



**User Guide**

# **ABC-CPU Systems**

**Profinet Parameterization under STEP7**

**44/2017**

© Copyright 2015-2017 by ABC IT, Ahrens & Birner Company GmbH

Virchowstraße19/19a

D-90409 Nürnberg

Fon +49 911-394 800-0

Fax +49 911-394 800-99

<mailto:mail@abcit.eu>

<http://www.abcit.eu/>

ABC IT is a registered trademark of ABC IT GmbH

Simatic is a registered trademark of Siemens AG

STEP is a registered trademark of Siemens AG

PROFINET is a registered trademark of PROFIBUS-Nutzerorganisation e. V.

## Contents

<b>1. Introduction</b> .....	<b>4</b>
<b>1.1 Scope of delivery</b> .....	<b>4</b>
1.1.1 Hilscher CIFX 50E-RE – hardware .....	4
1.1.2 ABC IT USB-Stick .....	4
1.1.3 ABC X-CPU-4 w57 Dongle .....	5
<b>2. Hilscher cifX Device Driver</b> .....	<b>6</b>
<b>2.1 Setup</b> .....	<b>6</b>
2.1.1 Hilscher cifXSetup .....	8
2.1.2 Hilscher cifXTest .....	11
<b>3. ABC X-CPU-4 w57 PN</b> .....	<b>14</b>
<b>3.1 In general</b> .....	<b>14</b>
<b>3.2 Runtime</b> .....	<b>15</b>
<b>3.3 Startup parameters</b> .....	<b>16</b>
<b>3.4 Resources</b> .....	<b>18</b>
<b>4. STEP7 – parameterization</b> .....	<b>19</b>
<b>4.1 In general</b> .....	<b>19</b>
<b>4.2 Configuration</b> .....	<b>19</b>
<b>4.3 Profinet IO-system</b> .....	<b>20</b>
<b>4.4 Peripheral areas</b> .....	<b>21</b>

# 1. Introduction

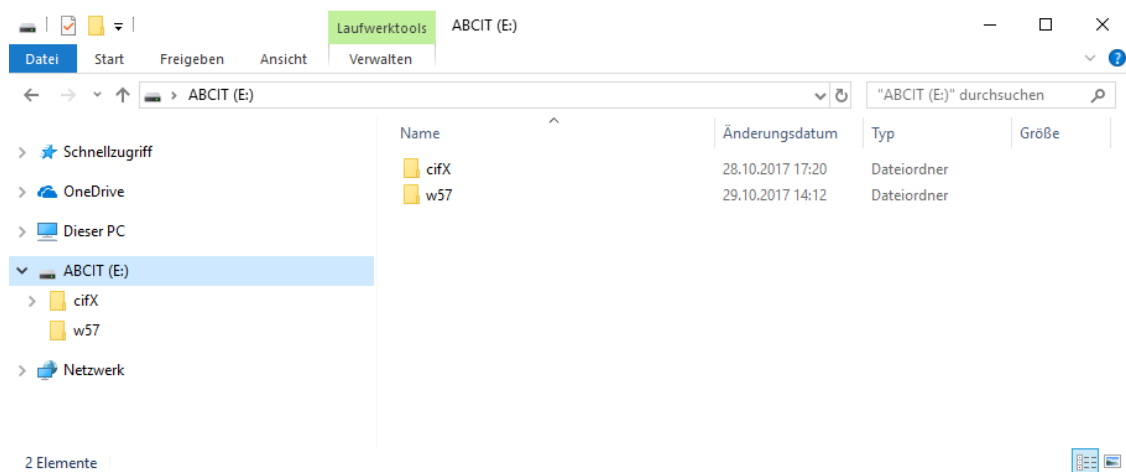
---

## 1.1 Scope of delivery

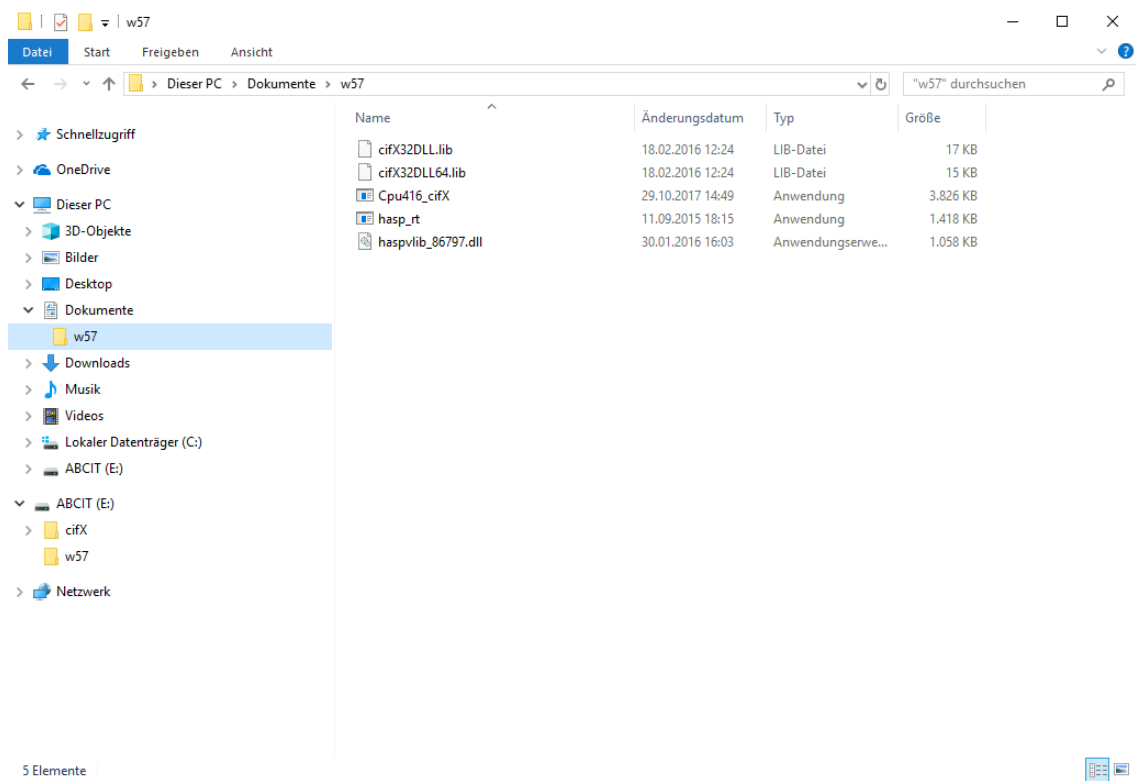
### 1.1.1 Hilscher CIFX 50E-RE – hardware

Install the supplied Hilscher CIFX 50E-RE – hardware in your PC. You will need a free PCI Express slot for this.

### 1.1.2 ABC IT USB-Stick



All necessary tools for commissioning the ABC X-CPU-4 w57 PN software you can find on the USB Stick or on our website [www.abcit.eu](http://www.abcit.eu)!



