

MSI-FB-PB100

Integration into
Siemens Simatic Step 7

Fieldbus module for the programmable
Safety Controllers MSI 100 and MSI 200



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1 Description

The MSI-FB-PB100 is a module which allows the connection of the MSI XXX to the PROFIBUS-DP. The module is certified in accordance with the DPV1 specification (EN 50170).

You can find the GSD file (with the characteristic communication features of a PROFIBUS-DP device) online at www.leuze.com/controller/.

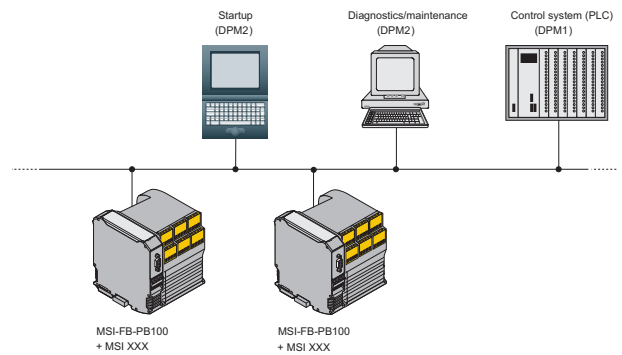


Figure 1 PROFIBUS gateway for the MSI XXX modules



Make sure that you always use the latest documentation.
This is available for download under www.leuze.com/controller/.

2 Downloading the GSD file

1. The download link for the GSD file is available at www.leuze.com/controller/.
2. Click on the GSD file.
3. Save the GSD file by clicking on "OK".

3 Controls and indicators of the MSI-FB-PB100

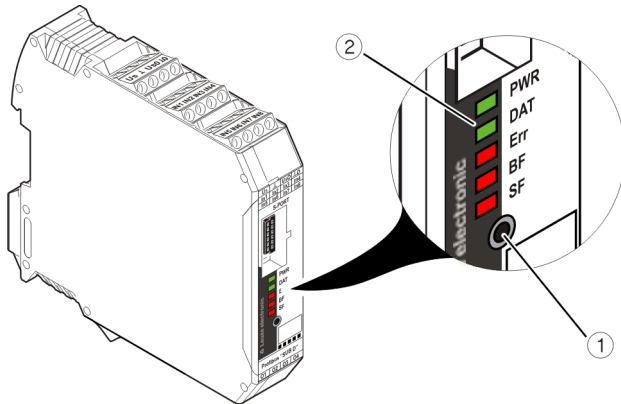


Figure 2 Controls and indicators

1. Button
2. Status LEDs

i The status LEDs are used to display the PROFIBUS address while the address is being set.

4 Example of addressing

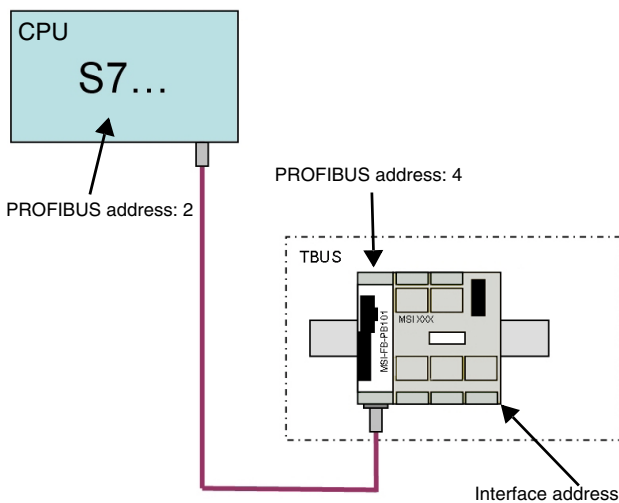


Figure 3 Exemplary addressing

5 Setting PROFIBUS address on the MSI-FB-PB100

1. Press the button 1 (see Figure 2 on page 3) on the MSI-FB-PB100 for approx. 3 seconds (until PWR LED blinks with 2 Hz).
2. The LEDs (see Figure 2 on page 3) on the MSI-FB-PB100 show the current PROFIBUS address (preset value: 4).
3. Set the PROFIBUS address by pressing the button on the MSI-FB-PB100 (see table).
4. Press the button on the MSI-FB-PB100 for six seconds to accept the address.
5. After the address has been accepted, all LEDs briefly illuminate.

i If no button is pressed for approx. 3 seconds, the device returns to the standard operating mode.

