KUNBUS
industrial communication

DF PROFINET IO

GettingStarted

V1.0/27.07.2016

h:\dokumente\project\700361_df_profinet_io_controller\anwenderdoku\getting started windows device\version_1.0\gettingstarted_e.doc

Revision History

Version	Date	Description	Respons.
V1.0	27.07.2016	Initial Version	

Version	Product manager	Project manager software
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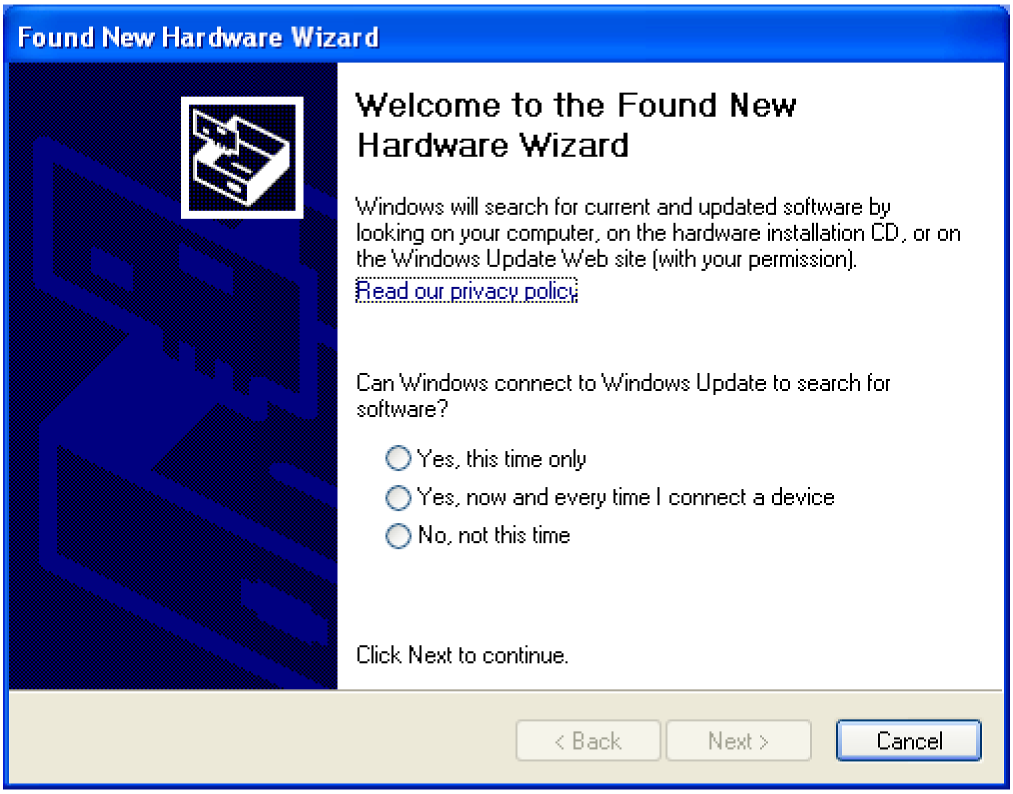
1 Installation

- Install the DF PROFINET IO PCI/CPCI/PCIe board in the PC system.

Please note, if a DF PROFINET IO CPCI board is used, the board does not support Hot Plugging. If installing/uninstalling the board the Compact PCI system must be switched off and the power supply must be interrupted.

- Switch on the PC system.
- Ignore the “New hardware” – dialog which is popped up automatically after the board was installed.



Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).

Read our privacy policy

Can Windows connect to Windows Update to search for software?

○ Yes, this time only

○ Yes, now and every time I connect a device

○ No, not this time

Click Next to continue.

Figure 1: New Hardware Wizard

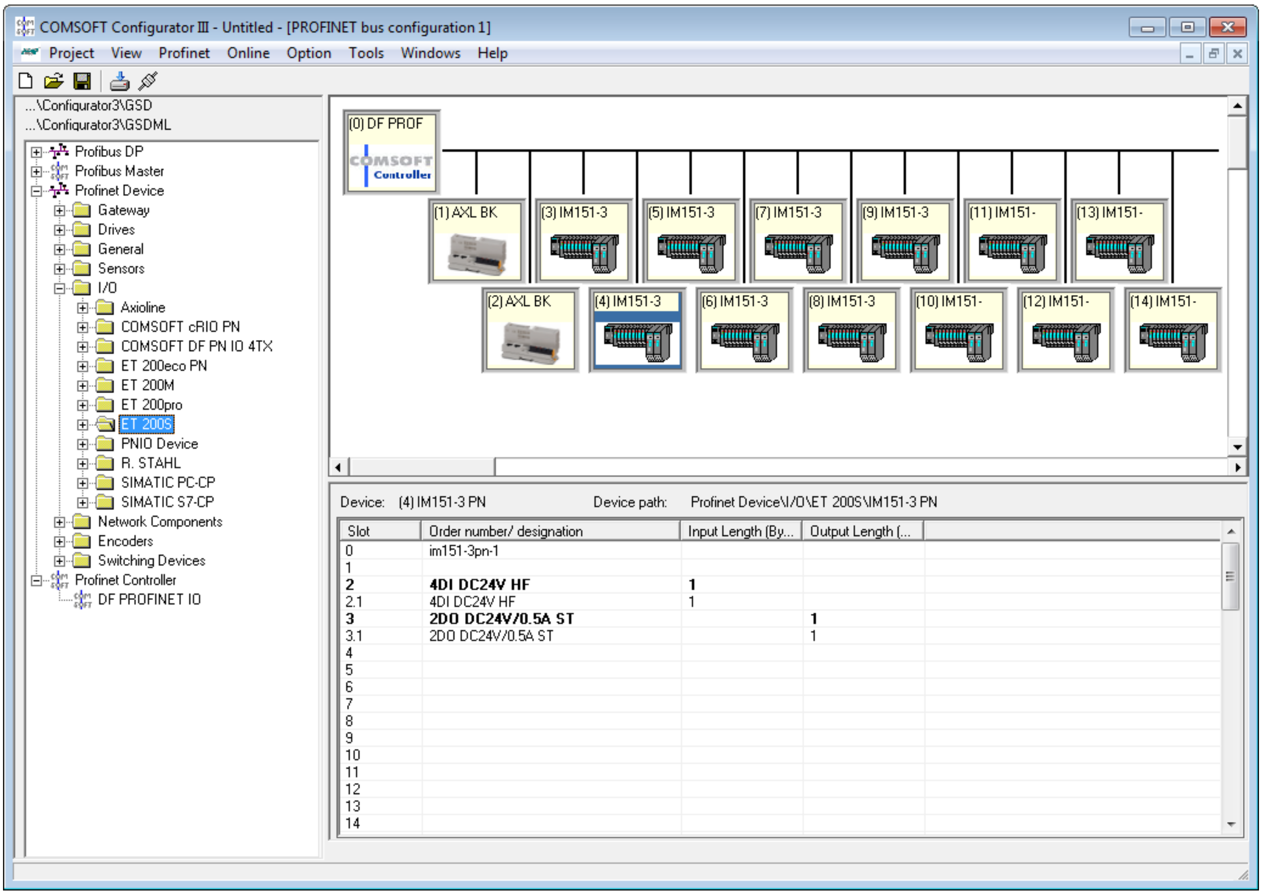
- Start the Setup from **KUNBUS** driver CD within scope of delivery.

2 Operation as PROFINET IO-Controller

2.1 PROFINET IO-Configuration

The PROFINET IO configuration is carried out by the **KUNBUS PROFINET IO** configuration tool *configurator III.exe. Configurator III* is a powerful tool to create, download and test a PROFINET IO configuration. Refer to the programs on line help menu for all details.

- Create a configuration and download it to the DF PROFINET IO board.



Device: (4) IM151-3 PN Device path: Profinet Device\I/O\ET 200S\IM151-3 PN

Slot	Order number/ designation	Input Length (By...	Output Length (...
0	im151-3pn-1		
1			
2	**4DI DC24V HF**	**1**	
2.1	4DI DC24V HF	1	
3	**2DO DC24V/0.5A ST**		**1**
3.1	2DO DC24V/0.5A ST		1
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

Figure 2: *Configurator III* PROFINET IO Configurations-Tool

- In that case, the DF PROFINET IO devices are already connected, use the Online-Mode of *Configurator III* to immediately test and troubleshoot the PROFINET IO configuration.

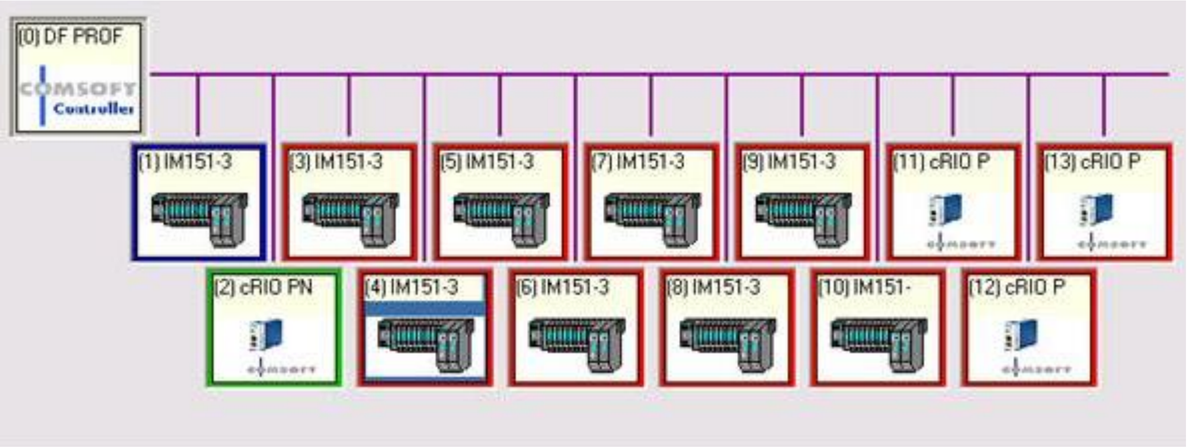


Figure 3: *Configurator III* PROFINET IO Online-Mode

1 Description LED's

🟢 Green LED:

ON: Firmware boot was successfull

OFF: Firmware not started

🟡 Yellow LED:

ON: PROFINET IO started

OFF: PROFINET IO not started

🔴 Red LED:

ON: Error in PROFINET IO Network detected (at minimum 1 configured PN IO Device does not respond or reports diagnostic)

OFF: All configured PROFINET IO Devices work properly

2 PROFINET IO C and C++ Sample

This example shows exemplarily and in an easy way how to use the driver interface of the DF PROFINET IO board. Before using the example code a PROFINET IO configuration has to be downloaded to the DF PROFINET IO board first.