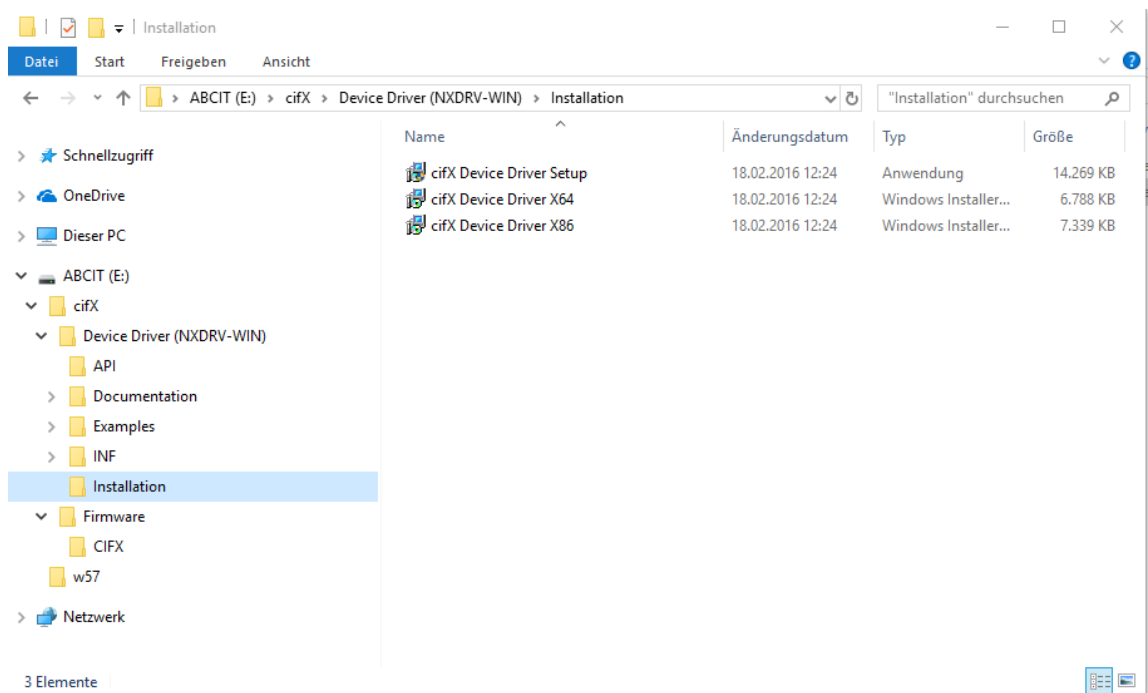
Copy the contents of the USB stick into the document directory of your PC!

### 1.1.3 ABC X-CPU-4 w57 Dongle

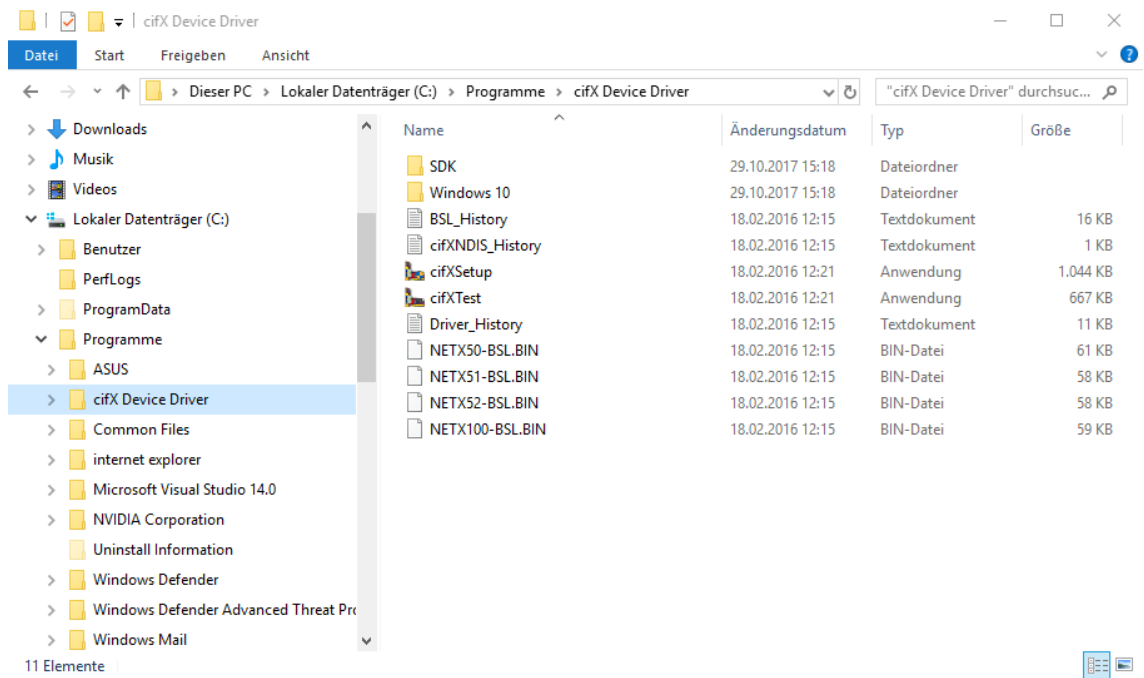
Plug the USB dongle into a free slot on your PC. Driver software doesn't need to be installed for the dongle.