LED code					PB address
PWR	DAT	ERR	BF	SF	
0	0	0	0	0	0
0	0	0	0	1	1
0	0	0	1	0	2
0	0	0	1	1	3
0	0	1	0	0	4
0	0	1	0	1	5
0	0	1	1	0	6
0	0	1	1	1	7
0	1	0	0	0	8
0	1	0	0	1	9
0	1	0	1	0	10
0	1	0	1	1	11
0	1	1	0	0	12
0	1	1	0	1	13
0	1	1	1	0	14
0	1	1	1	1	15
1	0	0	0	0	16
1	0	0	0	1	17
1	0	0	1	0	18
1	0	0	1	1	19
1	0	1	0	0	20
1	0	1	0	1	21
1	0	1	1	0	22
1	0	1	1	1	23
1	1	0	0	0	24
1	1	0	0	1	25
1	1	0	1	0	26
1	1	0	1	1	27
1	1	1	0	0	28
1	1	1	0	1	29
1	1	1	1	0	30
1	1	1	1	1	31

preset PB address

6 INTERFACE system addressing



Please perform during initial startup!

1. Press the button (see Figure 2 on page 3) on the MSI-FB-PB100 for approx. 12 seconds (until PWR LED blinks with 4 Hz).
2. After releasing the button, the SF LED blinks (if the SF LED does not illuminate alone, press the button over and over until the SF LED illuminates alone).
3. Briefly press the confirm button on the MSI XXX.
4. All LEDs on the MSI XXX illuminate briefly as a confirmation; then the PWR LED illuminates.
5. Press the button on the MSI-FB-PB100 for approx. 6 seconds.
6. All status LEDs on the MSI XXX illuminate briefly one time.
7. The PWR LED and the DAT LED now illuminate on the MSI-FB-PB100.



If no button is pressed for approx. 10 seconds, the device returns to the standard operating mode.



A project must exist on the MSI XXX before interface system addressing.



If there is still no communication via the Profibus during configuration, the BF LED and the SF LED continuously illuminate red.

7 Integration into STEP 7

7.1 Creating a project with SIMATIC 300

1. Starting SIMATIC Manager



SIMATIC Manager

Figure 4 SIMATIC Manager icon

2. Create a new project

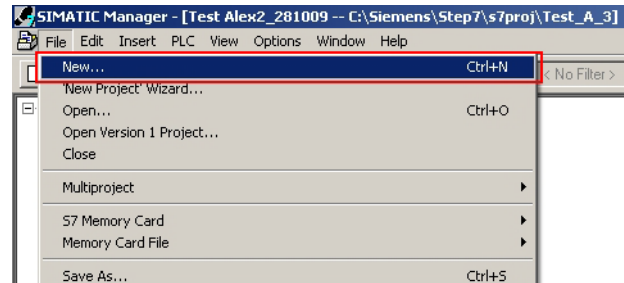


Figure 5 Creating a new project

3. Assign a project name and click "OK"

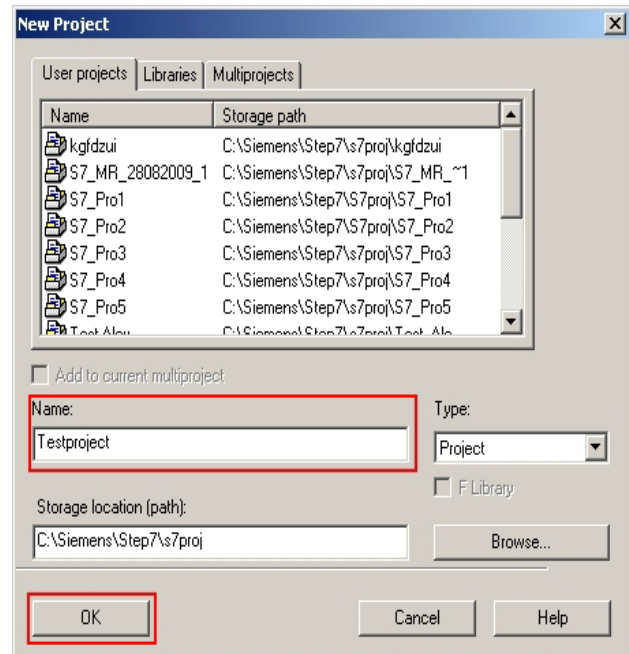


Figure 6 Saving project name

- Select the appropriate CPU in the "Insert" menu point under "Station".

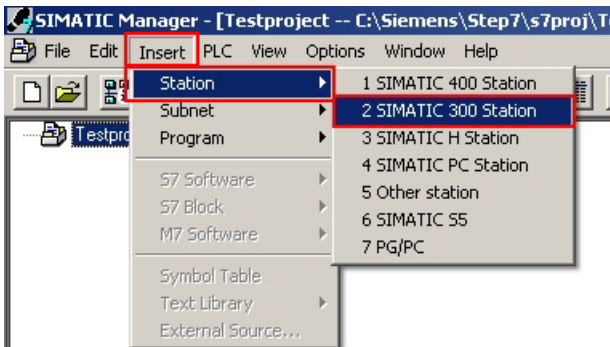


Figure 7 Selecting CPU

- The selected CPU is inserted into your project.