The example is located in the directory

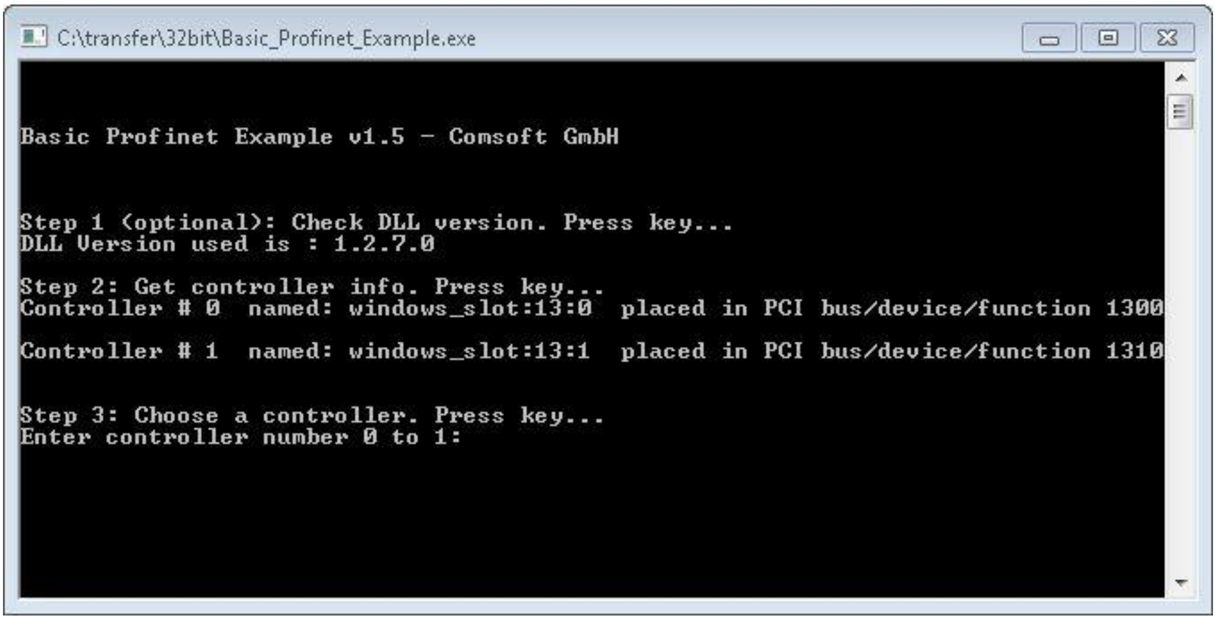
"C:\Program Files\KUNBUS GmbH\Profinet IO Controller\Basic_Profinet_Example”

or

"C:\Program Files (x86)\KUNBUS GmbH\Profinet IO Controller\Basic_Profinet_Example”.

The sample code is prepared for the use with Microsoft Visual C++ from version Visual C++ 2008. The sample code project is a 32-Bit console application. For all details please refer directly to the source code file "Basic_Profinet_Example.cpp". To test and troubleshoot the PROFINET configuration, *Configurator III* provides a powerful Online Mode with full graphical HMI supporting I/O-data-, Diagnostic- and Alarm handling.

For a first test execute the „Basic_Profinet_Example.exe" application within scope of delivery:



```
Basic Profinet Example v1.5 - Comsoft GmbH


Step 1 (optional): Check DLL version. Press key...
DLL Version used is : 1.2.7.0

Step 2: Get controller info. Press key...
Controller # 0  named: windows_slot:13:0  placed in PCI bus/device/function 1300

Controller # 1  named: windows_slot:13:1  placed in PCI bus/device/function 1310


Step 3: Choose a controller. Press key...
Enter controller number 0 to 1:
```

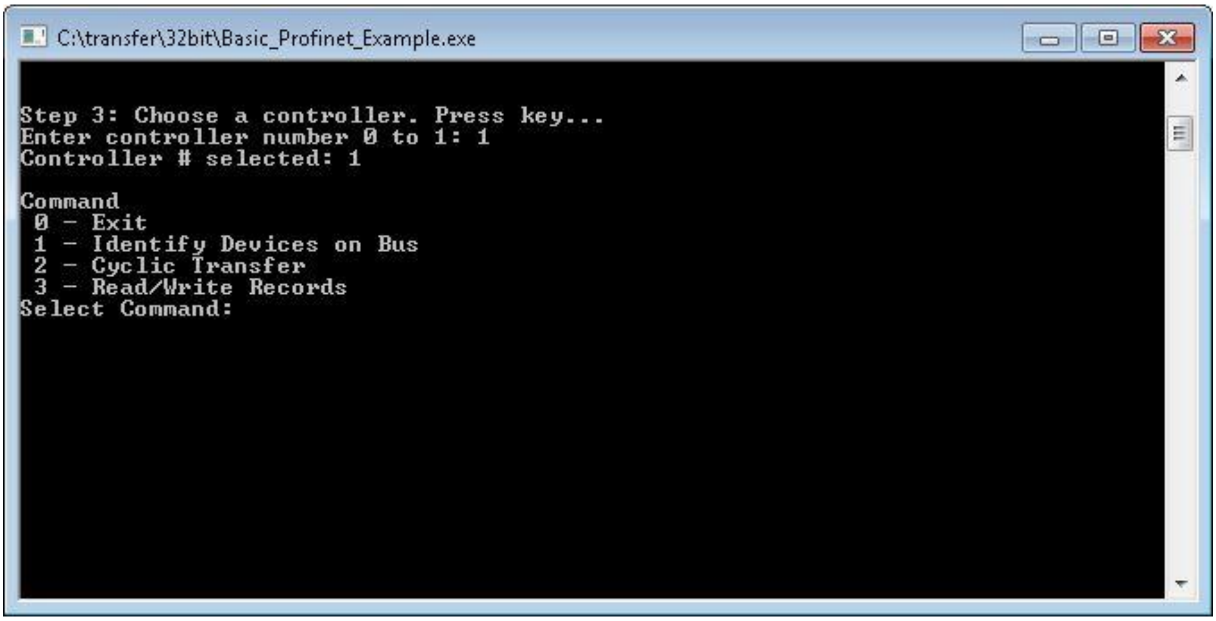
Figure 4: Sample Code- Initialization

The application runs step by step. Any keystroke invokes the next step. The following steps are available:

- Step 1: *Check DLL version:* Initialization of the underlying DFXX-DLL and creation of a file handle to access the board

- Step 2: *Get controller info:* Display of the installed board configuration

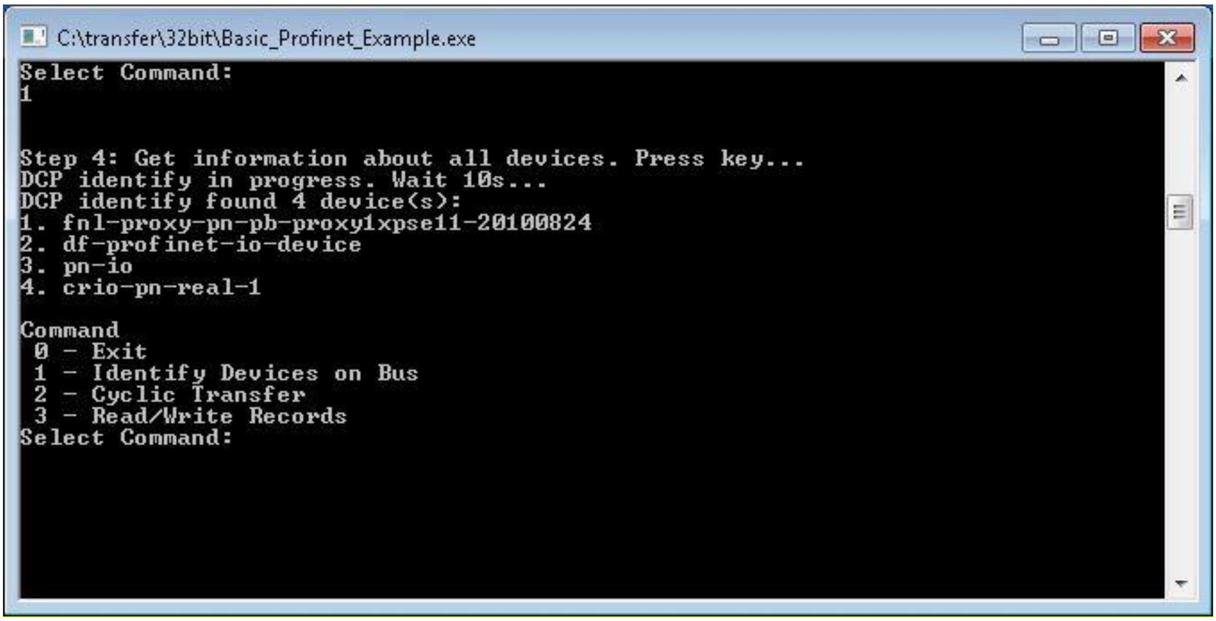
- Step 3: *Choose a controller:* Selection of a board installed
- LED Green = ON, LED Yellow = OFF, LED Red = OFF



```
Step 3: Choose a controller. Press key...
Enter controller number 0 to 1: 1
Controller # selected: 1

Command
 0 - Exit
 1 - Identify Devices on Bus
 2 - Cyclic Transfer
 3 - Read/Write Records
Select Command:
```

Figure 5: Sample Code – Command Overview

- Command 0: *Exit:* Sample application will be terminated
- Command 1: *Identify Devices on Bus:* Detection of all connected PN IO Devices

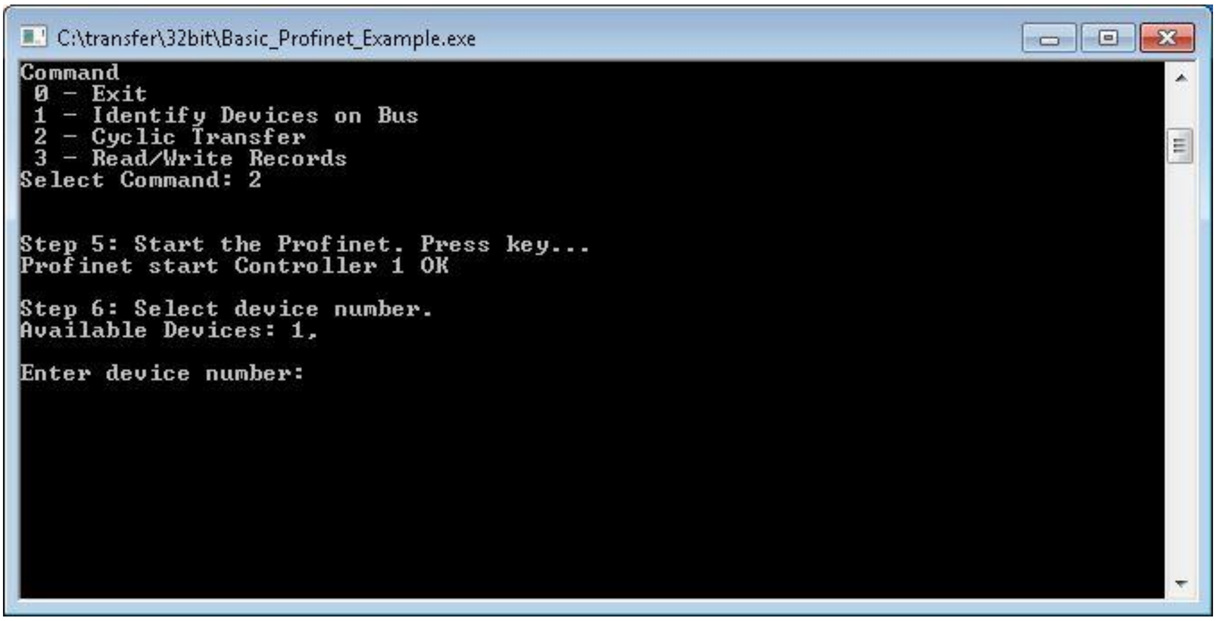


```
Select Command:
1


Step 4: Get information about all devices. Press key...
DCP identify in progress. Wait 10s...
DCP identify found 4 device(s):
1. fnl-proxy-pn-pb-proxy1xpse11-20100824
2. df-profinet-io-device
3. pn-io
4. crio-pn-real-1

Command
 0 - Exit
 1 - Identify Devices on Bus
 2 - Cyclic Transfer
 3 - Read/Write Records
Select Command:
```

Figure 6: Sample Code – Identify Devices on Bus

- Step 4: *Get information about all devices:* DCP Service to identify the connected PN IO Devices and to display the PN IO specific names

- Command 2: *Cyclic Transfer*: Start of the cyclic data traffic



```
Command
 0 - Exit
 1 - Identify Devices on Bus
 2 - Cyclic Transfer
 3 - Read/Write Records
Select Command: 2


Step 5: Start the Profinet. Press key...
Profinet start Controller 1 OK

Step 6: Select device number.
Available Devices: 1,

Enter device number:
```