# 2. Hilscher cifX Device Driver

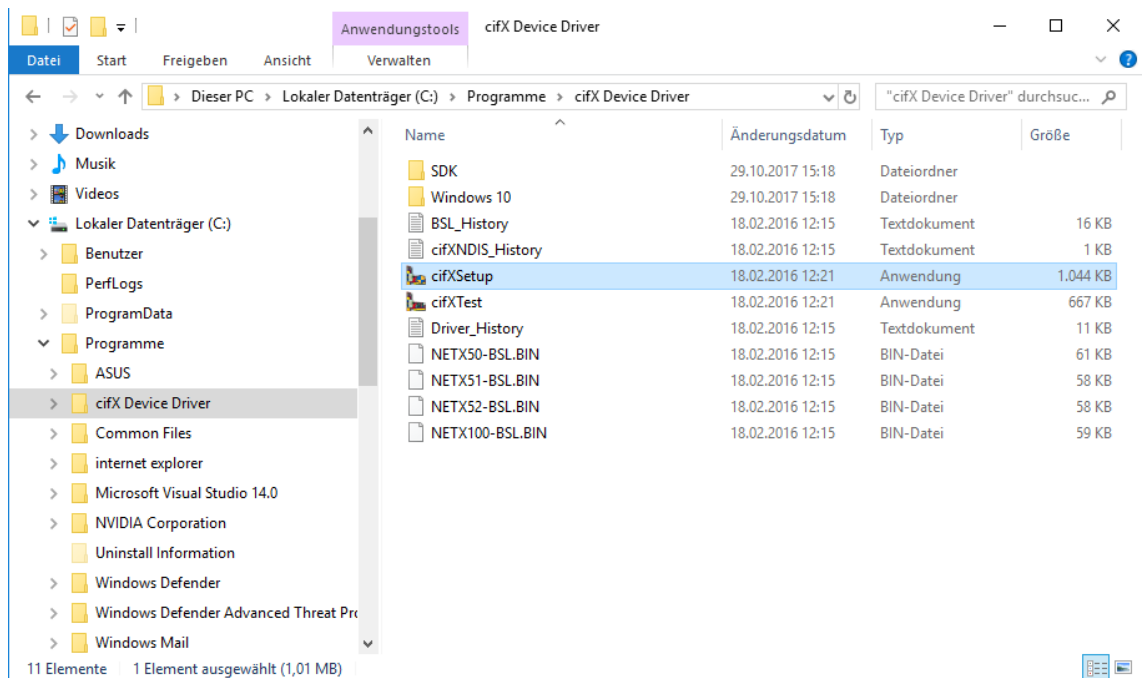
## 2.1 Setup



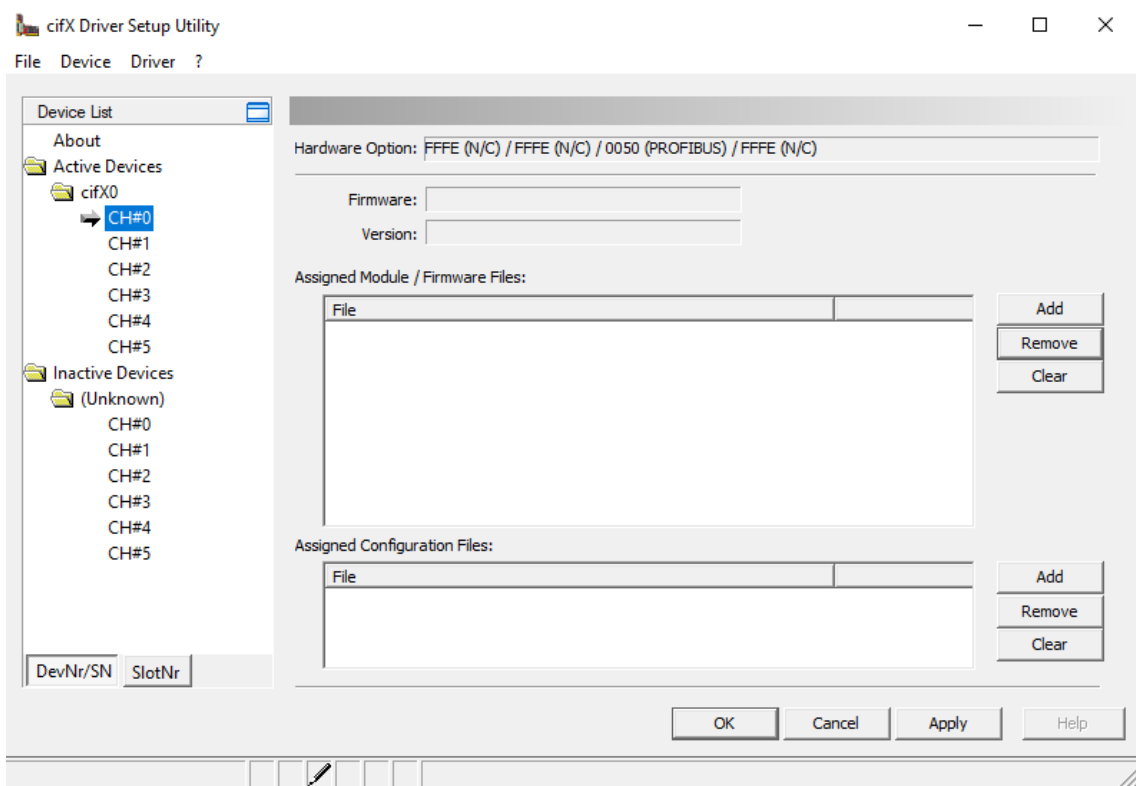