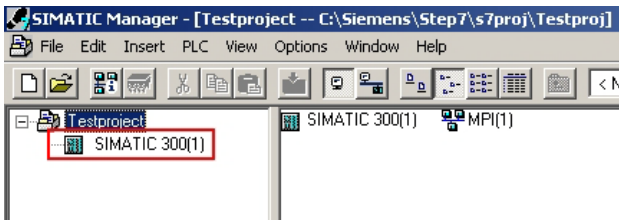


Figure 8 Selected CPU

- Open the context menu of the inserted CPU. Click on "Open Object".

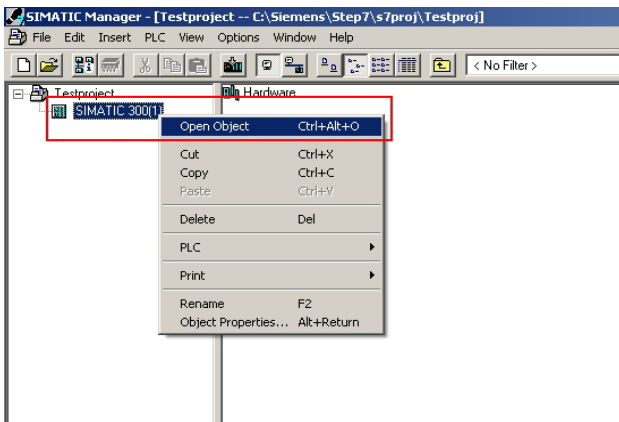


Figure 9 Opening object

- The hardware configuration is displayed.

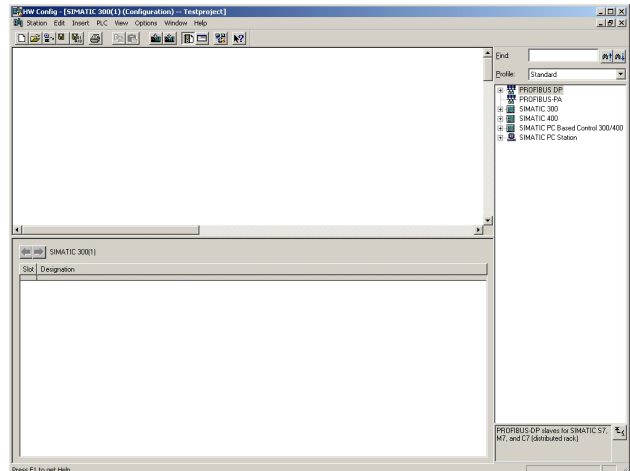


Figure 10 Hardware configuration

- Close all application windows.

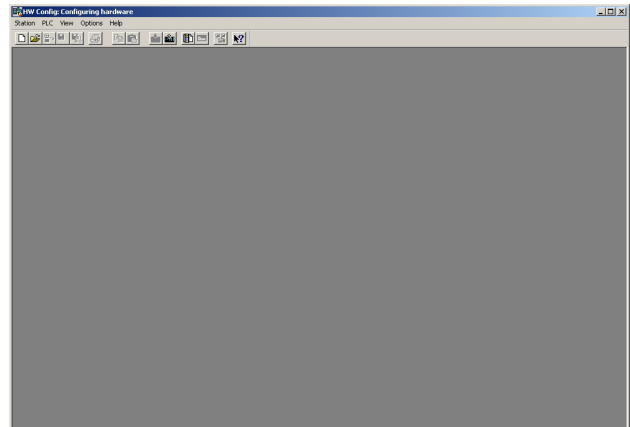


Figure 11 Hardware configuration

- Open the "Options" menu and select the "Install New GSD..." item.

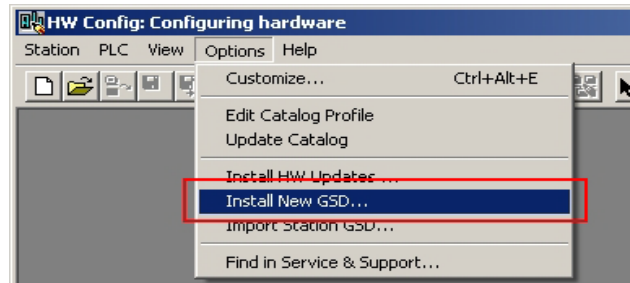


Figure 12 Installing GSD file

- Now load the GSD file downloaded in chapter 2.
- If the "Installation was successful" message appears, you can close the hardware editor.

