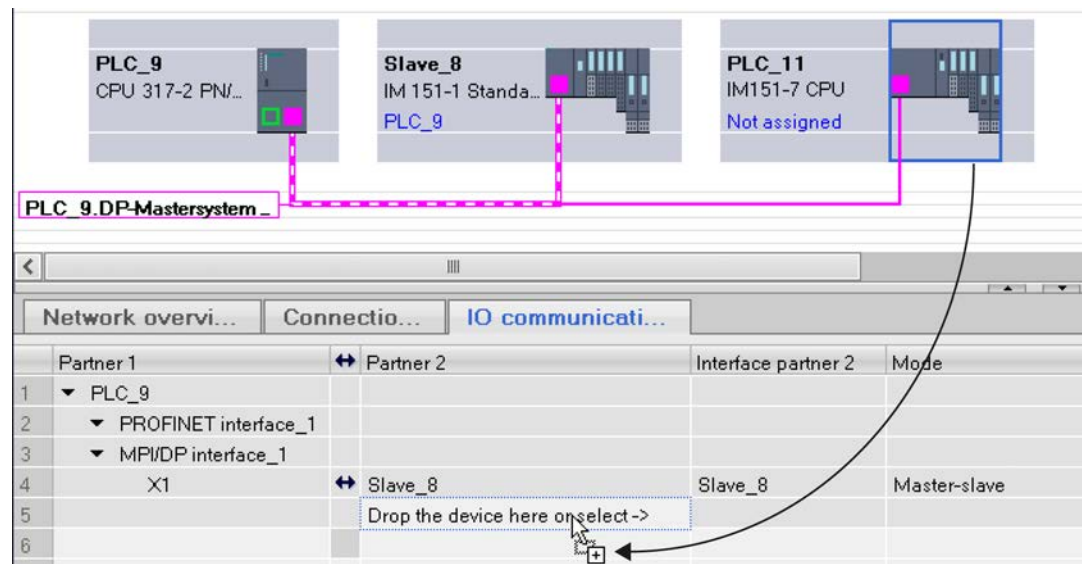


## Setting up direct data exchange

To set up direct data exchange, proceed as follows:

1. Click on the required communications partner (sender or receiver) to select it.
2. Press and hold down the left mouse button and then drag the second communications partner into the "Place device here" field, or select the "Partner 2" column of the I/O communications table.



Alternatively, click directly on the "Place device here..." and select the connection partner you want from the drop-down list box.

Using drag-and-drop, you have now managed to set up a relationship in the table between two nodes for the purpose of communication. In a new line of the I/O communications table, "Direct data exchange" will now be displayed.

### Note

The sender is always selected first in the case of a direct data exchange between two I-slaves. Subsequently, the receiver is dragged to the "Place device here or select" field or select from the drop-down list box. The communication direction of the direct data exchange determines the order in this case.

## Configuring direct data exchange

To configure direct data exchange, proceed as follows:

1. Select a direct data exchange partner.
2. In the I/O communications table, select the line showing "Direct data exchange" mode.
3. Select "Properties > Direct data exchange" in the Inspector window.

4. Create a new transfer area under "Direct data exchange" in the transfer area table:  
In the "Transfer area" column, click on "<Add new>" and select the "DX" communication type for direct data exchange in the "Type" drop-down list box. You can also create the new transfer area by setting the communication type in a new column only under "Type". The transfer area is then created automatically.
5. Under "Direct data exchange", click on the newly created transfer area.  
The detail view of the transfer area is opened.
6. Edit the properties for the sender and receiver and the general parameters of the direct data exchange.

You have now configured direct data exchange.

### Deleting direct data exchange

To delete the direct data exchange, proceed as follows:

1. In the I/O communications table, select the line showing "Direct data exchange" mode.
2. Press "Del" or select the "Delete" command from the shortcut menu.

### Example of how to configure direct data exchange

#### Introduction

In this example, you are going to configure three CPUs in a master-slave configuration for direct data exchange. You are then going to assign meaningful names and configure the address areas.

Use the CPUs below, which should be configured as follows:

CPU	Task	Address	Data
317-2 PN/DP	DP master	I 200	8 words from sender
315-2 DP	Sender	Q 100	8 words to master
317-2 DP	Receiver	I 120	First 2 bytes of the 8 words from the sender

#### Requirement

- You must be in the network view.
- The hardware catalog is open.

## Setting up a PROFIBUS DP master system

To set up a PROFIBUS DP master system, proceed as follows:

1. Drag and drop the following CPUs from the hardware catalog into the network view:  
315-2 DP, 317-2 DP and 317-2 PN/DP.
2. Give the CPUs meaningful names:
  - Select the CPU 317-2 PN/DP.
  - Assign the name "DP master" to the CPU under "Properties > General" in the Inspector window.

Now repeat the naming process for the other CPUs, calling them "Sender" and "Receiver" respectively.