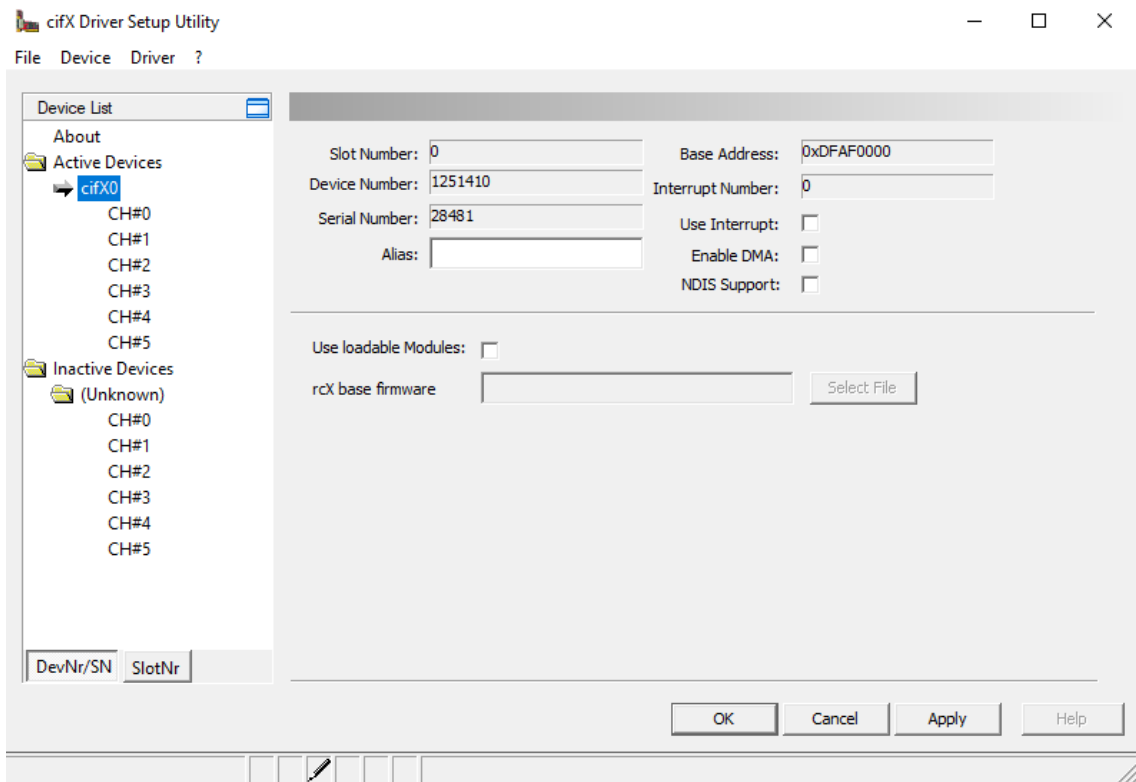




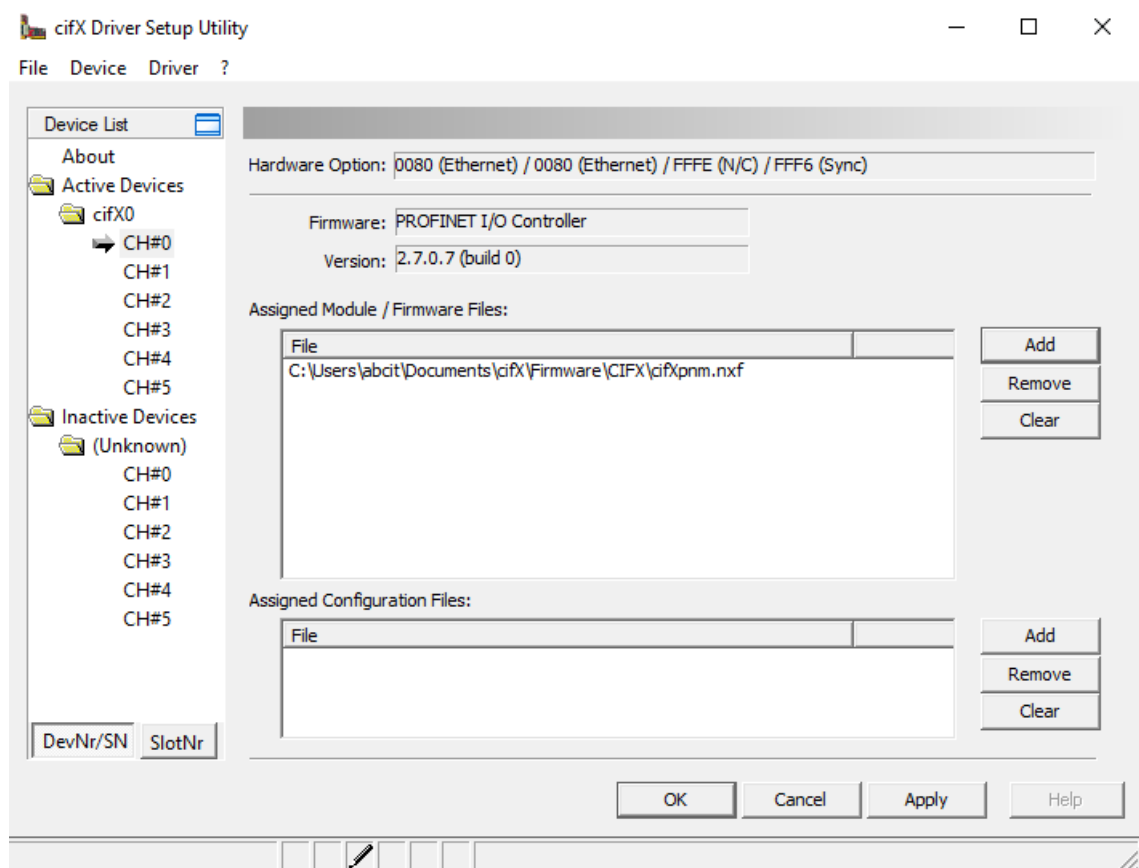
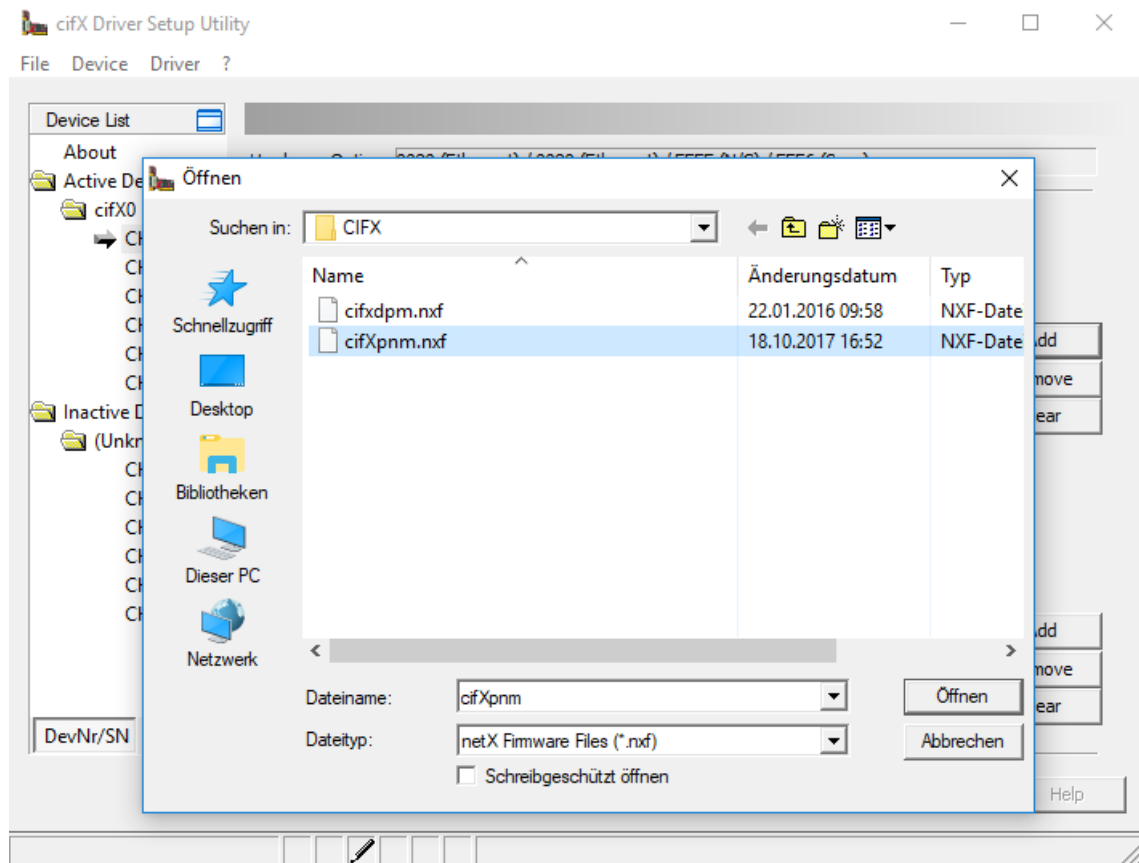
## 2.1.1 Hilscher cifXSetup

