

Instructions for Initial Start-Up

of wenglor Products
via Profibus



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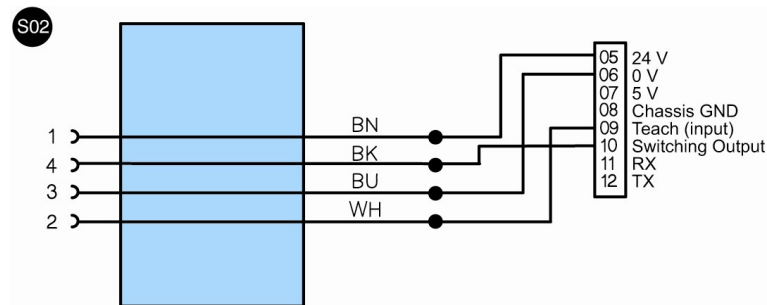
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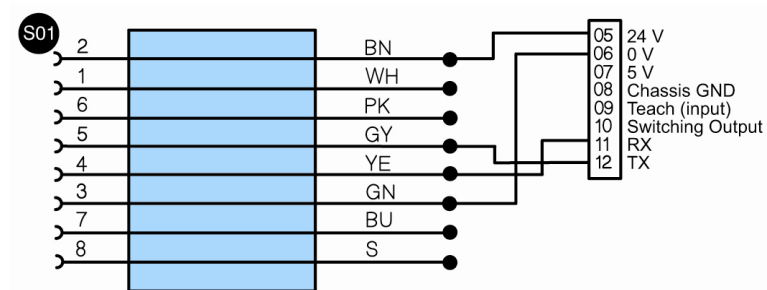
1 Connecting and Configuring the Sensor and the Gateways

1.1 Wiring Diagrams

1.1.1 4-Pin Sensor with RS-232 Interface

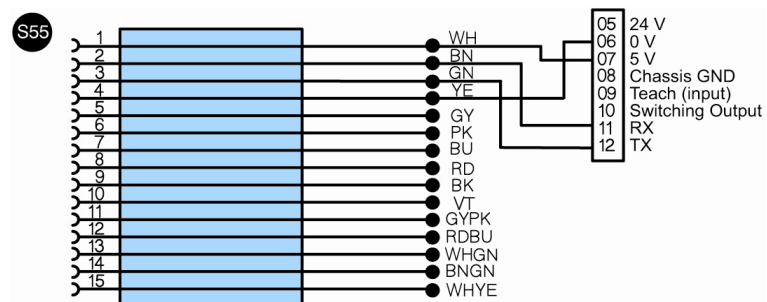


1.1.2 8-Pin Sensor with RS-232 Interface

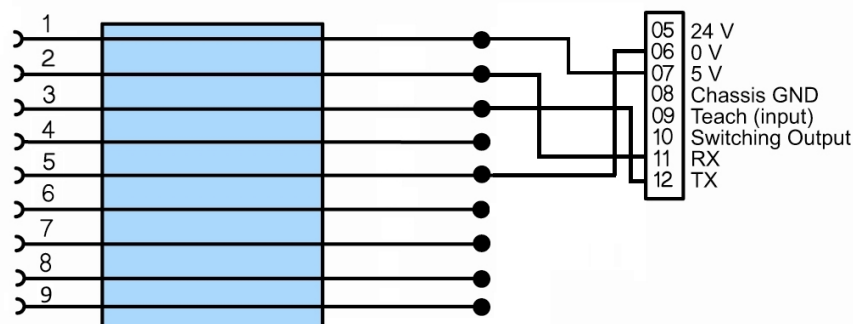


The sensor's switching output (e.g. A1) can be connected by wiring it to pin 10 at the gateway.

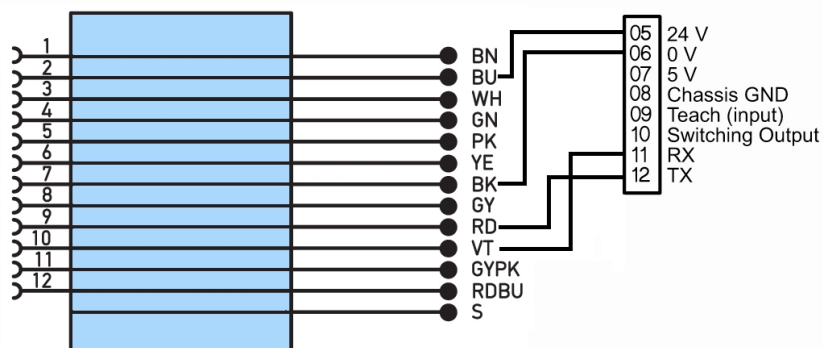
1.1.3 Scanner with 15-Pin D-Sub Plug Connector



1.1.4 Handheldscanner via RS-232 Interface with 9-Pin D-Sub Plug Connector



1.1.5 Scanner with 12-Pin Connection Cable



1.2 Configuring the Sensor

1.2.1 Configuring the Transit Time Sensor

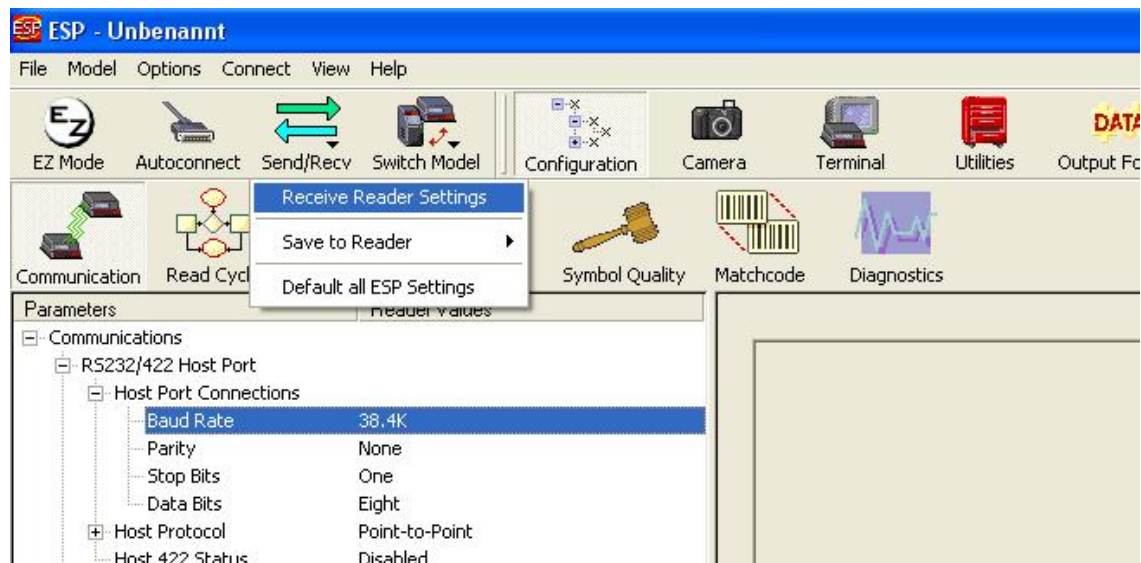
Click **Baud Rate** in the **Interface** menu for the sensor and select the desired baud rate.

1.2.2 Configuring the Scanner

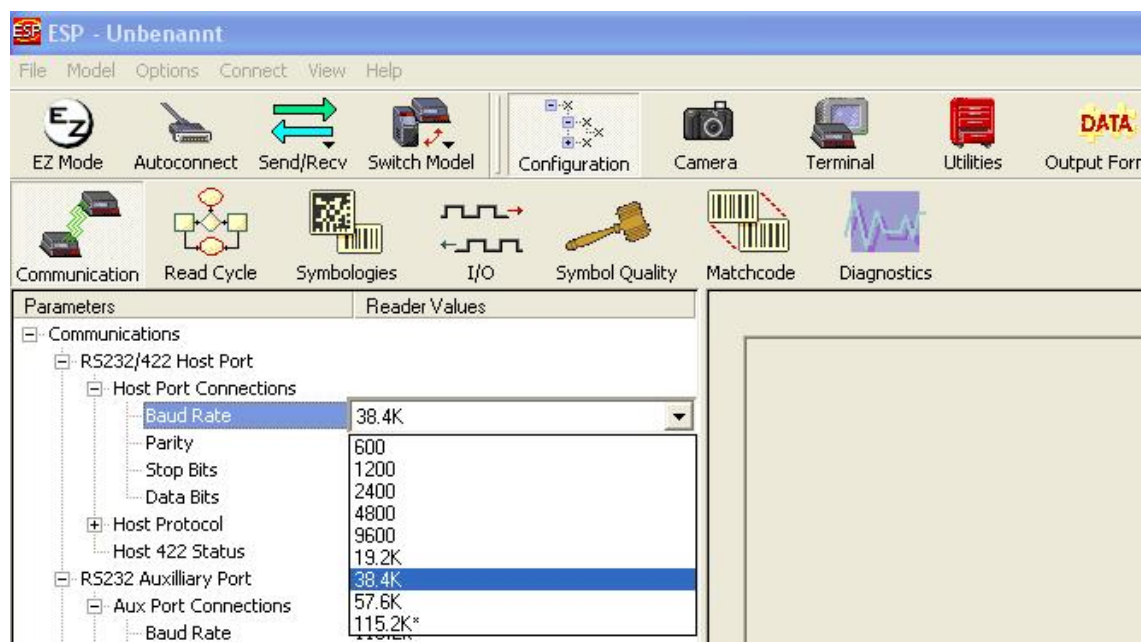
- 1 Connect the scanner to the PC with 15-pin to RS-232 adapter.
- 2 Start wenglor ESP software and establish connection with the Scanner.
- 3 Click the **App Mode** icon in the ESP software.