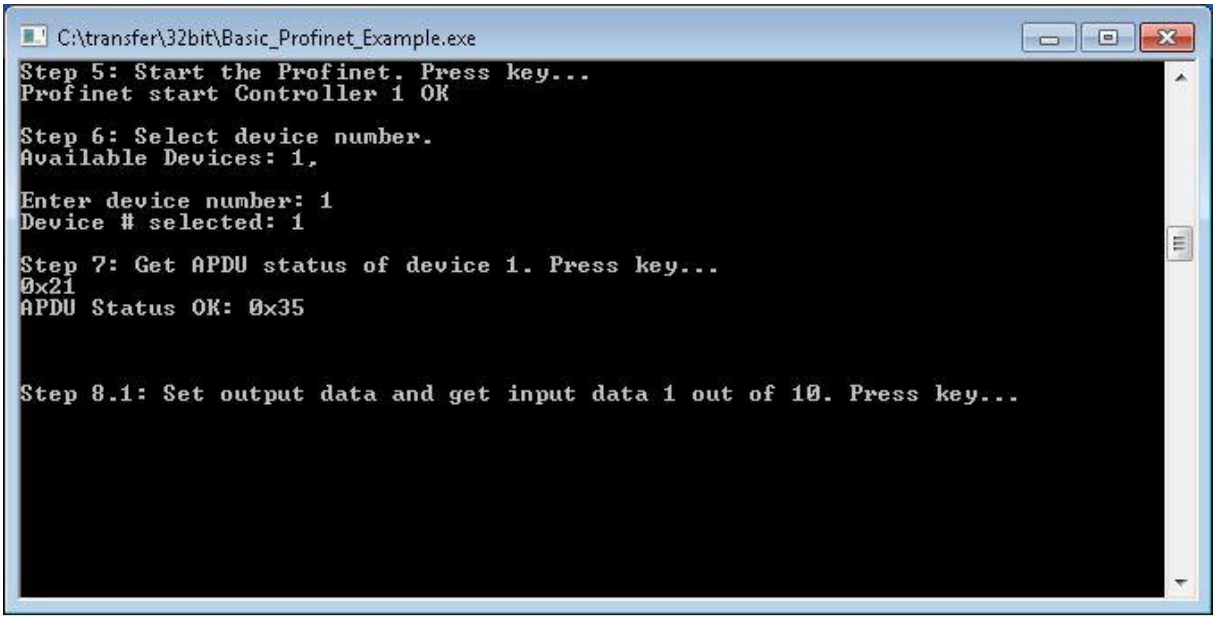
Figure 7: Sample Code - Cyclic Transfer

- Step 5: *Start the Profinet:* PROFINET IO will be started

- LED Green = ON, LED Yellow = OFF, LED Red = OFF

  - If the LED Red = ON, please check the PN IO Configuration via the Online Mode in *Configurator III*.

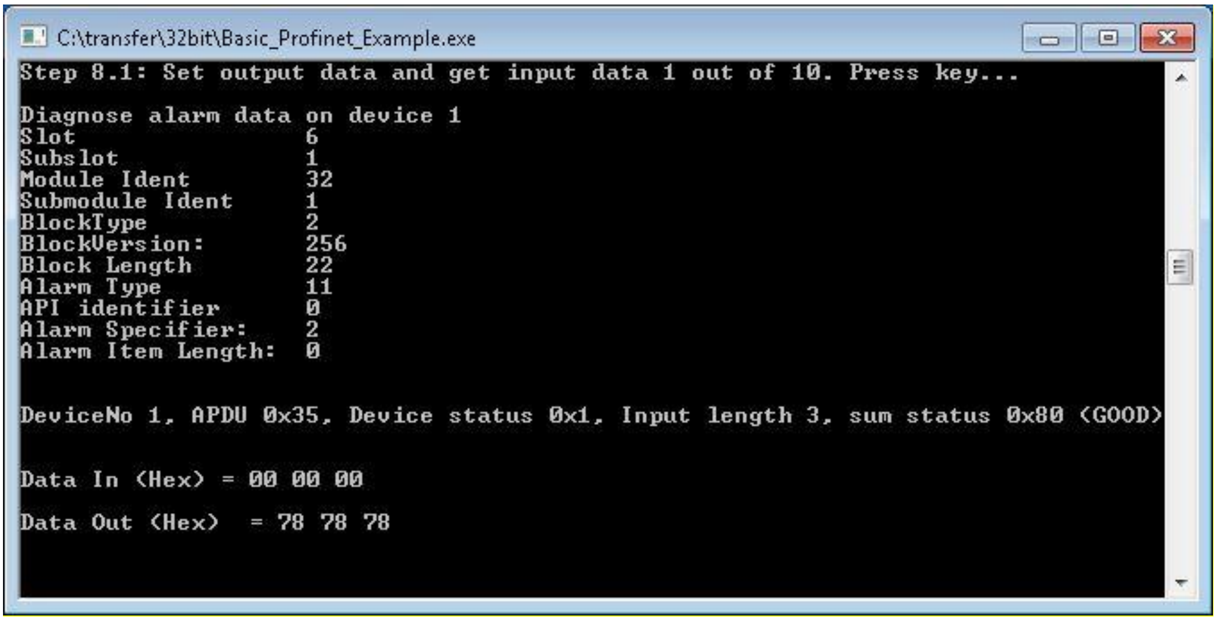
  - Step 6: *Select device number:* Display of the available PN IO Devices and selection of the PN IO Device number to display input data and to force output data. The PN IO device number can be learned from the PN IO configuration in *Configurator III*.



```
Step 5: Start the Profinet. Press key...
Profinet start Controller 1 OK

Step 6: Select device number.
Available Devices: 1,

Enter device number: 1
Device # selected: 1

Step 7: Get APDU status of device 1. Press key...
0x21
APDU Status OK: 0x35


Step 8.1: Set output data and get input data 1 out of 10. Press key...
```

Figure 8: Sample Code - Cyclic Transfer

- Step 7: *Get APDU status:* Display of the PN IO Device's APDU Status



```
Step 8.1: Set output data and get input data 1 out of 10. Press key...

Diagnose alarm data on device 1
Slot                6
Subslot             1
Module Ident        32
Submodule Ident     1
BlockType           2
BlockVersion:       256
Block Length        22
Alarm Type          11
API identifier      0
Alarm Specifier:    2
Alarm Item Length:  0


DeviceNo 1, APDU 0x35, Device status 0x1, Input length 3, sum status 0x80 (GOOD)


Data In (Hex) = 00 00 00

Data Out (Hex)  = 78 78 78
```

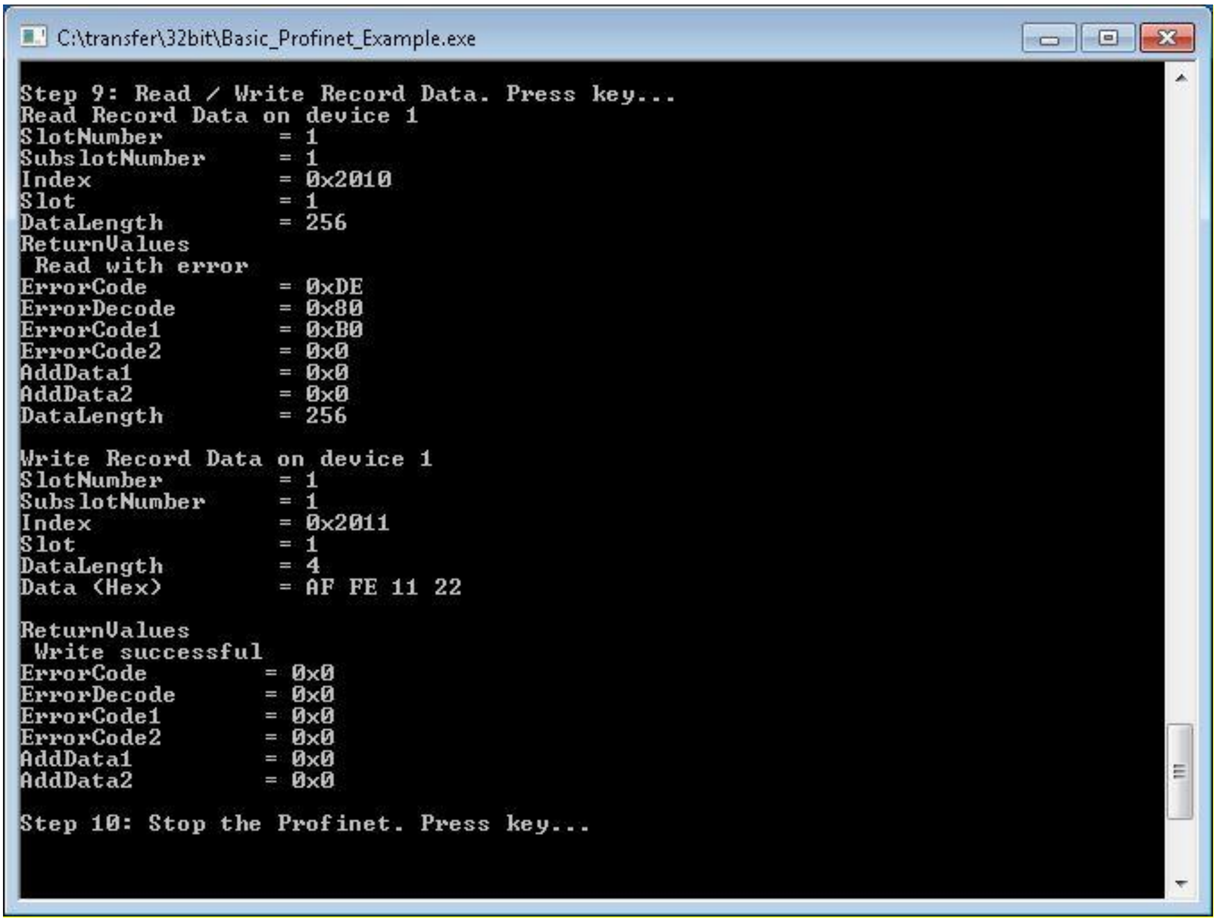
Figure 9: Sample Code - Cyclic Transfer

- Step 8.1 *Set output data and get input data:* Forcing of the output data, display of the input data

- Simultaneous display of upcoming diagnostic alarms

- Display of the I/O-data related APDU- and Device-Status (sum status)

- Display of the Input- und Output data.
    - Any keystroke increments and forces the output data and updates the input data



```
Step 9: Read / Write Record Data. Press key...
Read Record Data on device 1
SlotNumber           = 1
SubslotNumber        = 1
Index                = 0x2010
Slot                 = 1
DataLength           = 256
ReturnValues
 Read with error
ErrorCode            = 0xDE
ErrorDecode          = 0x80
ErrorCode1           = 0xB0
ErrorCode2           = 0x0
AddData1             = 0x0
AddData2             = 0x0
DataLength           = 256

Write Record Data on device 1
SlotNumber           = 1
SubslotNumber        = 1
Index                = 0x2011
Slot                 = 1
DataLength           = 4
Data (Hex)           = AF FE 11 22

ReturnValues
 Write successful
ErrorCode           = 0x0
ErrorDecode         = 0x0
ErrorCode1          = 0x0
ErrorCode2          = 0x0
AddData1            = 0x0
AddData2            = 0x0

Step 10: Stop the Profinet. Press key...
```

Figure 10: Sample Code - Acyclic Transfer

- Step 9 *Read / Write Record Data:* Execution of a ReadRec- and WriteRec service
    - The specific parameters for ReadRec and WriteRec are hard coded and can be modified directly in the related source code within scope of delivery
    - The ReadRec and WriteRec service are executed once only
- Step 10 Stop the PROFINET: Deactivation of the PROFINET IO Controller
    - LED Green = ON, LED Yellow = OFF, LED Red = OFF

3 Operation as PROFINET IO-Device

For the operation of the board as PROFINET IO device no configuration must be downloaded by Configurator III.