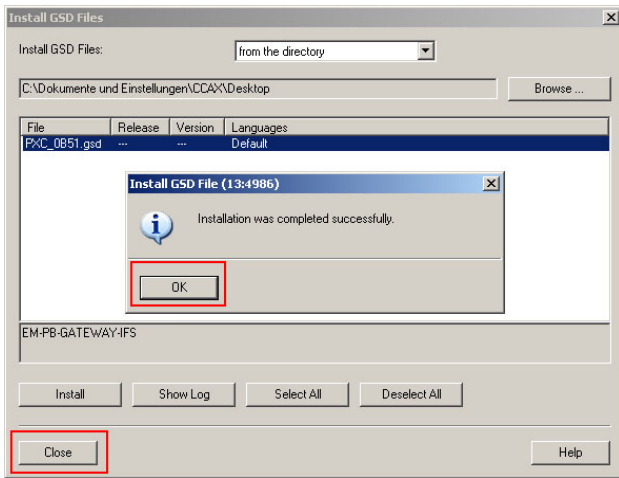


Figure 13 "Installation was successful" message

- Open the context menu of the inserted CPU.
Click on "Open Object".

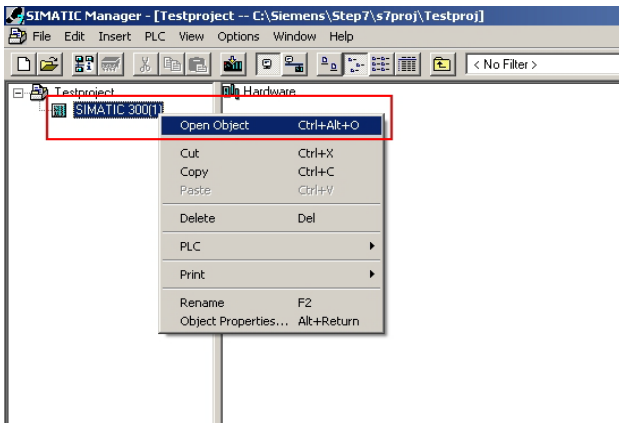


Figure 14 Opening object

- Open the "View" menu and select "Catalog".

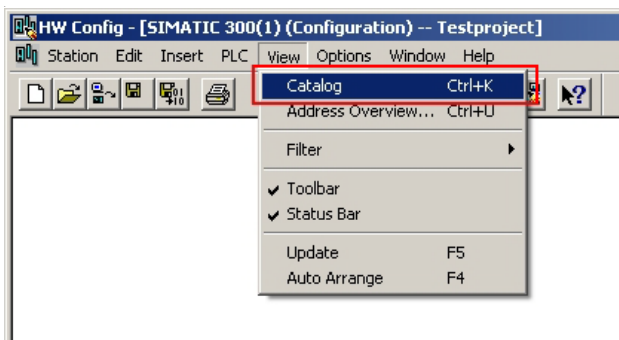


Figure 15 Catalog selection

- The Catalog window opens.

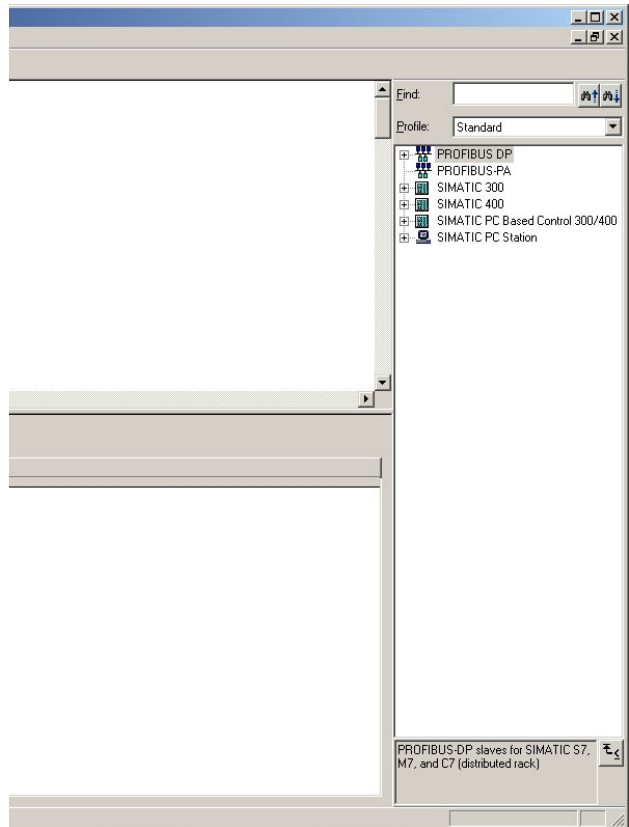


Figure 16 Catalog window

- You must now insert the appropriate devices into your project here.