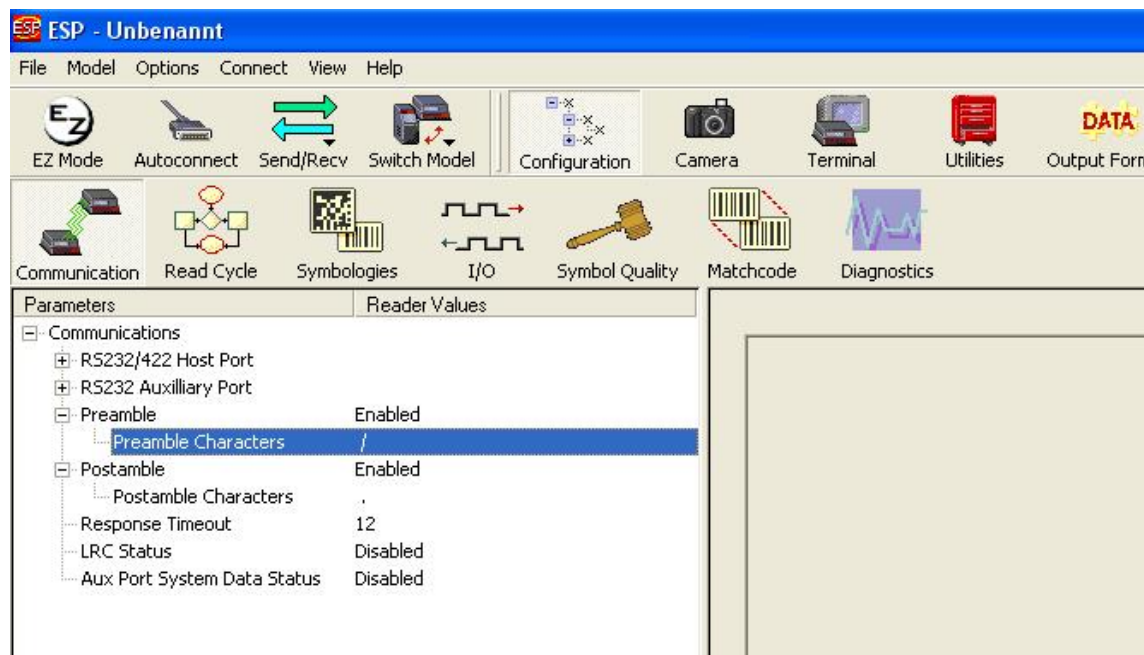
- 4 Click **Receive Reader Settings** in the **Send / Recv** popup menu.



- 5 Then select **Configuration** → **Communication**, and select the desired baud rate from the list.



- 6 In addition to this, enter an **"I"** under **Preamble** → **Preamble Characters** and a period **"."** under **Postamble** → **Postamble Characters**, and set both to **Enabled**.



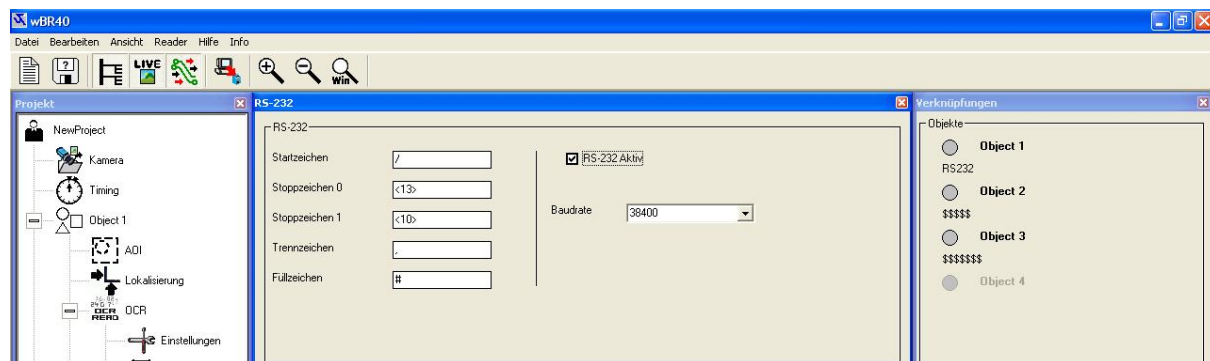
1.2.3 Configuring 8-Pin Sensors

Connect the sensor to the PC via an RS-232 interface and establish a connection with the sensor via the Hyper Terminal. Then, enter an appropriate command in order to set the sensor's baud rate (default baud rate in the operating instructions).

Note: It's also possible to leave the baud rate unchanged and use the default setting.

1.2.4 Configuring the BR40

Start wBR40 software and set the start character to **"I"**, the stop character to **"."** and select the desired baud rate under **RS-232**. Then enter a check mark next to **RS-232 active** and save the project to the sensor.



1.3 Configuring the Profibus Gateway

1.3.1 Baud Rate

Set the baud rate at the gateway with the rotary selector switch designated **RS-232 Mode**. A list indicating which setting is used for which baud rate is included in the operating instructions for the gateway.

Notes:

- As an alternative, you can set the baud rate with the help of the software by turning the rotary selector switch to the **F** position (baud rate is taken from Profibus).
- The baud rates for 4-pin sensors can be found in their respective operating instructions.

Important: After changing the baud rate for the gateway, disconnect it briefly from electrical power in order to activate the new setting.

1.3.2 Address

Select an unused address for the gateway in hex format with the two rotary selector switches under **Slave IO**.

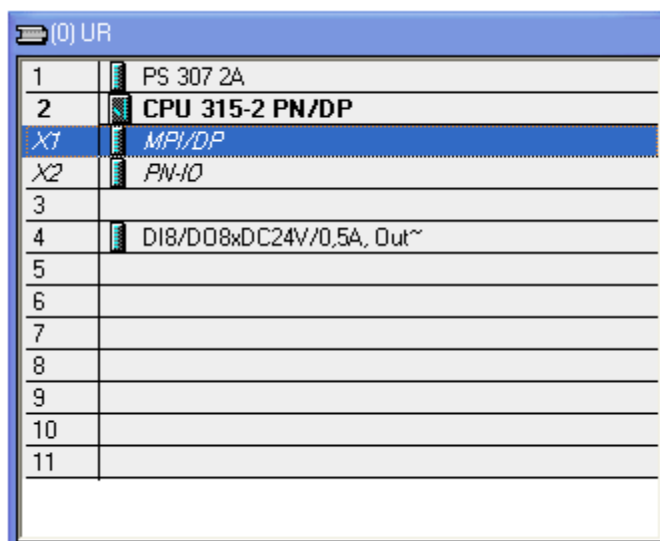
Important:

- Maximum permissible value: 125 (7D)
- After configuring the gateway, disconnect it briefly from electrical power in order to activate the new settings.

