Safety-Related IO Controller-I-Device Communication

SIMATIC, PROFIsafe

https://support.industry.siemens.com/cs/ww/en/view/109478798

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Table of Contents

1 Introduction

1.1 Overview

Description

Even in fail-safe automation systems, there is often the need to implement a deterministic communication between modules or machines that is easy to configure, to avoid having to use "additional" connection-related means of communication.

This document describes the following engineering options:

1. Safety-related communication between two F-CPUs is configured in a joint TIA Portal project.
2. Safety-related communication between two F-CPUs is configured in separate TIA Portal projects (cross projects).

Note This document only describes the use of the I-device function in a safe environment and explains the differences to standard environments. A detailed description, the benefits and the area of application of the I-device function can be found in the document "I-device in a standard environment" on the entry page of the application example:

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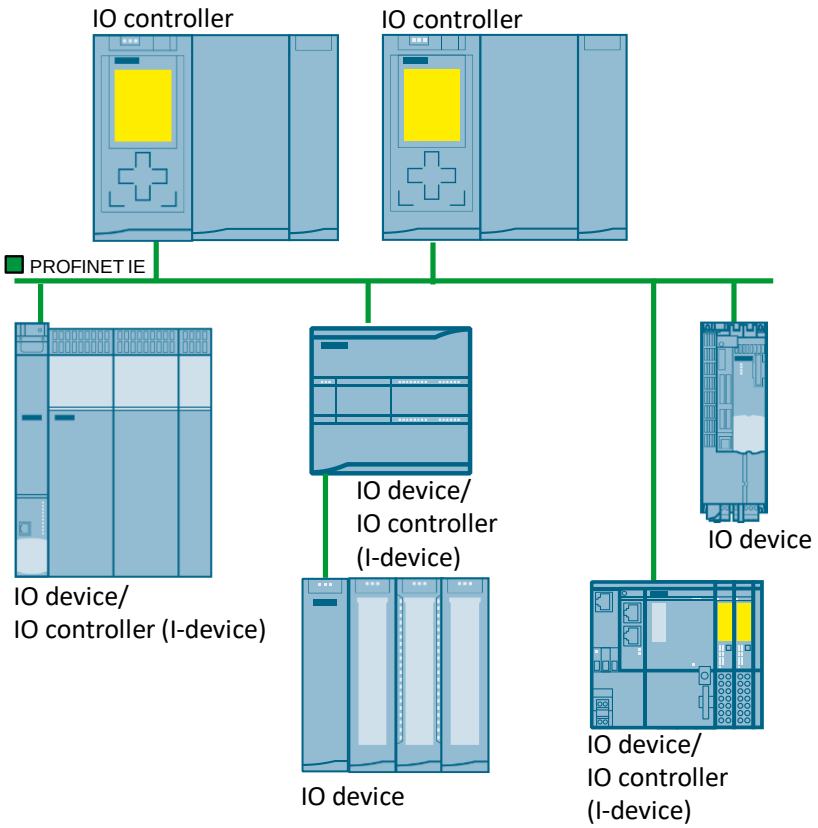
Schematic diagram

Figure 1-1



The I-device allows a very simple and fast communication between two PROFINET IO devices (or PN IO controllers) in the same subnet that can take place simultaneously and on one bus, even in a Safety-related environment.

The safety-related communication between the safety program of the F-CPU of an IO controller and the safety program(s) of the F CPU(s) of one or more I-devices takes place via connections between IO controller and I-device connections (F-CD) (via PROFINET IO, just like in the standard application).

The communication between IO controller and I-device requires no additional hardware.

Suitable components

The I-device function in a safe environment is supported by the following modules:

- S7-1200, S7-1500
- S7-300 (as of V3.2), S7-400 (as of V6)
- ET 200S CPU, ET 200SP CPU, ET 200pro CPU
- SIMOTION

Note Only the internal PROFINET interface of the I-device can be used for safety-related IO controller-I-device communication.

1.2 Differences to standard communication

General

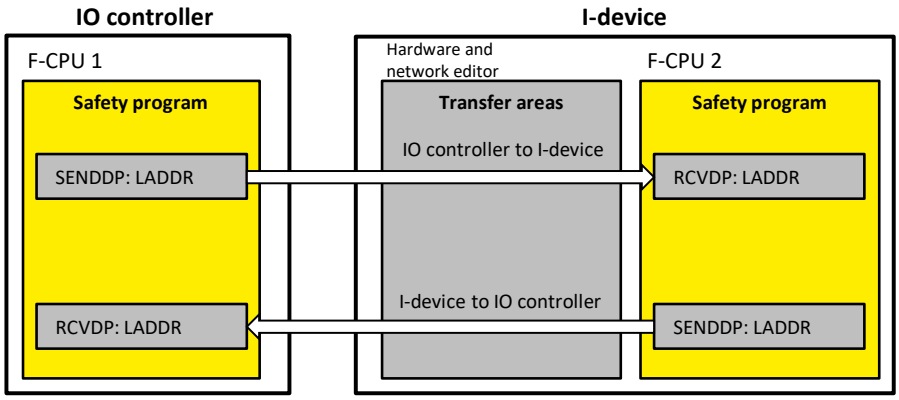
A safety-related communication between IO controller and I-device transfers a fixed number of data fail-safe between the safety programs of F-CPUs.

In contrast to the standard communication, the inputs and outputs of the created transfer areas of the IO controller or I-device are not accessed directly.

The data is transferred using the "SENDDP" instruction and received with the "RCVDP" instruction and stored in configured transfer areas of the devices. A transfer area consists of an input and an output address range.

"SENDDP" serves the respective outputs of the IO controller/I-device and "RCVDP" reads their inputs.

Figure 1-2



Transfer areas

Transfer areas are required for the communication between IO controller and IO device even in a safe environment. These contain the data to be transferred.

These transfer areas are assigned to the "SENDDP" and "RCVDP" blocks, as these are used to exchange data in a safety-related environment.

Rules:

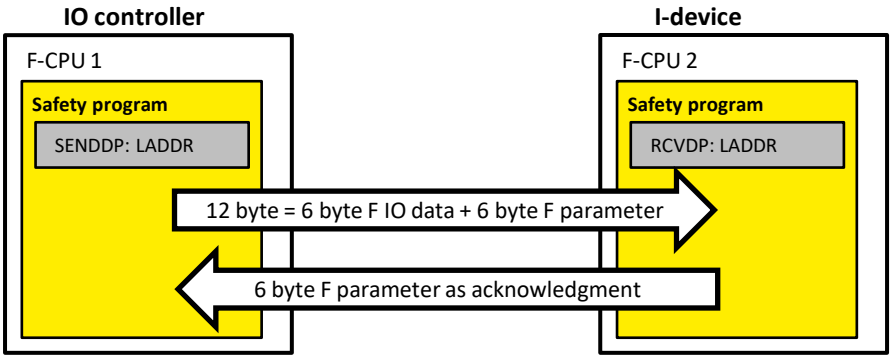
- The transfer area of the data to be **sent** must start with the same start address for output data and input data (this only applies to the SIMATIC S7-300/400 controllers).
  The output data transfer area requires 12 bytes (consistently); the input data transfer area requires 6 bytes (consistently).
- The transfer area of the data to be **received** must start with the same start address for output data and input data must start with the same start address for output data and input data (this only applies to the SIMATIC S7-300/400 controllers).
  The input data transfer area requires 12 bytes (consistently); the output data transfer area requires 6 bytes (consistently).

Note The transfer area of the input data to be sent and the transfer area for the output data to be received are created automatically by TIA Portal.

Example:

"SENDDP" sends 12 bytes to the partner. These 12 bytes consist of 6 bytes of F-IO data (16 Boolean and 2 INT values) and 6 bytes of F parameters. "RCVDP" answers this data with an acknowledgment of 6 bytes of F parameters.

Figure 1-3



Limits for data transfer

If the data volume to be transferred is bigger than the capacity of the interlinked "SENDDP" / "RCVDP" instructions, you can use additional "SENDDP" / "RCVDP" instructions. To achieve this, create additional transfer areas.

The table below shows how many output and input data is assigned in safety-related communication connections.

Table 1-1

Safety-related communication	Communication connection	Assigned input and output data			
		In the IO controller		In the I-device	
		Output data	Input data	Output data	Input data
IO controller – I-device	**Send:** I-device to IO controller	6 bytes	12 bytes	12 bytes	6 bytes
	Receive: I-device from IO controller	12 bytes	6 bytes	6 bytes	12 bytes

2 Engineering

Prerequisite

The configuration instruction below applies to STEP 7 Safety V14 SP1 and higher.

A configuration instruction for STEP 7 Safety V14 and older can be found in chapter 3.2.

2.1 Configuring IO controller and I-device in a project

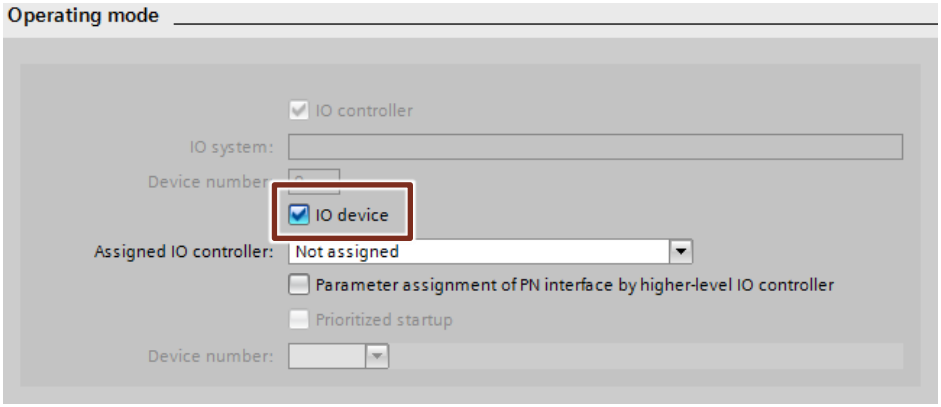
Creating devices and configuring I-device function

To set up an automation system, the individual hardware components must be configured, parameterized and connected to each other.

