

Configuration of a CP342-5 as DP Slave to a CP 342-5 as DP Master

PROFIBUS DP

FAQ • July 2010



Service & Support

Answers for industry.

SIEMENS

This entry is from the Service&Support portal of Siemens AG, Sector Industry, Industry Automation and Drive Technologies. The general terms of use (http://www.siemens.com/terms_of_use) apply.

Clicking the link below directly displays the download page of this document.

<http://support.automation.siemens.com/WW/view/en/6518937>

Question

How do you configure a CP342-5 as DP slave to a CP 342-5 as DP master?

Answer

The instructions and notes listed in this document provide a detailed answer to this question.

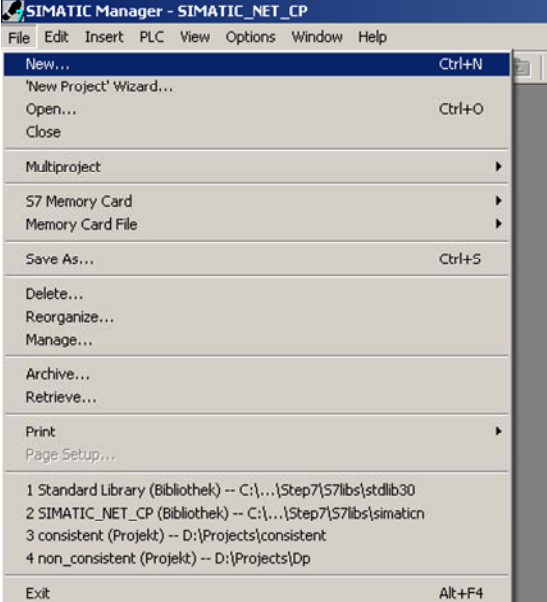
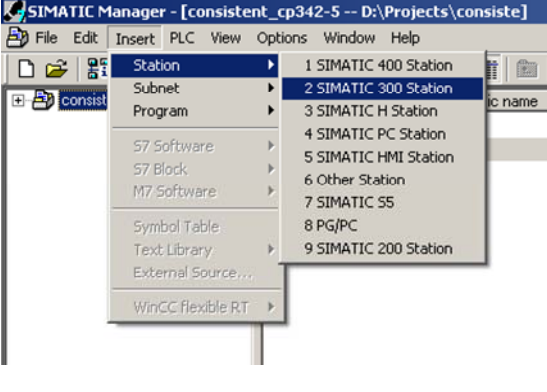
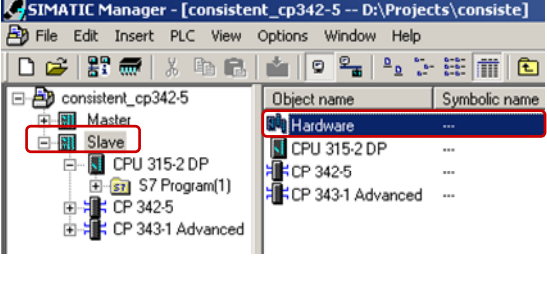
Table of contents

1	Configuration of the CP342-5 as DP Slave.....	4
2	Configuration of the CP342-5 as DP Master.....	7
3	S7 Program in the DP Slave	11
	Parameterization of FC1 "DP_SEND".....	11
	Parameterization of FC2 "DP_READ".....	12
4	S7 Program in the DP Master	14
	Parameterization of FC1 "DP_SEND".....	14
	Parameterization of FC2 "DP_READ".....	15

