B&R Hilscher Fieldbus cards

CANopen, DeviceNET, Profibus

Date: July 8, 2010

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I Version information

Version	Date	Comment	Author
1.0	2010-06-02	First edition (release of original Hilscher documenation: Edition 9)	LIK
1.1	2010-07-08	Second edition (release of original Hilscher documenation: Edition 12)	LIK

Table 1: Version information

1 Introduction

The fieldbus cards listed in the following table correspond mostly with the fieldbus cards offered by the company, Hilscher. For logistical reasons, and for easy integration of the fieldbus cards in B&R Automation Studio, (version 3.0.81.xx and later), B&R created separate model numbers for the corresponding card types and placed B&R-specific information on the respective cards. This is the only difference between the B&R fieldbus cards and the standard Hilscher fieldbus cards.

Description	B&R model number	Custom Hilscher model number	Standard Hilscher model number
PCI CANopen Master	5ACPCI.XCOM-00	CIFX 50-CO-B&R	CIFX 50-CO
PCI CANopen slave	5ACPCI.XCOS-00	CIFX 50-CO-B&R	CIFX 50-CO
PCI DeviceNet master	5ACPCI.XDNM-00	CIFX 50-DN-B&R	CIFX 50-DN
PCI DeviceNET slave	5ACPCI.XDNS-00	CIFX 50-DN-B&R	CIFX 50-DN
PCI Profibus DP master	5ACPCI.XDPM-00	CIFX 50-DP-B&R	CIFX 50-DP
PCI Profibus DP slave	5ACPCI.XDPS-00	CIFX 50-DP-B&R	CIFX 50-DP

Table 2: Cross reference of B&R and Hilscher model numbers

1.1 Use with Automation Studio/ Automation Runtime

The drivers and firmware files required by the respective cards are included in Automation Studio/ Automation Runtime.

1.2 Use outside of Automation Studio/ Automation Runtime

When used outside of Automation Studio/ Automation Runtime, the cards will perform like standard Hilscher products. With the exception of the firmware files, they can be used with the software offered by Hilscher. The required firmware files, whose only difference from standard Hilscher firmware is the additional B&R ID, must be downloaded from the B&R homepage www.br-automation.com.

Note:

The following document contains the Original Hilscher documentation.
The Table 2: Cross reference of B&R and Hilscher model numbers can be used to cross reference the fieldbus cards described in the original Hilscher documentation and the fieldbus cards offered by B&R.

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User Manual

cifX Cards Fieldbus: PROFIBUS-DP, CANopen, DeviceNet, AS-Interface, CompoNet, CC-Link

Installation, Operation and Hardware Description

Hilscher Gesellschaft für Systemautomation mbH

www.hilscher.com

DOC080201UM12EN | Revision 12 | English | 2010-05 | Released | Public

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1 Introduction

1.1 About the User Manual

This user manual provides descriptions of the

- installation,
- operation and
- hardware

of:

1. The cifX cards fieldbus under Windows® 2000 and Windows® XP, PC cards for the fieldbus systems:

- PROFIBUS-DP,
- CANopen,
- DeviceNet,
- AS-Interface,
- CompoNet,
- CC-Link,

as Communication Interface netX

- PCI (CIFX50-),
- PCI Express (CIFX 50E-),
- Compact PCI (CIFX80-),
- Mini PCI (CIFX90-),
- Mini PCI Express (CIFX 90E-),
- PCI 104 (CIFX 104C-),
- PC/104 (CIFX 104-).

2. The AIFX assembly and diagnosis interfaces for cifX cards fieldbus.

Important!

Mandatory read Manual
Read and understand all instructions before installation of the cifX card to avoid injury. First read the **Safety** chapter.
The devices described in this manual are listed in section
- *cifX Cards Fieldbus for PROFIBUS-DP; CANopen, DeviceNet* (page 36)
- *AIFX Assembly and Diagnosis Interfaces for PROFIBUS-DP; CANopen, DeviceNet* (on page 39).
- *cifX Cards Fieldbus for AS-Interface, CompoNet, CC-Link* (page 40)
These cifX cards and AIFX interfaces are described in detail in the chapters:
- *Device Drawings and Connections* (page 50),
- *LEDs* (page 249) and
- *Technical Data* (page 261).

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1.1.1 List of Revisions

Index	Date	Chapter	Revisions
1	01 Jan 2008	all	created
2	12.06.08	1 4.2 7 12.1	Chapte “Introductionl” actualized, Section “Steps how to install and configure cifX Master Devices” actualized, Chapter “netX Configuration Tool” actualized, Section “Fieldbus Systems” actualized.
3	16.01.09	1.1.2 7 12.1	Section “Reference on Hardware, Firmware, Software and Driver” actualized, Chapter “netX Configuration Tool” actualized, Section “Fieldbus Systems” actualized.
4	04.02.09	3.2.1 4 7.6 12.2.1	Section “System Requirements SYCON.net” completed, Chapter “Getting startet” actualized. Section “License” actualized, Section “PROFIBUS-DP Slave” actualized.
5	11.02.09	1.6.2 1.2.3 5.1 10.1	Section “*Device Description Files”* actualized, Section “*Documentations cifX Cards*” actualized, Section “*Steps how to install and configure cifX Cards Fieldbus* (Slave)” actualized, Section “LEDs at the Fieldbus Devices” actualized.
6	14.05.09	All 1.1 1.6 5.1 8.3 8.4 9 4, 12, 13 9.3 16	Descriptions added for: the cards CIFX 50-2DP, CIFX 50-CP / CIFX50E-CP, CIFX 50-CC / CIFX 50E-CC, CIFX 90E-DP, CIFX 90E-CO or CIFX 90E-DN; the protocolls CompoNet and CC-Link, Section “*About the User Manual*” actualized, Section “*Contents of the Product CD*” actualized, Section “*Steps how to install and configure cifX Cards Fieldbus* (Slave)” actualized, Section “*Introduction to the Dialog Structure*” actualized, Section “*Working with netX Configuration Tool*” actualized, Section “*Configuring* Slave Devices using netX Configuration Tool” actualized, Chapters “*Device Drawings and Connections*”, “*LEDs*” and “*Technical Data”*: For new hardware revisions CIFX-DP and CIFX-CO devices only 1 COM LED, LEDs AIFX interfaces added, technical data / protocols actualized, Section “*Configuration Parameters* Fieldbus Systems” actualized. Chapter “ *Glossary*“ actualized.
7	28.05.09	9.3	Section “*Configuration Parameters* Fieldbus Systems” actualized.
8	15.06.09	1.1 4.48.4	Section “ *About the User Manual*” actualized, Section “ *Pinning for Mini PCI Express Bus / SYNC Connector, X1/X2*” actualized.
9	02.07.09	 1.1, 1.6, 2.2, 3, 5.3, 6.3, 4, 12, 13	Descriptions added for: the cards CIFX 50-2ASM and CIFX 50E-2ASM; the protocol AS-Interface: Sections or chapters concerned: “*About the User Manual*”, “*Contents of the Product CD*”, “*Intended Use* ”, “*Description and Requirements*”, “*Device Names in SYCONnet*“, “*CIFX 50- or CIFX 50E Card* Fieldbus”, Chapters “*Device Drawings and Connections*”, “*LEDs*” and “*Technical Data*”
10	27.01.10	All, 1.2.6, 2, All, 3, 4, 6, 8, 12, 13, 13.2	The cards **CIFX 50-DP**/Rev 5, **CIFX 50-CO**/Rev 5, **CIFX 50-DN**/Rev 5, **CIFX 50-2ASM**/Rev 2 added [with **Rotary Switch Slot Number (Card ID)**], Information added on **Rotary Switch Slot Number (Card ID)** and **DMA Mode**, Terms: „Rotary Switch **PCI** Slot Number“ changed, „cifX Card Fieldbus“ standardized, Sect. *Registered Trademarks*: completed, Chap. *Safety* and entire manual: Safety Instructions revised and actualized, Chap. *Description and Requirements*: revised, Chap. *Device Drawings and Connections*: Dimensioning AIFX completed, Chap. *Installing cifX Card*: Figures completed, Chap. *Overview netX Configuration* Tool: Descriptions Diagnosis revised Chap. *LEDs*: partly revised. Chap. *Technical Data*: Card Dimensions, Operating Temperature, Power Supply actualized, Sect. *PCI IDs cifX Cards on the PCI Bus*: completed.