3.1 Description LED's

🟢 Green LED:

ON: Firmware boot was successfull

OFF: Firmware not started

🟡 Yellow LED:

ON: PROFINET IO started

OFF: PROFINET IO not started

🔴 Red LED:

On: None or faulty connection to PN IO Controller

Off: No error in PROFINET IO Network

3.2 PROFINET IO Device C and C++ Sample

This example shows exemplarily and in an easy way how to use the driver interface of the DF PROFINET IO board. Before using the example code a PROFINET IO configuration has to be downloaded to the DF PROFINET IO board first.

The example is located in the directory

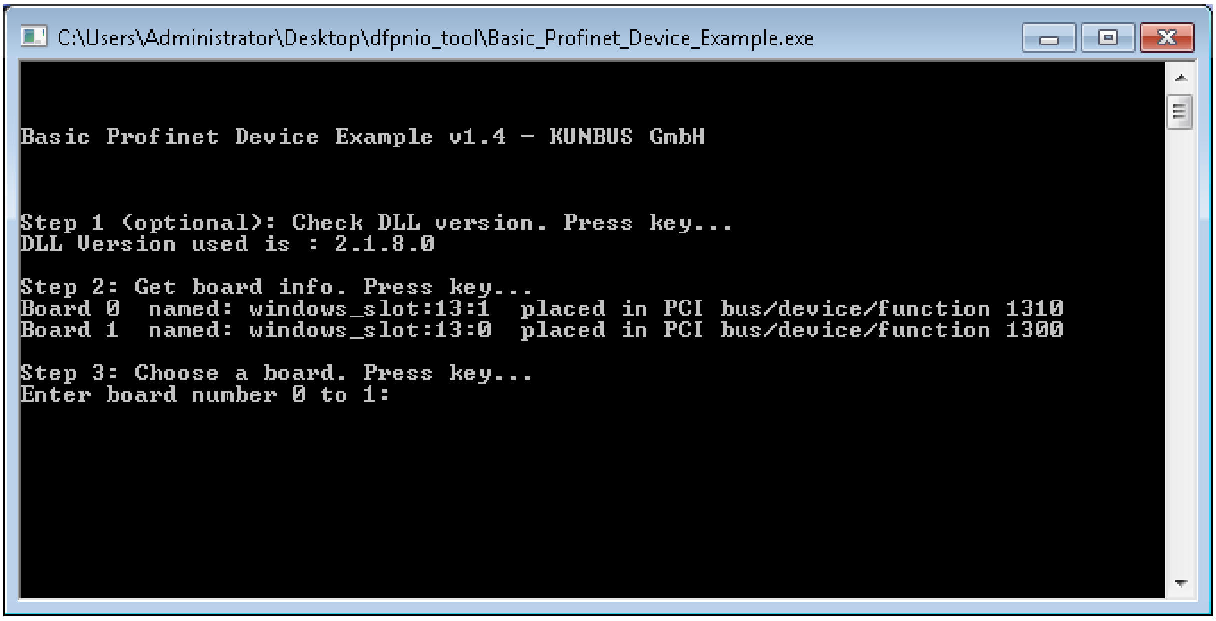
"C:\Program Files\KUNBUS GmbH\Profinet IO Controller\Basic_Profinet_Device_Example”

or

"C:\Program Files (x86)\KUNBUS GmbH\Profinet IO Controller\Basic_Profinet_Device_Example”.

The sample code is prepared for the use with Microsoft Visual C++ from version Visual C++ 2008. The sample code project is a 32-Bit console application. For all details please refer directly to the source code file "Basic_Profinet_Device_Example.cpp".

For a first test execute the „Basic_Profinet_Device_Example.exe" application within scope of delivery:



C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
Basic Profinet Device Example v1.4 - KUNBUS GmbH


Step 1 (optional): Check DLL version. Press key...
DLL Version used is : 2.1.8.0

Step 2: Get board info. Press key...
Board 0  named: windows_slot:13:1  placed in PCI bus/device/function 1310
Board 1  named: windows_slot:13:0  placed in PCI bus/device/function 1300

Step 3: Choose a board. Press key...
Enter board number 0 to 1:
```

Figure 11: Sample code PN IO device - Initialization

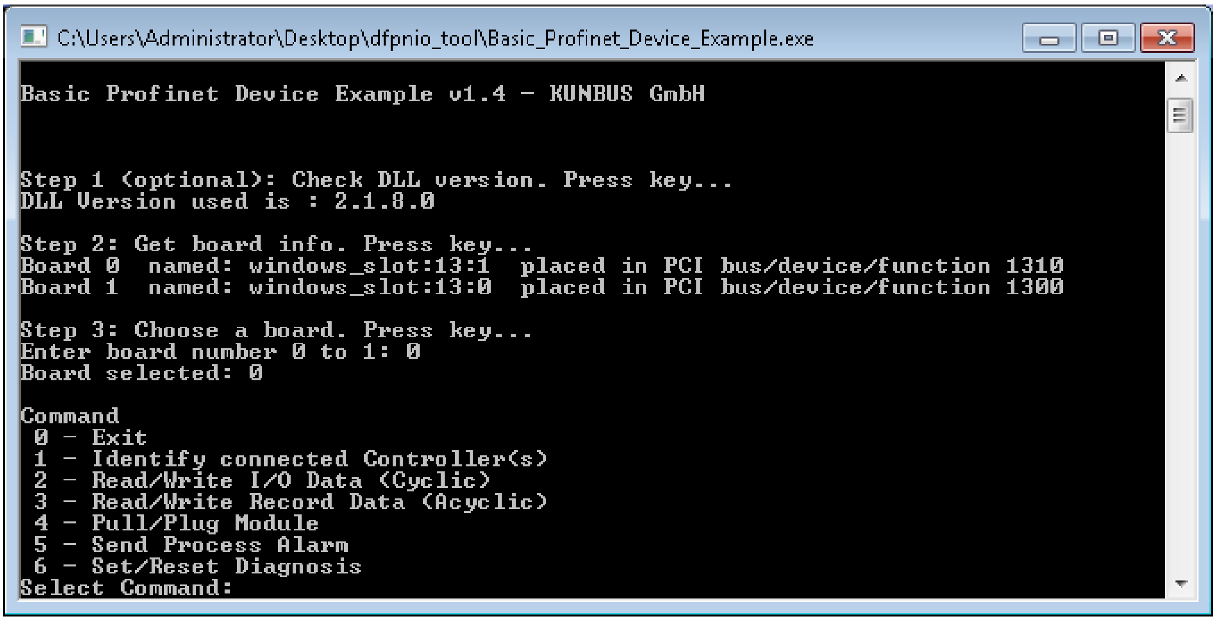
The application runs step by step. Any keystroke invokes the next step. The following steps are available:

- Step 1: *Check DLL version:* Initialization of the underlying DFXX-DLL and creation of a file handle to access the board

- Step 2: *Get board info:* Display of the installed board configuration

- Step 3: *Choose a board:* Selection of a board installed

- LED Green = ON, LED Yellow = OFF, LED Red = OFF


C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
Basic Profinet Device Example v1.4 - KUNBUS GmbH


Step 1 (optional): Check DLL version. Press key...
DLL Version used is : 2.1.8.0

Step 2: Get board info. Press key...
Board 0  named: windows_slot:13:1  placed in PCI bus/device/function 1310
Board 1  named: windows_slot:13:0  placed in PCI bus/device/function 1300

Step 3: Choose a board. Press key...
Enter board number 0 to 1: 0
Board selected: 0

Command
 0 - Exit
 1 - Identify connected Controller(s)
 2 - Read/Write I/O Data (Cyclic)
 3 - Read/Write Record Data (Acyclic)
 4 - Pull/Plug Module
 5 - Send Process Alarm
 6 - Set/Reset Diagnosis
Select Command:
```

Figure 12: Sample code PN IO Device – Command Overview

- Command 0: *Exit:* Exit sample application

- Command 1: *Identify connected Controllers:* Indication of all PN IO Controllers connected to the PN IO device

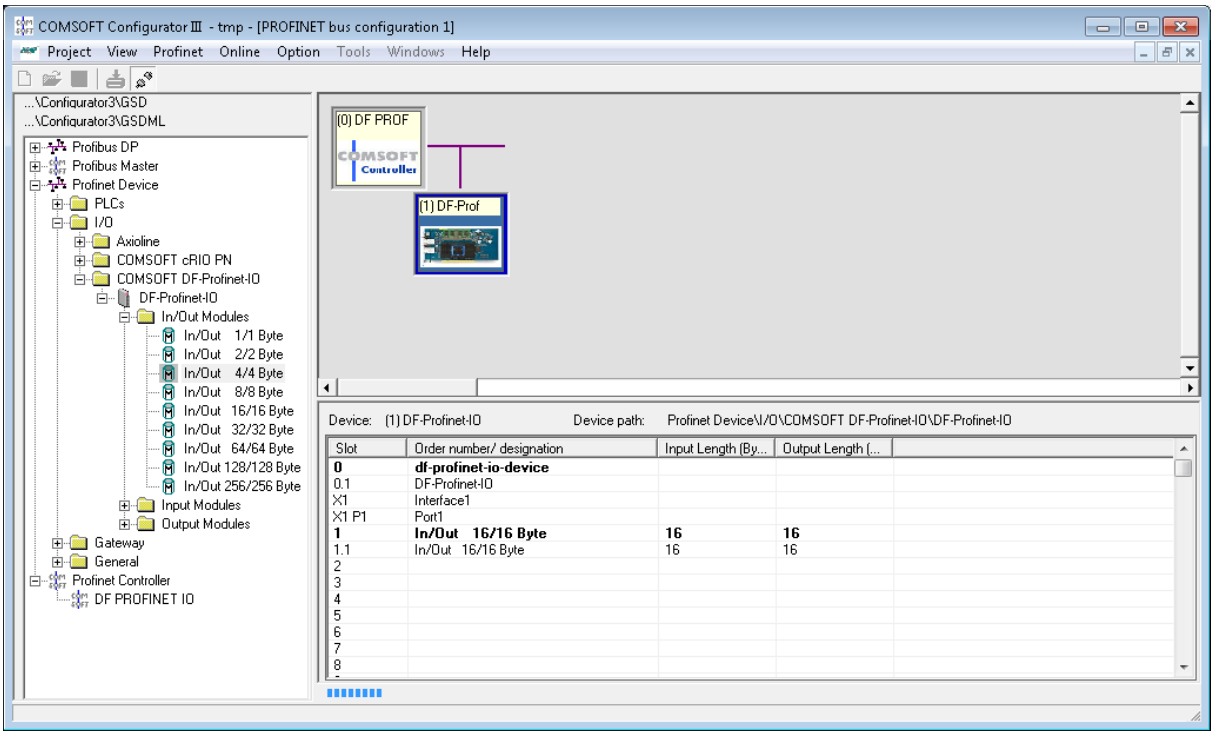
- Command 2: *Read/Write I/O Data (Cyclic):* Read/Write of cyclic process data

- Command 3: *Read/Write Record Data (Acyclic):* Read/Write of acyclic record data

- Command 4: *Pull/Plug Module*: Pull/Plug modules, triggers Pull/Plug-Alarms to PN IO Controller)

- Command 5: *Send Process Alarm*: Trasnsmitts Process Alarms to PN IO Controller