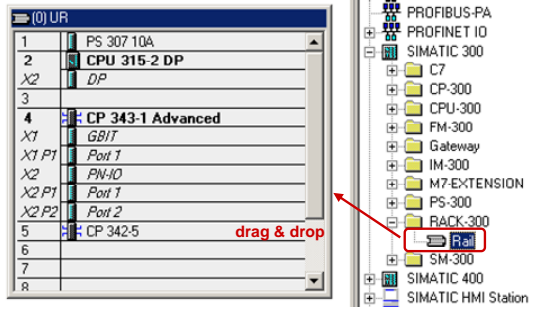
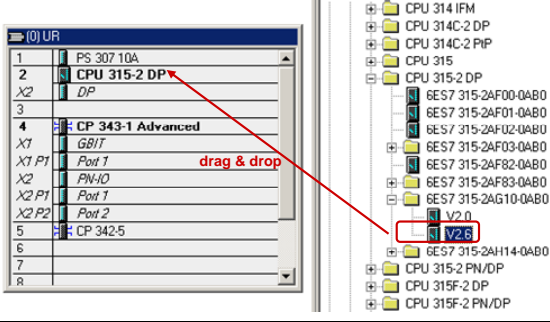
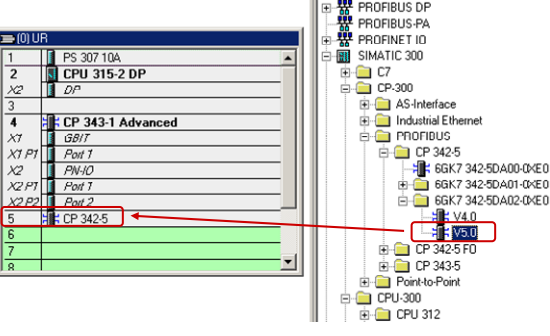
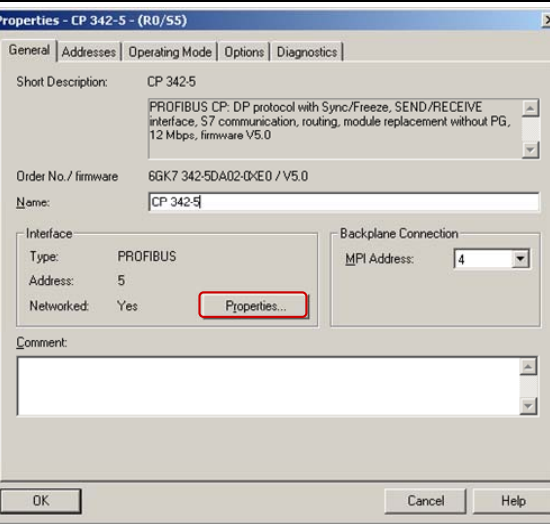
1 Configuration of the CP342-5 as DP Slave

In this example, a CP342-5 is configured as DP slave to a CP 342-5 as DP master. Follow the instructions below for configuring the CP342-5 as DP slave.

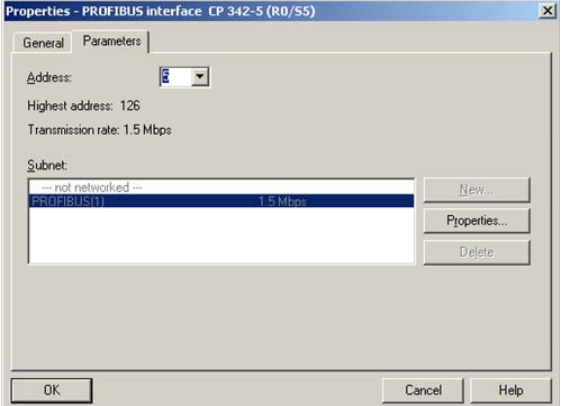
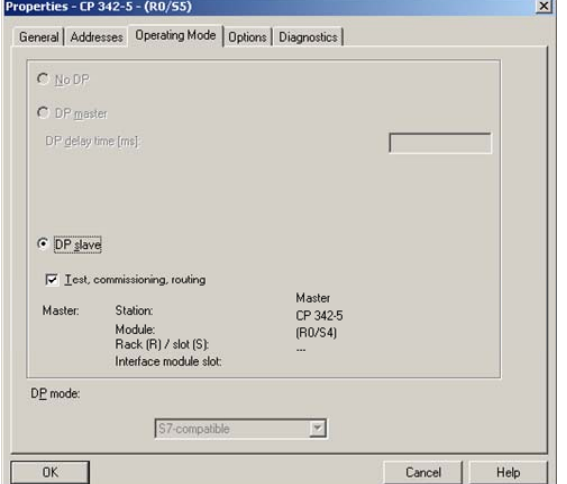
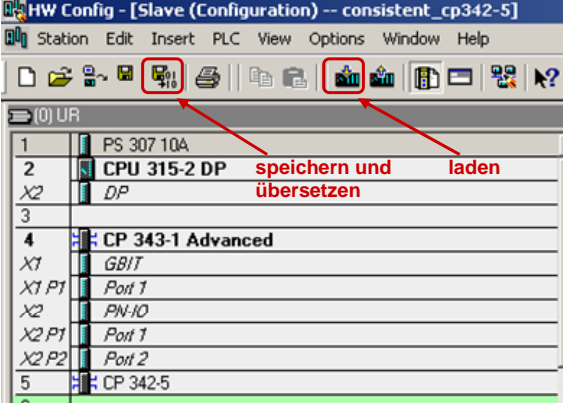
Table 1-1

No.	Action	Remark
1.	In the SIMATIC Manager, you create a new STEP 7 project via the menu "File > New".	 <p>The screenshot shows the SIMATIC Manager File menu. The 'New...' option is highlighted, which is used to create a new STEP 7 project.</p>
2.	Add a SIMATIC 300 station via "Insert > Station".	 <p>The screenshot shows the SIMATIC Manager Insert > Station menu. The '2 SIMATIC 300 Station' option is selected, which is used to add a SIMATIC 300 station to the project.</p>
3.	Mark the SIMATIC 300 station "Slave". Then double-click on Hardware to open the hardware configuration of the SIMATIC 300 station.	 <p>The screenshot shows the SIMATIC Manager hardware configuration window. The 'Slave' station is highlighted in the project tree, and the 'Hardware' object is selected in the object list, which is used to configure the hardware of the SIMATIC 300 station.</p>