To do this, proceed as follows:

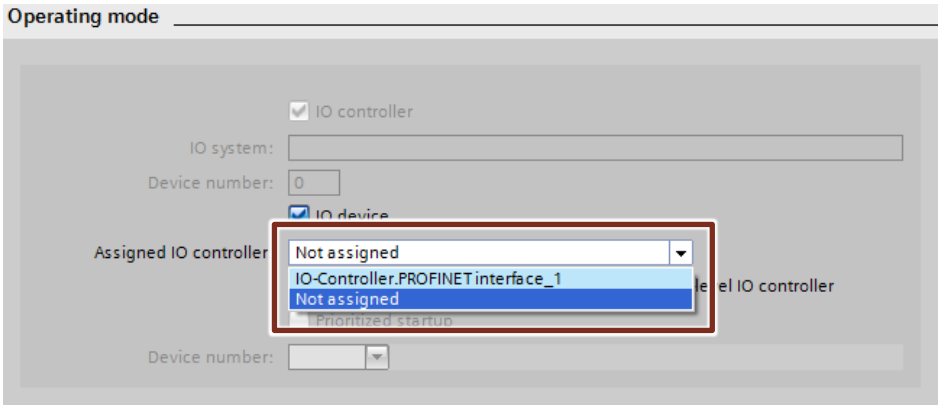
1. Open TIA Portal and create a new project.
2. Add two new devices. Select your respectively used CPU.
3. In order to be able to keep both devices apart regarding their function in this solution, change the device names to "IO controller" and "I-device".
4. Open the device configuration of the I-device.
5. Double-click the PROFINET interface used, in order to open the properties.
6. Select "Ethernet addresses" and customize the IP address to your application.
7. Select "Operating mode" in the area navigation and tick the "IO device" checkbox.

Figure 2-1



8. Select the IO controller from the "Assigned IO controller" drop-down list. Then, the networking and the IO system between both devices is displayed in network view.

Figure 2-2



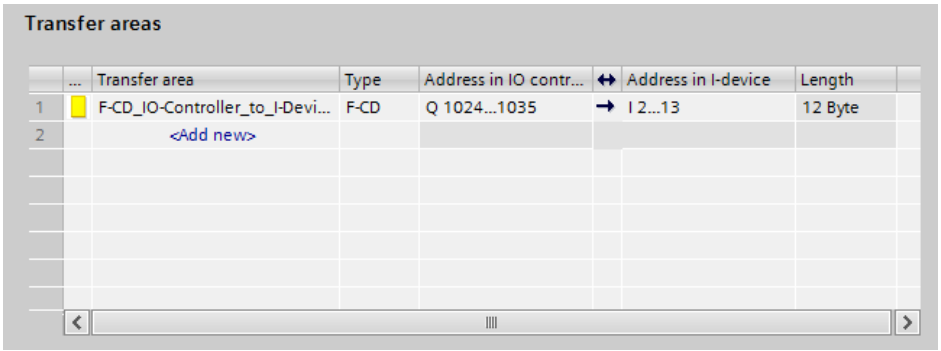
The "I-device" CPU has now been configured as I-device and takes on the role of an IO device in the PROFINET network.

Creating a transfer area

Transfer areas are the IO areas which are used to exchange data between the I-device and the higher-level IO controller.

1. Select "Operating mode > I-device communication" in the area navigation
2. Click the first field in the "Transfer areas" column, in order to create a new transfer area.
3. Select the "F-CD" type for safety-related communication. The addresses are pre-assigned automatically.
4. Change the name to "F-CD_IO-Controller_to_I-Device".

Abbildung 2-3

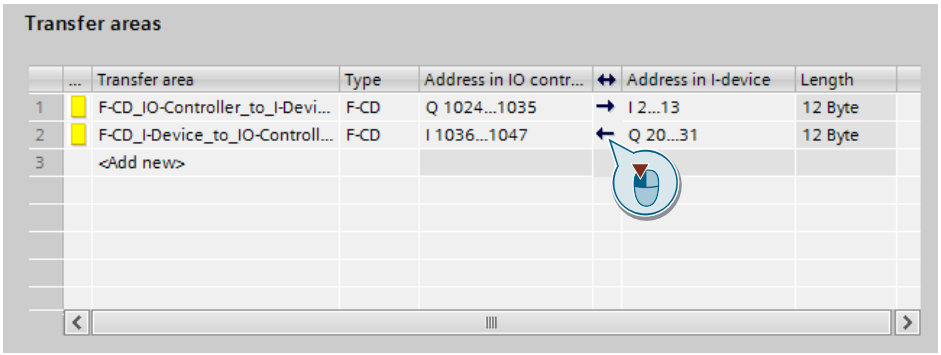


Note If required, you can adjust the addresses to your environment.

Note For safety-related communication, the length of the transfer area cannot be changed, as "SENDDP" and "RCVDP" can send and receive only 12 bytes.

5. Create a second transfer area of the type "F-CD".
6. Change the name to "F-CD_I-Device_to_IO-Controller".
7. Change the address range direction by clicking on the arrow symbol.

Figure 2-4



Programming I-device communication

Programming of the safety-related IO controller-I-device communication is irrespective from whether IO controller and I-device are configured in the same project. The description is can be found in chapter 2.3.

Afterwards, load the CPU.

2.2 Configuring IO controller and I-device cross-project

When implementing the solution, two projects are created. The first project only includes the I-device and a dummy CPU (project B).

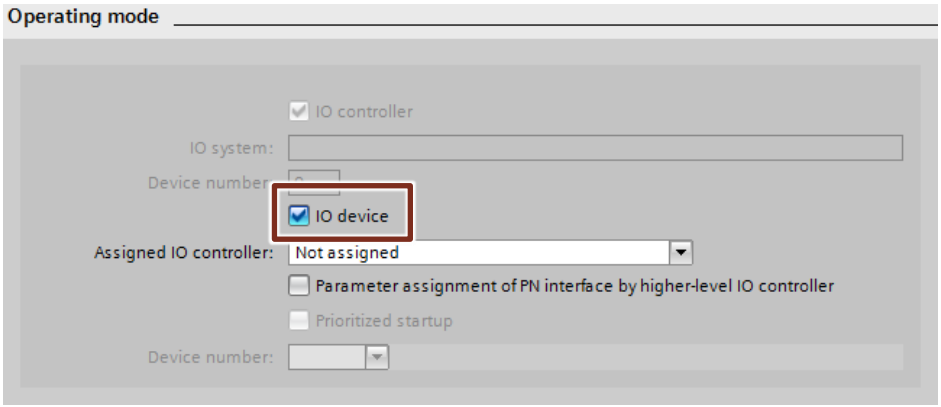
The second project includes the IO controller and the GSD file of the I-device (project A).

2.2.1 Configuring I-device (project B)

Creating devices and configuring I-device function

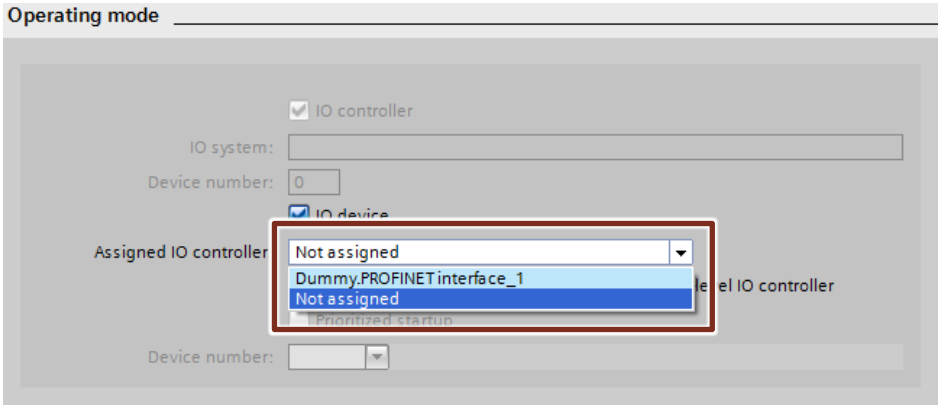
1. Open TIA Portal and create a new project.
2. Add two new devices:
   - The F-CPU, which you would like to configure as I-device.
   - An F CPU that is used as dummy for creating the transfer areas.
3. In order to be able to keep both devices apart regarding their function in this solution, change the device names to "I-device" and "Dummy".
4. Open the device configuration of the I-device.
5. Double-click the PROFINET interface used, in order to open the properties.
6. Select "Ethernet addresses" in the area navigation and adjust the IP address to your application.
7. Select "Operating mode" in the area navigation and tick the "IO device" checkbox.

Figure 2-5



8. Select the dummy CPU from the "Assigned IO controller" drop-down list. Then, the networking and the IO system between both devices is displayed in network view.

Figure 2-6



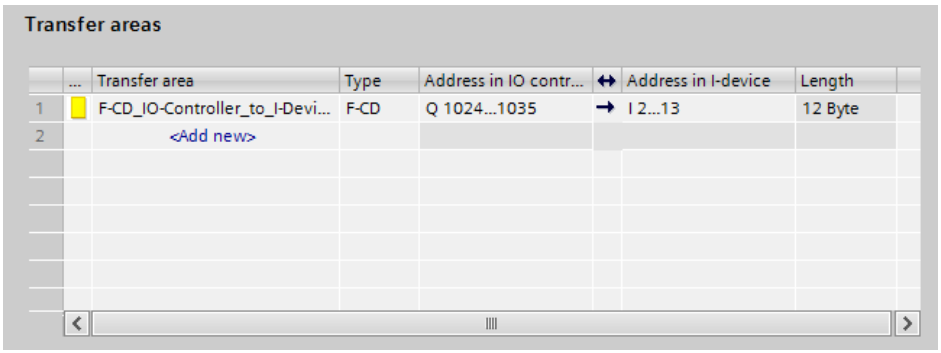
The "I-device" CPU has now been configured as I-device and takes on the role of an IO device in the PROFINET network.

Creating transfer areas

Transfer areas are the IO areas which are used to exchange data between the I-device and the higher-level IO controller.

1. Select "Operating mode > I-device communication" in the area navigation.
2. Click the first field in the "Transfer areas" column, in order to create a new transfer area.
3. Select the "F-CD" type for safety-related communication. The addresses are pre-assigned automatically.
4. Change the name to "F-CD_IO-Controller_to_I-Device ".

Figure 2-7

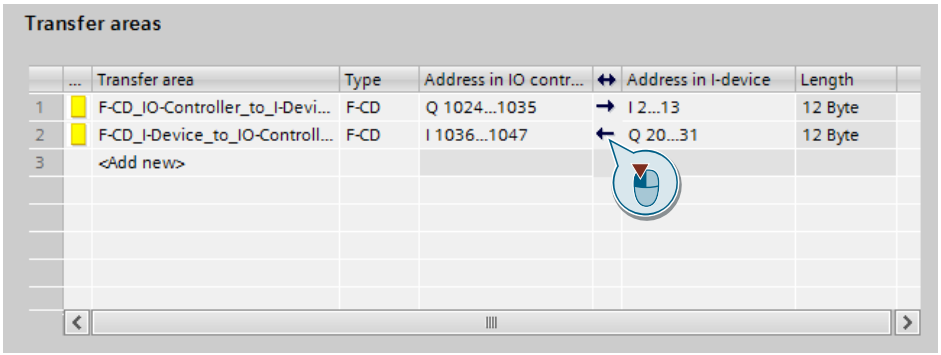


Note If required, you can adjust the addresses to your environment.

Note For safety-related communication, the length of the transfer area cannot be changed, as "SENDDP" and "RCVDP" can send and receive only 12 bytes.