For more see next page

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Index	Date	Chapter	Revisions
11	18.02.10	1.5, 1.6.3, 2.8.2, 6.2.2	Section *Reference on Hardware, Firmware, Software and Driver* actualized, Section *Documentations cifX Cards Fieldbus* actualized, Section *Device Destruction by exceeding allowed Signaling Voltage* added, Section *Device Destruction by exceeding allowed Signaling Voltage* added.
12	21.05.10	All, 1.5, 3.2.1, 3.2.5, 3.2.6 4.48.4, 6.9, 7.3, 7.4, 8, 9, 10, 13.1	Descriptions added for: the cards CIFX 104-DP, CIFX 104-DP-R, CIFX 104-DP\F, CIFX 104-DP-R\F, CIFX 104-CO, CIFX 104-CO-R, CIFX 104-CO\F, CIFX 104-CO-R\F, CIFX 104-DN, CIFX 104-DN-R, CIFX 104-DN\F, CIFX 104-DN-R\F, Section *Reference on Hardware, Firmware, Software and Driver* actualized, Sections *PCI or PC/104 Connector for cifX cards*, *System Requirements for netX Configuration Tool* added, *System Requirements SYCON.net* actualized, Section *Pinning for Mini PCI Express Bus / SYNC Connector, X1/X2* actualized, For ISA-devices: sections *For PC/104 Devices: Set Starting Address and Interrupt*, *Install CIFX 104 (ISA) – Windows XP*, *Install CIFX 104 (ISA) – Windows 7* added, Chapter „*Overview netX Configuration Tool*" revised, Chapter „*Configuring Slave Devices using netX Configuration Tool*" descriptions for the function **Conf Template** added, default values of the configuration parameters actualized, Chapter „*Diagnostic*": descriptions for diagnostic dialog, extended diagnostic and IO Monitor added; Corrections, supplements for UL (Electr. Ratings/ Temp., Hints pollution degree, RJ45 not for LAN) in section *Technical Data cifX Cards Fieldbus*

Table 1: List of Revisions

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DeviceNet® is a trademark of ODVA (Open DeviceNet Vendor Association, Inc).

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1.3 Licenses

If a cifX card is used as a slave, neither for the firmware nor for the configuration software SYCON.net a license is required.

Licenses are required, if the cifX card is used with

- a firmware with master functionality*.

* The master license includes the card operating as master and the license for the configuration software SYCON.net for the respective card.

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1.4 Conventions in this Manual

Operation instructions, a result of an operation step or notes are marked as follows:

Operation Instructions:

➢ <instruction>

Or

1. <instruction>
2. <instruction>

Results:

➩ <result>

Notes:

Important: <important note>

Note: <note>

<note, were to find further information>

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1.5 Reference on Hardware, Firmware, Software and Driver

Note: The listed hardware revisions, firmware and driver versions or versions of the configuration software and SYCONnet netX configuration tool functionally belong together.
For existing hardware installation update the firmware, the driver and the configuration software.

1.5.1 Hardware: cifX Cards Fieldbus

cifX Cards Fieldbus	Part No.	Hardware Revision	„Rotary Switch Slot Number (Card ID)“ from HW Rev.	„DMA Mode“ from HW Rev.
CIFX 50-DP	1250.410	5	5	1
CIFX 50-2DP	1252.410	1	-	1
CIFX 50-CO	1250.500	5	5	1
CIFX 50-DN	1250.510	5	5	1
CIFX 50-2ASM	1252.630	2	2	1
CIFX 50-CP	1250.750	1	-	1
CIFX 50-CC	1250.740	1	-	1
CIFX 50E-DP	1251.410	4	-	*no DMA*
CIFX 50E-CO	1251.500	3	-	*no DMA*
CIFX 50E-DN	1251.510	3	-	*no DMA*
CIFX 50E-2ASM	1253.630	3	-	*no DMA*
CIFX 50E-CP	1251.750	2	-	*no DMA*
CIFX 50E-CC	1251.740	2	-	*no DMA*
CIFX 80-DP	1280.410	2	-	1
CIFX 80-CO	1280.500	2	-	1
CIFX 80-DN	1280.510	2	-	1
CIFX 90-DP\F	1290.410	3	-	1
CIFX 90-CO\F	1290.500	3	-	1
CIFX 90-DN\F	1290.510	3	-	1
CIFX 90E-DP\F	1291.410	7	-	*no DMA*
CIFX 90E-CO\F	1291.500	7	-	*no DMA*
CIFX 90E-DN\F	1291.510	7	-	*no DMA*
CIFX 104C-DP	1270.410	2	-	1
CIFX 104C-DP-R	1271.410	2	-	1
CIFX 104C-DP\F	1270.411	2	-	1
CIFX 104C-DP-R\F	1271.411	2	-	1
CIFX 104C-CO	1270.500	2	-	1
CIFX 104C-CO-R	1271.500	2	-	1
CIFX 104C-CO\F	1270.501	2	-	1
CIFX 104C-CO-R\F	1271.501	2	-	1
CIFX 104C-DN	1270.510	2	-	1
CIFX 104C-DN-R	1271.510	2	-	1
CIFX 104C-DN\F	1270.511	2	-	1
CIFX 104C-DN-R\F	1271.511	2	-	1