1 Configuration of the CP342-5 as DP Slave

No.	Action	Remark
4.	In the Hardware Catalog, under SIMATIC 300, select the mounting channel and drag-and-drop this into the Hardware Configuration.	 <p>The screenshot shows the Hardware Catalog on the right with 'Rack' selected under SIMATIC 300. On the left, the hardware configuration table shows slot 5 containing 'CP 342-5', with a red arrow and the text 'drag & drop' pointing to it.</p>
5.	In the Hardware Catalog, select the CPU being and drag-and-drop this to slot 2 of the mounting channel.	 <p>The screenshot shows the Hardware Catalog on the right with 'CPU 315-2 DP' selected. On the left, the hardware configuration table shows slot 2 containing 'CPU 315-2 DP', with a red arrow and the text 'drag & drop' pointing to it.</p>
6.	In the Hardware Catalog, select the relevant CP342-5 and drag-and-drop this to any slot of the mounting channel. Double-click on the CP342-5 to open the Properties dialog of the CP342-5.	 <p>The screenshot shows the Hardware Catalog on the right with 'CP 342-5 V5.0' selected. On the left, the hardware configuration table shows slot 5 containing 'CP 342-5', with a red arrow pointing to it.</p>
7.	In the Properties dialog of the CP342-5, select the "General" tab and click on the "Properties" button.	 <p>The screenshot shows the 'Properties - CP 342-5 - (R0/55)' dialog box. The 'General' tab is selected. The 'Interface' section shows 'Type: PROFIBUS' and 'Address: 5'. The 'Backplane Connection' section shows 'MPI Address: 4'. A red box highlights the 'Properties...' button.</p>

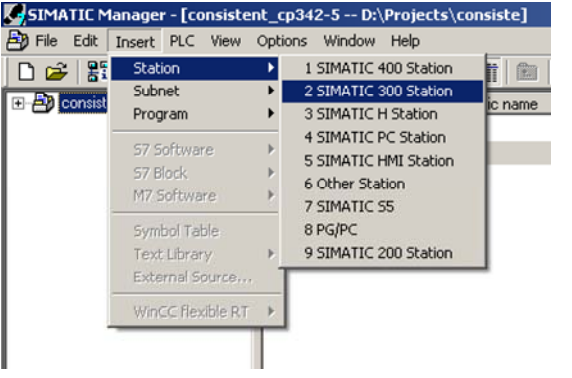
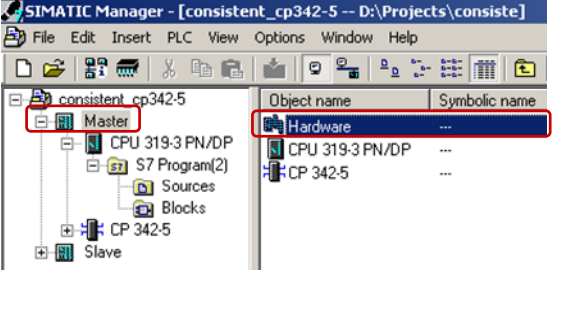
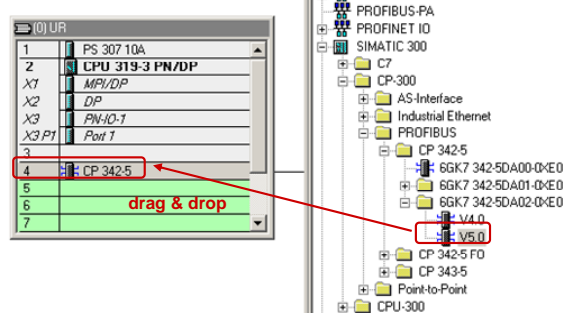
1 Configuration of the CP342-5 as DP Slave

No.	Action	Remark
8.	<p>Specify a PROFIBUS address for the CP342-5 and assign a PROFIBUS subnetwork to the CP342-5. If you have not yet created a PROFIBUS subnetwork, click on the "New" button to create a new PROFIBUS subnetwork.</p> <p>Confirm the settings with "OK".</p>	
9.	<p>In the Properties dialog of the CP342-5, you switch to the "Operating Mode" tab. Select "DP slave" as the operating mode.</p>	
10.	<p>Save and compile the hardware configuration of the S7-300 station. Load the configuration into the CPU.</p>	