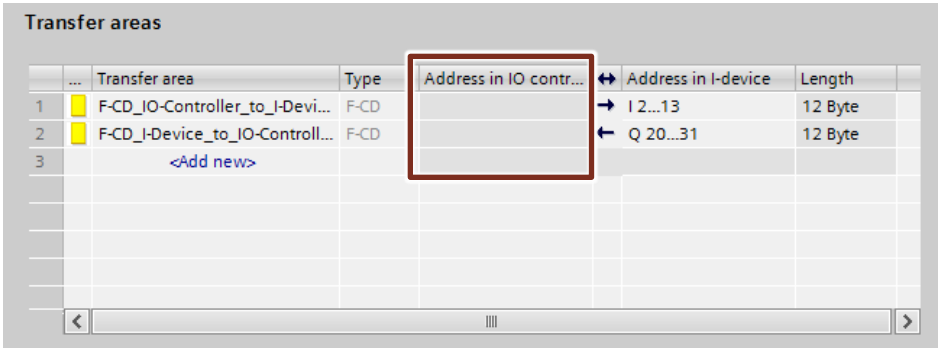
5. Create a second transfer area of the type "F-CD".
6. Change the name to "F-CD_I-Device_to_IO-Controller".
7. Change the address range direction by clicking on the arrow symbol.

Figure 2-8



8. Delete the dummy CPU. The addresses in the transfer areas are grayed out in the IO controller and the assignment of the I-device to dummy CPU is cleared.

Figure 2-9



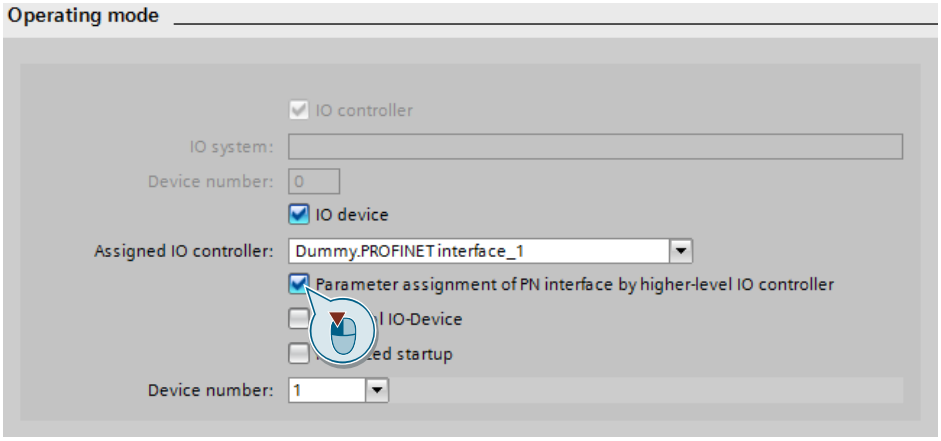
Operating several identical I-devices on an IO controller or in a network (optional)

To be able to operate several identical I-devices in an IO controller or in a network, without configuring each I-device separately, the IO controller has to be able to adjust the PROFINET device name and the IP addresses of the I-devices.

Note If you use the I-device with a subordinate IO system, the PROFINET interface (e.g. port parameters) of the I-device cannot be configured by the higher-level IO controller.

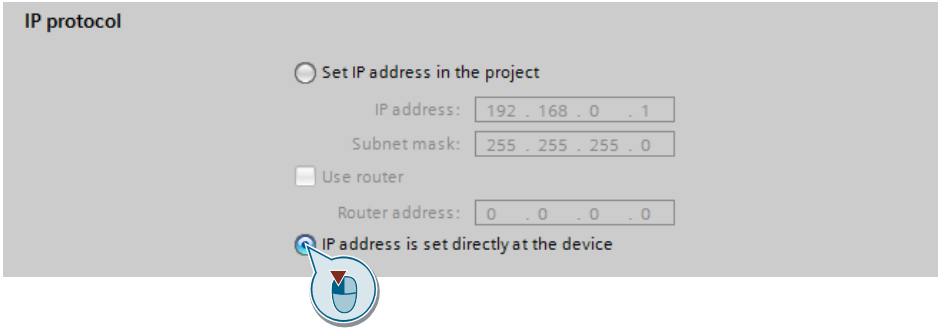
1. Select "Operating mode" in the area navigation and tick the "Parameter assignment of PN interface by higher-level IO controller" check box.

Figure 2-10



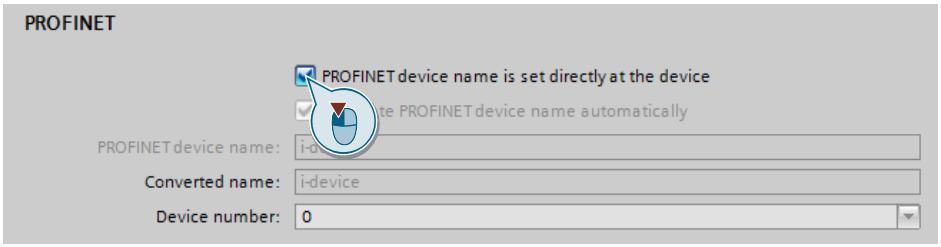
2. Select "Ethernet addresses" in the area navigation and tick the "IP address is set directly at the device" checkbox.

Figure 2-11



3. Tick the "PROFINET device name is set directly at the device" checkbox.

Figure 2-12

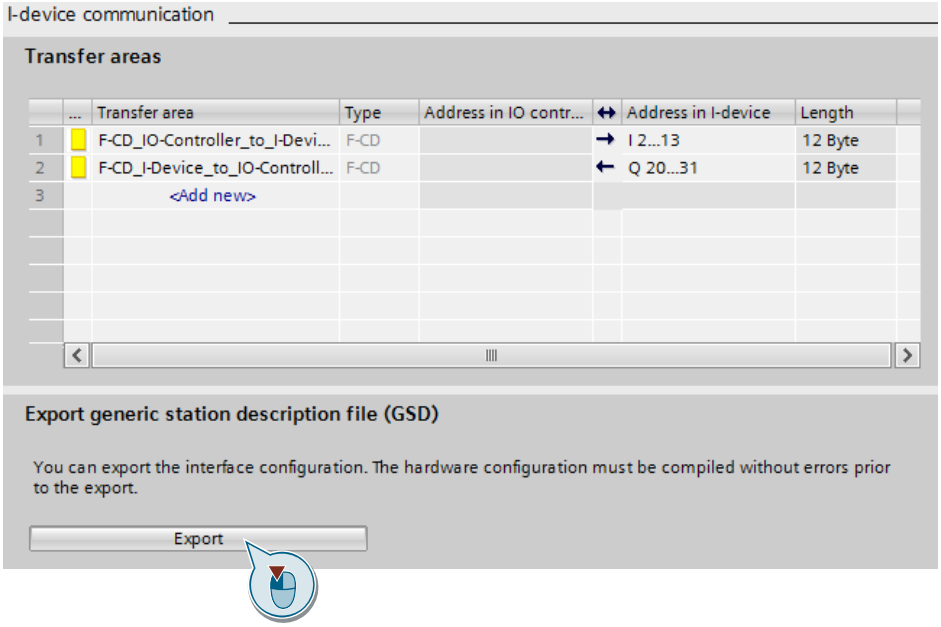


Exporting GSD

The hardware configuration is now completed and the GSD can be exported.

1. Compile the hardware configuration.
2. Select "Export" in "Operating mode > I-device communication".

Figure 2-13



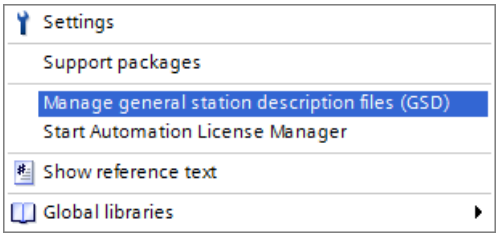
3. Select a directory and a name and export the GSD.

2.2.2 Configuring IO controller (project A)

Creating devices and importing GSD n

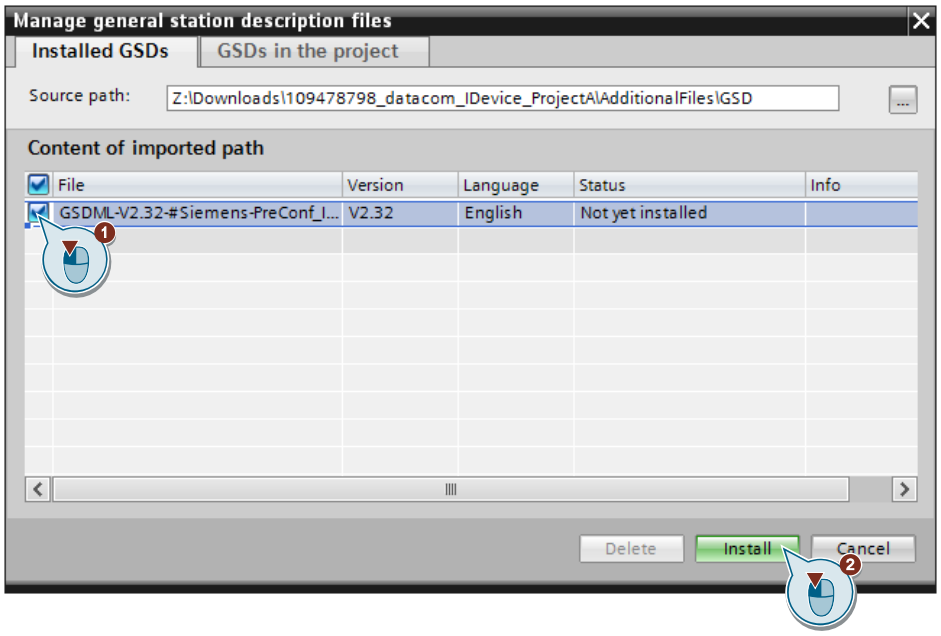
1. Create a new project.
2. Add your F CPU and change the name to "IO controller".
3. Open "Options > Manage general station description files (GSD)" in the menu bar.

Figure 2-14



4. Click on the "..." button and select the previously exported file.
5. Tick the check box of the file and click on "Install".

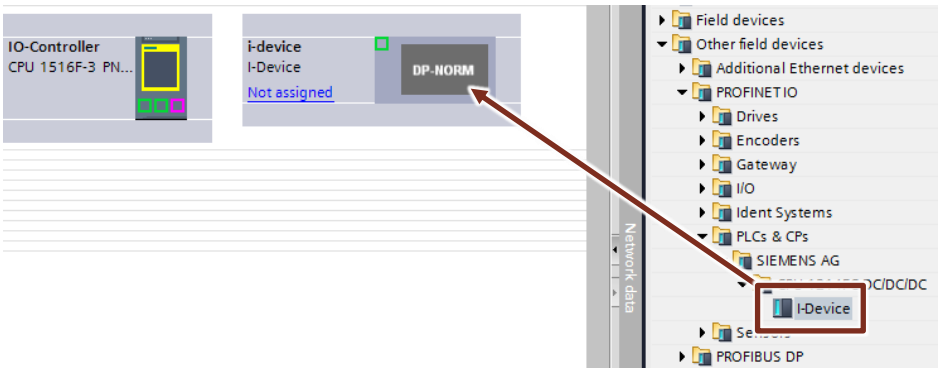
Figure 2-15



6. Confirm the dialog using "OK ".
7. Open "Devices & networks" from the project navigation.

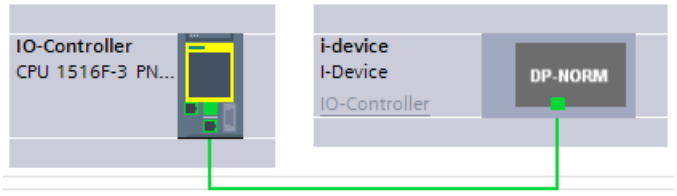
8. Drag the I-device from the hardware catalog in "Other field devices > PROFINET IO > PLCs & CPs" to the work area.