Further see next Page

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cifX Cards Fieldbus	Part No.	Hardware Revision	„Rotary Switch Slot Number (Card ID)“ from HW Rev.	„DMA Mode“ from HW Rev.
CIFX 104-DP	1278.410	2	-	*no DMA*
CIFX 104-DP-R	1279.410	2	-	*no DMA*
CIFX 104-DP\F	1278.411	2	-	*no DMA*
CIFX 104-DP-R\F	1279.411	2	-	*no DMA*
CIFX 104-CO	1278.500	2	-	*no DMA*
CIFX 104-CO-R	1279.500	2	-	*no DMA*
CIFX 104-CO\F	1278.501	2	-	*no DMA*
CIFX 104-CO-R\F	1279.501	2	-	*no DMA*
CIFX 104-DN	1278.510	2	-	*no DMA*
CIFX 104-DN-R	1279.510	2	-	*no DMA*
CIFX 104-DN\F	1278.511	2	-	*no DMA*
CIFX 104-DN-R\F	1279.511	2	-	*no DMA*

Table 2: Reference on Hardware cifX Cards Fieldbus

In *Table 2: Reference on Hardware cifX Cards Fieldbus* the column **„Rotary Switch Slot Number (Card ID)“ from HW Rev.** lists any device revisions, which are equipped with a **Rotary Switch Slot Number (Card ID)**. The column **„DMA Mode“ from HW Rev.** lists any device revisions, which provide **DMA Mode**. But the required firmware versions must be used, as given in section *Reference on Firmware* on page 18.

1.5.2 Hardware: AIFX Assembly and Diagnosis Interfaces

AIFX Interfaces	Part No.	Revision
AIFX-DP	2800.400	2
AIFX-CO	2800.500	2
AIFX-DN	2800.510	1, 2, 3
AIFX-DIAG	2800.000	1

Table 3: Reference on Hardware AIFX Assembly and Diagnosis Interfaces

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1.5.3 Reference on Firmware

Firmware File	Fieldbus System	Firmware Version	„Rotary Switch Slot Number (Card ID)“ and „DMA Mode“ from Firmware Version
CIFXDPM.NXF	PROFIBUS-DP Master	2.3.x.x	yes from 2.3.x.x
CIFX2DPM.NXF	PROFIBUS-DP Master	2.3.x.x	-
CIFXDPS.NXF	PROFIBUS-DP Slave	2.3.x.x	yes from 2.3.x.x
CIFXCOM.NXF	CANopen Master	2.4.x.x	yes from 2.3.x.x
CIFXCOS.NXF	CANopen Slave	2.4.x.x	yes from 2.3.x.x
CIFXDNM.NXF	DeviceNet Master	2.2.x.x	yes from 2.2.x.x
CIFXDNS.NXF	DeviceNet Slave	2.2.x.x	yes from 2.2.x.x
CIFX2ASM.NXF	AS-Interface Master	2.2.x.x	yes from 2.1.x.x
CIFXCPS.NXF	CompoNet Slave	0.9.7.0	-
CIFXCCS.NXF	CC-Link Slave	2.4.x.x	-

Table 4: Reference on Firmware

1.5.4 Reference on Driver

Driver, Bootloader	Version
cifX Device Driver	1.0.x.x
Bootloader (included in the cifX Device Driver Setup)	V1.3.x.x

Table 5: Reference on Driver and Bootloader

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1.5.5 Reference on Software

Software		Software Version
netX Configuration Tool-Setup:	`netX Configuration Tool.exe`	1.0500.x.x
SYCON.net:	SYCONnet netX setup.exe	V1.210.x.x

Table 6: Reference on Software

1.5.6 References for Slot Number (Card ID), DMA Mode

The references given in section *Reference on Hardware, Firmware, Software and Driver* (on page 16) for device revisions equipped with a **Rotary Switch Slot Number (Card ID)** or which provide **DMA Mode** must be observed in order to:

- a cifX card is identified explicitly by the **cifX Device Driver** via its **Slot Number (Card ID)** and can be distinguished from other cifX cards in the PC,
- the cifX card operates in **DMA Mode**.

References:

- Device revisions equipped with a **Rotary Switch Slot Number (Card ID)** or which provide **DMA Mode** are listed separately in section *Hardware: cifX Cards Fieldbus* on page 16.
- The firmware versions (and higher) listed in section Reference on Firmware on page 18 in the in the column **„Rotary Switch Slot Number (Card ID)“ and „DMA Mode“ from Firmware Version** must be used.
- The version (and higher) for the driver and the bootloader listed in section *Reference on Driver* on page 18 in the column **Version** must be used.
- The software version (and higher) for the SYCON.net setup listed in section *Reference on Software* on page 19 in the column **Software Version** must be used.

For a summary of the requirements for identifying devices via the **Slot Number (Card ID)** refer to section *Requirements Slot Number (Card ID)* on page 47 and for the **DMA Mode** to section *Requirements DMA Mode* on page 48.
For further information on this question refer to the sections:
- *The Functions „Slot Number (Card ID)“ and „DMA Mode“* (page 40),
- *Rotary Switch for Slot Number (Card ID)* (page 94),
- *Setting Slot Number (Card ID)* (page 119),
- *„Slot Number (Card ID)“ and „DMA Mode“ in the Software* (page 171).

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1.6 Contents of the Product CD

The Product CD for the Communication InterFaces cifX contains:

- **cifX Device Driver**
- **netX Configuration Tool setup**
- Configuration Software **SYCON.net**
- Device Description Files (GSD, EDS, CSP)
- Documentation

1.6.1 Directory Structure of the CD

All manuals on this CD are delivered in the Adobe Acrobat® Reader format (PDF).