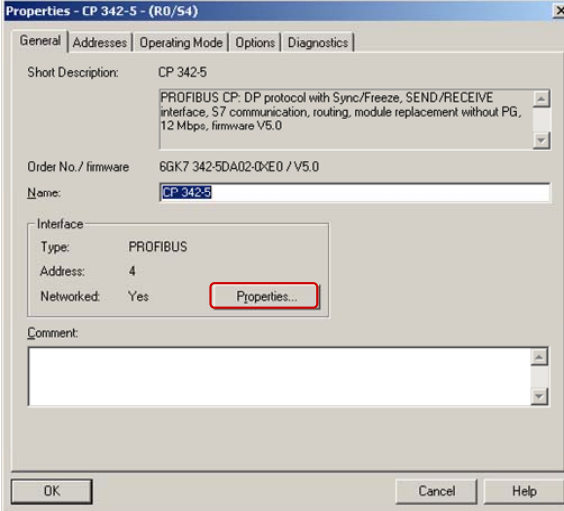
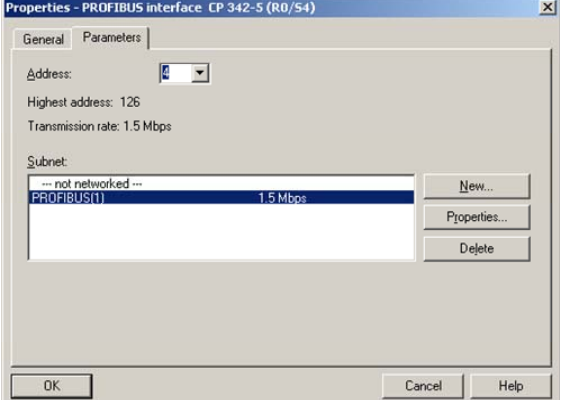
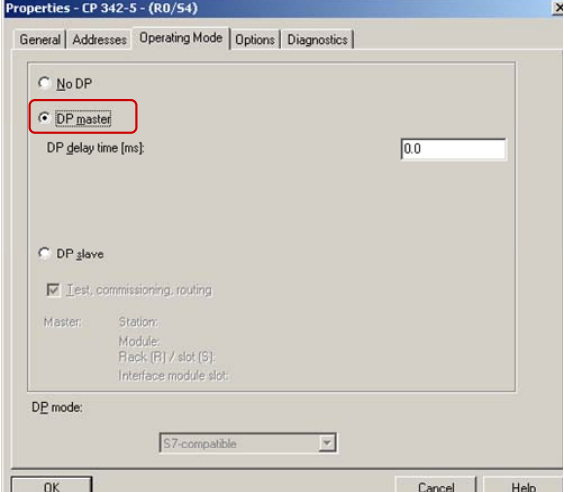
2 Configuration of the CP342-5 as DP Master

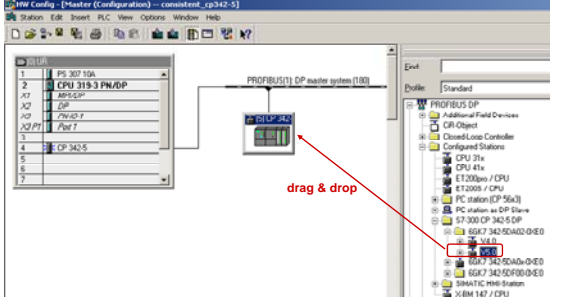
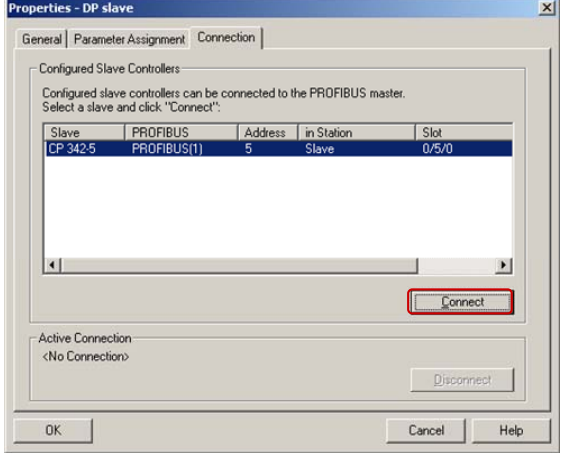
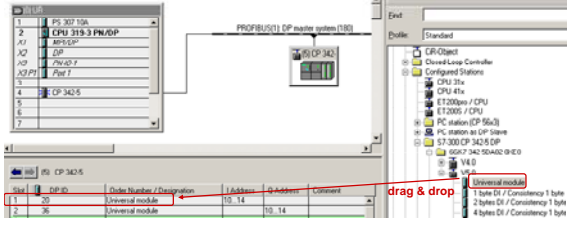
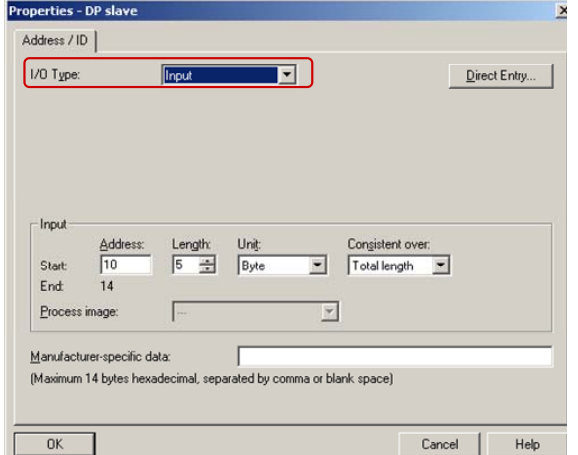
In the example, a CP342-5 is configured as a DP master. Please follow the instructions below for configuring the CP342-5 as DP master.