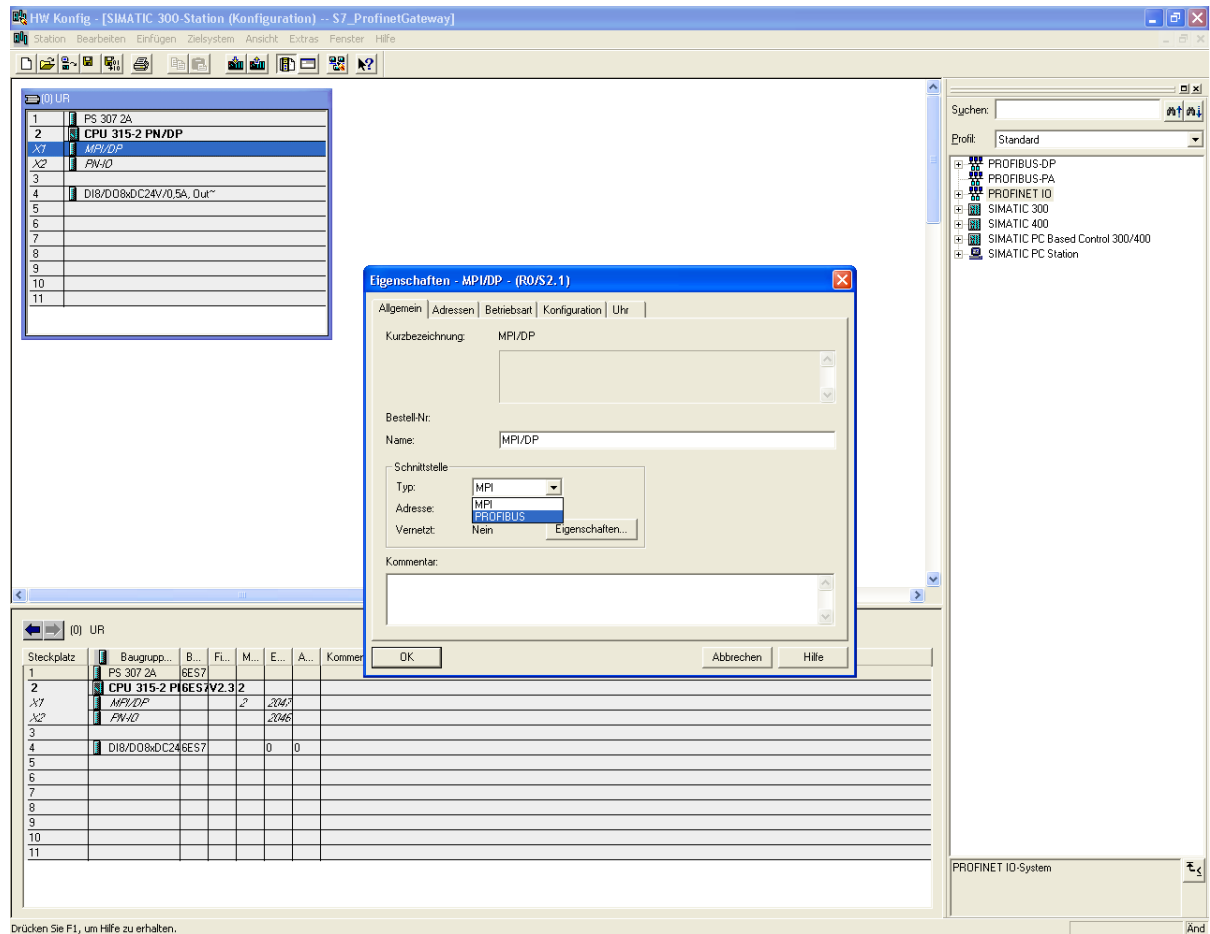
2 Adding a Profibus to the Hardware Manager in S7 Software

Proceed as follows in order to add a Profibus:

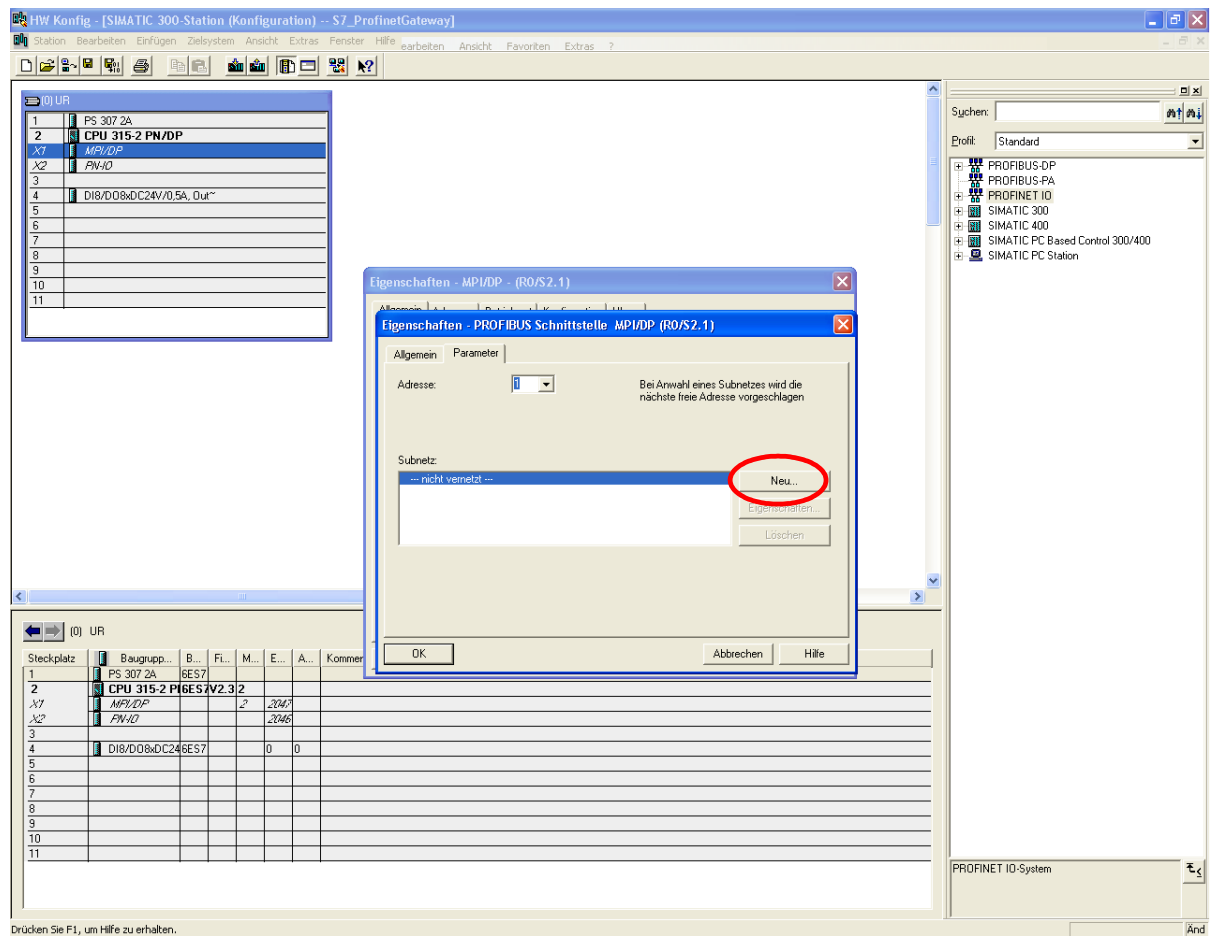
- 1 Double click the **MPI / DP** entry.



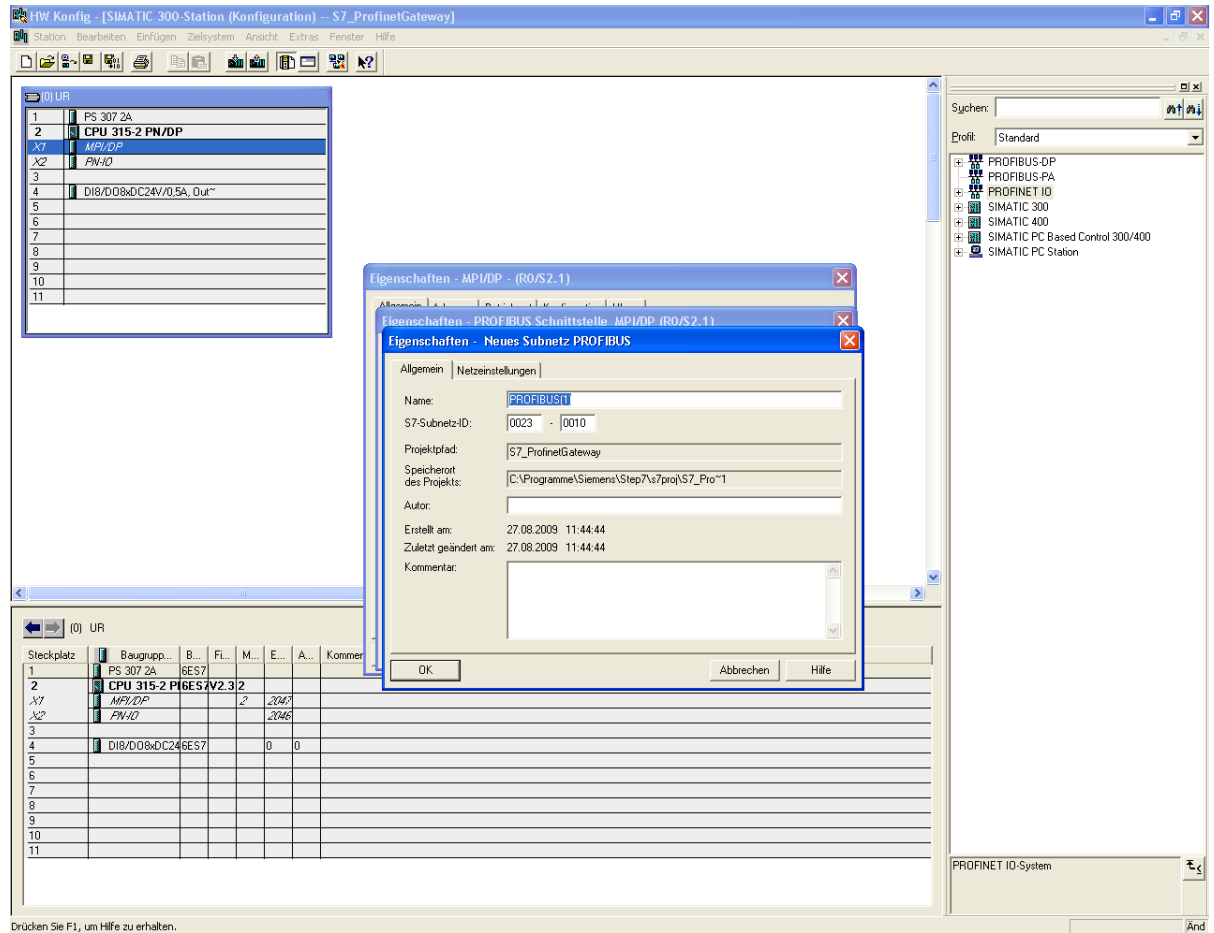
2 Select the Profibus interface and click **Properties**.