Directory Name	Description
API	Toolkit, Header Files and cifX32DLL.lib
Documentation	Documentation in the Acrobat® Reader Format (PDF)
Driver	cifX Device Driver
EDS	Device Description File
Firmware	Loadable Firmware
Software	netX Configuration Tool, **Configuration Software** SYCON.net (configuration and diagnostic program)
Tools	cifXTCPServer

Table 7: Directory Structure of the CD

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1.6.2 Device Description Files

The CD Rom EDS directory includes the device description files for the following PROFIBUS-DP, CANopen, DeviceNet, CompoNet, CC-Link cifX cards fieldbus (Slave):

Device Description Files for cifX Cards Fieldbus (Slave)

cifX Cards Fieldbus (Slave)	Fieldbus System	File Name of the Device Description File
CIFX 50-DP CIFX 50E-DP CIFX 80-DP CIFX 90-DP\F CIFX 90E-DP\F CIFX 104C-DP CIFX 104C-DP-R CIFX 104C-DP\F CIFX 104C-DP-R\F CIFX 104-DP CIFX 104-DP-R CIFX 104-DP\F CIFX 104-DP-R\F	PROFIBUS-DP Slave	HIL_0B69.GSD
CIFX 50-CO CIFX 50E-CO CIFX 80-CO CIFX 90-CO\F CIFX 90E-CO\F CIFX 104C-CO CIFX 104C-CO-R CIFX 104C-CO\F CIFX 104C-CO-R\F CIFX 104-CO CIFX 104-CO-R CIFX 104-CO\F CIFX 104-CO-R\F	CANopen Slave	CIFX CO COS.eds
CIFX 50-DN CIFX 50E-DN CIFX 80-DN CIFX 90-DN\F CIFX 90E-DN\F CIFX 104C-DN CIFX 104C-DN-R CIFX 104C-DN\F CIFX 104C-DN-R\F CIFX 104-DN CIFX 104-DN-R CIFX 104-DN\F CIFX 104-DN-R\F	DeviceNet Slave	CIFX_DN_DNS.EDS
CIFX 50-CP CIFX 50E-CP	CompoNet Slave	CIFX_CP_CPS.eds
CIFX 50-CC CIFX 50E-CC	CC-Link Slave	cifx-ccs_1.csp (for one Remote Device Station), cifx-ccs_2.csp (for two Remote Device Stations), cifx-ccs_3.csp (for three Remote Device Stations), cifx-ccs_4.csp (for four Remote Device Stations), cifx-ccs_io.csp (for one Remote IO Device Station)

Table 8: Device Description Files for cifX Cards Fieldbus (Slave)

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The device description file is required to configure the used

- PROFIBUS-DP Master device,
- DeviceNet Master device,
- CANopen Master device,
- CompoNet Master device,
- CC-Link Master device.

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1.6.3 Documentations cifX Cards Fieldbus

The following documentation overview gives information, for which items you can find further information in which manual.

Manual	Contents	File Name of the Document
User Manual, cifX Cards Fieldbus: PROFIBUS-DP, CANopen, DeviceNet, AS-Interface, CompoNet, CC-Link	Installation, Operation and Hardware Description	CIFX-FB_usermanual_en.doc
Operating Instruction Manual SYCON.net	SYCON.net, Frame Application	SYCONnet_netFrame_en.pdf
	FDT, Container	SYCONnet_netDevice_en.pdf
	DTM for Hilscher PROFIBUS-DP Master Devices	PROFIBUS_Master_netX_DTM_en.pdf
	DTM for Hilscher PROFIBUS-DP Slaver Devices	PROFIBUS_Slave_netX_DTM_en.pdf
	Generic Slave DTM for PROFIBUS-DP Slave Devices	PROFIBUS_Generic_Slave_en.pdf
	DTM for Hilscher CANopen Master Devices	CANopen_Master_netX_DTM_en.pdf
	DTM for Hilscher CANopen Slave Devices	CANopen_Slave_netX_DTM_en.pdf
	Generic Slave DTM for CANopen Slave Devices	CANopen_Generic_Slave_DTM_en.pdf
	DTM for Hilscher DeviceNet Master Devices	DeviceNet_Master_netX_DTM_en.pdf
	DTM for Hilscher DeviceNet Slave Devices	DeviceNet_Slave_netX_DTM_en.pdf
	Generic Slave DTM for DeviceNet Slave Devices	DeviceNet_Generic_Slave_DTM_en.pdf
	DTM for Hilscher AS-Interface Master Devices	AS-Interface_Master_netX_DTM_en.pdf
	Generic Slave DTM for AS-Interface Slave Devices	AS-Interface_Generic_Slave_DTM_ en.pdf
	netSLAVE DTM for Hilscher NETX Slave Devices	netSlave_DTM_en.pdf
netX Dual-Port Memory Interface for netX based Products	Interface of netX Dual-Port Memory	netX DPM Interface.pdf
AS-Interface Master Protocol API Manual	Description of AS-Interface Master Protocol API	`AS-Interface Master Protocol API.pdf` (Englische Version)
CANopen Slave Protocol API Manual	Description of CANopen Slave Protocol API	`CANopen Slave Protocol API.pdf` (English Version)
CANopen Master Protocol API Manual	Description of CANopen Master Protocol API	`CANopen Master Protocol API.pdf` (English Version)
CC-Link Slave Protocol API Manual	Description of CC-Link Slave Protocol API	`CC-Link Slave Protocol API.pdf` (English Version)
CompoNet Slave Protocol API Manual	Description of CompoNet Slave Protocol API	`CompoNet Slave Protocol API.pdf` (English Version)
DeviceNet Slave Protocol API Manual	Description of DeviceNet Slave Protocol API	`DeviceNet Slave Protocol API.pdf` (English Version)
DeviceNet Master Protocol API Manual	Description of DeviceNet Master Protocol API	`DeviceNet Master Protocol API.pdf` (English Version)

For more see next page

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Manual	Contents	File Name of the Document
PROFIBUS-DP Slave Protocol API Manual	Description of PROFIBUS-DP Slave Protocol API	`PROFIBUS-DP Slave Protocol API.pdf` (English Version)
PROFIBUS-DP Master Protocol API Manual	Description of PROFIBUS-DP Master Protocol API	`PROFIBUS-DP Master Protocol API.pdf` (English Version)

Table 9: Documentations cifX Cards Fieldbus

All these documents are available on the CD delivered with the device underneath the directory **Documentation**, in Adobe Acrobat® Reader format (PDF).