7.2 Hardware configuration

- Select the "SIMATIC 300" → "RACK 300" → "Rail" item and insert it into your project.

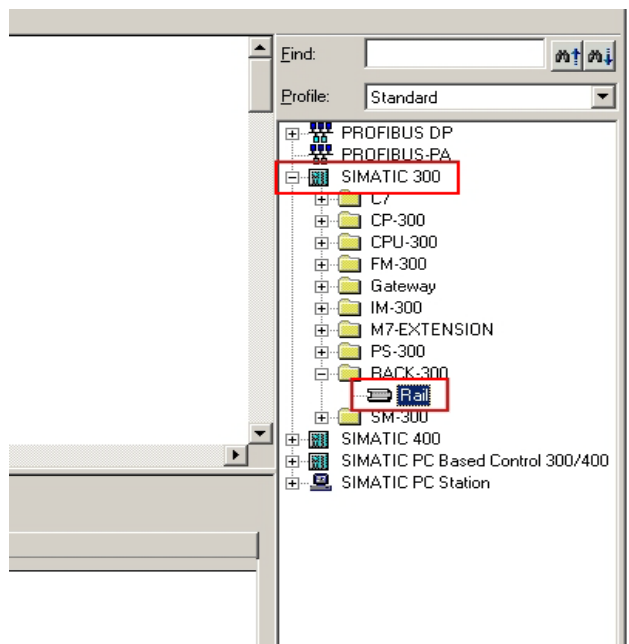


Figure 17 Selecting rail

- Select the "SIMATIC 300" → "CPU 315-2 DP" → "6ES7-315-2AF03-0AB0" → "V1.2" item and insert it into your project.

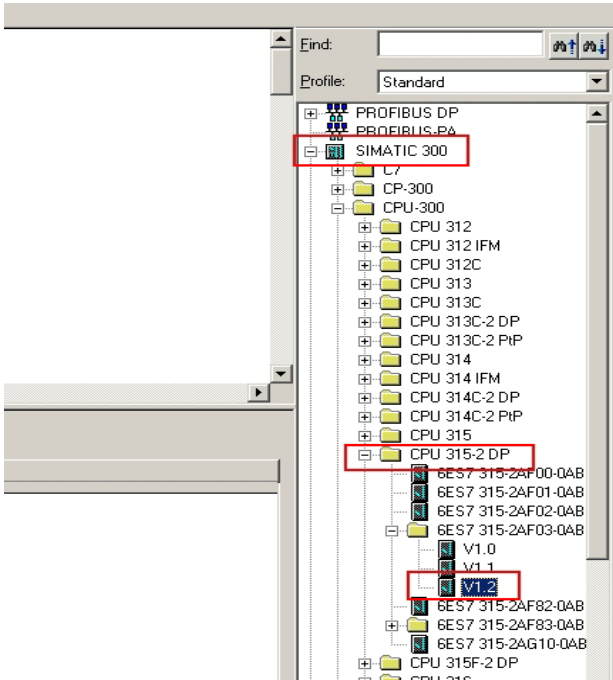


Figure 18 Selecting CPU

- The "Properties" window opens. Click on "New" and assign the bus segment a name.

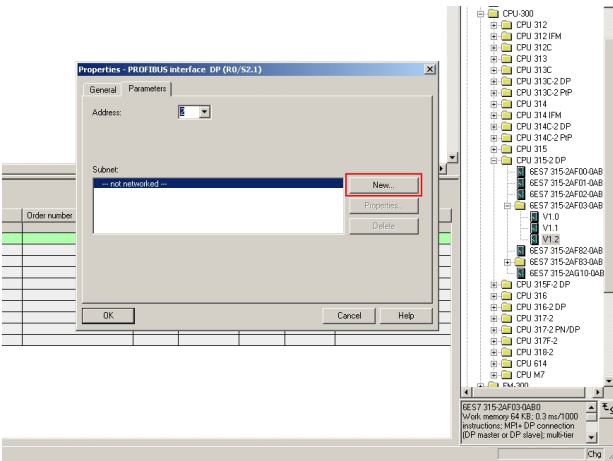


Figure 19 Bus segment name

- Select the "PROFIBUS-DP" → "Additional Field Devices" → "Gateway" item. Now drag the MSI-FB-PB100 into your project.