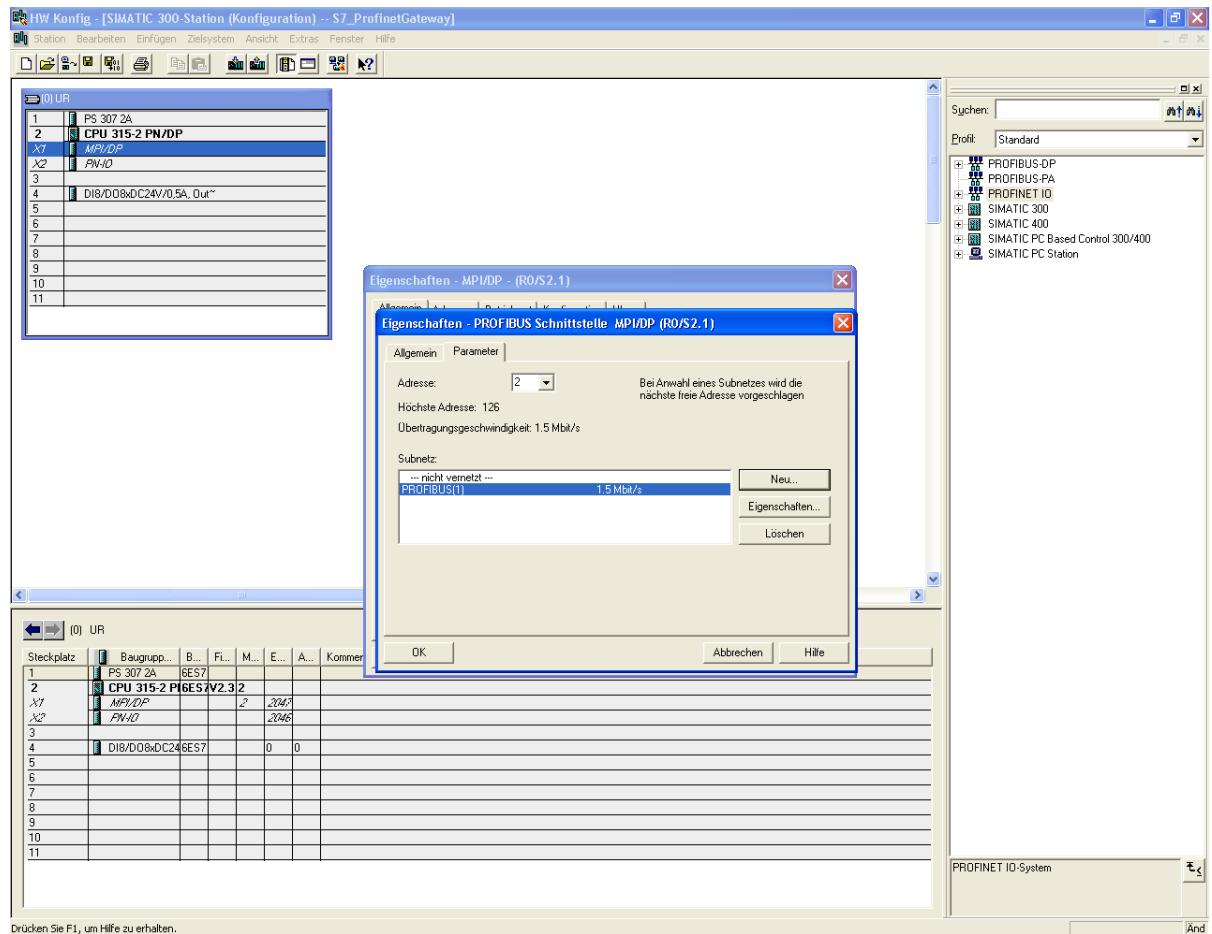
- 3 Select the address you want to assign to the S7, and add a new connection by clicking **New**.



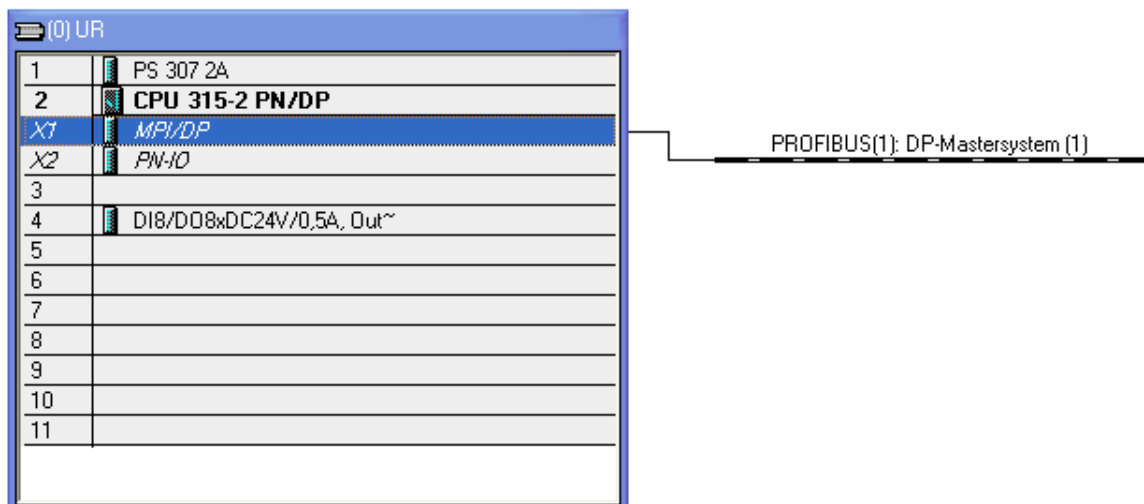
- 4 The following window appears, with which you can configure the Profibus in the **Network Settings** tab.