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2 Safety

2.1 General Note

The user manual, the accompanying texts and the documentation are written for the use of the products by educated personnel. When using the products, all safety instructions and all valid legal regulations have to be obeyed. Technical knowledge is presumed. The user has to assure that all legal regulations are obeyed.

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2.2 Intended Use

2.2.1 cifX Cards Fieldbus

The cifX cards fieldbus described in this user manual are PC cards for fieldbus communication. Depending from the loaded firmware, the fieldbus systems listed in the following table can be realized using the respective cifX card.

cifX Card Fieldbus	Fieldbus System	cifX Card Fieldbus	Fieldbus System
CIFX 50-DP CIFX 50-2DP* CIFX 50E-DP CIFX 80-DP CIFX 90-DP\F CIFX 90E-DP\F CIFX 104C-DP CIFX 104C-DP-R CIFX 104C-DP\F CIFX 104C-DP-R\F CIFX 104-DP CIFX 104-DP-R CIFX 104-DP\F CIFX 104-DP-R\F	PROFIBUS-DP Master PROFIBUS-DP Slave (*only Master)	**CIFX 50-2ASM**	AS-Interface Master
CIFX 50-CO CIFX 50E-CO CIFX 80-CO CIFX 90-CO\F CIFX 90E-CO\F CIFX 104C-CO CIFX 104C-CO-R CIFX 104C-CO\F CIFX 104C-CO-R\F CIFX 104-CO CIFX 104-CO-R CIFX 104-CO\F CIFX 104-CO-R\F	CANopen Master CANopen Slave	CIFX 50-CP CIFX 50E-CP	**CompoNet Slave**
CIFX 50-DN CIFX 50E-DN CIFX 80-DN CIFX 90-DN\F CIFX 90E-DN\F CIFX 104C-DN CIFX 104C-DN-R CIFX 104C-DN\F CIFX 104C-DN-R\F CIFX 104-DN CIFX 104-DN-R CIFX 104-DN\F CIFX 104-DN-R\F	DeviceNet Master DeviceNet Slave	CIFX 50-CC CIFX 50E-CC	CC-Link Slave

Table 10: cifX Cards Fieldbus and the Fieldbus Systems realized thereby

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2.2.2 AIFX Assembly and Diagnosis Interfaces

The AIFX assembly interfaces AIFX-DP, AIFX-CO, AIFX-DN and the diagnosis interface AIFX-DIAG are attached to the respective cifX card by cable connectors. Thereby the cifX card is equipped with a fieldbus or with a diagnosis interface.

AIFX Interface	cifX Card Fieldbus with cable connector (label „\F“)
AIFX-DP AIFX-DIAG	CIFX 90-DP\F CIFX 90E-DP\F CIFX 104C-DP\F CIFX 104C-DP-R\F CIFX 104-DP\F CIFX 104-DP-R\F
AIFX-CO AIFX-DIAG	CIFX 90-CO\F CIFX 90E-CO\F CIFX 104C-CO\F CIFX 104C-CO-R\F CIFX 104-CO\F CIFX 104-CO-R\F
AIFX-DN AIFX-DIAG	CIFX 90-DN\F CIFX 90E-DN\F CIFX 104C-DN\F CIFX 104C-DN-R\F CIFX 104-DN\F CIFX 104-DN-R\F

Table 11: AIFX Assembly and Diagnosis Interfaces

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2.3 Personnel Qualification

The cifX card must only be installed, configured and removed by qualified personnel. Job-specific technical skills for people professionally working with electricity must be present concerning the following topics:

- Safety and health at work
- Mounting and connecting of electrical equipment
- Measurement and Analysis of electrical functions and systems
- Evaluation of the safety of electrical systems and equipment
- Installing and Configuring IT systems

2.4 Commitment to read and understand the Manual

Important! Read and understand all instructions in this manual before installation or use of your device to avoid injury.

2.5 References Safety

[1] ANSI Z535.6-2006 American National Standard for Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials

[2] IEC 60950-1, Information technology equipment - Safety -
Part 1: General requirements,
(IEC 60950-1:2005, modified); GermanEdition EN 60950-1:2006

[3] EN 61340-5-1 and EN 61340-5-2 as well as IEC 61340-5-1 and IEC 61340-5-2

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2.6 Labeling of Safety Instructions

The safety instructions are pinpointed particularly. The instructions are highlighted with a specific safety symbol, a warning triangle and a signal word according to the degree of endangerment. Inside the note the danger is exactly named. Instructions to a property damage message do not contain a warning triangle.

Symbol	Symbol (USA)	Sort of Warning or Principle
		Warning of Personal Injury
		Warning of Lethal Electrical Shock
		Warning of danger by electrical current
		Warning of damages by electrostatic discharge
		Principle: Disconnect the power plug
		Principle: Mandatory read Manual

Table 12: Safety Symbols and Sort of Warning or Principle

Signal Word	Meaning
DANGER	Indicates a direct hazard with high risk, which will have as consequence death or grievous bodily harm if it isn't avoided.
WARNING	Indicates a possible hazard with medium risk, which will have as consequence death or (grievous) bodily harm if it isn't avoided.
CAUTION	Indicates a minor hazard with medium risk, which could have as consequence simple battery if it isn't avoided.
NOTICE	Indicates a Property Damage Message.
Note	Indicates an important note in the manual.

Signal Word (USA)	Meaning (USA)
DANGER	Indicates a Hazardous Situation Which, if not Avoided, will Result in Death or Serious Injury.
WARNING	Indicates a Hazardous Situation Which, if not Avoided, could Result in Death or Serious Injury.
CAUTION	Indicates a Hazardous Situation Which, if not Avoided, may Result in Minor or Moderate Injury.
NOTICE	Indicates a Property Damage Message.
Note	Indicates an Important Note in the Manual.

Table 13: Signal Words

In this document the safety instructions and property damage messages are designed according both to the international used safety conventions as well as to the ANSI standard, refer to reference safety [1].

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2.7 Safety Instructions

To ensure your own personal safety and to avoid personal injury, you necessarily must read, understand and follow the following and all other safety instructions in this guide.