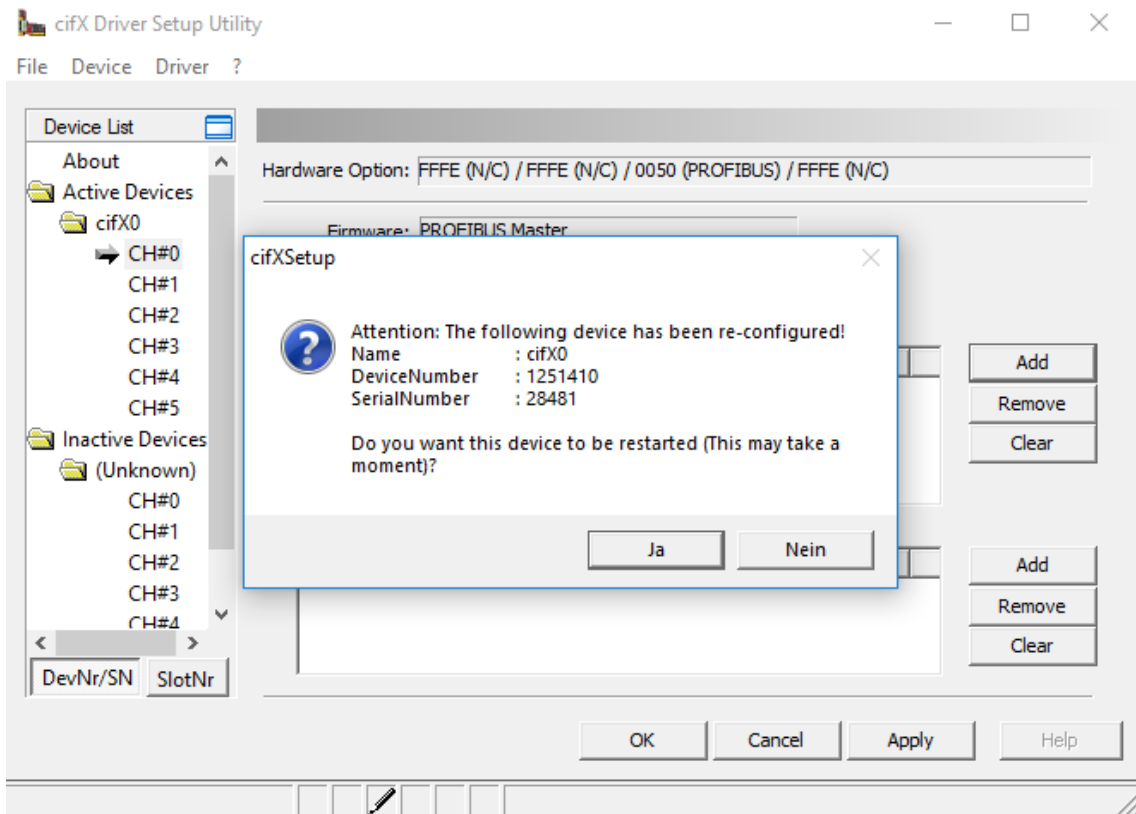




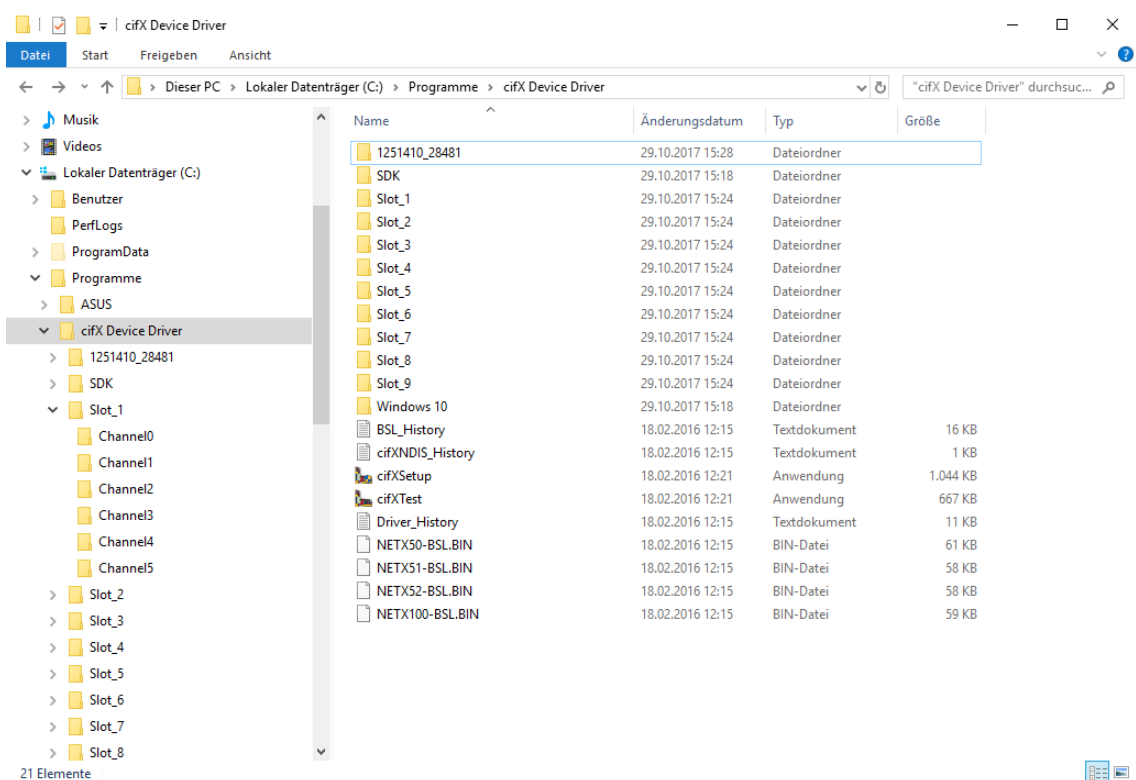


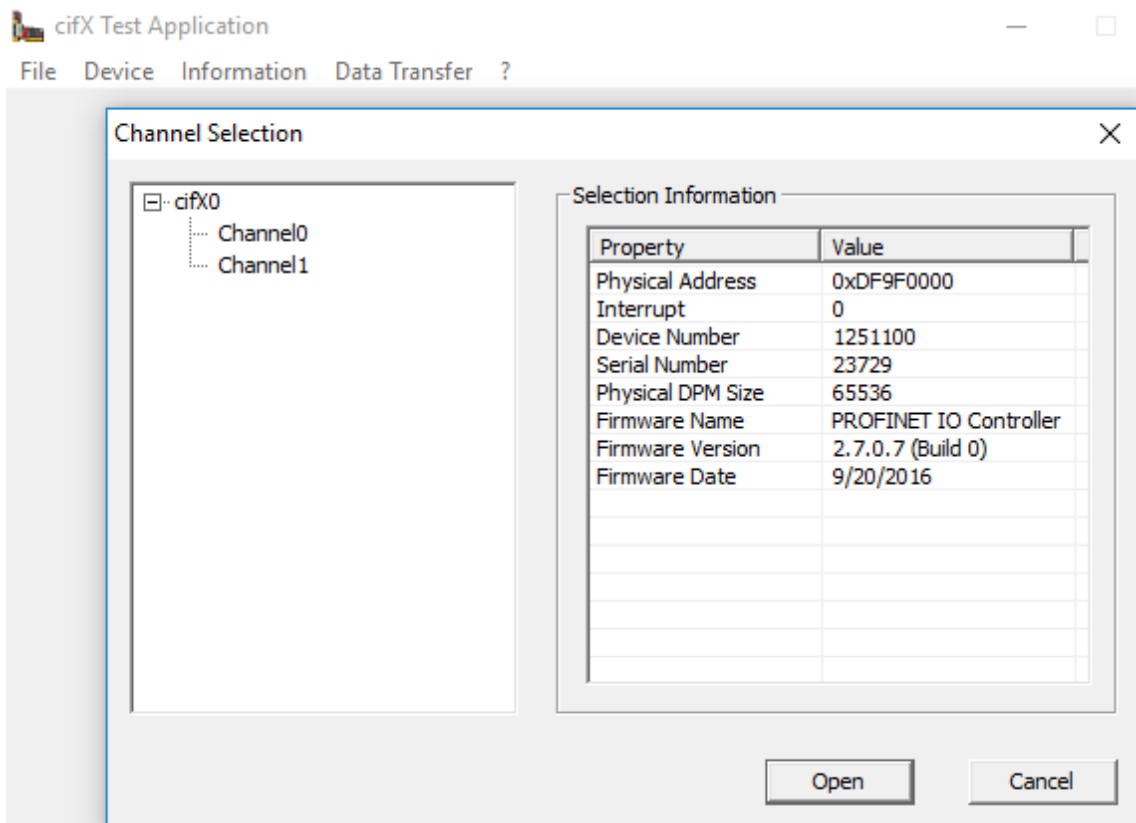
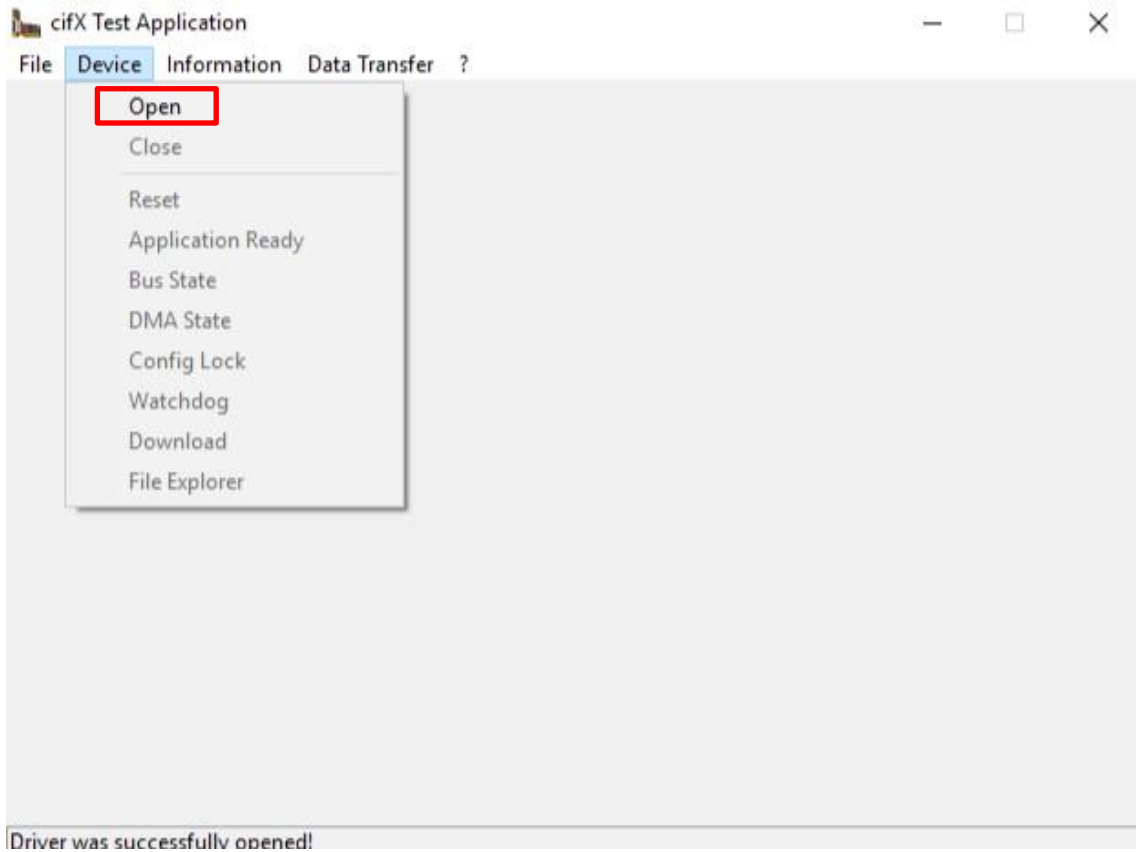
## Add the firmware files