5 Acknowledge all settings by clicking **OK**.



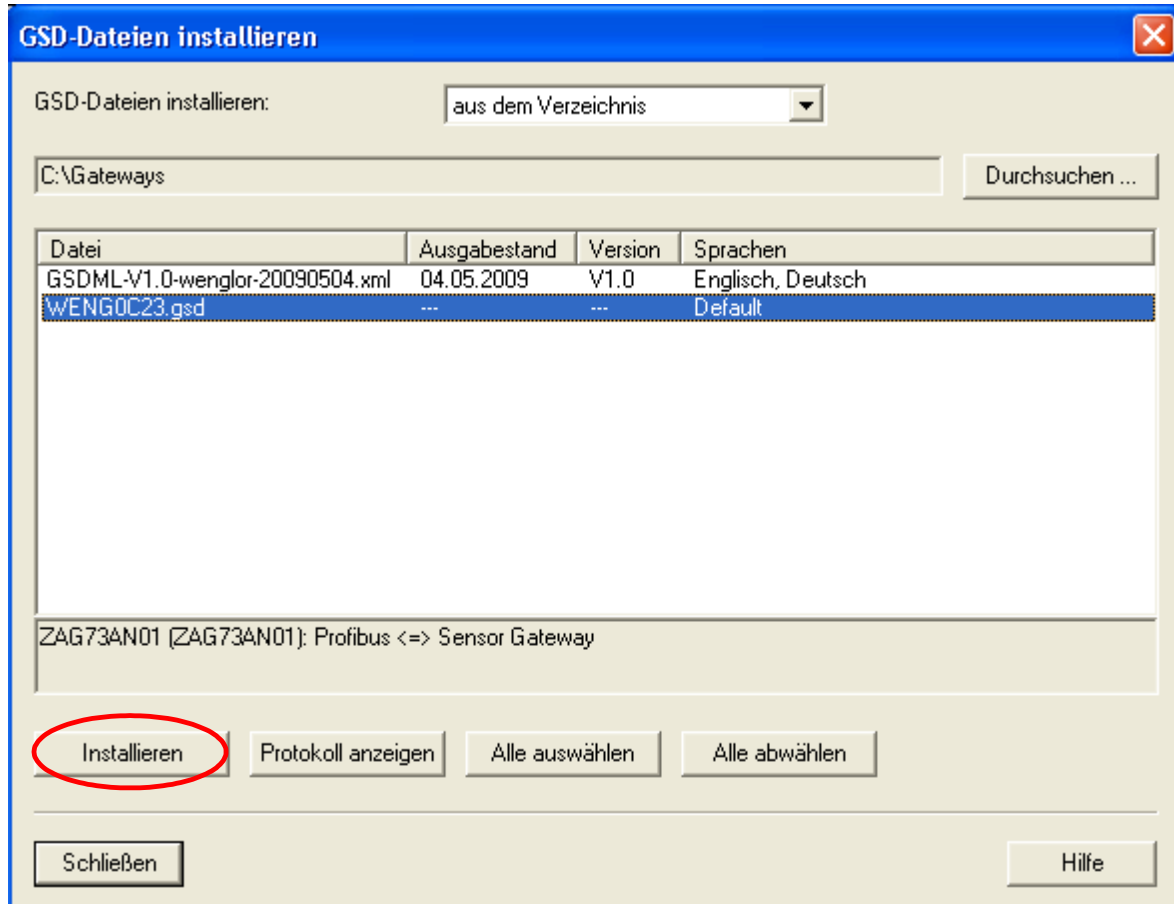
6 The Profibus should now be displayed in the hardware monitor.



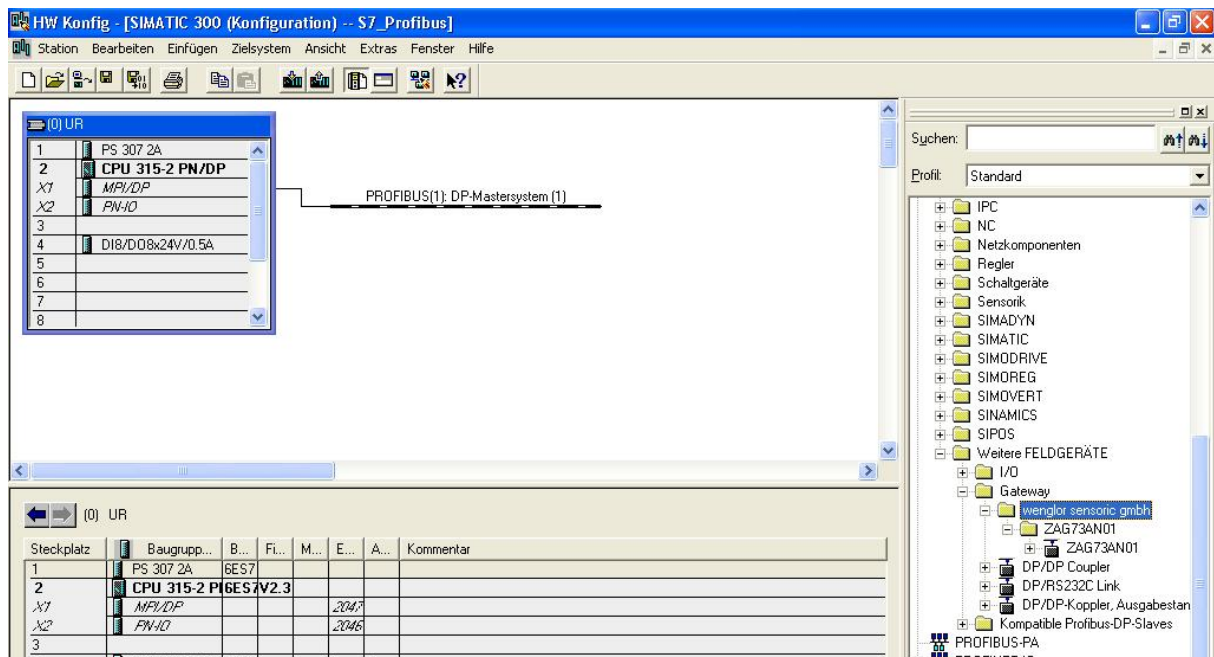
3 Installing the Gateway to the S7 Software

3.1 Incorporating the wenglor Gateway into the Simatic Manager

Select **Install DDBFs** from the **Extras** menu in the **Hardware Configuration** for the S7 to this end. Then select the memory location to which the wenglor DDBF has been written and click **Install**.

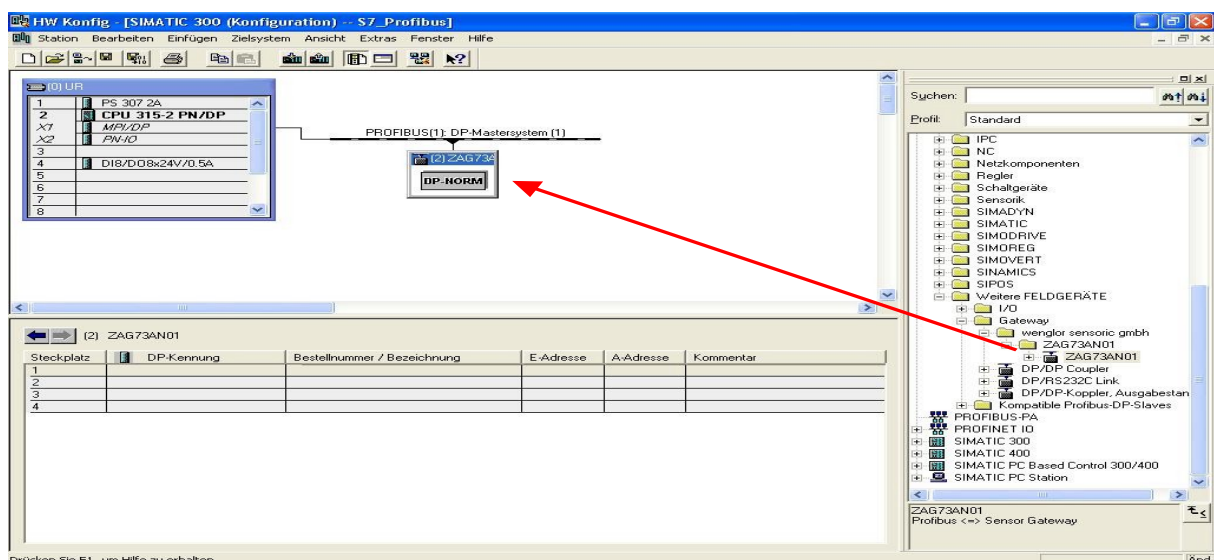


If everything functions correctly, the “wenglor sensoric gmbh” directory should then appear in the right-hand column under **Profibus-DP → Other field devices → Gateway**.



Important: In the event that problems are encountered while installing the DDBF, delete any previously installed DBBF or XML file from the temporary directory of the S7 installation folder (C:\Programs\Siemens\Step7) in the “S7tmp” subdirectory!

Drag and drop the ZAG73AN01 module into the Profibus. Then enter the address of the gateway to be addressed. Enter the address in decimal format.