Table 2-1

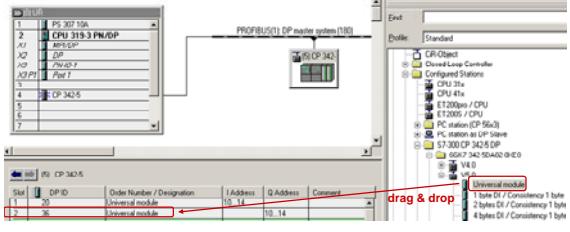
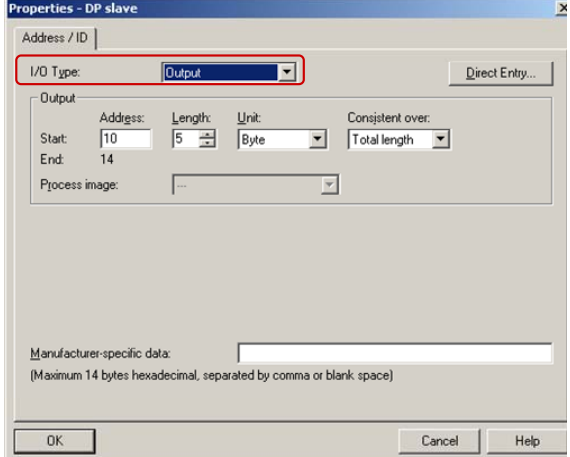
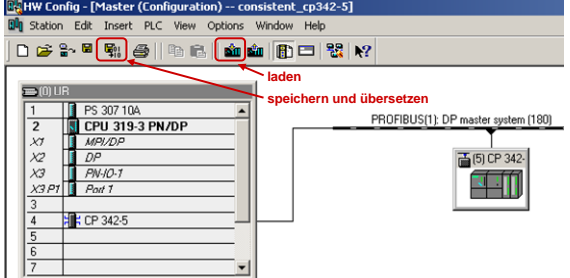
No.	Action	Remark
1.	If you have configured the S7-300 CPU as DP slave, add another S7-300 station to your STEP 7 project.	
2.	Mark the SIMATIC 300 station "Master". Then double-click on Hardware to open the hardware configuration of the SIMATIC 300 station.	
3.	In the Hardware Catalog, under SIMATIC 300, select the mounting channel, the appropriate CPU and the CP342-5 and drag-and-drop them into the Hardware Configuration. Double-click on the CP342-5 to open the Properties dialog of the CP342-5.	

2 Configuration of the CP342-5 as DP Master

No.	Action	Remark
4.	In the Properties dialog of the CP342-5, select the "General" tab and click on the "Properties" button.	
5.	Specify a PROFIBUS address for the CP342-5 and assign a PROFIBUS subnetwork to the CP342-5. The DP slave and the DP master are assigned to the same PROFIBUS subnetwork. Confirm the settings with "OK".	
6.	In the Properties dialog of the CP342-5, you switch to the "Operating Mode" tab. Select "DP master" as the operating mode. Confirm the settings with "OK".	