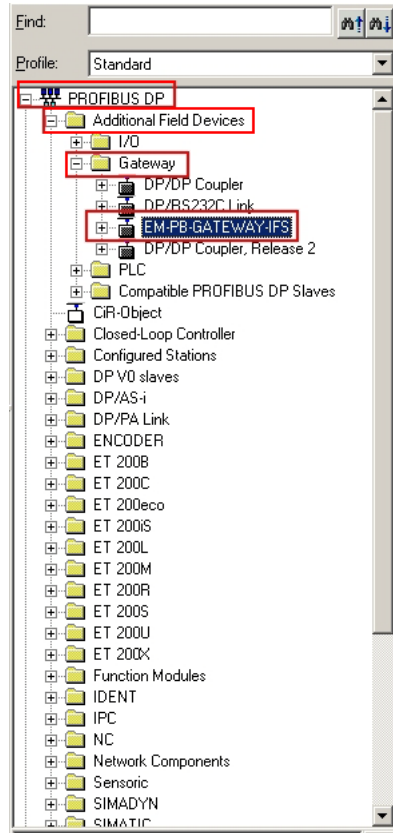


Figure 20 Selecting gateway

- The "Properties" window opens. Under "Address", you must select the address which was configured in the MSI-FB-PB100 in chapter 4.

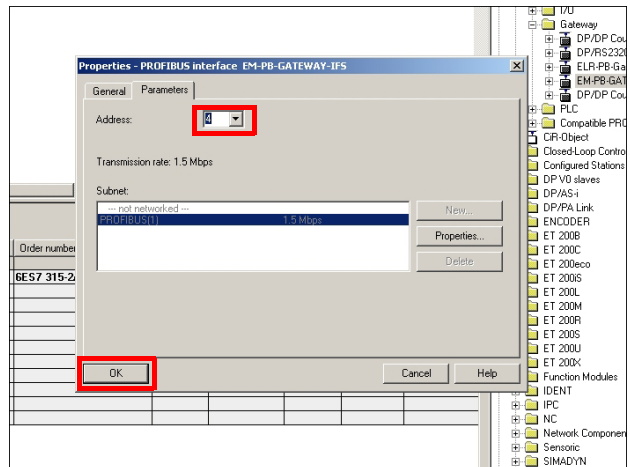


Figure 21 Gateway properties

- You can now drag the necessary GSD data from the Catalog window into your project under the "MSI-FB-PB100" item (see chapter 9).

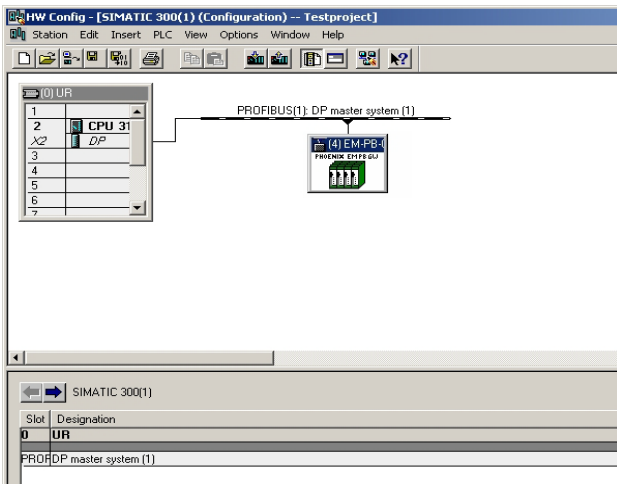


Figure 22 GSD data

8 Setting: byte order

- Open the context menu of the MSI-FB-PB100 and select "Object properties".
- Activate the "Parameter Assignment" tab.

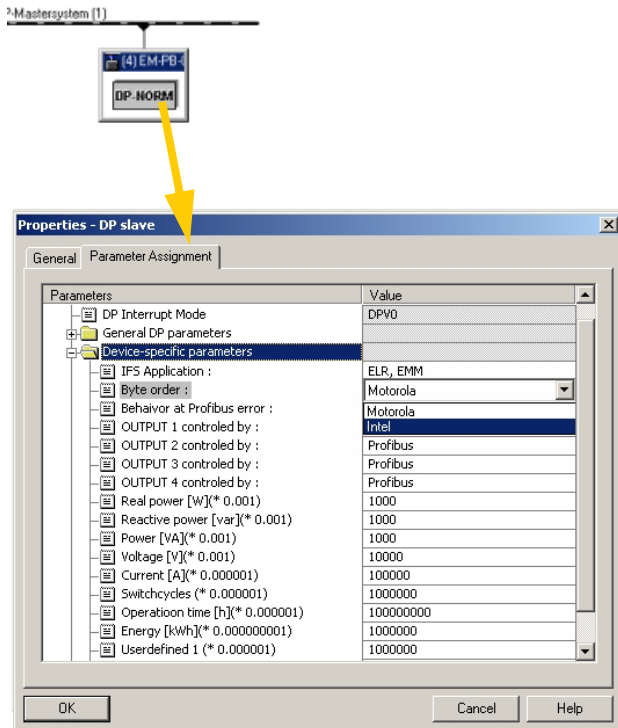


Figure 23 Setting of byte order

- You can set the byte order of the transmitted data here under "Device-specific parameters", item "Byte order".