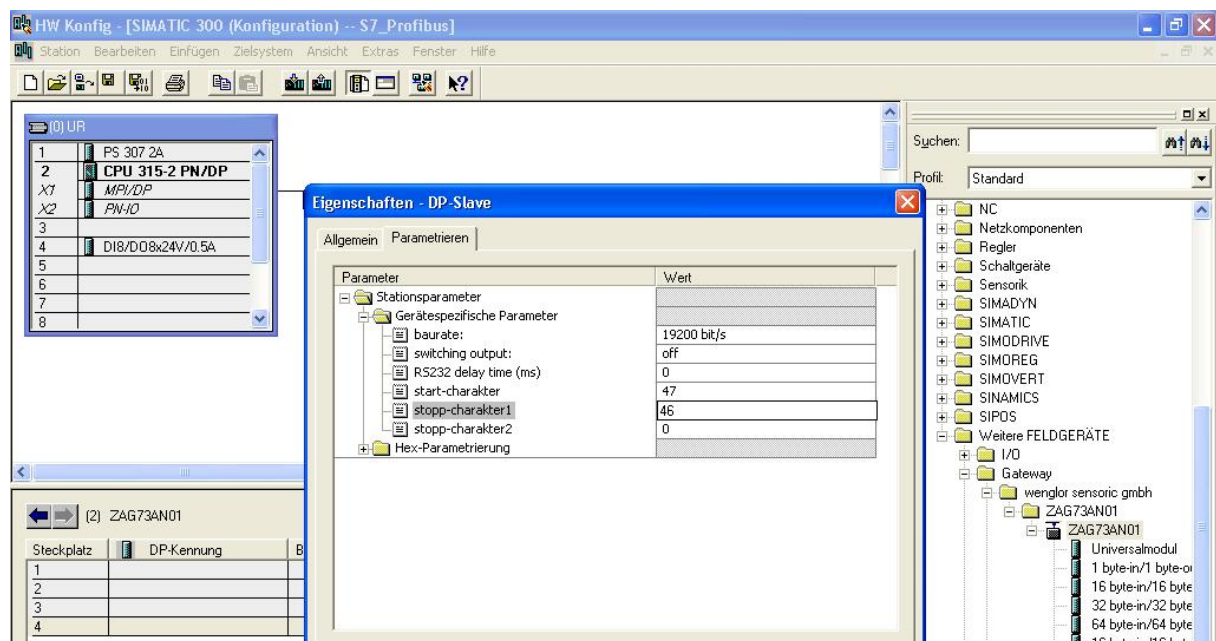


3.2 Configuring the Gateway

Double click the interconnected gateway in the hardware monitor included in the Simatic Manager. Then click the **Device specific parameters** entry under **Parameterize**. The baud rate only has to be entered if the RS-232 mode has been set to “F” at the gateway, otherwise this value is irrelevant. Then enter the sensor’s start and stop characters in decimal format. These values are included in the operating instructions for the sensor.

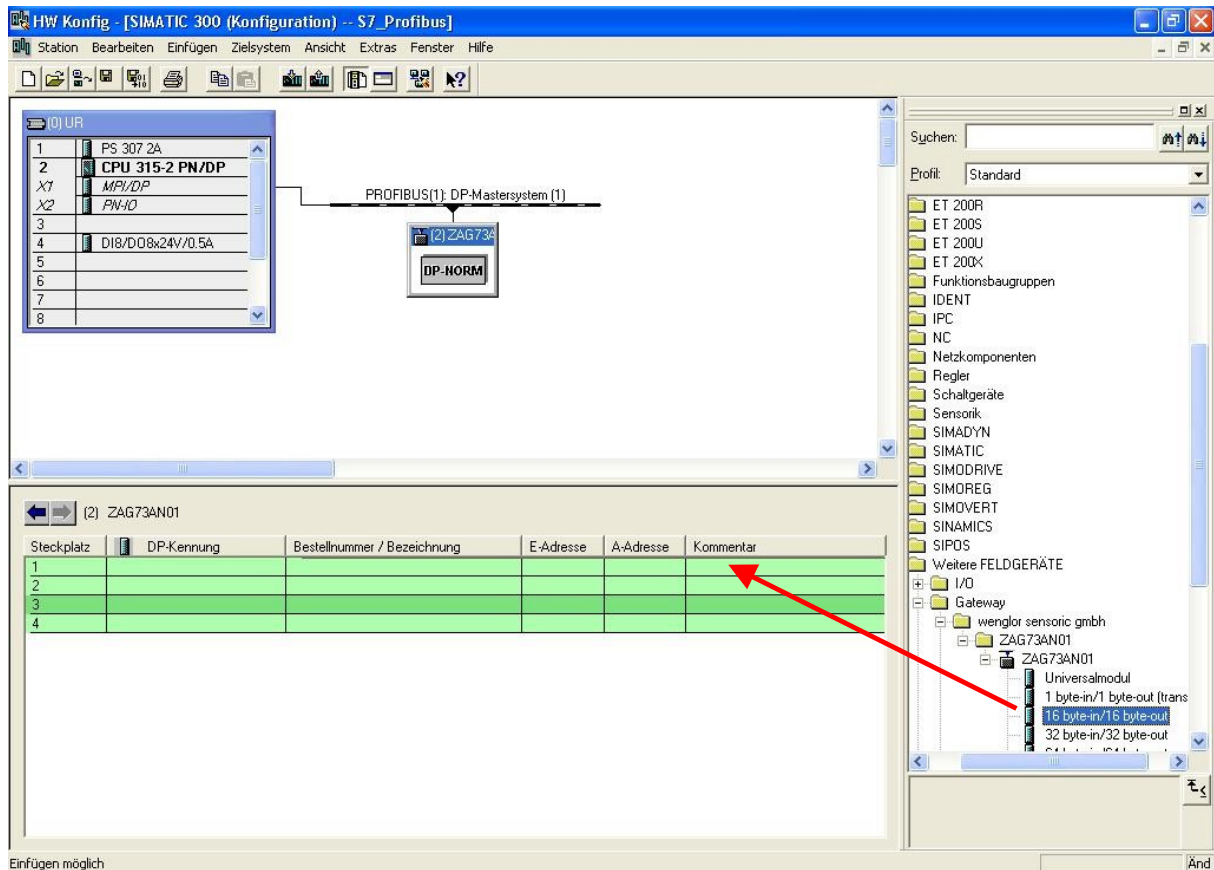
→ Enter **0** as the start and stop characters for the scanner, and set RS-232 time to 10 ms.

Note: The table for converting ASCII to decimal format is on pages 19 and 20 of the operating instructions for the gateway.



3.3 Adding a Transmission Mode

Click the module on the Profibus to this end, so that a list containing I/O addresses appears at the bottom of the monitor. Then drag and drop the desired transmission mode from the right-hand list under **Profibus-DP → Other field devices → Gateways → wenglor sensoric gmbh → ZAG73AN01 → ...** into the DP list for the ZAG73AN01 (see section 4.3.3).