2.7.1 Electrical Shock Hazard

DANGER!

Lethal Electrical Shock caused by parts with more than 50V!

- HAZARDOUS VOLTAGE inside of the PC or of the connecting device.
- Therefore first disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.
- Open the PC cabinet and install or remove the cifX card only after disconnecting power.

USA:

DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- HAZARDOUS VOLTAGE inside of the PC or of the connecting device.
- Therefore first disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.
- Open the PC cabinet and install or remove the cifX card only after disconnecting power.

An electrical shock is the result of a current flowing through the human body. The resulting effect depends on the intensity and duration of the current and on its path through the body. Currents in the range of approximately ½ mA can cause effects in persons with good health, and indirectly cause injuries resulting from startle responses. Higher currents can cause more direct effects, such as burns, muscle spasms, or ventricular fibrillation.

In dry conditions permanent voltages up to approximately 42.4 V peak or 60 V DC are not considered as dangerous, if the contact area is equivalent to a human hand.

Reference Safety [2]

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2.8 Property Damage Messages

To avoid property damage respectively device destruction to the card and to your system, you necessarily must read, understand and follow the following and all other property damage messages in this guide.

2.8.1 Device Destruction by exceeding allowed Supply Voltage

For the devices

- CIFX 50-DP, CIFX 50-2DP, CIFX 50-CO, CIFX 50-DN, CIFX 50-2ASM, CIFX 50-CP, CIFX 50-CP
- CIFX 50E-DP, CIFX 50E-CO, CIFX 50E-DN, CIFX 50E-2ASM, CIFX 50E-CC, CIFX 50E-CC
- CIFX 80-DP, CIFX 80-CO, CIFX 80-DN
- CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F
- CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F

you must follow this:

The cifX card may not be powered by a 5V supply voltage! The cifX card may only be powered by a 3.3 V supply voltage. The use of a higher supply voltage than 3.3V may result in severe damage to the cifX card!

NOTICE

Device Destruction!

- Use only 3.3 V for supply voltage to operate the card.
  Operation with 5 V supply voltage leads to device destruction.

USA:

NOTICE

Device Destruction!

- Use only 3.3 V for supply voltage to operate the card.
  Operation with 5 V supply voltage leads to device destruction.

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2.8.2 Device Destruction by exceeding allowed Signaling Voltage

Adhere for all cifX cards described in this manual the instruction hereafter:

NOTICE

Device Destruction!

- All I/O signal pins at the cifX card tolerate only a specified signaling voltage!
- Operation with a signaling voltage other than the specified signaling voltage may lead to severe damage to the cifX card!

For detailed information on the supply and signaling voltage of the cifX cards described in this manual, refer to section *Supply and Signaling Voltage* on page 44.

USA:

NOTICE

Device Destruction!

- All I/O signal pins at the cifX card tolerate only a specified signaling voltage!
- Operation with a signaling voltage other than the specified signaling voltage may lead to severe damage to the cifX card!

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2.8.3 Electrostatically sensitive Devices

Adhere to the necessary safety precautions for components that are vulnerable with electrostatic discharge.

NOTICE

Electrostatically sensitive Devices

This equipment is sensitive to electrostatic discharge, which cause internal damage and affect normal operation. Follow guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

USA:

NOTICE

Electrostatically sensitive Devices

This equipment is sensitive to electrostatic discharge, which cause internal damage and affect normal operation. Follow guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static.
- Wear an approved grounding wriststrap.
- Do not touch connectors or pins on component boards.
- Do not touch circuit components inside the equipment.
- If available, use a static-safe workstation.
- When not in use, store the equipment in appropriate static-safe packaging.

Reference Safety [2]

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3 Description and Requirements

3.1 Description

These cifX cards fieldbus are PC cards for fieldbus communication. Depending of the loaded firmware, the fieldbus specific cifX card proceeds the communication of the corresponding fieldbus system.

The following fieldbus systems are used:

- PROFIBUS-DP Master
- PROFIBUS-DP Slave
- CANopen Master
- CANopen Slave
- DeviceNet Master
- DeviceNet Slave
- AS-Interface Master
- CC-Link Slave
- CompoNet Slave

The cifX card fieldbus handles the complete data exchange between the connected fieldbus devices and the PC. The data exchange is proceeded via dual-port memory.

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3.1.1 Devices described in this Manual

In this manual are described:

1. The cifX cards fieldbus, PC cards for the fieldbus systems:

- PROFIBUS-DP,
- CANopen,
- DeviceNet,
- AS-Interface,
- CompoNet,
- CC-Link,

as Communication Interface netX

- PCI (CIFX50-),
- PCI Express (CIFX 50E-),
- Compact PCI (CIFX80-),
- Mini PCI (CIFX90-),
- Mini PCI Express (CIFX 90E-),
- PCI 104 (CIFX 104C-).

2. The AIFX assembly and diagnosis interfaces for cifX cards fieldbus.

The devices described in this manual are listed in section
- *cifX Cards Fieldbus for PROFIBUS-DP; CANopen, DeviceNet* (page 36)
- *AIFX Assembly and Diagnosis Interfaces for PROFIBUS-DP; CANopen, DeviceNet* (on page 39).
- *cifX Cards Fieldbus for AS-Interface, CompoNet, CC-Link* (page 40)
These cifX cards and AIFX interfaces are described in detail in the chapters:
- *Device Drawings and Connections* (page 50),
- *LEDs* (page 249) and
- *Technical Data* (page 261).