Figure 2-16



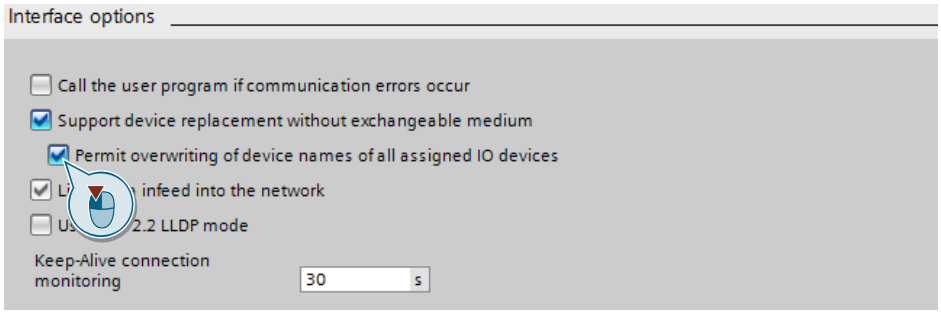
9. Network the IO controller with the I-device.
10. For the IO controller to be able to customize the PROFINET device name and the IP address of the I-device, go to the topology view and connect the respective ports (optional).

Figure 2-17



11. Open the device configuration of the IO controller.
12. Double-click the PROFINET interface used, in order to open the properties.
13. In the area navigation, select "Advanced options" and tick the option "Permit overwriting of device names of all assigned IO devices" check box (optional).

Figure 2-18



14. Compile the controller hardware.

2.3 Programming IO controller-I-device communication

Calling up blocks

Carry out the following steps in the IO controller and in the I-device:

1. Open the FB "Main_Safety_RTG1" (generated automatically).
2. Call the "RCVDP" block in the first network of the FB.

   The "RCVDP" block requires a single-instance data block.
3. Call the "SENDDP" block in the last network of the FB.

   The "SENDDP" block has to be created as a single-instance data block.

Assigning inputs

The following inputs of the two blocks can be assigned to establish a communication:

1. "ACK_REI" input:

   Create a tag for acknowledging communication errors.
2. "DP_DP_ID" input:

   The ID of the respective associated "SENDDP" and "RCVDP" blocks must be unique in the network in order to be able to establish communication.

   This means: "DP_DP_ID" of "SENDDP" in the IO controller and "DP_DP_ID" of "RCVDP" in the "I-device" must be identical.

   The same applies for "DP_DP_ID" of "RCVDP" in the IO controller and "DP_DP_ID" of "SENDDP" in the I-device.
3. "LADDR" input:
   - S7-1200/1500:

     When creating a transfer area, a system constant with the name of the transfer area is created in the F-CPU of the IO controller as well as in the F-CPU of the I-device. Die system constant includes the hardware ID of the transfer area from the view of the respective F-CPU.

     Create the hardware identifier of the respective transfer area at the "LADDR" input. You can find it in the PLC tags in the "System constants" of the respective F-CPU.

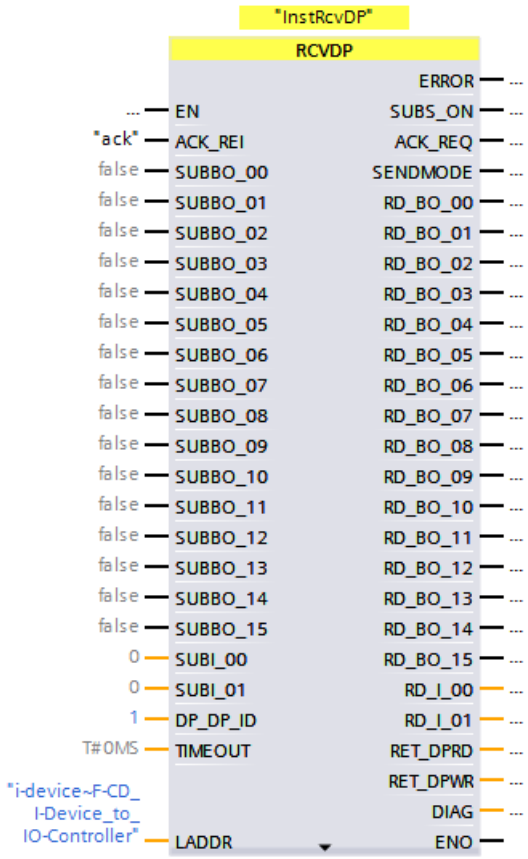
Figure 2-19: System constants of the IO controller (project A)

52	i-device~Proxy	Hw_SubModule	258
53	i-device~IODevice	Hw_Device	265
54	i-device~F-CD_IO-Controller_to_I-...	Hw_SubModule	261
55	i-device~01_SYSTEM_GENERATED_...	Hw_SubModule	262
56	i-device~F-CD_I-Device_to_IO-Con...	Hw_SubModule	263
57	i-device~02_SYSTEM_GENERATED_...	Hw_SubModule	264

Figure 2-20: System constants of the I-device (project B)

30	Local~PROFINET_interface_1~IODe...	Hw_Device	269
31	Local~PROFINET_interface_1~F-CD...	Hw_SubModule	272
32	Local~PROFINET_interface_1~01_S...	Hw_SubModule	273
33	Local~PROFINET_interface_1~F-CD...	Hw_SubModule	274
34	Local~PROFINET_interface_1~02_S...	Hw_SubModule	275

Figure 2-21: Assignment LADDR in the IO controller (project A)

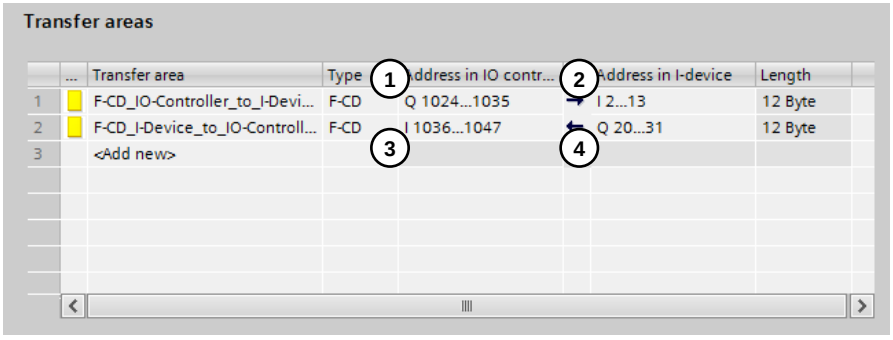


- S7-300/400:

  Create the start address of the respective transfer area at the "LADDR" input:

  - IO controller: (1) to "SENDDP", (3) to "RCVDP "
  - I-device: (2) to "SENDDP", (4) to "RCVDP "

Figure 2-22



4. "TIMEOUT" input:
   Configure the "TIMEOUT" inputs with the desired monitoring time, e.g. 500 ms.

Note More information on monitoring time can be found in the manual "SIMATIC Safety – Configuring and Programming":

https://support.industry.siemens.com/cs/ww/en/view/54110126/86651661579

1. Inputs "SD_BO_00" to "SD_BO_15", "SD_I_00" and "SD_I_01":
   Interconnect the data to be transferred to the "SENDDP" blocks.
2. Outputs "RD_BO_00" to "RD_BO_15", "RD_I_00" and "RD_I_01":
   Interconnect tags of a fail-safe global DBs on the outputs of the "RCVDP" blocks.

The following figures show the ready connections of the blocks in the respective CPUs. For easy testing of the communication, data is transferred from a standard global DB.