- Command 6: *Set/Reset diagnosis:* Set/Reset diagnostic state

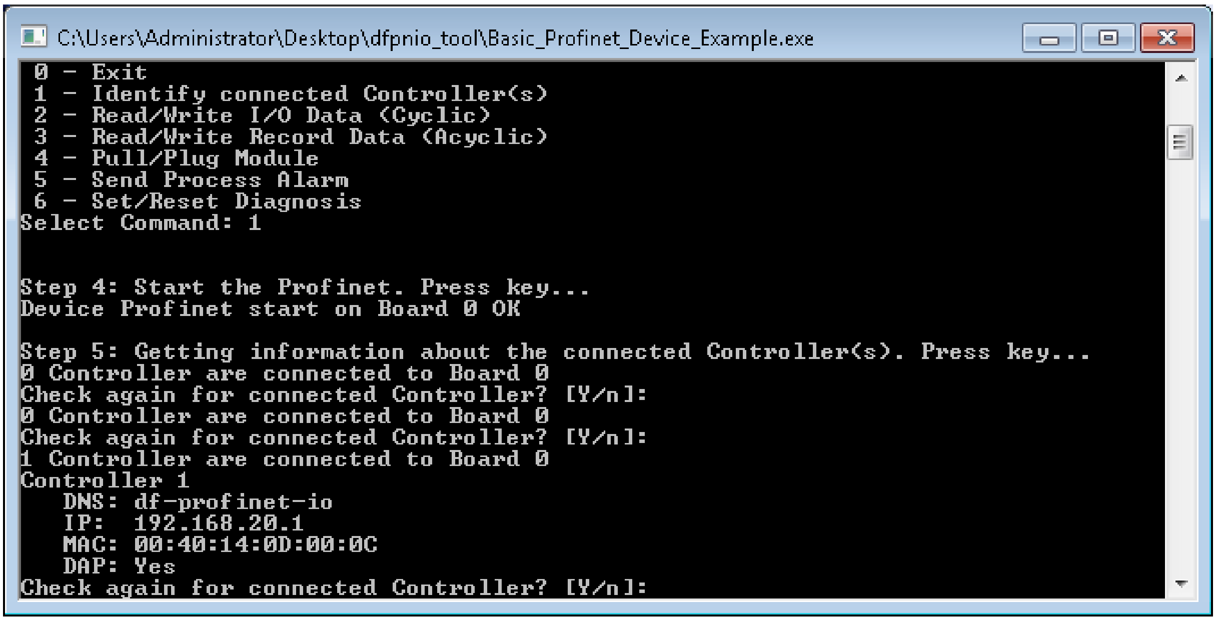


Device: (1) DF-Profinet-IO Device path: Profinet Device\I/O\COMSOFT DF-Profinet-IO\DF-Profinet-IO

Slot	Order number/ designation	Input Length (By...	Output Length (...
0	**df-profinet-io-device**		
0.1	DF-Profinet-IO		
X1	Interface1		
X1 P1	Port1		
1	**In/Out 16/16 Byte**	**16**	**16**
1.1	In/Out 16/16 Byte	16	16
2			
3			
4			
5			
6			
7			
8			

Figure 13: Communication State of the PN IO Device before activating the PN IO communication

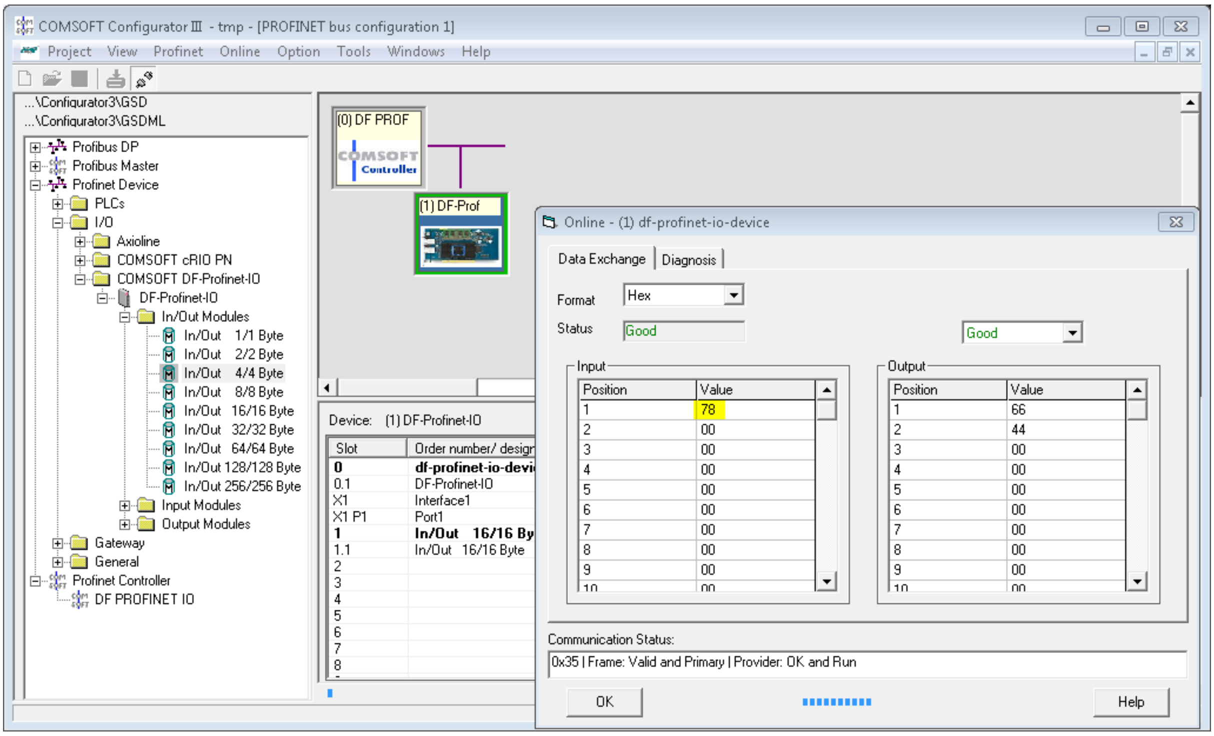
With the PN IO device still not activated, a second DF PROFINET IO board, configured as PN IO Controller, indicates in Configurator's on line mode the PN IO Device as faulty (blue frame).


C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
 0 - Exit
 1 - Identify connected Controller(s)
 2 - Read/Write I/O Data (Cyclic)
 3 - Read/Write Record Data (Acyclic)
 4 - Pull/Plug Module
 5 - Send Process Alarm
 6 - Set/Reset Diagnosis
Select Command: 1


Step 4: Start the Profinet. Press key...
Device Profinet start on Board 0 OK

Step 5: Getting information about the connected Controller(s). Press key...
0 Controller are connected to Board 0
Check again for connected Controller? [Y/n]:
0 Controller are connected to Board 0
Check again for connected Controller? [Y/n]:
1 Controller are connected to Board 0
Controller 1
   DNS: df-profinet-io
   IP:  192.168.20.1
   MAC: 00:40:14:0D:00:0C
   DAP: Yes
Check again for connected Controller? [Y/n]:
```

Figure 14: Sample code PN IO Device – Start of Profinet

- Step 4: *Start the Profinet:* Profinet IO communication is activated



Device: (1) DF-Profinet-IO

Slot	Order number/ design
0	**df-profinet-io-devi**
0.1	DF-Profinet-IO
X1	Interface1
X1 P1	Port1
1	**In/Out 16/16 By**
1.1	In/Out 16/16 Byte
2	
3	
4	
5	
6	
7	
8	

Format: Hex

Status: Good Good

Input

Position	Value
1	78
2	00
3	00
4	00
5	00
6	00
7	00
8	00
9	00
10	00

Output

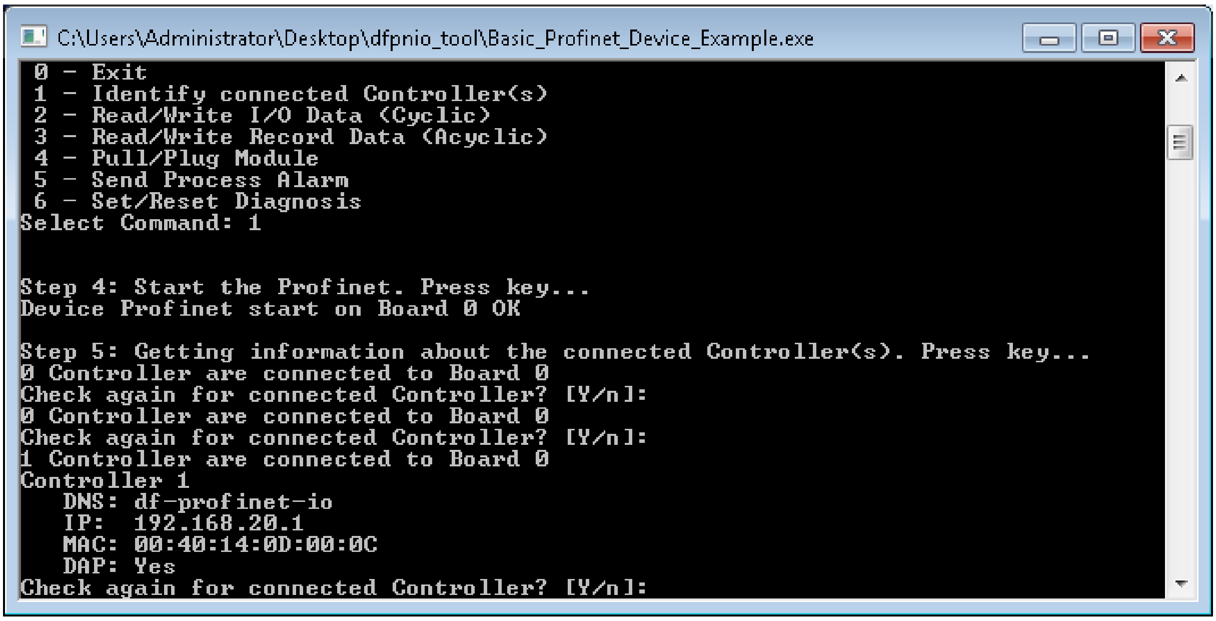
Position	Value
1	66
2	44
3	00
4	00
5	00
6	00
7	00
8	00
9	00
10	00

Communication Status:

0x35 | Frame: Valid and Primary | Provider: OK and Run

Figure 15: State of the PN IO Device after activating PROFINET communication

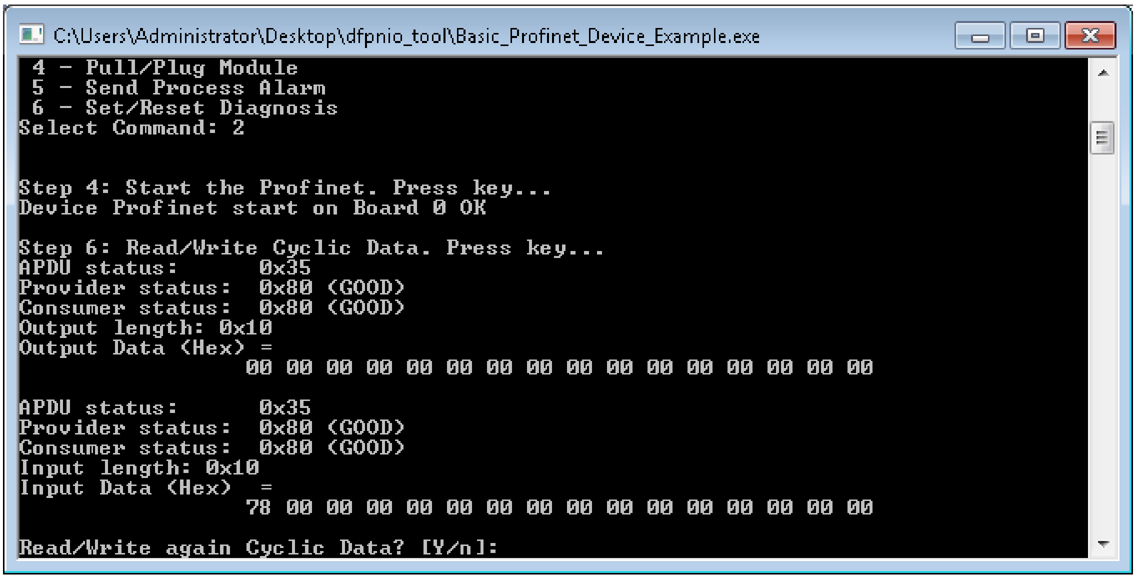
After activating the PN IO Device, the PN IO Controller indicates the PN IO Device as operational (green frame). Exchange of cyclic process data is now possible.


C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
 0 - Exit
 1 - Identify connected Controller(s)
 2 - Read/Write I/O Data (Cyclic)
 3 - Read/Write Record Data (Acyclic)
 4 - Pull/Plug Module
 5 - Send Process Alarm
 6 - Set/Reset Diagnosis
Select Command: 1


Step 4: Start the Profinet. Press key...
Device Profinet start on Board 0 OK

Step 5: Getting information about the connected Controller(s). Press key...
0 Controller are connected to Board 0
Check again for connected Controller? [Y/n]:
0 Controller are connected to Board 0
Check again for connected Controller? [Y/n]:
1 Controller are connected to Board 0
Controller 1
   DNS: df-profinet-io
   IP:  192.168.20.1
   MAC: 00:40:14:0D:00:0C
   DAP: Yes
Check again for connected Controller? [Y/n]:
```