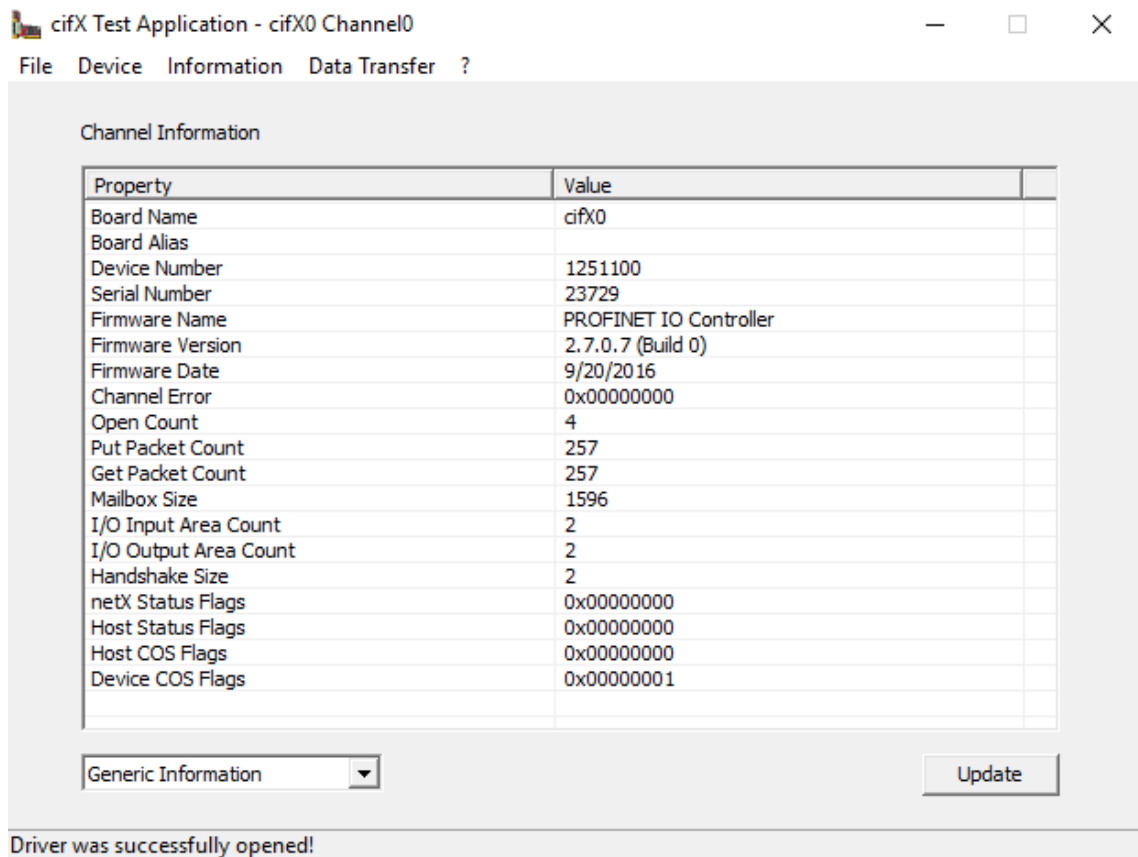
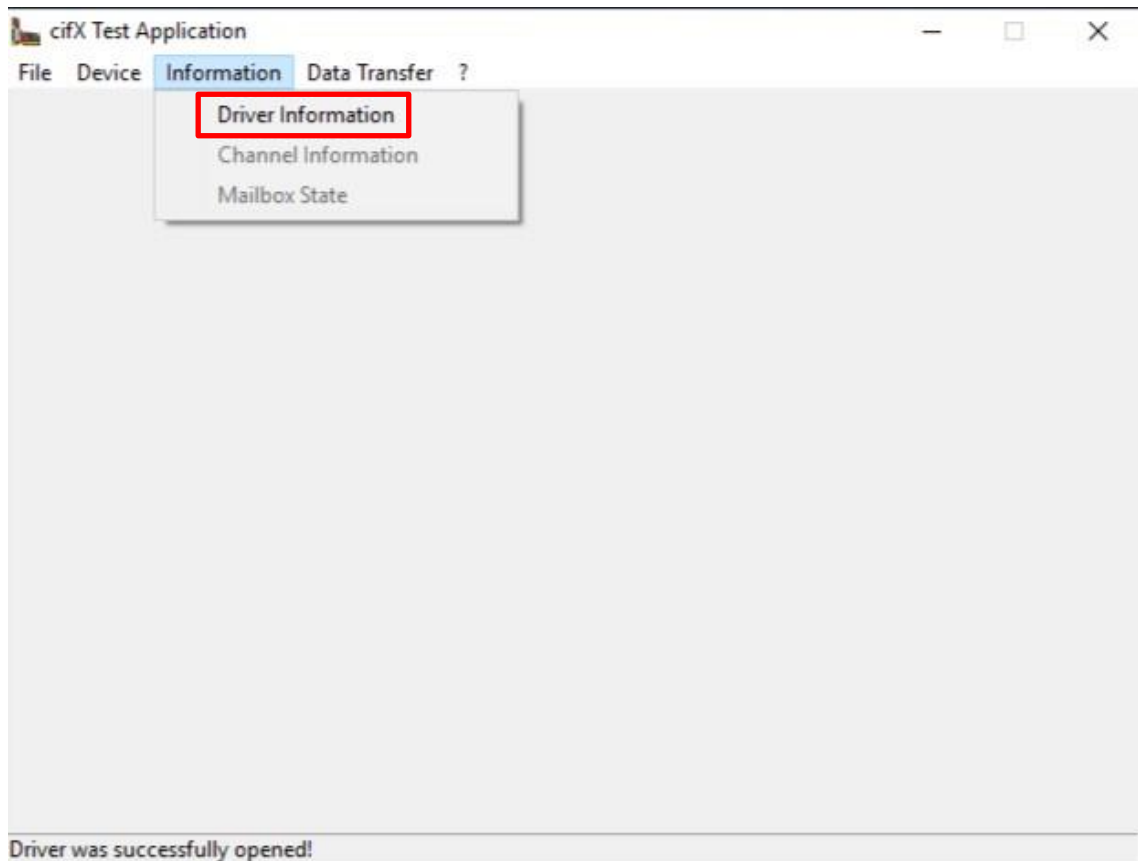




## 2.1.2 Hilscher cifXTest







# 3. ABC X-CPU-4 w57 PN

---

## 3.1 In general

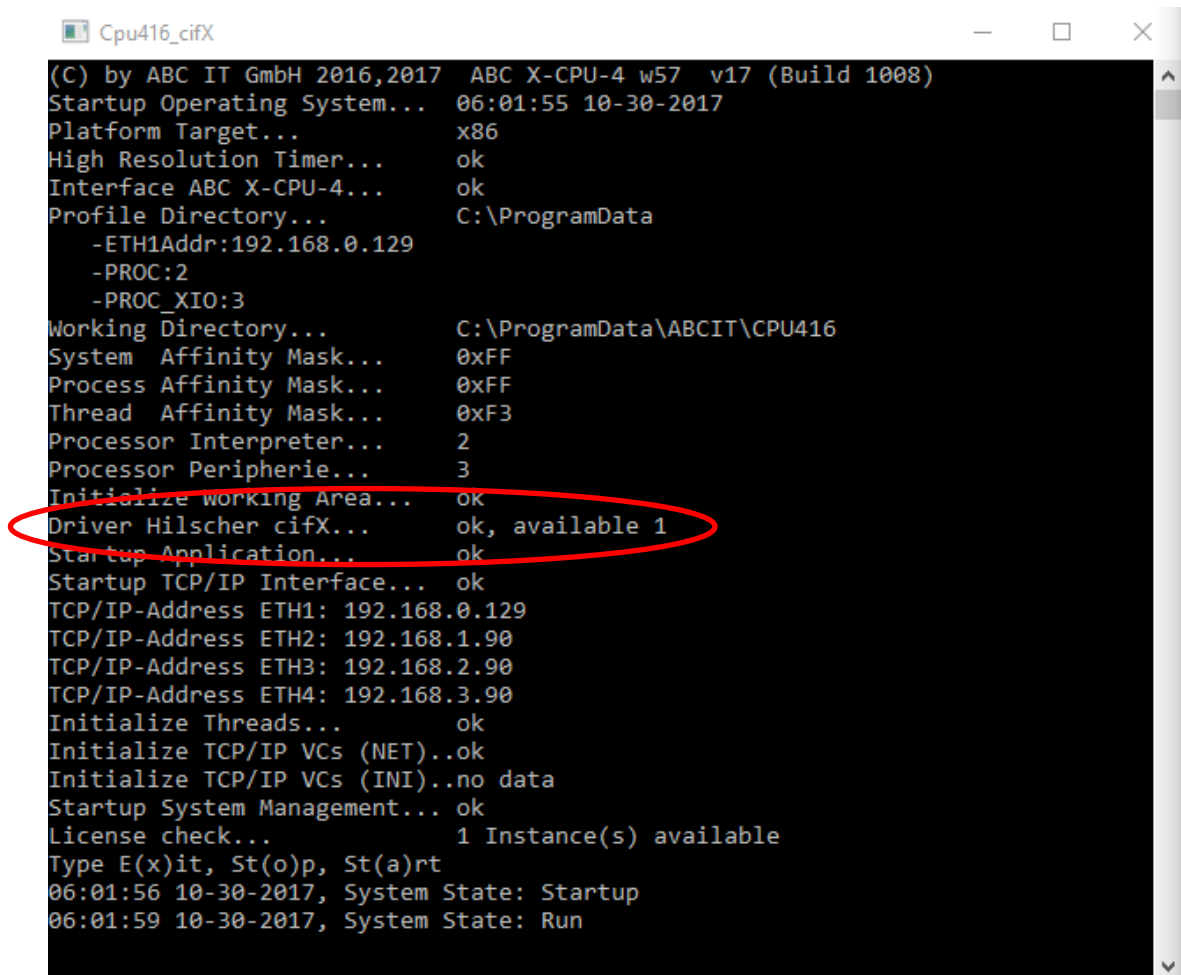
Please read the document *ABC-X-CPU-4 w57- 2016.20 eng* at first!