No.	Action	Remark																		
7.	<p>In the Hardware Catalog, under PROFIBUS DP > Configured Stations > S7-300 CP 342-5 DP, select the CP342-5 and drag-and-drop it into the master system of the CP342-5.</p> <p>The Properties dialog of the DP slave opens automatically.</p>	 <p>The screenshot shows the HW Config interface with a hardware catalog on the right. A CP342-5 DP slave is highlighted in red and being dragged towards the master system (PROFIBUS(1) DP master system (100)) in the center workspace. A red arrow labeled 'drag & drop' points to the slave component.</p>																		
8.	<p>In the Properties dialog of the DP slave, select the "Connection" tab and click on the "Connect" button.</p>	 <p>The screenshot shows the 'Properties - DP slave' dialog box with the 'Connection' tab selected. A table under 'Configured Slave Controllers' shows a CP 342-5 slave connected to PROFIBUS(1) at address 5. A red box highlights the 'Connect' button at the bottom right.</p> <table border="1" data-bbox="821 750 1173 817"> <thead> <tr> <th>Slave</th> <th>PROFIBUS</th> <th>Address</th> <th>in Station</th> <th>Slot</th> </tr> </thead> <tbody> <tr> <td>CP 342-5</td> <td>PROFIBUS(1)</td> <td>5</td> <td>Slave</td> <td>0/5/0</td> </tr> </tbody> </table>	Slave	PROFIBUS	Address	in Station	Slot	CP 342-5	PROFIBUS(1)	5	Slave	0/5/0								
Slave	PROFIBUS	Address	in Station	Slot																
CP 342-5	PROFIBUS(1)	5	Slave	0/5/0																
9.	<p>Mark the DP slave connected to the DP master system and drag-and-drop the universal module to slot 0.</p> <p>Double-click on the universal module to define the input address, the length, the unit and the consistency.</p>	 <p>The screenshot shows the HW Config interface with a table of modules for the CP 342-5. A red box highlights a 'Universal module' in the table, and a red arrow labeled 'drag & drop' points to it from the hardware catalog on the right.</p> <table border="1" data-bbox="791 1265 1173 1321"> <thead> <tr> <th>Slot</th> <th>Module</th> <th>Order Number / Designation</th> <th>Address</th> <th>Q-Address</th> <th>Consistency</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DP-DI</td> <td></td> <td>10..14</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Universal module</td> <td></td> <td>10..14</td> <td></td> <td></td> </tr> </tbody> </table>	Slot	Module	Order Number / Designation	Address	Q-Address	Consistency	1	DP-DI		10..14			2	Universal module		10..14		
Slot	Module	Order Number / Designation	Address	Q-Address	Consistency															
1	DP-DI		10..14																	
2	Universal module		10..14																	
10.	<p>For I/O type select the "Input" item.</p> <p>Enter the start address, length, unit and consistency for the input.</p> <p>To ensure that the data is transferred consistently in the block, under "Consistent over:" you select the "Total length" item.</p> <p>Confirm the settings with "OK".</p>	 <p>The screenshot shows the 'Properties - DP slave' dialog box with the 'I/O Type' tab selected. The 'I/O Type' is set to 'Input'. The 'Consistent over:' dropdown is set to 'Total length'. The 'Start' address is 10, 'End' is 14, and 'Unit' is 'Byte'.</p>																		

2 Configuration of the CP342-5 as DP Master

No.	Action	Remark
11.	<p>Mark the DP slave connected to the DP master system and drag-and-drop another universal module to slot 1.</p> <p>Double-click on the universal module to define the output address, the length, the unit and the consistency.</p>	
12.	<p>For I/O type select the "Output" item.</p> <p>Enter the start address, length, unit and consistency for the output.</p> <p>To ensure that the data is transferred consistently in the block, under "Consistent over:" you select the "Total length" item.</p> <p>Confirm the settings with "OK".</p>	
13.	<p>Save and compile the hardware configuration of the S7-300 station.</p> <p>Load the configuration into the CPU.</p>	

3 S7 Program in the DP Slave

The CP342-5 always transfer the data consistently. For data exchange via PROFIBUS you call functions FC1 "DP_SEND" and FC2 "DP_READ" in the user program of the CPU.

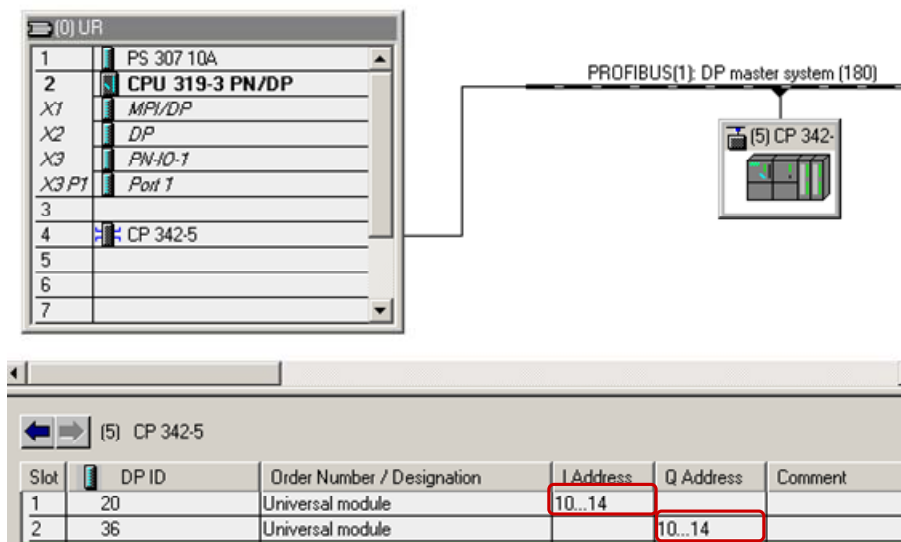
Functions FC1 and FC2 are available in the SIMATIC_NET_CP > CP 300 > Blocks library.