Figure 16: Sample code PN IO Device – Identification of connected PN IO Controllers

- Step 5: *Identify connected Controllers:* Indication of the connected PN IO controllers

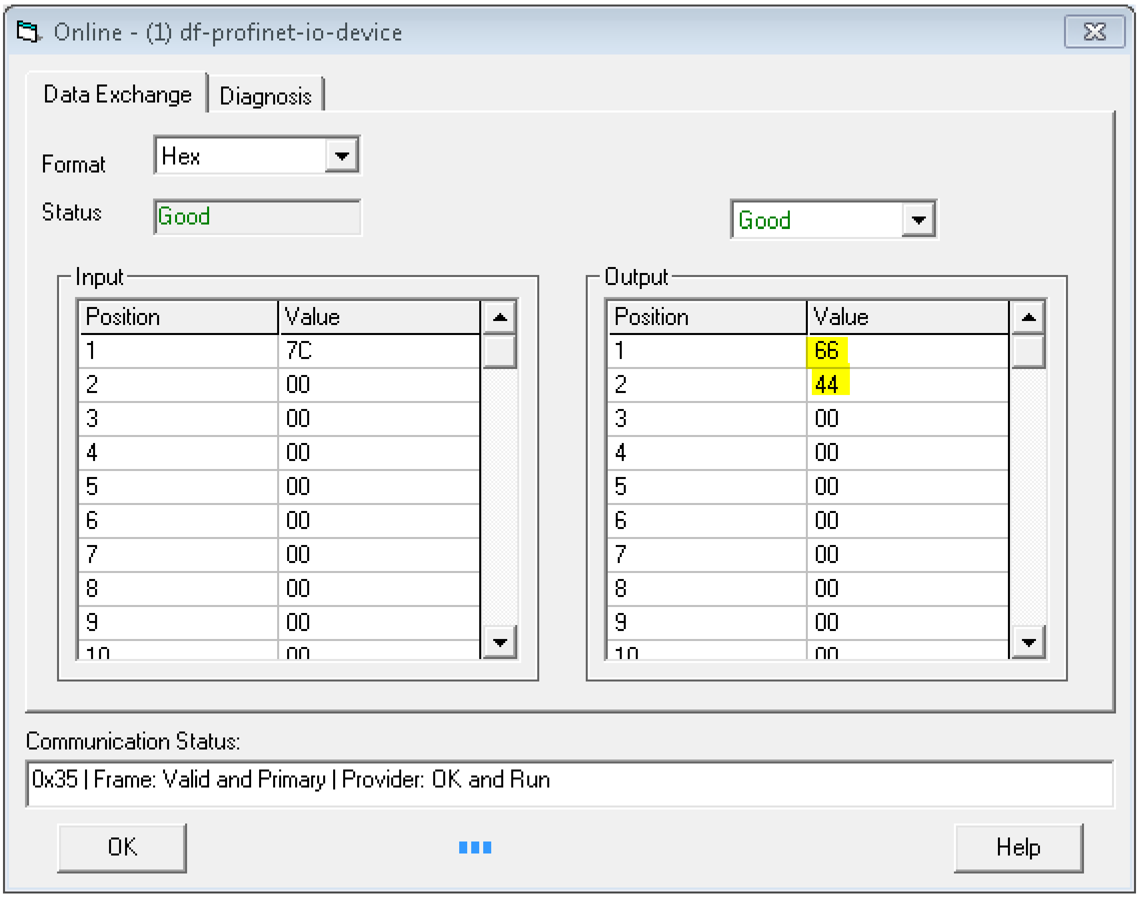


C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
 4 - Pull/Plug Module
 5 - Send Process Alarm
 6 - Set/Reset Diagnosis
Select Command: 2


Step 4: Start the Profinet. Press key...
Device Profinet start on Board 0 OK

Step 6: Read/Write Cyclic Data. Press key...
APDU status:       0x35
Provider status:   0x80 (GOOD)
Consumer status:   0x80 (GOOD)
Output length: 0x10
Output Data (Hex) =
                 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

APDU status:       0x35
Provider status:   0x80 (GOOD)
Consumer status:   0x80 (GOOD)
Input length: 0x10
Input Data (Hex)  =
                 78 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Read/Write again Cyclic Data? [Y/n]:
```

Figure 17: Sample code PN IO Device - Start of PN IO device and Read/Write of cyclic process data

- Step 6: *Read/Write Cyclic Data:* Read/Write cyclic process data. Additionally the communication status and data sizes are indicated



Format: Hex

Status: Good

Good

Input

Position	Value
1	7C
2	00
3	00
4	00
5	00
6	00
7	00
8	00
9	00
10	00

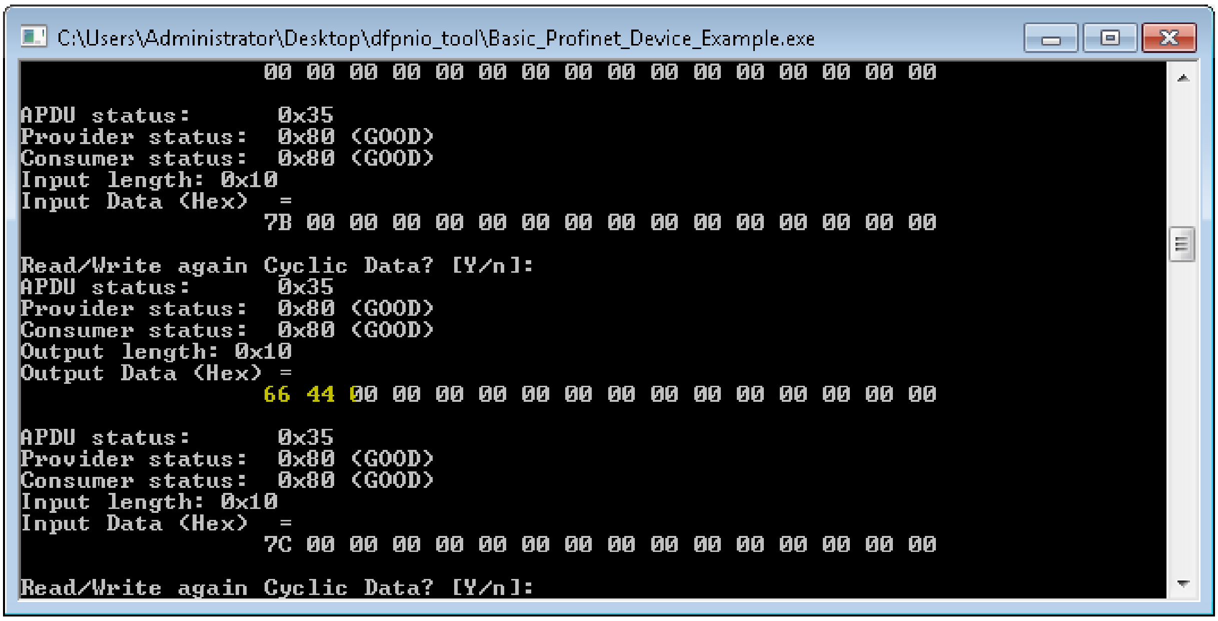
Output

Position	Value
1	66
2	44
3	00
4	00
5	00
6	00
7	00
8	00
9	00
10	00

Communication Status:

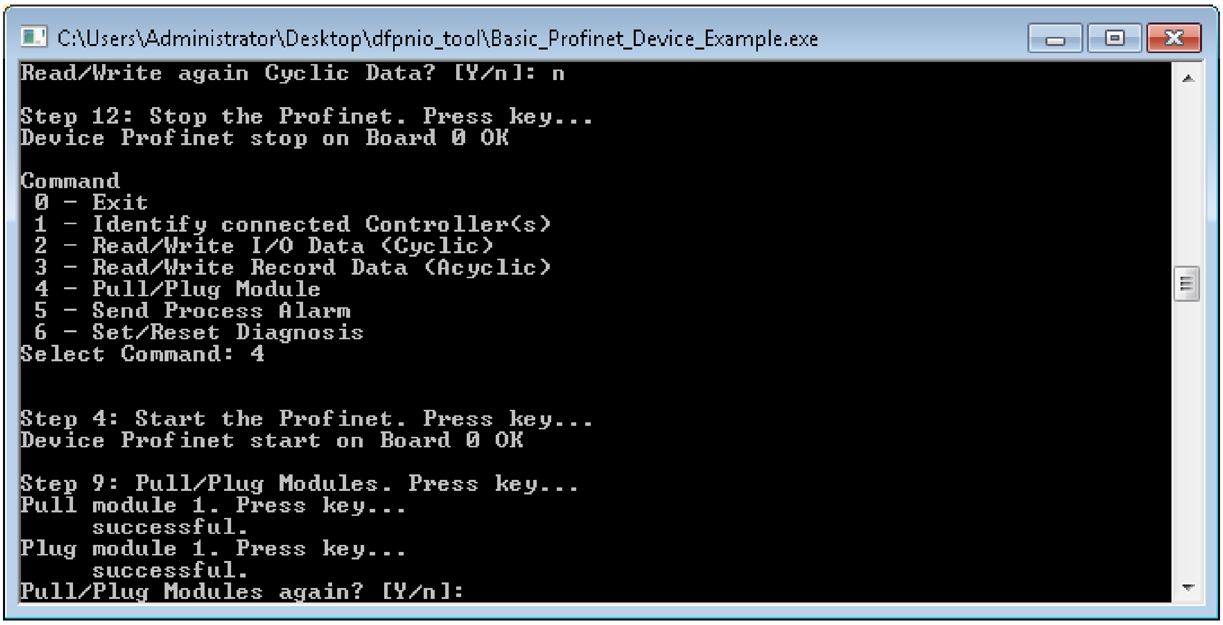
0x35 | Frame: Valid and Primary | Provider: OK and Run

Figure 18: Change of output data on PN IO Controller


C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
                  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

APDU status:       0x35
Provider status:   0x80 (GOOD)
Consumer status:   0x80 (GOOD)
Input length: 0x10
Input Data (Hex)  =
                  7B 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Read/Write again Cyclic Data? [Y/n]:
APDU status:       0x35
Provider status:   0x80 (GOOD)
Consumer status:   0x80 (GOOD)
Output length: 0x10
Output Data (Hex) =
                  66 44 00 00 00 00 00 00 00 00 00 00 00 00 00 00

APDU status:       0x35
Provider status:   0x80 (GOOD)
Consumer status:   0x80 (GOOD)
Input length: 0x10
Input Data (Hex)  =
                  7C 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Read/Write again Cyclic Data? [Y/n]:
```