3. Select the CPU 317-2 PN/DP and then, if necessary, change the interface type from "MPI" to "PROFIBUS" under "Properties > MPI/DP interface > MPI address" in the Inspector window.  
Note: If the MPI/DP interface is set to "PROFIBUS" type, the entry is no longer "MPI address" but rather "PROFIBUS address".
4. Select CPUs 315-2 DP and 317-2 DP one after the other and in both cases select "Slave" mode under "Properties > DP interface > Mode" in the Inspector window.  
The two CPUs 315-2 DP "Sender" and 317-2 "Receiver" are now being operated as I-slaves.
5. While holding down the mouse button, draw the PROFIBUS connections between the master CPU and the two slave CPUs.

You have now successfully set up a PROFIBUS master system with the CPU 317-2 PN/DP as DP master and the 315-2 DP "Sender" and 317-2 DP "Receiver" as I-slaves. New lines for the communications partners will have been created in the I/O communications table relating to the CPUs. "I-slave" will be displayed in the "Mode" column.

## Setting up direct data exchange

To set up direct data exchange within the PROFIBUS master system, proceed as follows:

1. Select the "Sender".
2. Press and hold down the left mouse button and then drag the "Receiver" to the "Place device here" field, which appears in the "Partner 2" column of the I/O communications table.  
Note: You can also open the drop-down list box in the "Place device here" field of the "Partner 2" column, and select the "Receiver" from this list.

You have now successfully set up a direct data exchange between the two I-slaves. A new line will have been created in the I/O communications table relating to the two I-slaves. "Direct data exchange" will be displayed in the "Mode" column.

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### Note

The arrow symbols in the I/O communication table between the "Peer 1" and "Peer 2" columns indicate the directions of the communication relations. The arrows point in both directions for master-slave and slave-I-slave relations. The arrows point from the sender to the receiver in the case of communication relations between I-slaves or during direct data exchange.

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## Configuring master-slave communication

To select master-slave communication, proceed as follows:

1. Select one of the two communication partners of master-slave communication (DP master CPU 317-2 PN/DP or I-slave CPU 315-2 DP "sender")
2. In the I/O communications table, click on the line with the respective second partner and "I-slave" mode.
3. Select "Properties > I-slave communication" in the Inspector window.

Or:

1. Select the CPU 315-2 DP "sender" I-slave.
2. Select "Properties > DP interface > Mode > I-slave communication" in the Inspector window.

To configure master-slave communication, proceed as follows:

1. Create a new transfer area under "I-slave communication" in the transfer area table:  
In the "Transfer area" column, click on "<Add new>" and select the "MS" communication type for master-slave communication in the "Type" drop-down list box. You can also create the new transfer area by setting the communication type in a new column only under "Type". The transfer area is then created automatically.
2. Under "I-slave communication", click on the newly created transfer area.  
The detail view of the transfer area is opened.
3. Make the following entries:  
for "DP master":
  - Address type I
  - Start address 200
  - Length 8
  - Unit WORD
  - Consistency total lengthfor "Sender":
  - Address type Q
  - Start address 100

Once the data length has been specified, the slave and master addresses for the required data space are completed. If you click on "I-slave communication" in the Inspector window, you will see an overview of the updated configuration of master-slave communication.

## Configuring direct data exchange

To configure direct data exchange, proceed as follows:

1. Select one of the two communication partners of direct data exchange (I-slave CPU 315-2 DP "Sender" or I-slave CPU 317-2 DP "Receiver")
2. In the I/O communications table, click on the line showing "Direct data exchange" mode.
3. Select "Properties > Direct data exchange" in the Inspector window.

To configure direct data exchange, proceed as follows:

1. Create a new transfer area under "Direct data exchange" in the transfer area table:  
In the "Transfer area" column, click on "<Add new>" and select the "DX" communication type for direct data exchange in the "Type" drop-down list box. You can also create the new transfer area by setting the communication type in a new column only under "Type". The transfer area is then created automatically.
2. Under "Direct data exchange", click on the newly created transfer area.  
The detail view of the transfer area is opened.
3. Make the following entries:  
for "Sender":
  - Address 100
  - Data length 1
  - Unit WORD
 for "Receiver":
  - Address 120

**Note**

If the sender in the direct data exchange is a normal DP slave, no transfer areas will be configured. Instead, an input module has to be added to the sender.

**Particularity**

In theory, you can also set an start address higher than 200 (202, for example). The length of consistent data will be adapted automatically. Furthermore, you can set a shorter length than that specified by the sender (1 byte, for example).

**Note**

If a consistent length of 3 bytes or more than 4 bytes is set for the sender and the data is to be transferred with the extended instruction of system function "DPWR\_DAT" (SFC 15), the receiver will always need to use extended instruction "DPRD\_DAT" (SFC 14) even if only 1 byte is actually being read, for example!

If you are using a loading operation (L IB..) instead of the DPRD\_DAT to read 1 byte, a "0" is read in (incorrect value).

**DPWR\_DAT call on sender (CPU 315-2 DP)****STL**

```
CALL    "DPWR_DAT"
        LADDR    :=W#16#64           //Start address Q 100
        RECORD   :=P#M 10.0 BYTE 16 //User data source area
        RET_VAL:=MW100              //Return value
```