Figure 2-23: Communication of IO controller to I-device

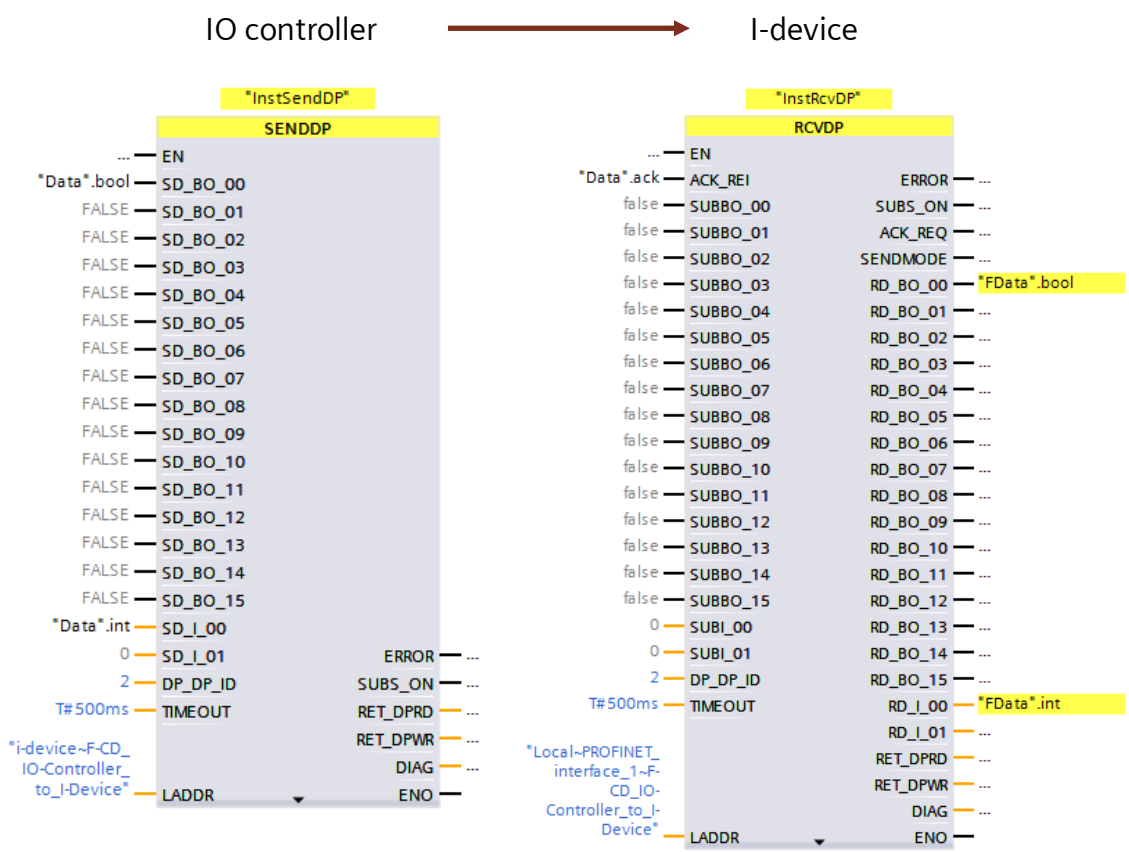
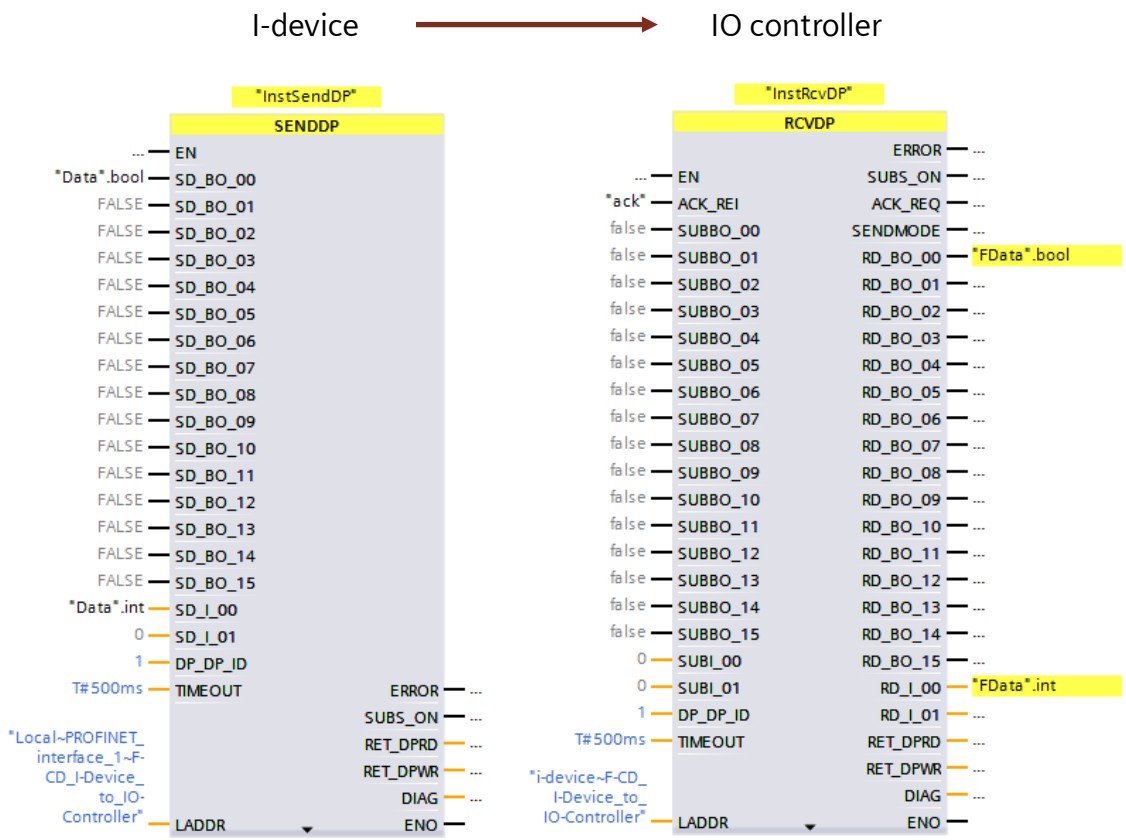


Figure 2-24: Communication of I-device to IO controller



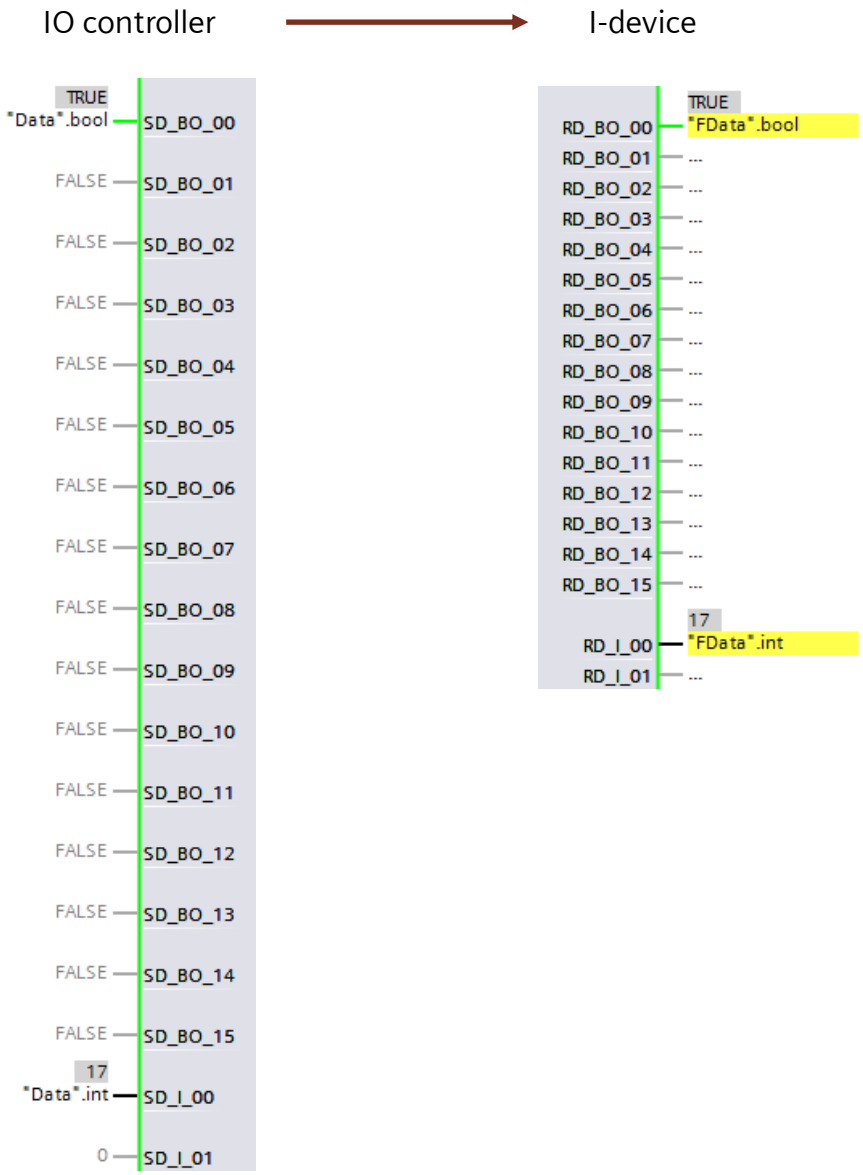
Loading devices

Now load the two CPUs.

Testing communication

1. In order to test the function of the communication go to the two CPUs online.
2. Open the FB "Main_Safety_RTG1" in both CPUs and enable monitoring.
3. Control the tags of "SENDDP" and monitor the outputs of "RCVDP" of the respective other CPU.

Figure 2-25



3 Valuable Information

3.1 Basics on the instructions SENDDP and RCVDP

General

The safety-related communication between the IO controller and an I-device is done with the help of the "SENDDP" instruction for sending data and the "RCVDP" instruction for receiving data. These commands allow for a fail-safe transfer of 16 BOOL and two INT values (or one DINT value with S7-1200/1500).

These instructions can be found in the "Instructions" task card under "Communication". The "RCVDP" instruction must be called at the beginning of the main safety block and the "SENDDP" instruction at the end.

Please note that the send signals are only sent once the "SENDDP" instruction has been called at the end of processing the respective F runtime group.

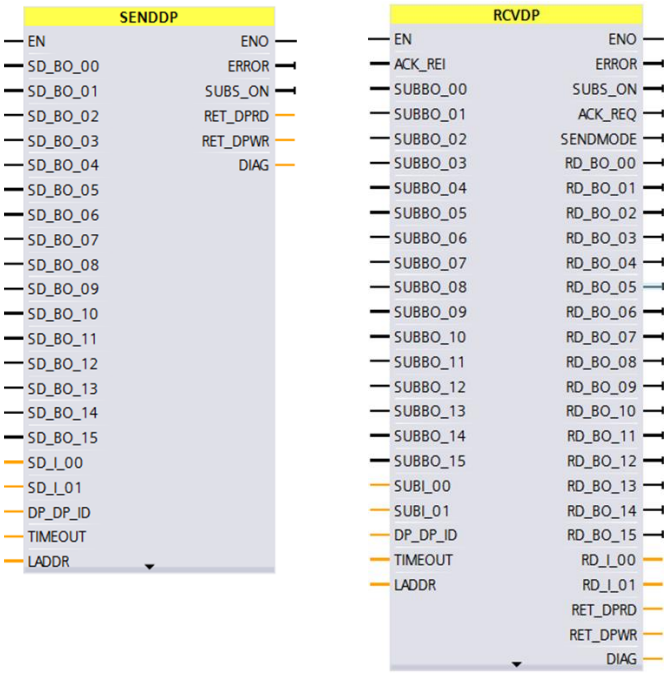
Description

The "SENDDP" instruction sends 16 BOOL data and 2 INT data via PROFIBUS DP/PROFINET from one F-CPU to the other in a fail-safe way. In case of the S7-1500, DINT data is used. The data can then be received from the respective "RCVDP" instruction.

Calling the instructions SENDDP and RCVDP

The figure below shows how to call up the instructions "SENDDP" and "RCVDP".

Figure 3-1



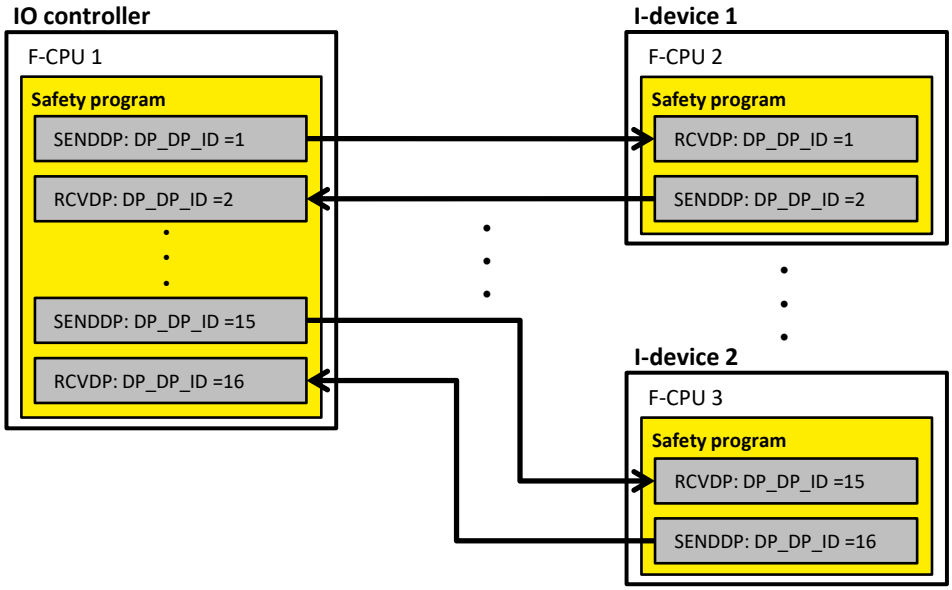
DP_DP_ID parameter for several I-devices

The "DP_DP_ID" parameter of the "SENDDP" and "RCVDP" instructions is a unique ID in the network of the "SENDDP" and "RCVDP" instructions that communicate with each other.