Figure 19: Sample code PN IO Device - Read/Write of cyclic output data and indication of the changed output data

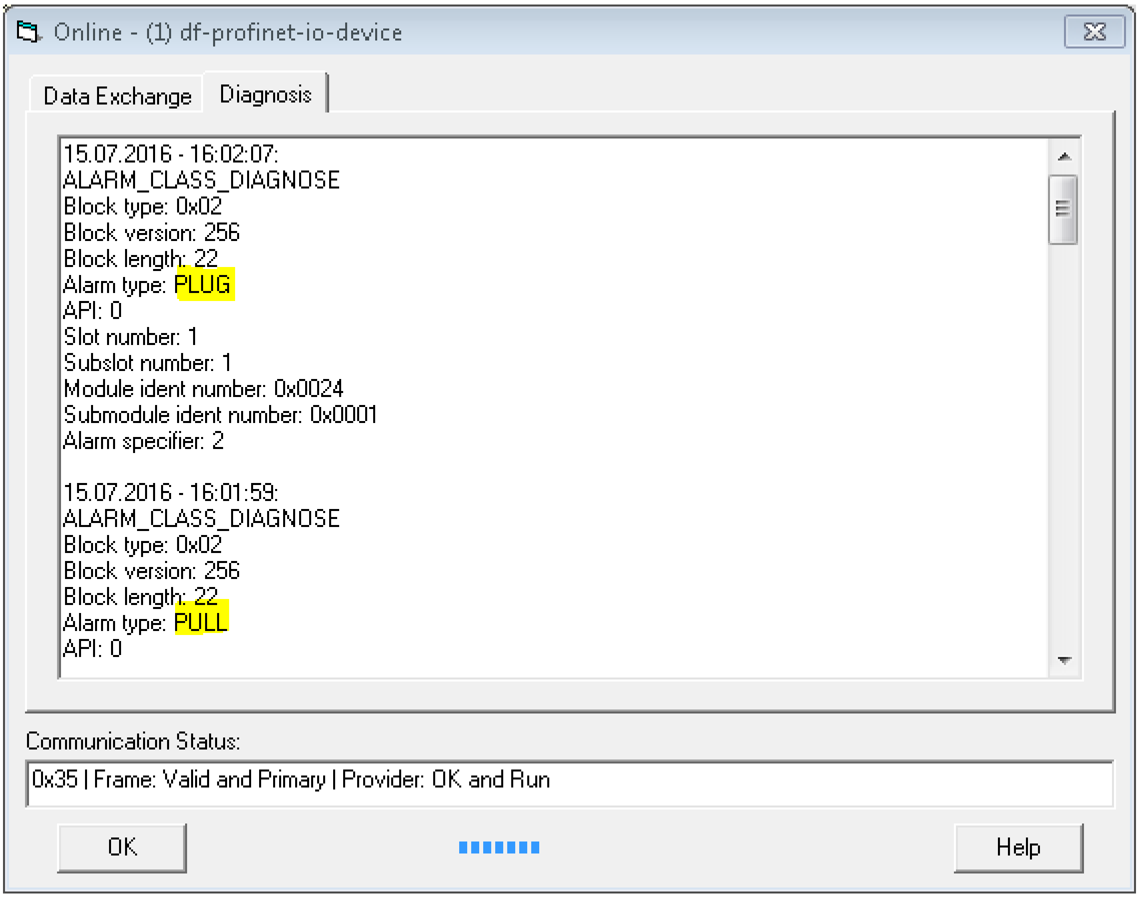

C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
Read/Write again Cyclic Data? [Y/n]: n

Step 12: Stop the Profinet. Press key...
Device Profinet stop on Board 0 OK

Command
 0 - Exit
 1 - Identify connected Controller(s)
 2 - Read/Write I/O Data (Cyclic)
 3 - Read/Write Record Data (Acyclic)
 4 - Pull/Plug Module
 5 - Send Process Alarm
 6 - Set/Reset Diagnosis
Select Command: 4


Step 4: Start the Profinet. Press key...
Device Profinet start on Board 0 OK

Step 9: Pull/Plug Modules. Press key...
Pull module 1. Press key...
     successful.
Plug module 1. Press key...
     successful.
Pull/Plug Modules again? [Y/n]:
```

Figure 20: Sample code PN IO Device - Command 4- Pull/Plug Module

- Step 4: *Start the Profinet:* Profinet IO communication is activated

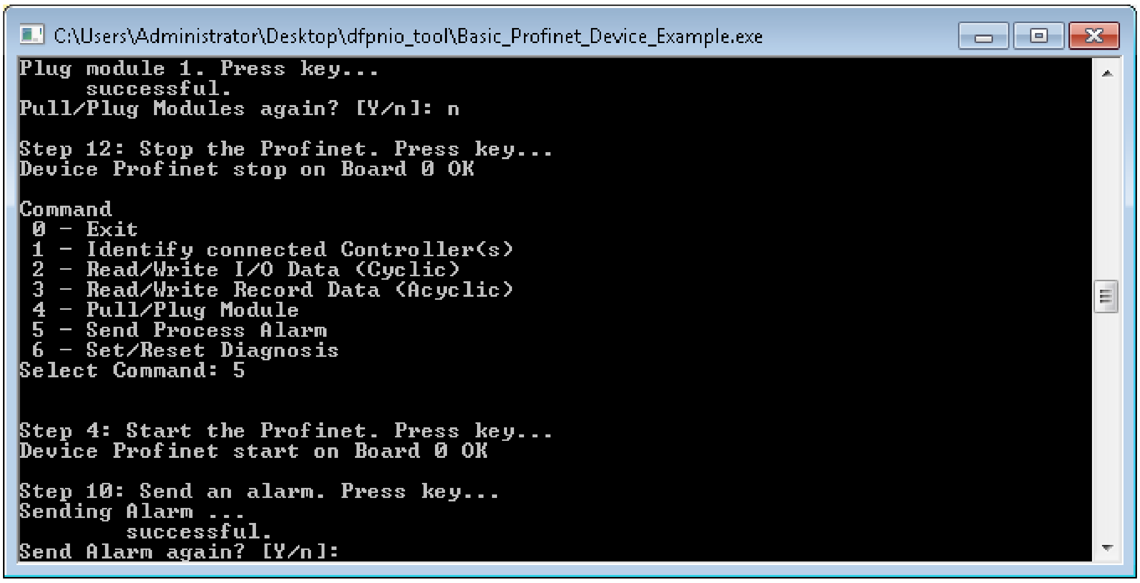
- Step 9: *Pull Module / Plug Module* – Trigger Pull / Plug – Alarm on the PN IO Controller



```
15.07.2016 - 16:02:07:
ALARM_CLASS_DIAGNOSE
Block type: 0x02
Block version: 256
Block length: 22
Alarm type: PLUG
API: 0
Slot number: 1
Subslot number: 1
Module ident number: 0x0024
Submodule ident number: 0x0001
Alarm specifier: 2

15.07.2016 - 16:01:59:
ALARM_CLASS_DIAGNOSE
Block type: 0x02
Block version: 256
Block length: 22
Alarm type: PULL
API: 0
```

Communication Status:
0x35 | Frame: Valid and Primary | Provider: OK and Run

Figure 21: Indication of Pull / Plug – Alarms on PN IO Controller



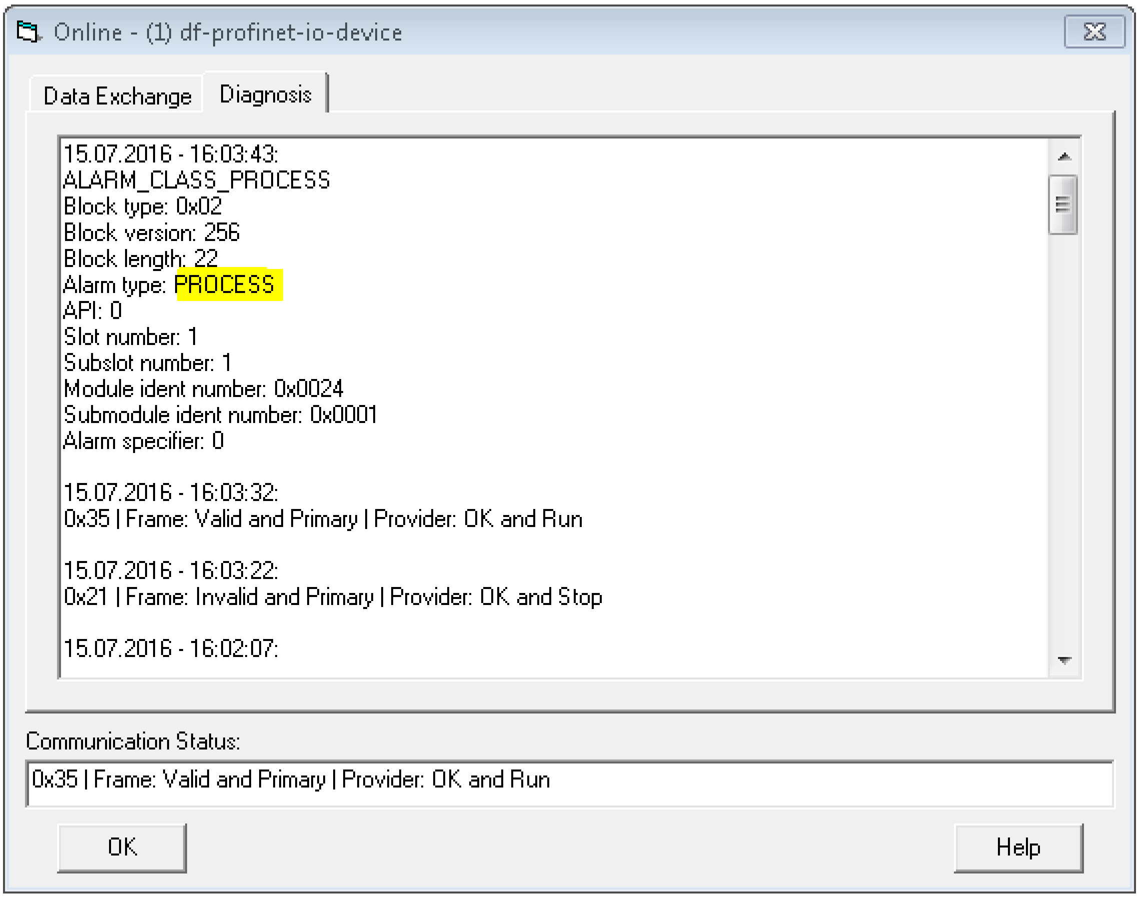
C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
Plug module 1. Press key...
     successful.
Pull/Plug Modules again? [Y/n]: n

Step 12: Stop the Profinet. Press key...
Device Profinet stop on Board 0 OK

Command
 0 - Exit
 1 - Identify connected Controller(s)
 2 - Read/Write I/O Data (Cyclic)
 3 - Read/Write Record Data (Acyclic)
 4 - Pull/Plug Module
 5 - Send Process Alarm
 6 - Set/Reset Diagnosis
Select Command: 5


Step 4: Start the Profinet. Press key...
Device Profinet start on Board 0 OK

Step 10: Send an alarm. Press key...
Sending Alarm ...
        successful.
Send Alarm again? [Y/n]:
```