Parameterization of FC1 "DP_SEND"

The FC1 "DP_SEND" transfers the input data of the DP slave to the CP342-5 for transfer to the DP master.

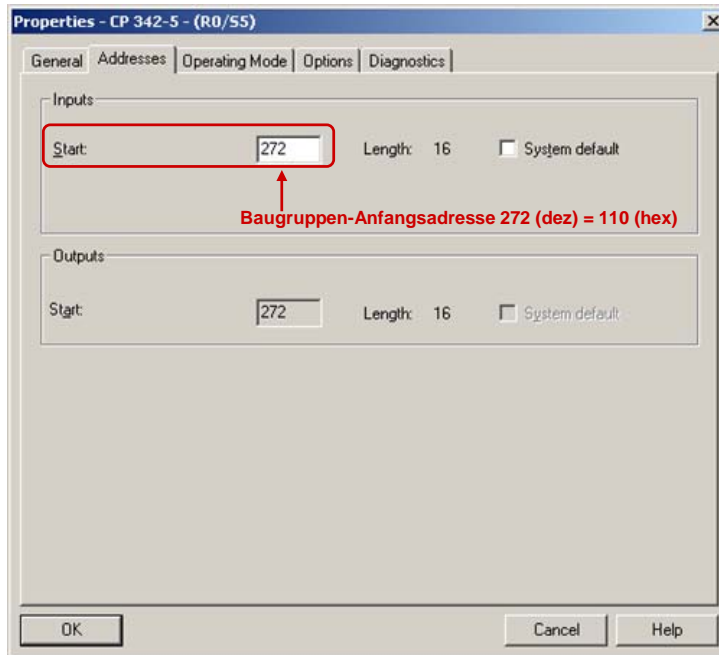
In this example, the input data is configured with the start address 10 and a length of 5 bytes, i.e. the address area of the input data are I addresses 10 to 14 (see Figure 3-1).

Figure 3-1



At the input parameter CPLADDR of FC1, you specify the module start address. You take the module start address from the Hardware Configuration of the S7-300 station that is configured as DP slave. In the Hardware Configuration you open the Properties dialog of the CP342-5. The module start address is defined in the "Addresses" tab (see Figure 3-2).

Figure 3-2



At the SEND input parameter of FC1 you specify the address and length of the DP data area in which the input data of the DP slave are stored. The length of the DP data area must correspond to the length of the address area of the input data.

In this example, the FC1 "DP_SEND" transfers the 5 bytes of input data of the DP slave to the DB1 as of address 10 for transfer to the DP master.

Figure 3-3

```
CALL "DP_SEND"
CPLADDR:=W#16#110 ← Baugruppen-Anfangsadresse
SEND :=P#DB1.DBX10.0 BYTE 5
DONE :=M10.0
ERROR :=M10.1
STATUS :=MW12
```

DP- Datenbereich, in dem die Eingangsdaten des DP- Slaves gespeichert sind

Parameterization of FC2 "DP_READ"

FC2 "DP_READ" reads the output data transferred from the DP master into the DP data area specified on the block.

In this example, the output data is configured with the start address 10 and a length of 5 bytes, i.e. the address area of the output data are O addresses 10 to 14 (see Figure 3-1).

At the input parameter CPLADDR of FC2, you specify the module start address. You take the module start address from the Hardware Configuration of the S7-300 station that is configured as DP slave. In the Hardware Configuration you open the Properties dialog of the CP342-5. The module start address is defined in the "Addresses" tab (see Figure 3-2).

At the RECV input parameter of FC2 you specify the address and length of the DP data area in which the output data is received. The length of the DP data area must correspond to the length of the address area of the output data.

In this example, FC2 "DP_RECV" reads the 5 bytes of output data transferred from the DP master into DB2 as of address 10.

Figure 3-4

```
CALL "DP_RECV"  
CPLADDR :=W#16#110  
RECV :=P#DB2.DBX10.0 BYTE 5  
NDR :=M20.0  
ERROR :=M20.1  
STATUS :=MW22  
DPSTATUS:=MB24
```

← Baugruppen-Anfangsadresse

DP- Datenbereich, in den die vom DP- Master übertragenen Ausgangsdaten übernommen werden

4 S7 Program in the DP Master

The CP342-5 always transfer the data consistently. For data exchange via PROFIBUS you call functions FC1 "DP_SEND" and FC2 "DP_READ" in the user program of the CPU.

Functions FC1 and FC2 are available in the SIMATIC_NET_CP > CP 300 > Blocks library.