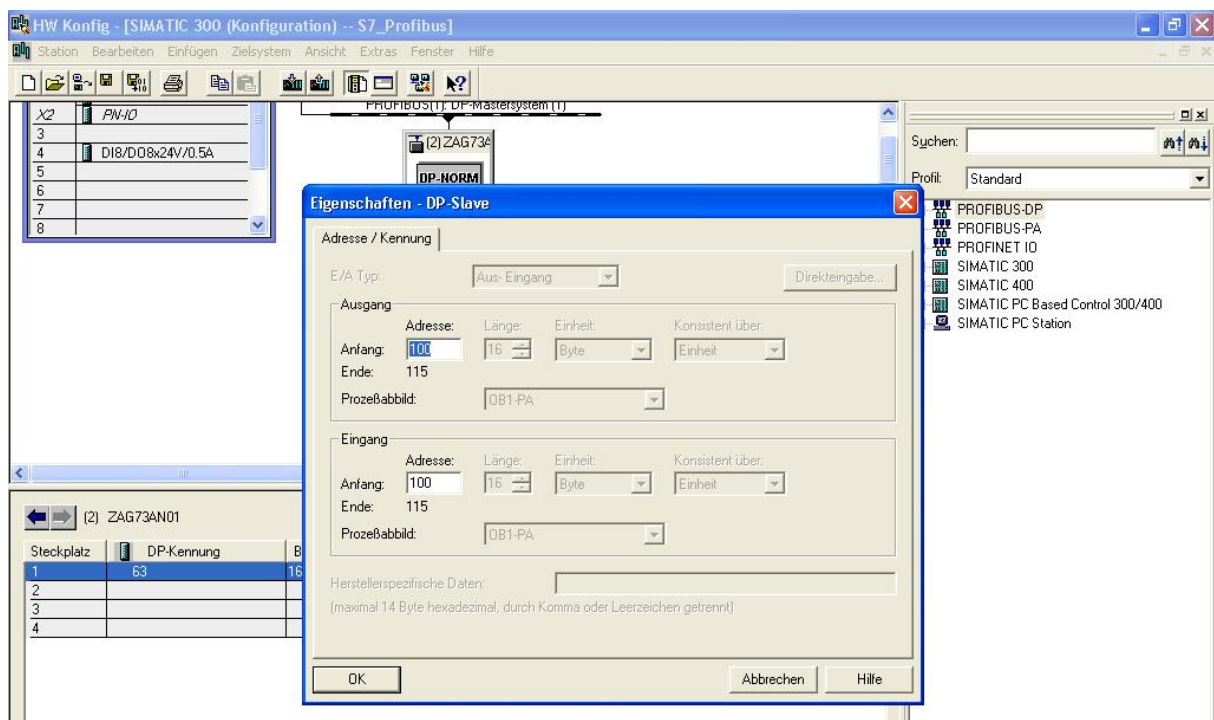
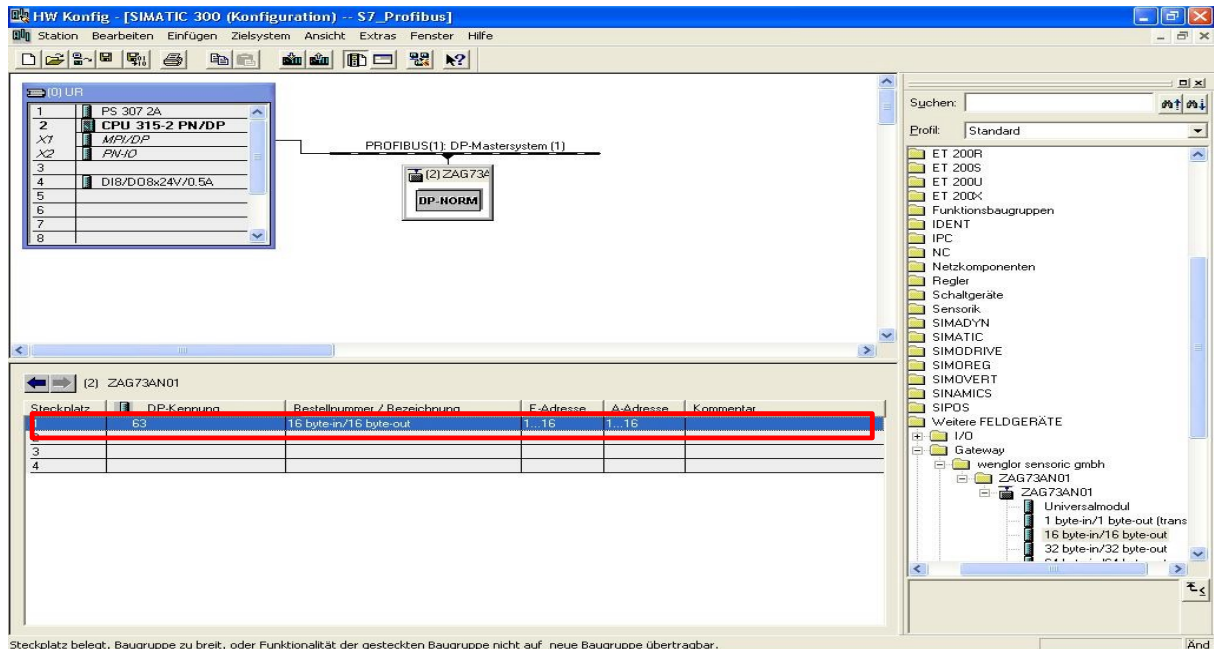


The screenshot shows the SIMATIC Manager HW Config interface. On the left, the rack configuration (Rack 1) includes a PS 307 2A power supply, a CPU 315-2 PN/DP, and DP modules (MPI/DP, PN-I/O, DI16/DO16x24V/0.5A). A Profibus-DP network (PROFIBUS(1): DP-Mastersystem (1)) is connected to a ZAG73AN01 gateway module. Below the rack configuration, a table for the ZAG73AN01 module is displayed, showing slots 1 through 4. A red arrow points from the 'Kommentar' column of this table to the right-hand pane, which shows the device selection tree. In the tree, the path is: I/O > Gateway > wenglor sensoric gmbh > ZAG73AN01 > 16 byte-in/16 byte-out (trans). The selected device is highlighted in blue.

Steckplatz	DP-Kennung	Bestellnummer / Bezeichnung	E-Adresse	A-Adresse	Kommentar
1					
2					
3					
4					

3.4 Setting Input and Output Bytes

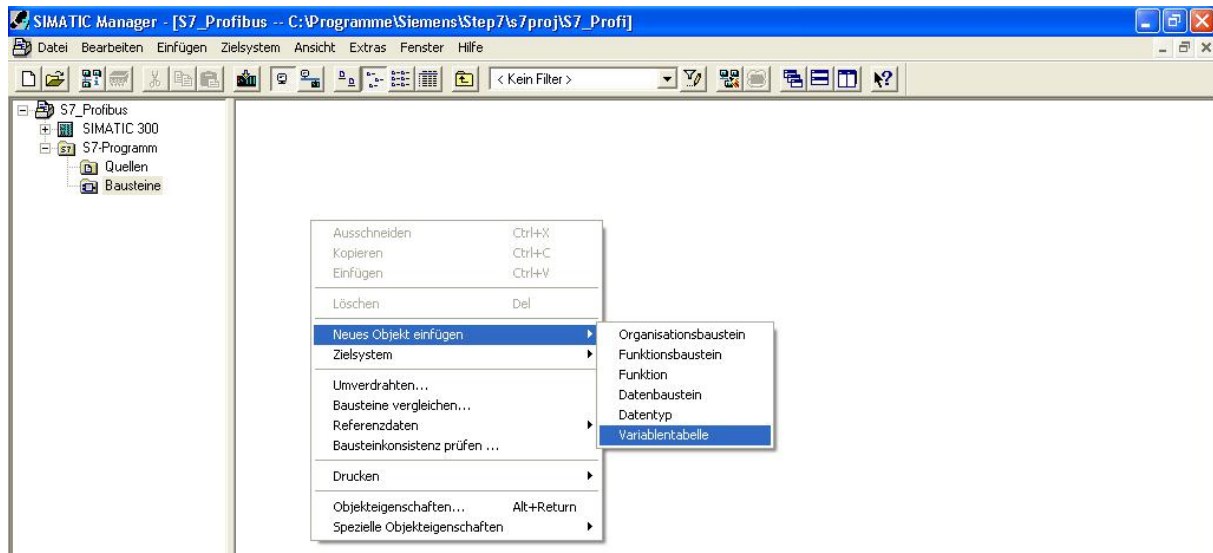
In order to be able to incorporate the bytes into the programming, they have to be assigned to unused S7 inputs and outputs. Double click the transmission mode which has been added to the ZAG73AN01 list to this end, and then enter the input byte and the output byte.



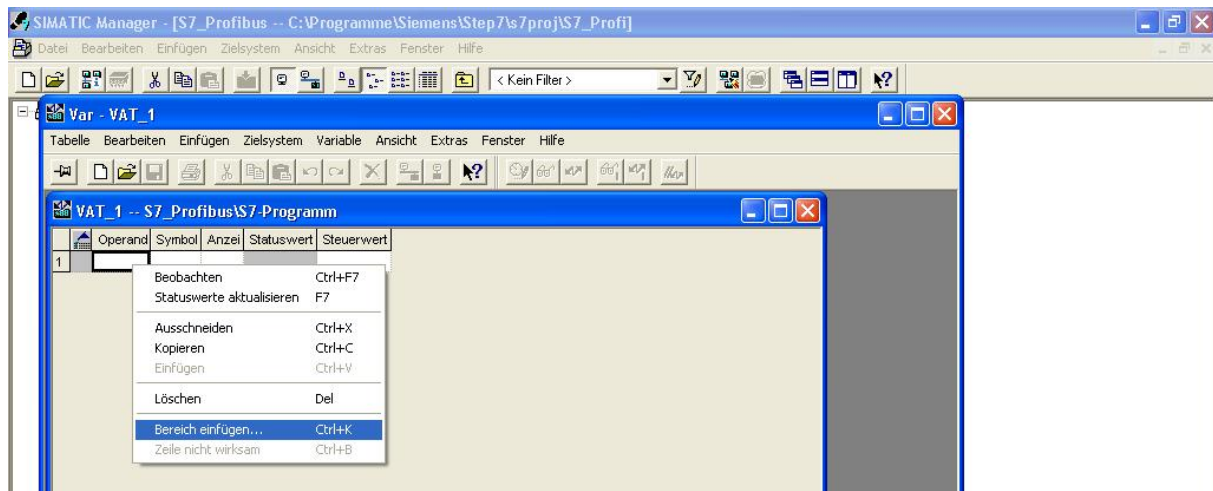
4 Checking the Existing Connection in S7 Software