Figure 22: Sample code PN IO Device - Command 5- Transmitting Process-Alarms

- Step 4: *Start the Profinet:* Profinet IO communication is activated

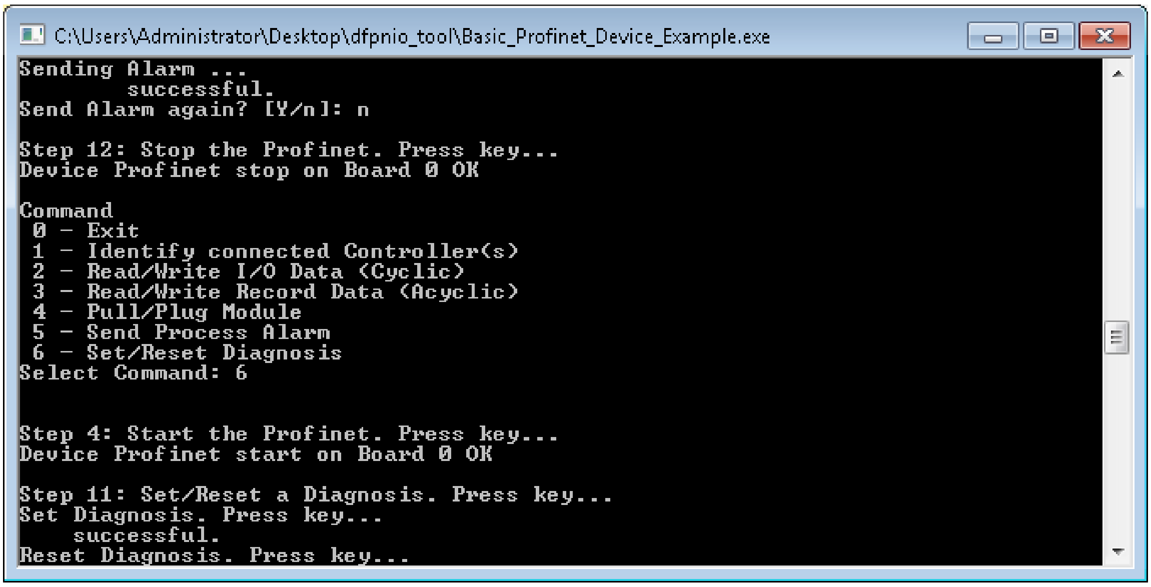
- Step 10: *Send an alarm* – Transmit a Process-Alarm to the PN IO Controller



```
15.07.2016 - 16:03:43:
ALARM_CLASS_PROCESS
Block type: 0x02
Block version: 256
Block length: 22
Alarm type: PROCESS
API: 0
Slot number: 1
Subslot number: 1
Module ident number: 0x0024
Submodule ident number: 0x0001
Alarm specifier: 0

15.07.2016 - 16:03:32:
0x35 | Frame: Valid and Primary | Provider: OK and Run

15.07.2016 - 16:03:22:
0x21 | Frame: Invalid and Primary | Provider: OK and Stop

15.07.2016 - 16:02:07:
```

Communication Status: 0x35 | Frame: Valid and Primary | Provider: OK and Run

Figure 23: Indication of a process-alarm on PN IO Controller

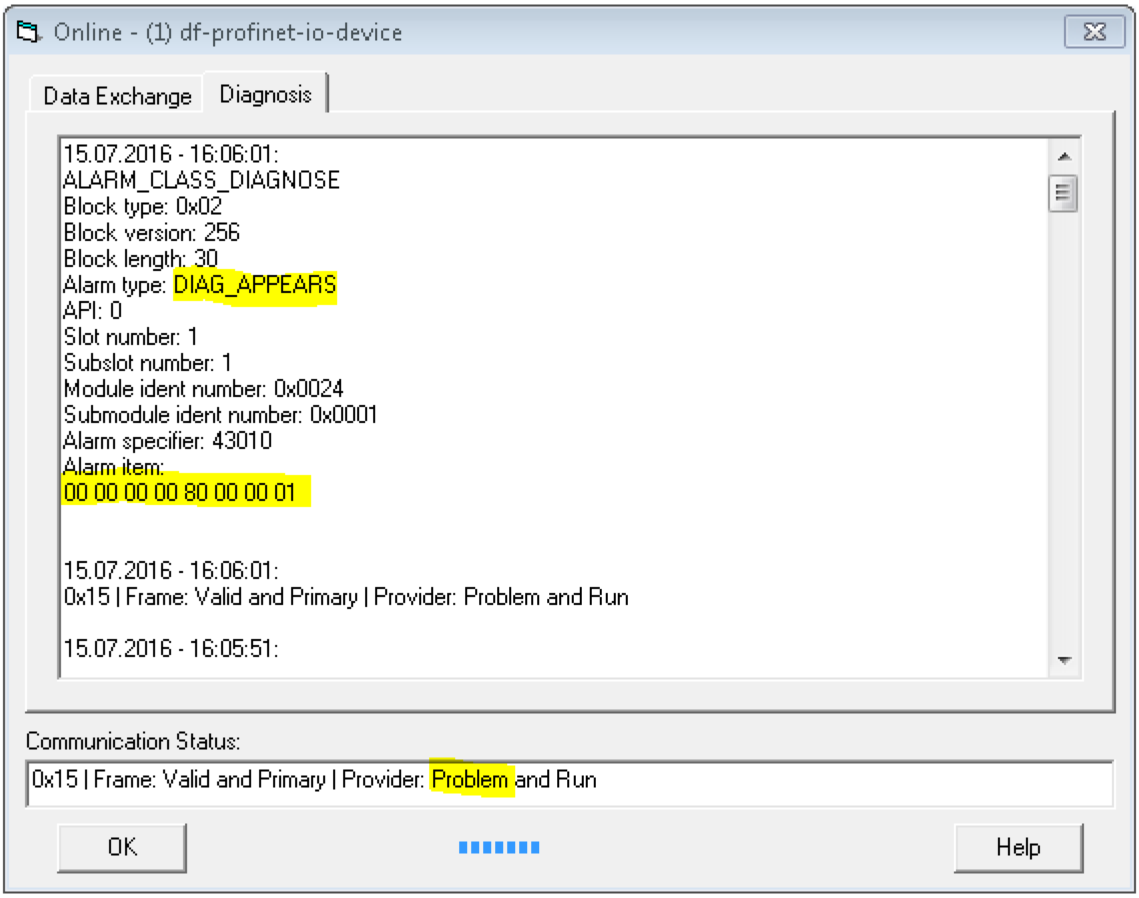

C:\Users\Administrator\Desktop\dfpnio_tool\Basic_Profinet_Device_Example.exe

```
Sending Alarm ...
        successful.
Send Alarm again? [Y/n]: n

Step 12: Stop the Profinet. Press key...
Device Profinet stop on Board 0 OK

Command
 0 - Exit
 1 - Identify connected Controller(s)
 2 - Read/Write I/O Data (Cyclic)
 3 - Read/Write Record Data (Acyclic)
 4 - Pull/Plug Module
 5 - Send Process Alarm
 6 - Set/Reset Diagnosis
Select Command: 6


Step 4: Start the Profinet. Press key...
Device Profinet start on Board 0 OK

Step 11: Set/Reset a Diagnosis. Press key...
Set Diagnosis. Press key...
    successful.
Reset Diagnosis. Press key...
```

Figure 24: Sample code PN IO Device - Command 6- Set/Reset Diagnostic State

- Step 4: *Start the Profinet:* Profinet IO communication is activated

- Step 11: *Set/Reset a Diagnosis* – Set/Reset diagnostic state



```
15.07.2016 - 16:06:01:
ALARM_CLASS_DIAGNOSE
Block type: 0x02
Block version: 256
Block length: 30
Alarm type: DIAG_APPEARS
API: 0
Slot number: 1
Subslot number: 1
Module ident number: 0x0024
Submodule ident number: 0x0001
Alarm specifier: 43010
Alarm item:
00 00 00 00 80 00 00 01


15.07.2016 - 16:06:01:
0x15 | Frame: Valid and Primary | Provider: Problem and Run

15.07.2016 - 16:05:51:
```

Communication Status:

0x15 | Frame: Valid and Primary | Provider: Problem and Run

Figure 25: Indication of PN IO Device’s diagnostic state on PN IO Controller

4 Simultaneous operation of PN IO Controller and PN IO Device

On the DF PROFINET IO board the operation modes PN IO Controller and Device can be processed simultaneously that means the board works as PN IO controller and Device at the same time.

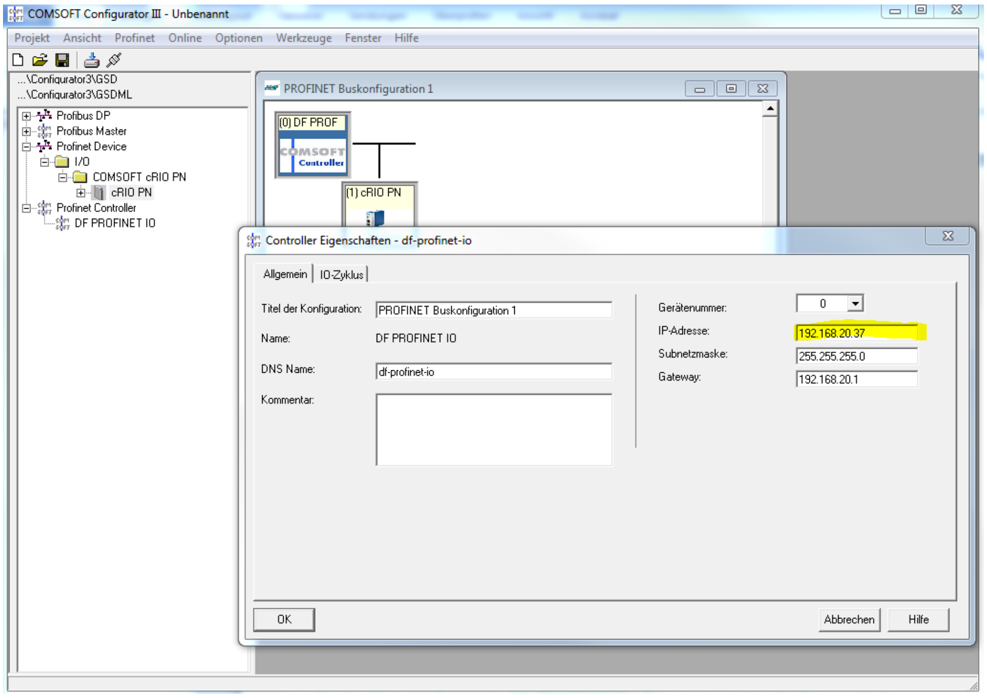
Furthermore the sample applications within scope of delivery for PN IO Controller and PN IO device can be run in parallel for testing purposes.

4.1 Simultaneous operation of PN IO Controller/Device on a single Ethernet Port

With DF PROFINET IO boards equipped with a single Ethernet conection please consider the following configuration requirements:

The TCP/IP address for PN IO controller and PN IO device must be **identical**.

Example: For the operation as PN IO Controller, the TCP IP – address **192.168.20.37** was adjusted with Configurator III:



Titel der Konfiguration: PROFINET Buskonfiguration 1
Name: DF PROFINET IO
DNS Name: df-profinet-io
Kommentar:
Gerätenummer: 0
IP-Adresse: 192.168.20.37
Subnetzmaske: 255.255.255.0
Gateway: 192.168.20.1

Figure 26: Adjusted TCP IP-Adress for the internal PN IO Controller

In the DCP-configuration of the external PN IO controller configuration tool (Assignment of PROFINET IO name and TCP IP address for the PN IO Device) the identical TCP IP address **192.168.20.37** must be configured.

4.2 Description LED's

🟢 Green LED:

ON: Firmware boot was successfull

OFF: Firmware not started

🟡 Yellow LED:

ON: PROFINET IO started

OFF: PROFINET IO not started

🔴 Red LED:

On: Error on PROFINET IO Network

Off: No error in PROFINET IO Network

4.3 Simultaneous operation of PN IO Controller/Device on 2 Ethernet Ports

With DF PROFINET IO boards equipped with 2 independent Ethernet ports the PN IO Controller is run on **port 1** and the PN IO device is run on **port 2**. The Ethernet ports are working completely independent so different TCP IP – addresses can be configured.