

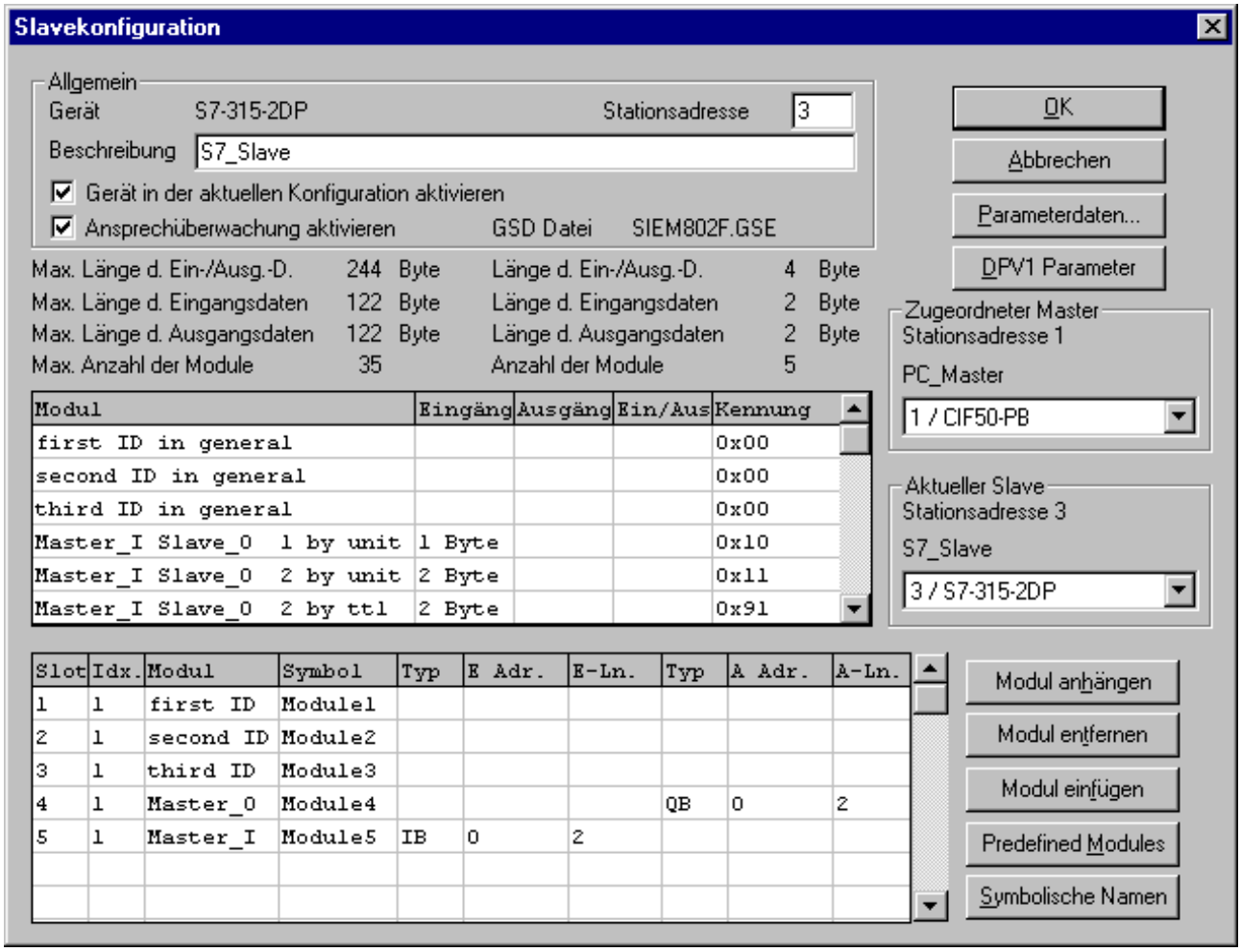
First select 'first ID in general '

Then select 'second ID in general '

Then select 'third ID in general '

Then select 'Master_O Slave_I 2 by unit' (2 Byte)

Finally select 'Master_I Slave_O 2 by unit' (2 Byte)



The adresses for input (I Addr) and output (O Addr) are allocated in the process data memory in the Master.

4.5 Set the Bus Parameters

Click on the Icon for the master and then select the menu **Settings > Busparameters** and set the baudrate, e.g. 1.5 Mbaud.

4.6 Download the Configurtion

Click on the Icon for the master and then select the menu Online > Download.

4.7 Save the Configuration

Select the menu **File > Save** to save your configuration.