4.1 Adding a Variables Table

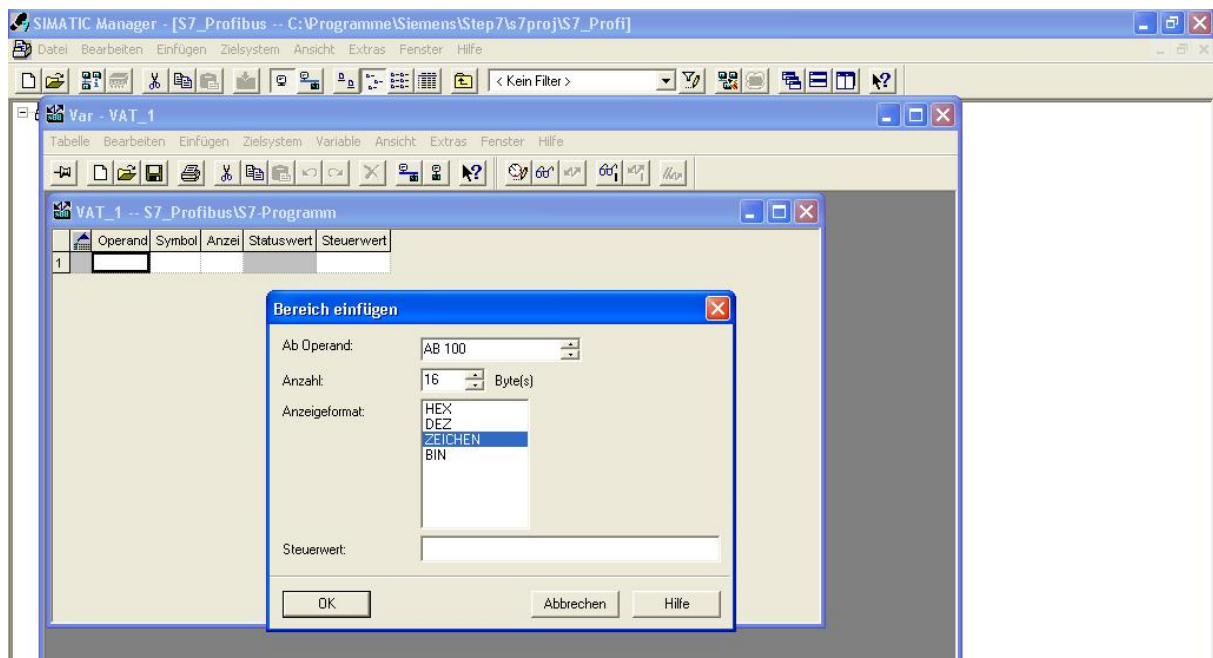
Right click into the user interface under **S7 program** → **modules**, and select **Add new object** → **Variables table**.



Then right click the table and select **Add range**.



Then add both of the ranges which you installed in accordance with section 3.3. For example, with a range of 100 to 115, the **As of operand** range would be set to IR 100 and the number of bytes would be set to 16.




Now set the display format to **characters**, because most sensors transmit data in ASCII format. If you have a sensor which transmits data in hex format, set the display format to hex.

Proceed in the same manner for the output bytes, but enter **OR** instead of **IR** in the **As of operand**.


4.2 Setting Up the Variables Table

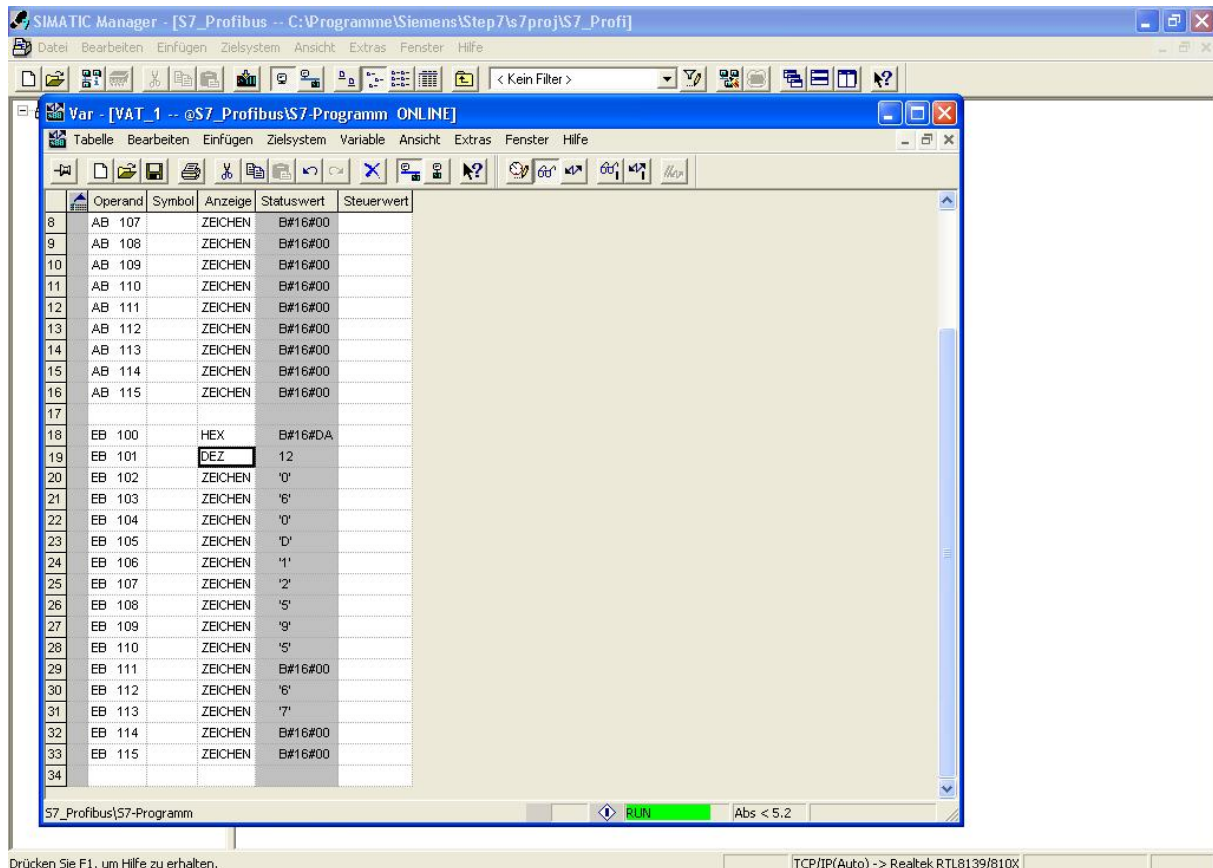
Set the first operand (the toggle byte which always changes its value so that the gateway knows that new data are coming) to Hex for the input, as well as for the output. Right click **Characters** to this end, and select hexadecimal. Set the second operand (the length byte which specifies the length of the value that will be transmitted) to Dec for IR, as well as for OR.

Click the  icon in order to start communication (observe variable).

4.3 Starting Communication via the Variables Table

4.3.1 Receiving Data from the Sensor


After clicking the  icon, the variables table displays the data transmitted by the sensor under the input bytes.



Note: If the first byte doesn't change its value (doesn't toggle), the sensor doesn't transmit any data and the most recently transmitted data are displayed.

4.3.2 Transmitting Data to the Sensor

In order to transmit a command to the sensor, the transmit bytes (after byte 2) must first be set to the right data type (see table 4.3.3). Then set the transmission mode to the right length (see table 4.3.3). Proceed as follows after these settings have been completed:

- 1 Change the toggle byte to the other value.
- 2 Specify the length of the subsequent command.
- 3 Enter the command.
- 4 Then transmit your entry to the sensor by clicking the  icon.

```

ASCII command:      TB  LB
                   1  6  0  2  0  p  1  9

```

Command: /020p19.

Hex command: (BR40 example) 00	TB	LB	ST	a								
	2	32	24	00	01	00	23	00	00	00	00	00

b													c					
01	05	01	00	01	00	00	00	00	00	00	00	03	00	00	00	42	73	
c	CS	CS	d	SP	SP													
70	40	00	2E	3B														

Command: 24 00 01 00 23 00 00 00 00 00 00 01 05 01 00 01 00 00 00 00 00 00 03 00 00 00 42 73 70 40 00 2E 3B with start and stop characters!

a:
Frame
Entry

b: Data Header
c: User Data d: Frame End (see interface protocol for the sensor)

TB...	Toggle-Byte	LB...	Length Byte	CS...	Checksum
SP...	Stop Character	ST...	Start Character		

4.3.3 Information Table for the Individual Sensors

Sensor	Data Type, In	Data Type, Out	Transmission Mode
CP, WP, FP, A1P, A2P	ASCII	ASCII	At least 16 bytes in/out
4-pin sensors	ASCII	ASCII	1 byte in/out, transparent
Transit Time Sensors	ASCII	ASCII	At least 16 bytes in/out
BR40 OCR Reader	HEX	ASCII / HEX	64 bytes in/out
Scanners	ASCII	ASCII	Any (depending barcode length)

5 Programming

Important: Error module OB121 must be present in the program!