## 3.2 Runtime

After the Hilscher device driver has been installed and the corresponding firmware has been initialized, the ABC CPU runtime can be started.

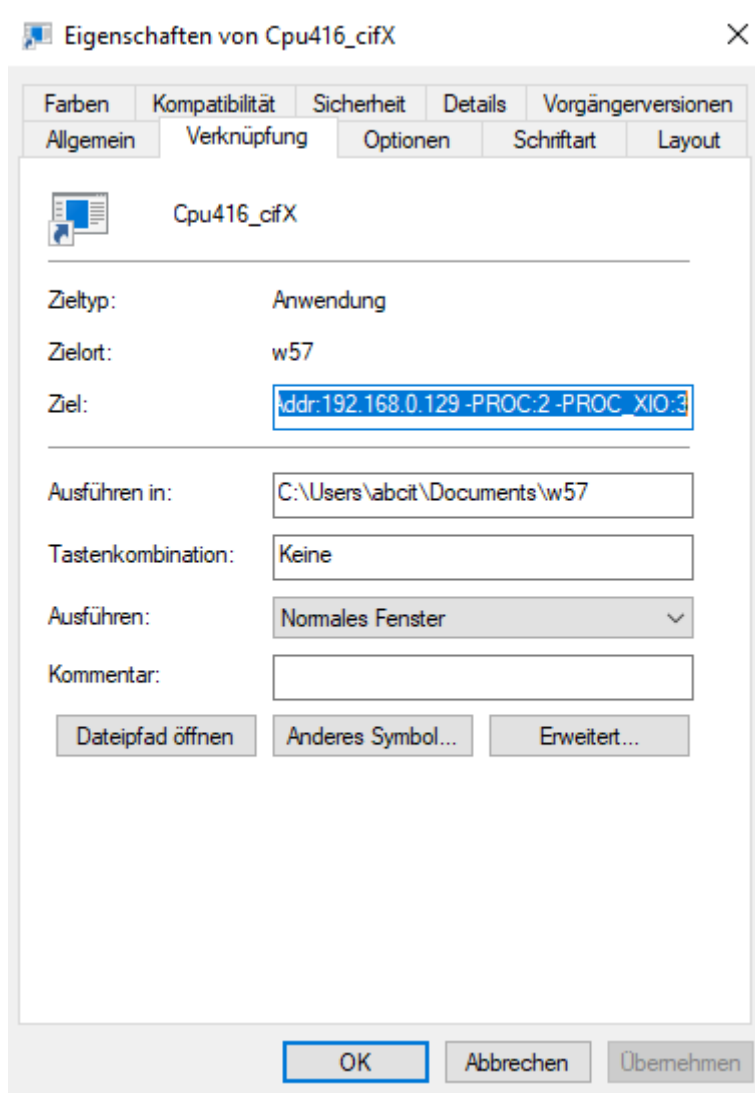
If the hardware has been found and initialized, will that be confirmed with a

*Driver Hilscher cifX          ok, available 1*



```
(C) by ABC IT GmbH 2016,2017  ABC X-CPU-4 w57  v17 (Build 1008)
Startup Operating System... 06:01:55 10-30-2017
Platform Target... x86
High Resolution Timer... ok
Interface ABC X-CPU-4... ok
Profile Directory... C:\ProgramData
  -ETH1Addr:192.168.0.129
  -PROC:2
  -PROC_XIO:3
Working Directory... C:\ProgramData\ABCIT\CPU416
System Affinity Mask... 0xFF
Process Affinity Mask... 0xFF
Thread Affinity Mask... 0xF3
Processor Interpreter... 2
Processor Peripherie... 3
Initialize working Area... ok
Driver Hilscher cifX... ok, available 1
Startup Application... ok
Startup TCP/IP Interface... ok
TCP/IP-Address ETH1: 192.168.0.129
TCP/IP-Address ETH2: 192.168.1.90
TCP/IP-Address ETH3: 192.168.2.90
TCP/IP-Address ETH4: 192.168.3.90
Initialize Threads... ok
Initialize TCP/IP VCs (NET)..ok
Initialize TCP/IP VCs (INI)..no data
Startup System Management... ok
License check... 1 Instance(s) available
Type E(x)it, St(o)p, St(a)rt
06:01:56 10-30-2017, System State: Startup
06:01:59 10-30-2017, System State: Run
```

### 3.3 Startup parameters



#### *General parameters*

-ETH1Addr:192.168.0.129  
-PROC:2  
-PROC\_XIO:3

Server with instance binding on ETH1  
Processor allocation S7 (CPU 2)  
Processor allocation peripherals (CPU 3)



```
Cpu416_cifX
(C) by ABC IT GmbH 2016,2017 ABC X-CPU-4 w57 v17 (Build 1008)
Startup Operating System... 06:01:55 10-30-2017
Platform Target... x86
High Resolution Timer... ok
Interface ABC X-CPU-4... ok
Profile Directory... C:\ProgramData
  -ETH1Addr:192.168.0.129
  -PROC:2
  -PROC_XIO:3
Working Directory... C:\ProgramData\ABCIT\CPU416
System Affinity Mask... 0xFF
Process Affinity Mask... 0xFF
Thread Affinity Mask... 0xF3
Processor Interpreter... 2
Processor Peripherie... 3
Initialize Working Area... ok
Driver Hilscher cifX... ok, available 1
Startup Application... ok
Startup TCP/IP Interface... ok
TCP/IP-Address ETH1: 192.168.0.129
TCP/IP-Address ETH2: 192.168.1.90
TCP/IP-Address ETH3: 192.168.2.90
TCP/IP-Address ETH4: 192.168.3.90
Initialize Threads... ok
Initialize TCP/IP VCs (NET)..ok
Initialize TCP/IP VCs (INI)..no data
Startup System Management... ok
License check... 1 Instance(s) available
Type E(x)it, St(o)p, St(a)rt
06:01:56 10-30-2017, System State: Startup
06:01:59 10-30-2017, System State: Run
```

# 3.4 Resources

Ressourcenmonitor

Übersicht CPU Arbeitsspeicher Datenträger Netzwerk

Prozesse 29% CPU-Auslastung 110% Maximale Frequenz

Prozess	PID	Beschreibung	Status	Threads	CPU	Durchschnittlic...
SearchUI.exe	5788	Search and Cortana application	Angehalten	46	0	0,21
ShellExperienceHost.exe	5624	Windows Shell Experience Host	Angehalten	33	0	0,06
backgroundTaskHost.exe	6744	Background Task Host	Angehalten	18	0	0,00
WinStore.App.exe	2816	Store	Angehalten	27	0	0,00
SystemSettings.exe	7260	Einstellungen	Angehalten	37	0	0,00
Cpu416_cifX.exe	5320	ABC X-CPU-4 w57 - the Windows based PLC Solution	Wird ausgeführt	67	25	25,00
SnippingTool.exe	6064	Snipping Tool	Wird ausgeführt	23	0	0,48
dwm.exe	1092	Desktopfenster-Manager	Wird ausgeführt	12	0	0,20
Systemunterbrechungen	-	Zurückgestellte Prozeduraufrufe und unterbrochene ...	Wird ausgeführt	-	0	0,17

Dienste 0% CPU-Auslastung

Zugeordnete Handles Gefiltert von "Cpu416\_cifX.exe"

Prozess	PID	Typ	Handlename
Cpu416_cifX.exe	7648	Desktop	\Default
Cpu416_cifX.exe	7648	Directory	\Sessions\1\BaseNamedObjects
Cpu416_cifX.exe	7648	Directory	\KnownDlls32
Cpu416_cifX.exe	7648	Directory	\KnownDlls32
Cpu416_cifX.exe	7648	Directory	\KnownDlls
Cpu416_cifX.exe	7648	File	\Device\Afd
Cpu416_cifX.exe	7648	File	\Device\Afd
Cpu416_cifX.exe	7648	File	\Device\Afd
Cpu416_cifX.exe	7648	File	\Device\ConDrv