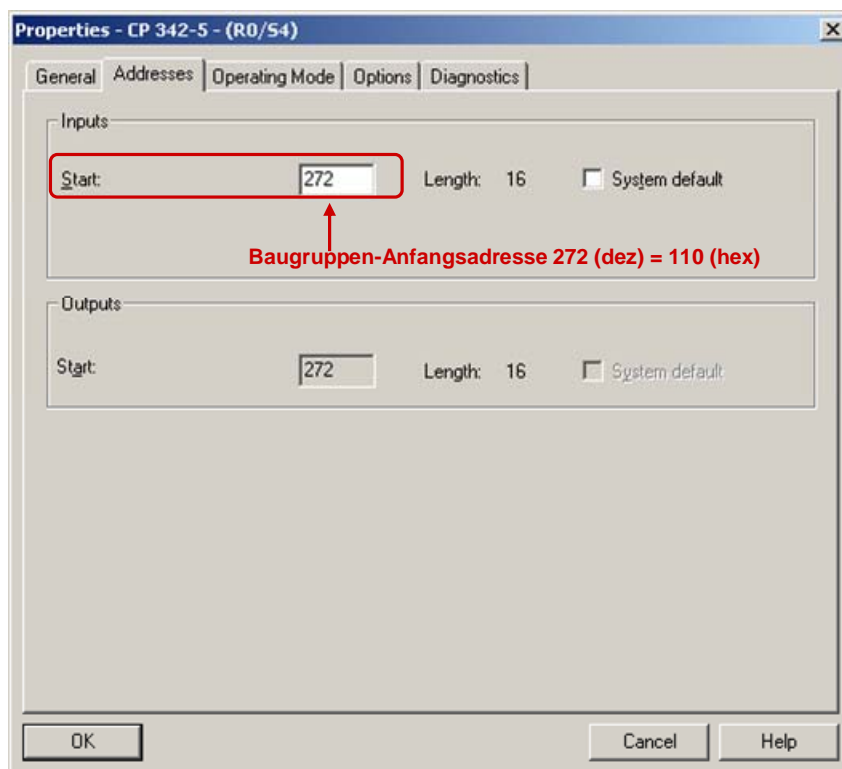
Parameterization of FC1 "DP_SEND"

The FC1 "DP_SEND" transfers the data of a specified DP output area to the CP342-5 for output to the DP slave.

In this example, the output data is configured with the start address 10 and a length of 5 bytes, i.e. the address area of the output data are O addresses 10 to 14 (see Figure 3-1). The total length of the address area of the output data and the DP output area is 15 bytes.

At the input parameter CPLADDR of FC1, you specify the module start address. You take the module start address from the Hardware Configuration of the S7-300 station that is configured as DP master. In the Hardware Configuration you open the Properties dialog of the CP342-5. The module start address is defined in the "Addresses" tab (see Figure 4-1).

Figure 4-1



At the SEND input parameter of FC1 you specify the address and length of the DP output area in which the send data will be stored. The length of the DP output area must be at least as long as the total length of the address area of the output data.

In this example, the FC1 "DP_SEND" transfers the 15 bytes from the DB1 as of address 0 to the DP output area for transfer to the DP slave.

Figure 4-2

```

CALL "DP_SEND"
CPLADDR:=W#16#110
SEND :=P#DB1.DBX0.0 BYTE 15
DONE :=M10.0
ERROR :=M10.1
STATUS :=MW12

```

← Baugruppen- Anfangsadresse

↑ DP- Ausgabebereich zur Übertragung an den DP- Slav

Parameterization of FC2 "DP_READ"

FC2 "DP_RECV" reads the process data of the DP slave into the DP input area specified.

In this example, the input data is configured with the start address 10 and a length of 5 bytes, i.e. the address area of the input data are I addresses 10 to 14 (see Figure 3-1). The total length of the address area of the input data and the DP input area is 15 bytes.

At the input parameter CPLADDR of FC2, you specify the module start address. You take the module start address from the Hardware Configuration of the S7-300 station that is configured as DP master. In the Hardware Configuration you open the Properties dialog of the CP342-5. The module start address is defined in the "Addresses" tab (see Figure 4-1).

At the RECV input parameter of FC2 you specify the address and length of the DP input area in which the received data will be stored. The length of the DP input area must be at least as long as the total length of the address area of the input data.

In this example, FC2 "DP_RECV" reads 15 bytes from the DP input area into DB2 as of address 0.

Figure 4-3

```

CALL "DP_RECV"
CPLADDR:=W#16#110
RECV :=P#DB2.DBX0.0 BYTE 15
REQ :=REQ0
REQD :=REQ1
STATUS :=MW22
DPSTATUS :=MW24

```

← Baugruppen- Anfangsadresse

↑ DP- Eingabebereich