When using several "SENDDP" / "RCVDP" instructions, the "DP_DP_ID" input must be adjusted accordingly.

The figure below shows an example of how the instructions can be configured.

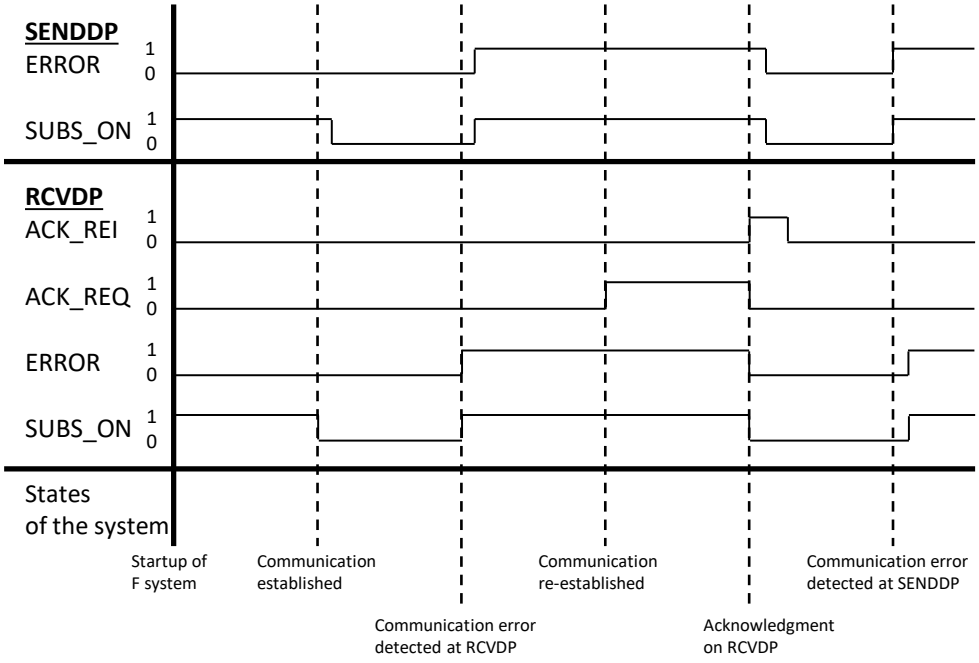
Figure 3-2



Behavior of the instructions "SENDDP" and "RCVDP "

The following time diagram shows the behavior of the "SENDDP" and "RCVDP" instructions while establishing the communication, in the event of communication errors, when troubleshooting and when manually acknowledging on "RCVDP".

Figure 3-3



Behavior in the event of communication errors

If a communication error occurs during the safety-related IO controller-I-device communication, the "ERROR" and "SUBS_ON" outputs of both instructions are set.

As long as this communication error is not fixed and acknowledged, the "RCVDP" instruction outputs the configured substitute values on inputs "SUBBO_xx" and "SUBI_xx" or "SUBDI_00".

The send data pending on the inputs "SD_BO_xx" and "SD_I_xx" or "SD_DI_00" of "SENDDP" is only output again when no further communication errors are detected ("ACK_REQ = TRUE) and when the error has been acknowledged manually at the "ACK_REI" input.

3.2 Cross-project configuration of the I-device function using STEP 7 V14 and older

3.2.1 Introduction

Description

It is not possible to use a GSD of the I-device in TIA Portal V14 and older for safety-related communication with S7-1200/1500.

If the two communication partners are located in separate projects, a safety-related communication between an IO controller and an I-device must be realized by configuring "dummy CPUs"..

A "Dummy CPU" represents the "I-device" in the "IO controller" project. Another "dummy CPU" represents the "IO controller" in the "I-device" project.

Solution

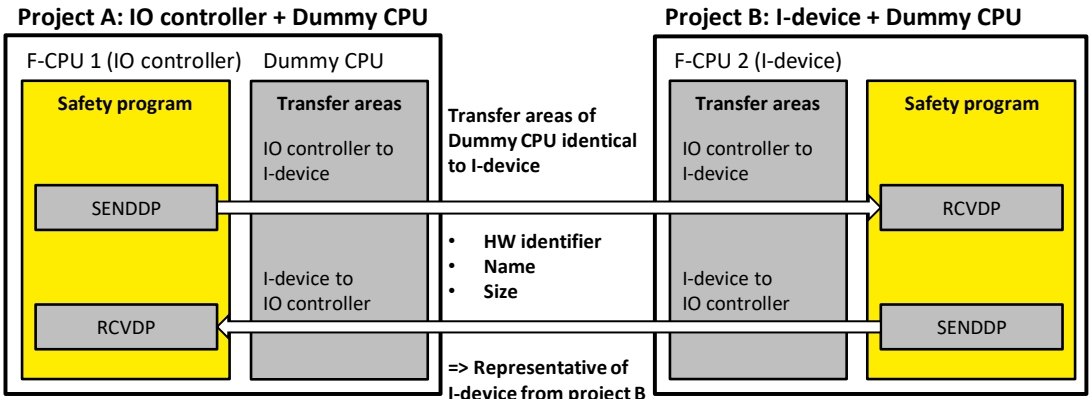
Configuring project B ("I-device"):

- CPU, configured in the "I-device" mode:
  - complete hardware configuration of a normal **"I-device"** (transfer areas, network configuration)
  - Safety program and communication blocks "SENDDP" and "RCVDP "
- "Dummy CPU" represents the "IO controller" from project A

Configuring project A ("IO controller"):

- CPU, configured as "IO controller":
  - Safety program and communication blocks "SENDDP" and "RCVDP"
- "Dummy CPU" which represents the **"I-device"** CPU from project B
  - Identical HW configuration like the **"I-device"**

Figure 3-4



Note

The following settings of the "Dummy CPU" in project A and the actual "I-device" in project B must be identical:

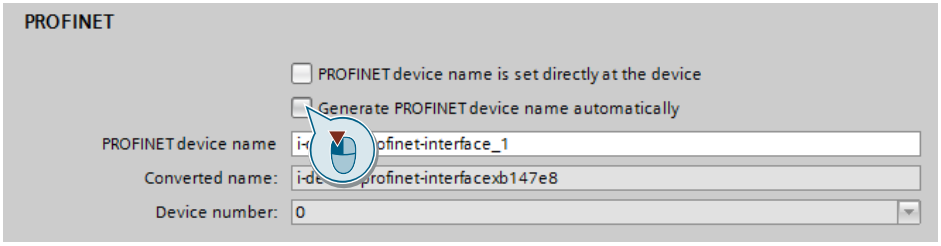
- CPU hardware and firmware
- PROFINET device name
- Addresses of the transfer areas in the I-device
- Slots of the transfer areas in the I-device

3.2.2 Configuring I-device (project B)

Creating devices and configuring I-device function

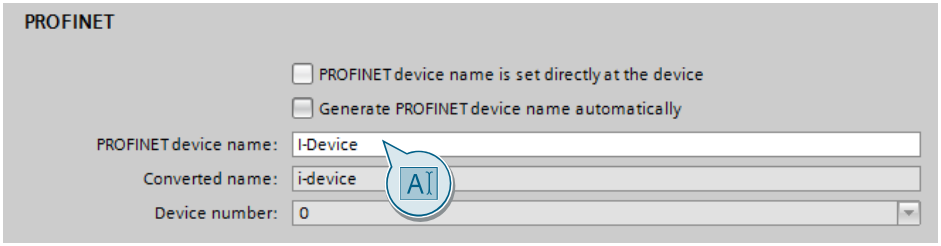
1. Open TIA Portal and create a new project.
2. Add two new devices:
   - The F-CPU, which you would like to configure as I-device.
   - An F-CPU that is used as dummy for creating the transfer areas.
3. In order to be able to keep both devices apart regarding their function in this solution, change the device names to "I-device" and "Dummy".
4. Open the device configuration of the I-device.
5. Double-click the PROFINET interface used, in order to open the properties.
6. Select "Ethernet addresses" in the area navigation and adjust the IP address to your application.
7. Untick the check box "Generate PROFINET device name automatically".

Figure 3-5



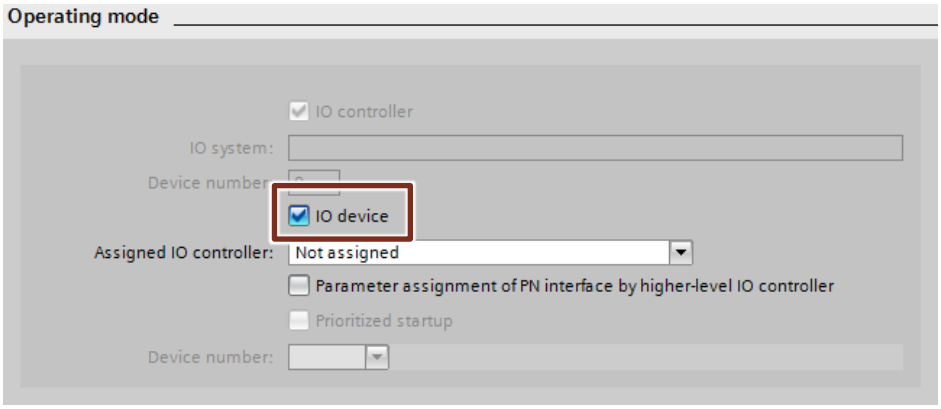
8. Enter the name "I-Device" in "PROFINET device name".

Figure 3-6



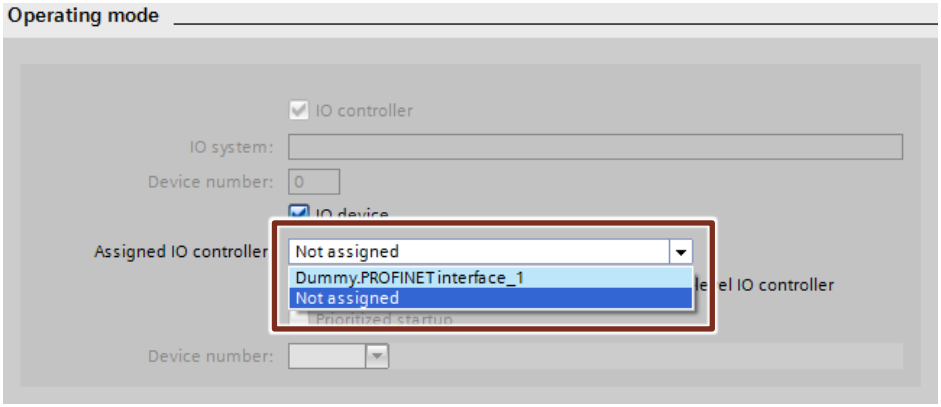
9. Select "Operating mode" in the area navigation and tick the "IO device" checkbox.