Zugeordnete Module Gefiltert von "Cpu416\_cifX.exe"

Prozess	PID	Modulname	Version	Vollständiger Pfad
Cpu416_cifX.exe	7648	Cpu416_cifX.exe	17.10.8.0	C:\Users\abci\Documents\w57\Cpu416_cifX.exe
Cpu416_cifX.exe	7648	advapi32.dll	10.0.16299.15	C:\WINDOWS\System32\advapi32.dll
Cpu416_cifX.exe	7648	bcryptPrimitive...	10.0.16299.19	C:\WINDOWS\System32\bcryptPrimitives.dll
Cpu416_cifX.exe	7648	cfx32DLL.DLL	1.3.0.0	C:\WINDOWS\SYSTEM32\cfx32DLL.DLL
Cpu416_cifX.exe	7648	combase.dll	10.0.16299.15	C:\WINDOWS\System32\combase.dll
Cpu416_cifX.exe	7648	CRYPTBASE.dll	10.0.16299.15	C:\WINDOWS\System32\CRYPTBASE.dll
Cpu416_cifX.exe	7648	GD32.dll	10.0.16299.15	C:\WINDOWS\System32\GD32.dll
Cpu416_cifX.exe	7648	gdi32full.dll	10.0.16299.19	C:\WINDOWS\System32\gdi32full.dll
Cpu416_cifX.exe	7648	IMM32.DLL	10.0.16299.15	C:\WINDOWS\System32\IMM32.DLL

# 4. STEP7 – parameterization

## 4.1 In general

Profibus configuration is done via HW-Config of the Simatic Manager. In our downloadarea under [www.abcit.de](http://www.abcit.de) download the STEP7 Samples, which already provide different configurations.

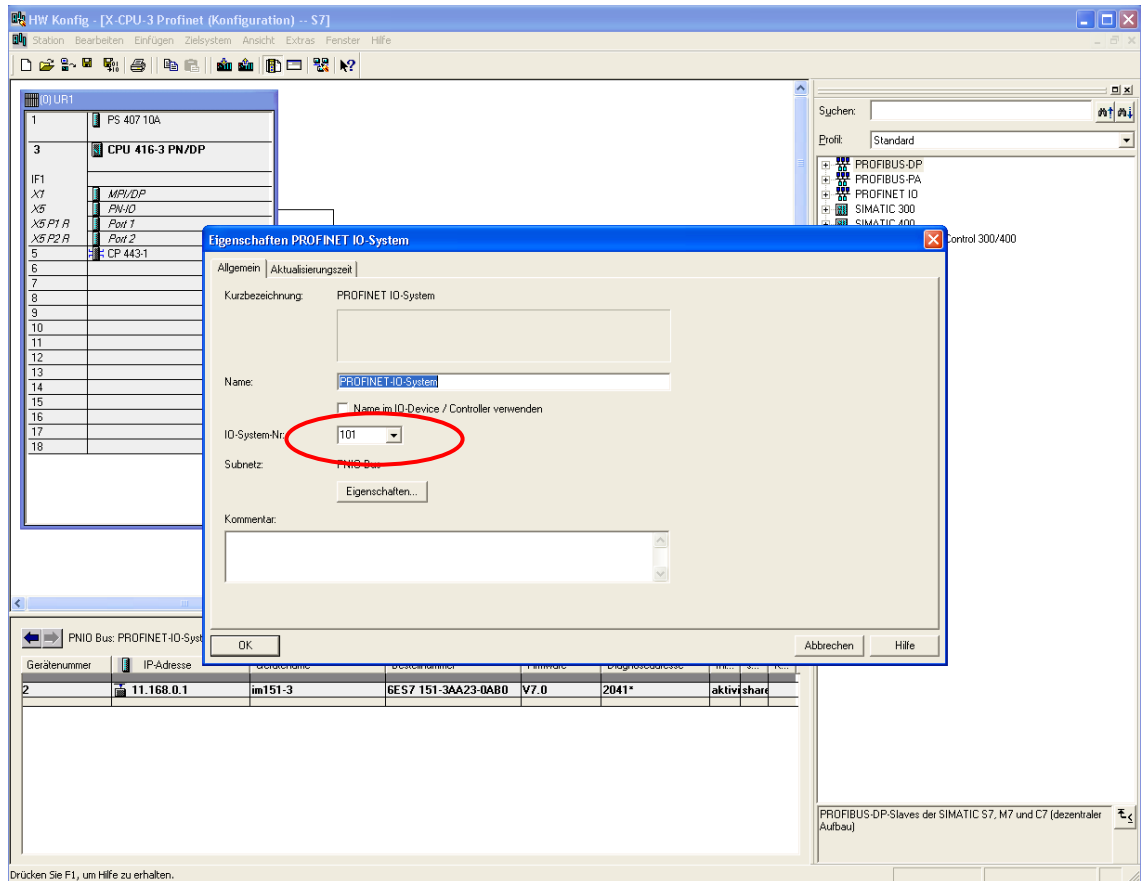
## 4.2 Configuration

Configuration of the Profinet master occurs as on a Simatic CPU 416-3 PN/DP.

The screenshot displays the HW Config software interface for a SIMATIC system. The main window shows a rack diagram with a PS 407 10A power supply at slot 1 and a CPU 416-3 PN/DP at slot 3. The CPU is connected to a Profinet bus labeled 'PNIO Bus: PROFINET IO-System (101)'. A physical representation of the CPU is shown below the bus. The hardware catalog on the right lists various components like PROFIBUS-DP, PROFIBUS-PA, PROFINET IO, SIMATIC 300, SIMATIC 400, SIMATIC PC Based Control 300/400, and SIMATIC PC Station. The hardware table at the bottom provides detailed information for each component in the rack.

Steckplatz	Baugruppe	Bestellnummer	Firmware	MPI-Adresse	E-Adresse	A-Adresse	Kommentar
1	PS 407 10A	6ES7 407-0KA01-0AA0					
3	CPU 416-3 PN/DP	6ES7 416-3ES06-0AB0	V6.0				
IF1							
X7	MPI/DP				76.303*		
X5	PN/IO				76.302*		
X5 P1 A	Port 1				76.300*		
X5 P2 A	Port 2				76.301*		
5	CP 443-1	6GK7 443-1EX11-0XE0	V2.6			16361*	
6							
7							

## 4.3 Profinet IO-system



Configure the Profinet on the CPU 416-3 PN/DP interface X5 as specified by the STEP7 environment.

## 4.4 Peripheral areas

The peripheral area of a Profinet controller can be addressed from 0...5759.

The screenshot shows the HW Config interface for a SIMATIC S7-400 station. The main rack (UR1) contains a PS 407 10A power supply, a CPU 416-3 PN/DP, and various communication modules (MPI/DP, FW/IO, Port 1, Port 2, CP 443-1). A Profinet IO system (101) is connected to the CPU. A secondary rack (2) is connected to the Profinet IO system via a bus labeled 'PNIO Bus: PROFINET-IO-System (101)'. The secondary rack contains an in151-3 module, FW/IO, Port 1, Port 2, and several DC24V power supplies.

Steckplatz	Baugruppe	Bestellnummer	E-Adresse	A-Adresse	Diagnoseadresse	Kommentar	Zugriff
0	in151-3	6ES7 151-3AA23-0AB0			2041*		voll
X1	FW/IO				2040*		voll
X1 P1 R	Port 1				2038*		voll
X1 P2 R	Port 2				2038*		voll
1	PM-E DC24V	6ES7 138-4CA01-0AA0	2037*		2037*		voll
2	8DI DC24V	6ES7 131-4BF00-0AA0	400.0...400.7				voll
3	8DO DC24V/0.5A	6ES7 132-4BF00-0AA0		400.0...400.7			voll
4	8DO DC24V/0.5A	6ES7 132-4BF00-0AA0		401.0...401.7			voll
5	8DO DC24V/0.5A	6ES7 132-4BF00-0AA0		402.0...402.7			voll
6	8DO DC24V/0.5A	6ES7 132-4BF00-0AA0		403.0...403.7			voll
7							
8							

PROFIBUS-DP-Slaves der SIMATIC S7, M7 und C7 (dezentraler Aufbau)

The size of the process image can be limited to max. 5760 for inputs and outputs.