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3.1.2 cifX Cards Fieldbus for PROFIBUS-DP; CANopen, DeviceNet

3.1.2.1 cifX Cards Fieldbus for PROFIBUS-DP

cifX Card Fieldbus	Description
CIFX 50-DP	PCI card for PROFIBUS-DP Master or Slave
CIFX 50-2DP	PCI card for 2 x PROFIBUS-DP Master
CIFX 50E-DP	PCI Express card for PROFIBUS-DP Master or Slave
CIFX 80-DP	Compact PCI card for PROFIBUS-DP Master or Slave
CIFX 90-DP\F	Mini PCI card for PROFIBUS-DP Master or Slave - with cable connector fieldbus for assembly interface PROFIBUS-DP AIFX-DP, **Note**: The device height and the power input of the Mini PCI card CIFX 90-DP\F do not comply with the standard specifications.
CIFX 90E-DP\F	Mini PCI Express card for PROFIBUS-DP Master or Slave - with cable connector fieldbus for assembly interface PROFIBUS-DP AIFX-DP, **Note**: The device height and the power input of the Mini PCI Express card CIFX 90E-DP\F do not comply with the standard specifications.
CIFX 104C-DP	PCI 104 card for PROFIBUS-DP Master or Slave
CIFX 104C-DP-R	PCI 104 card for PROFIBUS-DP Master or Slave (connectors at the left side)
CIFX 104C-DP\F	PCI 104 card for PROFIBUS-DP Master or Slave - with cable connector fieldbus for assembly interface PROFIBUS-DP AIFX-DP - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104C-DP-R\F	PCI 104 card for PROFIBUS-DP Master or Slave (connectors at the left side) - with cable connector fieldbus for assembly interface PROFIBUS-DP AIFX-DP - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104-DP	PC/104 card for PROFIBUS-DP Master or Slave
CIFX 104-DP-R	PC/104 card for PROFIBUS-DP Master or Slave (connectors at the right side)
CIFX 104-DP\F	PC/104 card for PROFIBUS-DP Master or Slave - with cable connector fieldbus for assembly interface PROFIBUS-DP AIFX-DP - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104-DP-R\F	PC/104 card for PROFIBUS-DP Master or Slave (connectors at the right side) - with cable connector fieldbus for assembly interface PROFIBUS-DP AIFX-DP - and cable connector DIAG for diagnosis interface AIFX-DIAG.

Table 14: cifX Cards Fieldbus for PROFIBUS-DP

Note: The cifX cards including the label "**\F**" in its device name are equipped with a **Cable Connector Fieldbus**, to connect the assembly interface AIFX-DP. The variants of the cifX cards CIFX 104C-DP or CIFX 104-DP with the label "**\F**" in its device name are additionally equipped with a **Cable Connector DIAG**, to optionally connect the diagnosis interface AIFX-DAIG.

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3.1.2.2 cifX Cards Fieldbus for CANopen

cifX Card Fieldbus	Description
CIFX 50-CO	PCI card for CANopen Master or Slave
CIFX 50E-CO	PCI Express card for CANopen Master or Slave
CIFX 80-CO	Compact PCI card for CANopen Master or Slave
CIFX 90-CO\F	Mini PCI card for CANopen Master or Slave - with cable connector fieldbus for assembly interface CANopen AIFX-CO, **Note**: The device height and the power input of the Mini PCI card CIFX 90-CO\F do not comply with the standard specifications.
CIFX 90E-CO\F	Mini PCI Express card for CANopen Master or Slave - with cable connector fieldbus for assembly interface CANopen AIFX-CO, **Note**: The device height and the power input of the Mini PCI Express card CIFX 90E-CO\F do not comply with the standard specifications.
CIFX 104C-CO	PCI 104 card for CANopen Master or Slave
CIFX 104C-CO-R	PCI 104 card for CANopen Master or Slave (connectors at the left side)
CIFX 104C-CO\F	PCI 104 card for CANopen Master or Slave - with cable connector fieldbus for assembly interface CANopen AIFX-CO - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104C-CO-R\F	PCI 104 card for CANopen Master or Slave (connectors at the left side) - with cable connector fieldbus for assembly interface CANopen AIFX-CO - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104-CO	PC/104 card for CANopen Master or Slave
CIFX 104-CO-R	PC/104 card for CANopen Master or Slave (connectors at the right side)
CIFX 104-CO\F	PC/104 card for CANopen Master or Slave - with cable connector fieldbus for assembly interface CANopen AIFX-CO - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104-CO-R\F	PC/104 card for CANopen Master or Slave (connectors at the right side) - with cable connector fieldbus for assembly interface CANopen AIFX-CO - and cable connector DIAG for diagnosis interface AIFX-DIAG.

Table 15: cifX Cards Fieldbus for CANopen

Note: The cifX cards including the label "**\F**" in its device name are equipped with a **Cable Connector Fieldbus**, to connect the assembly interface AIFX-CO. The variants of the cifX cards CIFX 104C-CO or CIFX 104-CO with the label "**\F**" in its device name are additionally equipped with a **Cable Connector DIAG**, to optionally connect the diagnosis interface AIFX-DAIG.

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3.1.2.3 cifX Cards Fieldbus for DeviceNet

cifX Card Fieldbus	Description
CIFX 50-DN	PCI card for DeviceNet Master or Slave
CIFX 50E-DN	PCI Express card for DeviceNet Master or Slave
CIFX 80-DN	Compact PCI card for DeviceNet Master or Slave
CIFX 90-DN\F	Mini PCI card for DeviceNet Master or Slave - with cable connector fieldbus for assembly interface DeviceNet AIFX-DN **Note**: The device height and the power input of the Mini PCI card CIFX 90-DN\F do not comply with the standard specifications.
CIFX 90E-DN\F	Mini PCI Express card for DeviceNet Master or Slave - with cable connector fieldbus for assembly interface DeviceNet AIFX-DN, **Note**: The device height and the power input of the Mini PCI Express card CIFX 90E-DN\F do not comply with the standard specifications.
CIFX 104C-DN	PCI 104 card for DeviceNet Master or Slave
CIFX 104C-DN-R	PCI 104 card for DeviceNet Master or Slave (connectors at the left side)
CIFX 104C-DN\F	PCI 104 card for DeviceNet Master or Slave - with cable connector fieldbus for assembly interface DeviceNet AIFX-DN - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104C-DN-R\F	PCI 104 card for DeviceNet Master or Slave (connectors at the left side) - with cable connector fieldbus for assembly interface DeviceNet AIFX-DN - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104-DN	PC/104 card for DeviceNet Master or Slave
CIFX 104-DN-R	PC/104 card for DeviceNet Master or Slave (connectors at the right side)
CIFX 104-DN\F	PC/104 card for DeviceNet Master or Slave - with cable connector fieldbus for assembly interface DeviceNet AIFX-DN - and cable connector DIAG for diagnosis interface AIFX-DIAG.
CIFX 104-DN-R\F	PC/104 card for DeviceNet Master or Slave (connectors at the right side) - with cable connector fieldbus for assembly interface DeviceNet AIFX-DN - and cable connector DIAG for diagnosis interface AIFX-DIAG.