Figure 3-7



10. Select the dummy CPU from the "Assigned IO controller" drop-down list. Then, the networking and the IO system between both devices is displayed in network view.

Figure 3-8



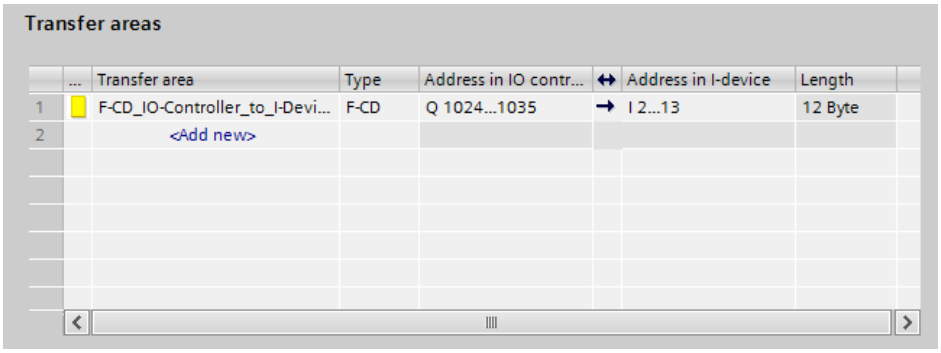
The "I-device" CPU has now been configured as I-device and takes on the role of an IO device in the PROFINET network.

Creating transfer areas

Transfer areas are the IO areas which are used to exchange data between the I-device and the higher-level IO controller.

1. Select "Operating mode > I-device communication" in the area navigation.
2. Click the first field in the "Transfer areas" column, in order to create a new transfer area.
3. Select the "F-CD" type for safety-related communication. The addresses are pre-assigned automatically.
4. Change the name to "F-CD_IO-Controller_to_I-Device".

Figure 3-9

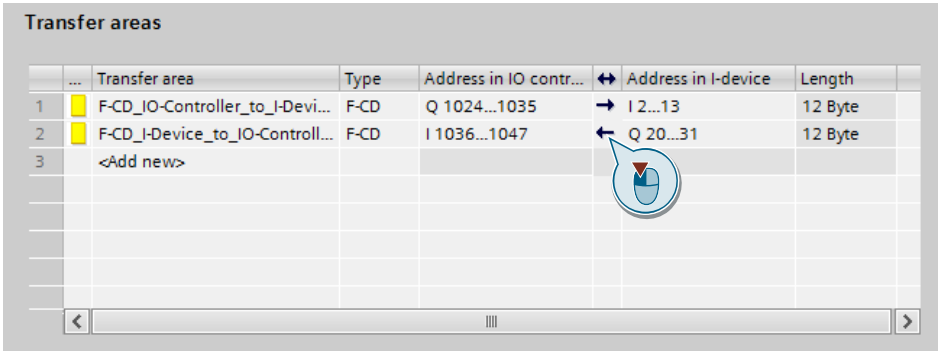


Note If required, you can adjust the addresses to your environment.

Note For safety-related communication, the length of the transfer area cannot be changed, as "SENDDP" and "RCVDP" can send and receive only 12 bytes.

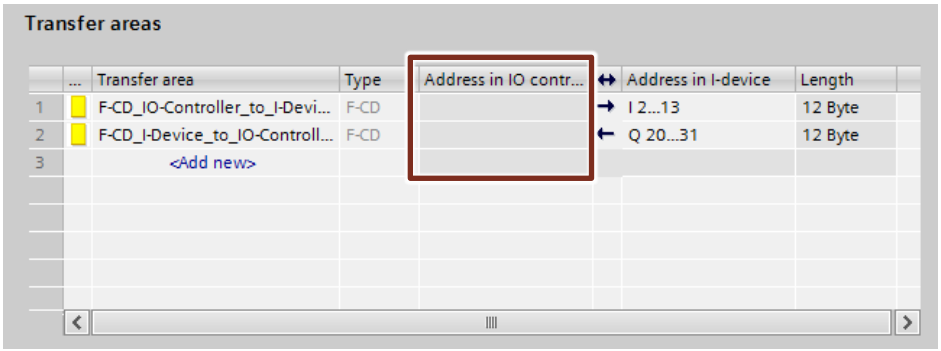
5. Create a second transfer area of the type "F-CD".
6. Change the name to "F-CD_I-Device_to_IO-Controller ".
7. Change the address range direction by clicking on the arrow symbol.

Figure 3-10



8. Delete the dummy CPU. The addresses in the transfer areas are grayed out in the IO controller and the assignment of the I-device to dummy CPU is cleared.

Figure 3-11



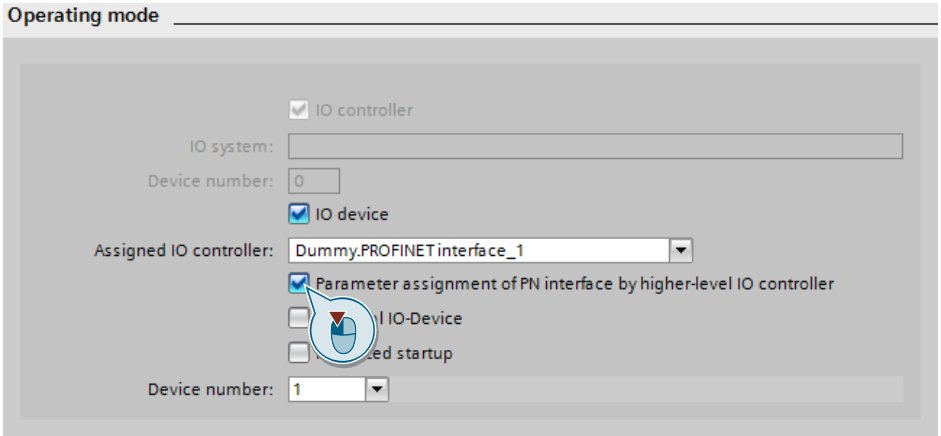
Operating several identical I-devices on an IO controller or in a network (optional)

To be able to operate several identical I-devices in an IO controller or in a network, without configuring each I-device separately, the IO controller has to be able to adjust the PROFINET device name and the IP addresses of the I-devices.

Note If you use the I-device with a subordinate IO system, the PROFINET interface (e.g. port parameters) of the I-device cannot be configured by the higher-level IO controller.

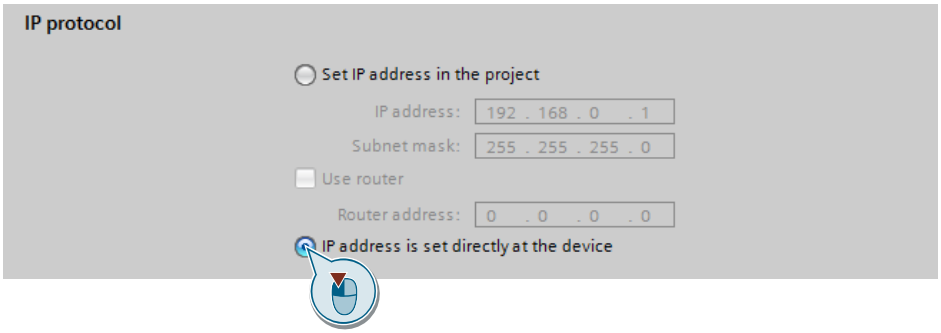
1. Select "Operating mode" in the area navigation and tick the "Parameter assignment of PN interface by higher-level IO controller" check box).

Figure 3-12



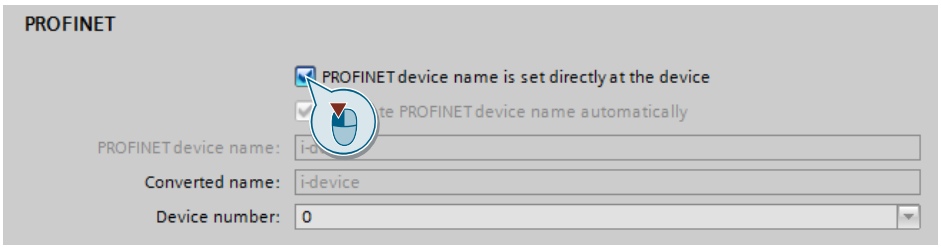
2. Select "Ethernet addresses" in the area navigation and tick the "IP address is set directly at the device" checkbox.

Figure 3-13



3. Tick the "PROFINET device name is set directly at the device" checkbox.

Figure 3-14

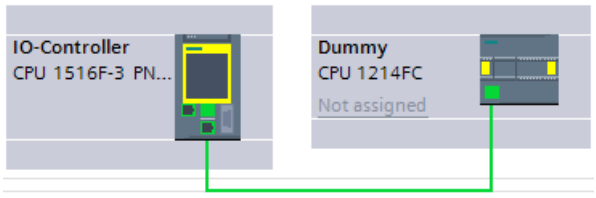


3.2.3 Configuring IO controller (project A)

Creating devices

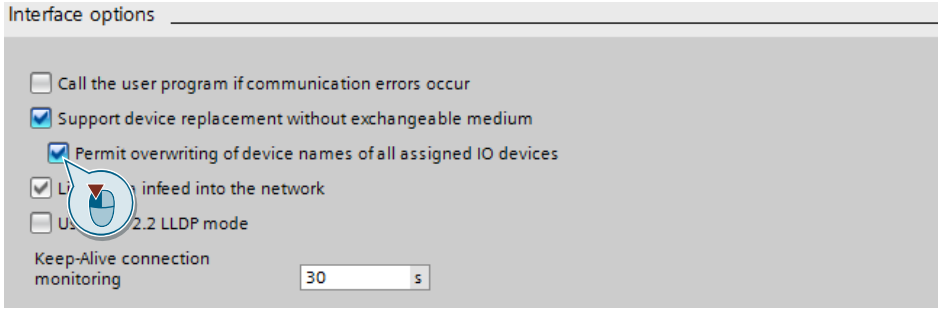
1. Create a new project.
2. Add two new devices:
   - The F-CPU, which you would like to configure as IO controller.
   - The identical F-CPU as in project B that is used as dummy for creating the transfer areas.
3. In order to be able to keep both devices apart regarding their function in this solution, change the device names to "IO controller" and "Dummy ".
4. For the IO controller to be able to customize the PROFINET device name and the IP address of the I-device, go to the topology view and connect the respective ports (optional).