9 Explanation of GSD data



You can find a comprehensive description in the package insert of the MSI-FB-PB100 supplied with the product.

You can download the package insert at www.leuze.com/controller/.

9.1 GSD data for MSI-FB-PB100

MSI-FB-PB100
Universal module
Digital inputs, outputs
Gateway: Module state
Gateway: Channel State 1
Gateway: Channel State 2
Gateway: Channel State 3
Gateway: Channel State 4
IFS: Slave Error State 1
IFS: Peripherie State 1

9.2 GSD data for MSI 10x

MSI100 – Objects	
MSI100 : Device	Interface
MSI100 : Safe IN w01	Safe inputs: I0 – I15
MSI100 : Safe IN w02	Safe inputs: I16 – I19
MSI100 : Safe OUT w01	Safe outputs: O0 – O3
MSI100 : None Safe OUT w01	Message outputs: M0 – M3 and external signals: EQ0 – EQ11
MSI100 : None Safe OUT w02	External signals: EQ12 – EQ15
MSI100 : PWR-LED	Diagnosis LED: PWR
MSI100 : ERR-LED	Diagnosis LED: ERR

9.3 GSD data for MSI 20x

MSI200 – Objects	
MSI200 : Device	Interface
MSI200 : Safe IN w01	Safe inputs: I0 – I15
MSI200 : Safe IN w02	Safe inputs: I16 – I19
MSI200 : Safe OUT w01	Safe outputs: O0 – O3
MSI200 : None Safe OUT w01	Message outputs: M0 – M3 and external signals: EQ0 – EQ11
MSI200 : None Safe OUT w02	External signals: EQ12 – EQ27
MSI200 : None Safe OUT w03	External signals: EQ28 – EQ43
MSI200 : None Safe OUT w04	External signals: EQ44 – EQ59
MSI200 : None Safe OUT w05	External signals: EQ60 – EQ63
MSI200 : Diag IN w01	Diagnosis LEDs: PWR, DATA, ERR and voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave1 – Diag IN w01	Diagnosis LEDs EM1: PWR, ERR
MSI200 : Slave1 – Diag IN w02	Diagnosis EM1: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave2 – Diag IN w01	Diagnosis LEDs EM2: PWR, ERR
MSI200 : Slave2 – Diag IN w02	Diagnosis EM2: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave3 – Diag IN w01	Diagnosis LEDs EM3: PWR, ERR
MSI200 : Slave3 – Diag IN w02	Diagnosis EM3: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave4 – Diag IN w01	Diagnosis LEDs EM4: PWR, ERR
MSI200 : Slave4 – Diag IN w02	Diagnosis EM4: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave5 – Diag IN w01	Diagnosis LEDs EM5: PWR, ERR
MSI200 : Slave5 – Diag IN w02	Diagnosis EM5: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave6 – Diag IN w01	Diagnosis LEDs EM6: PWR, ERR
MSI200 : Slave6 – Diag IN w02	Diagnosis EM6: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave7 – Diag IN w01	Diagnosis LEDs EM7: PWR, ERR
MSI200 : Slave7 – Diag IN w02	Diagnosis EM7: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave8 – Diag IN w01	Diagnosis LEDs EM8: PWR, ERR
MSI200 : Slave8 – Diag IN w02	Diagnosis EM8: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave9 – Diag IN w01	Diagnosis LEDs EM9: PWR, ERR
MSI200 : Slave9 – Diag IN w02	Diagnosis EM9: voltage supply terminal 24V/0V and short circuit O0 – O3
MSI200 : Slave10 – Diag IN w01	Diagnosis LEDs EM10: PWR, ERR
MSI200 : Slave10 – Diag IN w02	Diagnosis EM10: voltage supply terminal 24V/0V and short circuit O0 – O3

10 Example

The following modules are used in this example:

- SIMATIC S7-300
- MSI-FB-PB100

10.1 Hardware structure

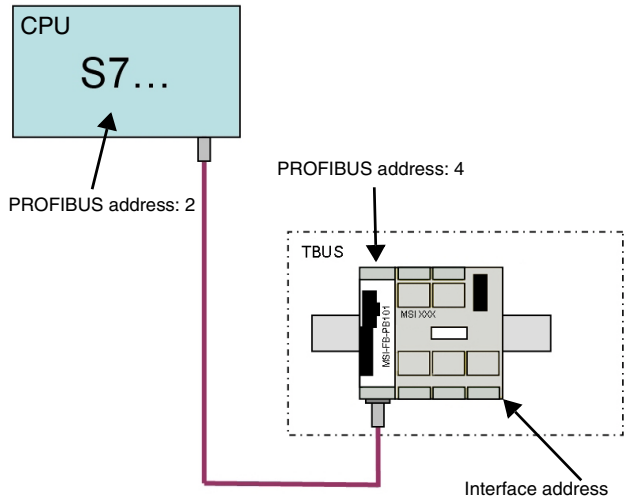

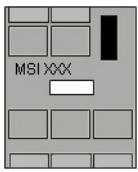


Figure 24 Hardware structure

10.2 GSD values used

	Order no. / designation	
	Digital inputs, outputs	Inputs and outputs of the MSI-FB-PB100
	MSI100 : Device	Must be set
	MSI100 : Safe IN w01	Display: safe inputs: I0 – I15
	MSI100 : Safe IN w02	Display: safe inputs: I16 – I19
	MSI100 : Safe OUT w01	Display: safe outputs: O0 – O3
	MSI100 : None Safe OUT w01	Display: message outputs: M0 – M3

10.3 Monitoring variables

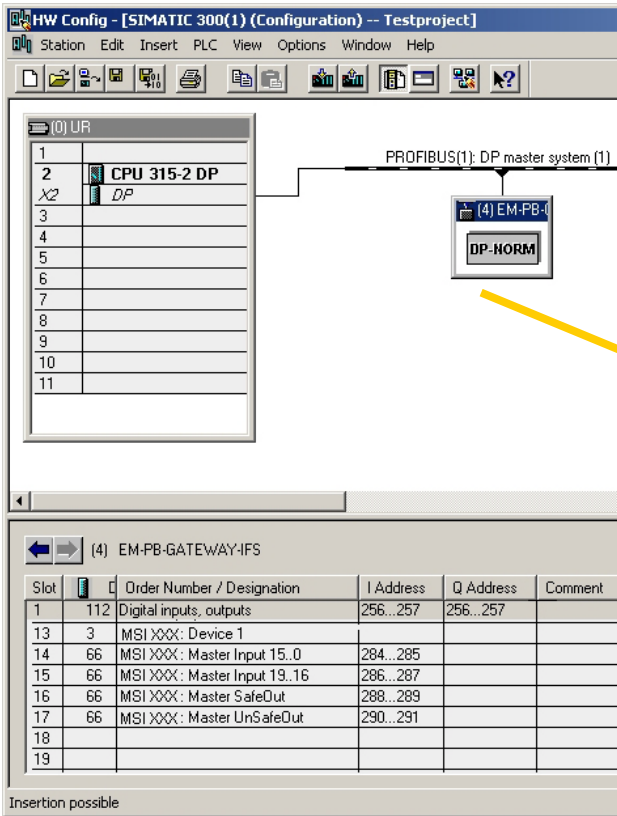


Figure 25 Opening context menu of the MSI-FB-PB100

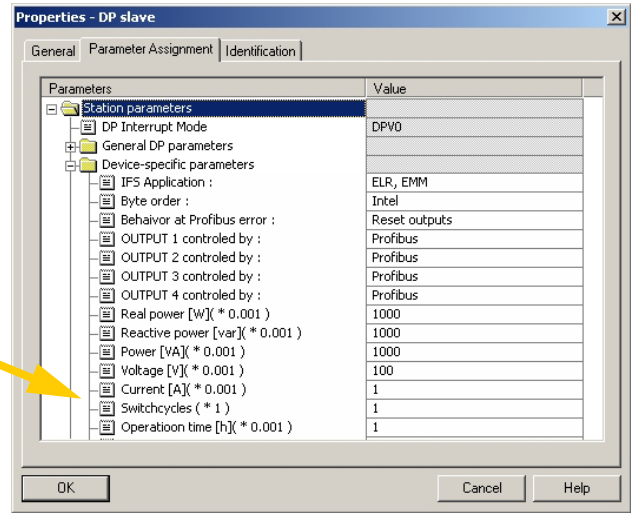


Figure 26 Object properties of the MSI-FB-PB100

- In the object properties of the MSI-FB-PB100, the conversion factors of the measurement values are defined.