Figure 3-15



5. Open the device configuration of the IO controller.
6. Double-click the PROFINET interface used, in order to open the properties.
7. In the area navigation, select "Advanced options" and tick the option "Permit overwriting of device names of all assigned IO devices" check box.

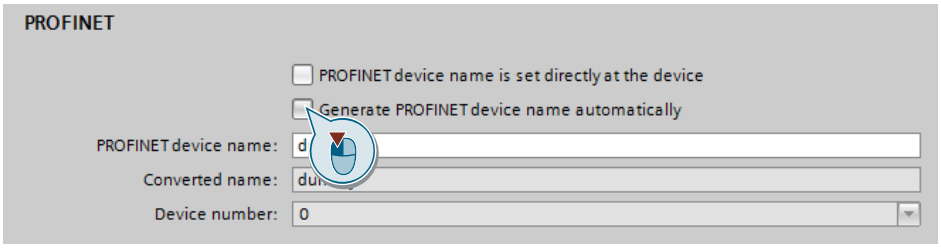
Figure 3-16



8. Open the device configuration of the dummy CPU.
9. Double-click the PROFINET interface used, in order to open the properties.

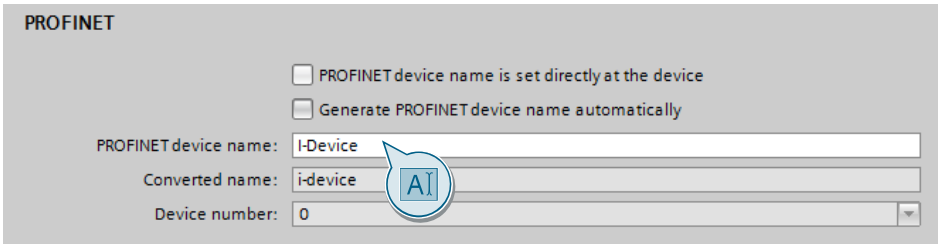
10. Select the "Ethernet addresses" in the area navigation and disable the checkbox "Generate PROFINET device name automatically".

Figure 3-17



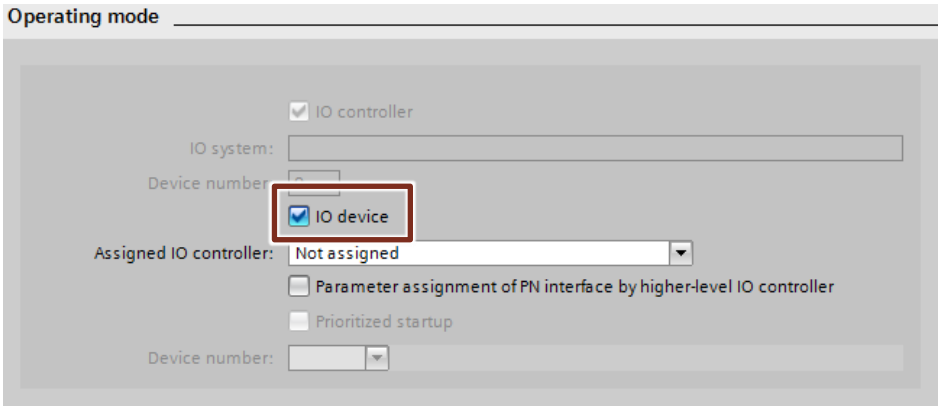
11. Enter the same device name as in project B in "PROFINET device name".

Figure 3-18



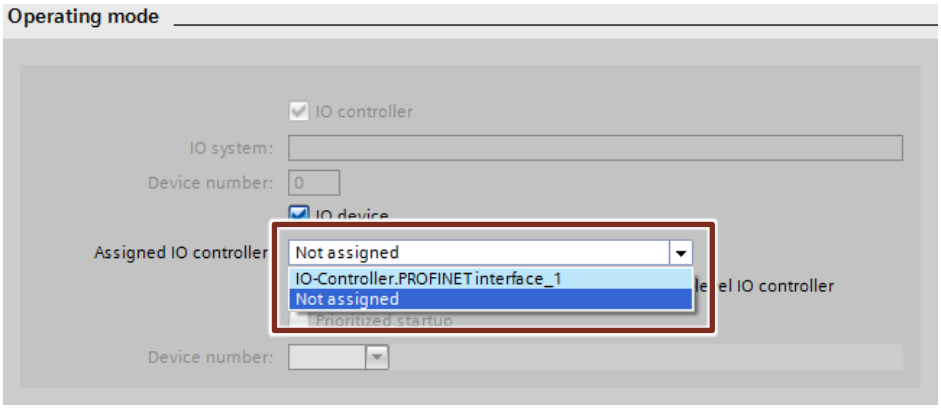
12. Select "Operating mode" in the area navigation and tick the "IO device" checkbox.

Figure 3-19



13. Select the IO controller from the "Assigned IO controller" drop-down list. Then, the networking and the IO system between both devices is displayed in network view.

Figure 3-20



14. If you ticked the "Parameter assignment of PN interface by higher-level IO controller" check box in the I-device in project B, tick the check box here as well.

The "dummy" CPU has now been configured as I-device and takes on the role of an IO device in the PROFINET network.

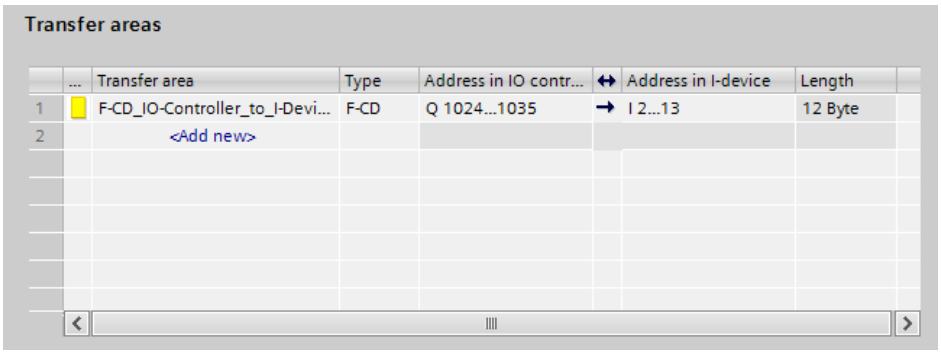
Creating a transfer area

Transfer areas are the IO areas which are used to exchange data between the I-device and the higher-level IO controller.

1. Select "Operating mode > I-device communication" in the area navigation.
2. Click the first field in the "Transfer areas" column, in order to create a new transfer area.
3. Select the "F-CD" type for safety-related communication. The addresses are pre-assigned automatically.

4. Change the name to "F-CD_IO-Controller_to_I-Device".

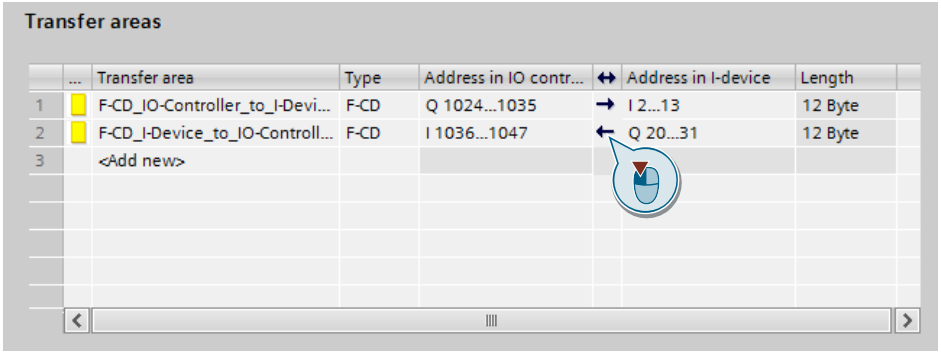
Figure 3-21



Note The addresses in the I-device must be identical to the addresses of the real I-device in project B.

5. Create a second transfer area of the type "F-CD".
6. Change the name to "F-CD_I-Device_to_IO-Controller".
7. Change the address range direction by clicking on the arrow symbol.

Figure 3-22



Note Create the transfer areas in the real F I-device and in the dummy CPU in the same order.

Programming I-device communication

Programming of the I-device communication is irrespective from whether IO controller and I-device are configured in the same project. The description is can be found in chapter 2.3.

Afterwards, load both CPUs.

4 Appendix

4.1 Service and Support

Industry Online Support

Do you have any questions or need support?

Siemens Industry Online Support offers access to our entire service and support know-how as well as to our services.

Siemens Industry Online Support is the central address for information on our products, solutions and services.

Product information, manuals, downloads, FAQs and application examples – all information is accessible with just a few mouse clicks at:
https://support.industry.siemens.com

Technical Support

Siemens Industry's Technical Support offers quick and competent support regarding all technical queries with numerous tailor-made offers – from basic support right up to individual support contracts.

Please address your requests to the Technical Support via the web form:
www.siemens.de/industry/supportrequest

SITRAIN – Training for Industry

With our globally available training courses for industry, we help you achieve these goals – with practical experience, innovative learning methods, and a concept that's tailored to the customer's specific needs.

More information on the training courses offered as well as on locations and dates is available at:
www.siemens.de/sitrain

Service offer

Our service offer includes the following:

- Plant Data Services
- Spare Parts Services
- Repair Services
- On Site and Maintenance Services
- Retrofit and Modernization Services
- Service Programs and Agreements

Detailed information on our service offer is available in the Service Catalog:
https://support.industry.siemens.com/cs/sc

Industry Online Support app

Thanks to the "Siemens Industry Online Support" app, you will get optimum support even when you are on the move. The app is available for Apple iOS, Android and Windows Phone:
https://support.industry.siemens.com/cs/ww/en/sc/2067

4.2 Links and literature

Table 4-1

No.	Topic
\1\	Siemens Industry Online Support http://support.industry.siemens.com
\2\	Link to the entry page of the application example https://support.industry.siemens.com/cs/ww/en/view/109478798
\3\	PROFINET with STEP 7 V15 https://support.industry.siemens.com/cs/ww/en/view/49948856
\4\	SIMATIC STEP 7 Basic/Professional V15 and SIMATIC WinCC V15 https://support.industry.siemens.com/cs/ww/en/view/109755202
\5\	Description of SENDDP and RCVDP https://support.industry.siemens.com/cs/ww/en/view/54110126/98654032139
\6\	Monitoring time for safety-related communication https://support.industry.siemens.com/cs/ww/en/view/54110126/86651661579
\7\	Overview of the I-device function support https://support.industry.siemens.com/cs/ww/en/view/102325771

4.3 Change documentation

Table 4-2

Version	Date	Modification
V1.0	08/2015	First version
V2.0	11/2016	Added check lists, selection help, more detailed description of "SENDDP"/"RCVDP" and transfer areas.
V2.1	03/2018	Updated engineering for cross-project I-device communication for TIA Portal V14 SP1 and higher Layout and structural modifications
V2.2	08/2019	Revised figures