Table 16: cifX Cards Fieldbus for DeviceNet

Note: The cifX cards including the label "**\F**" in its device name are equipped with a **Cable Connector Fieldbus**, to connect the assembly interface AIFX-DN. The variants of the cifX cards CIFX 104C-DN or CIFX 104-DN with the label "**\F**" in its device name are additionally equipped with a **Cable Connector DIAG**, to optionally connect the diagnosis interface AIFX-DAIG.

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3.1.3 AIFX Assembly and Diagnosis Interfaces for PROFIBUS-DP; CANopen, DeviceNet

AIFX Interface	Description
AIFX-DP	Assembly interface with PROFIBUS Interface for the devices: CIFX 90-DP, CIFX 90E-DP, CIFX 104C-DP\F, CIFX 104C-DP-R\F, CIFX 104-DP\F, CIFX 104-DP-R\F
AIFX-CO	Assembly interface with CANopen Interface for the devices: CIFX 90-CO, CIFX 90E-CO, CIFX 104C-CO\F, CIFX 104C-CO-R\F, CIFX 104-CO\F, CIFX 104-CO-R\F
AIFX-DN	Assembly interface with DeviceNet Interface for the devices: CIFX 90-DN, CIFX 90E-DN, CIFX 104C-DN\F, CIFX 104C-DN-R\F, CIFX 104-DN\F, CIFX 104-DN-R\F
AIFX-DP and optional AIFX-DIAG	Assembly interface with PROFIBUS Interface and optionally with Diagnosis Interface for the devices: CIFX 104C-DP\F, CIFX 104C-DP-R\F, CIFX 104-DP\F, CIFX 104-DP-R\F
AIFX-CO and optional AIFX-DIAG	Assembly interface with CANopen Interface and optionally with Diagnosis Interface for the devices: CIFX 104C-CO\F, CIFX 104C-CO-R\F, CIFX 104-CO\F, CIFX 104-CO-R\F
AIFX-DN and optional AIFX-DIAG	Assembly interface with DeviceNet Interface and optionally with Diagnosis Interface for the devices: CIFX 104C-DN\F, CIFX 104C-DN-R\F, CIFX 104-DN\F, CIFX 104-DN-R\F

Table 17: AIFX Interfaces for cifX Cards with Cable Connector

The assembly Interface AIFX-DP, AIFX-CO or AIFX-DN and optionally the diagnosis interface AIFX-DIAG are connected to the cifX cards with **Cable Connector Fieldbus** or **Cable Connector DIAG**. The cifX cards with cable connector include the label "**\F**" in its device name. The variants of the cifX cards CIFX 104C-DP, -CO, -DN or CIFX 104-DP, -CO, -DN with the label "**\F**" in its device name are additionally equipped with a **Cable Connector DIAG**.

Note: When the diagnosis interface AIFX-DIAG is used, the assembly interface AIFX-DP, AIFX-CO or AIFX-DN must be installed also.

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3.1.4 cifX Cards Fieldbus for AS-Interface, CompoNet, CC-Link

cifX Card Fieldbus	Description
CIFX 50-2ASM	PCI card for AS-Interface Master
CIFX 50E-2ASM	PCI Express card for AS-Interface Master

Table 18: cifX Cards Fieldbus for AS-Interface

cifX Card Fieldbus	Description
CIFX 50-CP	PCI card for CompoNet Slave
CIFX 50E-CP	PCI Express card for CompoNet Slave

Table 19: cifX Cards Fieldbus for CompoNet

cifX Card Fieldbus	Description
CIFX 50-CC	PCI card for CC-Link Slave
CIFX 50E-CC	PCI Express card for CC-Link Slave

Table 20: cifX Cards Fieldbus for CC-Link

3.1.5 The Functions „Slot Number (Card ID)“ and „DMA Mode“

The functions **Slot Number (Card ID)** and **DMA Mode** are in technical view independently from each other.

The **Slot Number (Card ID)** must be set at the cifX card using the **Rotary Switch Slot Number (Card ID)**. The **Slot Number (Card ID)** serves to distinguish cifX cards from each other clearly, especially if more cifX cards are installed into the very same PC.

Device revisions equipped with a **Rotary Switch Slot Number (Card ID)** or which provide **DMA Mode** are listed separately in section *Hardware: cifX Cards Fieldbus* on page 16.

The **DMA Mode** is activated via the device driver **cifX Device Driver**.

For further information about the **Slot Number (Card ID)** and the **DMA Mode** refer to the sections:
- *References for Slot Number (Card ID), DMA Mode* (page 19),
- *Requirements Slot Number (Card ID)* (page 47),
- *Requirements DMA Mode* (page 48),
- *Rotary Switch for Slot Number (Card ID)* (page 94),
- *Setting Slot Number (Card ID)* (page 119),
- *„Slot Number (Card ID)“ and „DMA Mode“ in the Software* (page 171).

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3.2 System Requirements

3.2.1 PCI or PC/104 Connector for cifX cards

PC with PCI connector (3.3 V) or PC/104 connector (5V)

Type of Card	PCI Connector or PC/104 Connector
CIFX 50-DP CIFX 50-2DP CIFX 50-CO CIFX 50-DN CIFX 50-2ASM CIFX 50-CP CIFX 50-CC	PCI slot (3.3 V)
CIFX 50E-DP CIFX 50E-CO CIFX 50E-DN CIFX 50E-2ASM CIFX 50E-CP CIFX 50E-CC	PCI Express X1 slot (3.3 V), X1 = Single Lane
CIFX 80-DP CIFX 80-CO CIFX 80-DN	Compact PCI Socket (3.3 V)
CIFX 90-DP\F CIFX 90-CO\F CIFX 90-DN\F	Mini PCI Socket (3.3 V), Type III System Connector
CIFX 90E-DP\F CIFX 90E-CO\F CIFX 90E-DN\F	PCI Express Mini Card System Connector (3.3 V) X1/X2 = Single Lane
CIFX 104C-DP CIFX 104C-DP-R CIFX 104C-DP\F CIFX 104C-DP-R\F CIFX 104C-CO CIFX 104C-CO-R CIFX 104C-CO\F CIFX 104C-CO-R\F CIFX 104C-DN CIFX 104C-DN-R CIFX 104C-DN\F CIFX 104C-DN-R\F	PCI-104 slot (3.3 V)
CIFX 104-DP CIFX 104-DP-R CIFX 104-DP\F CIFX 104-DP-R\F CIFX 104-CO CIFX 104-CO-R CIFX 104-CO\F CIFX 104-CO-R\F CIFX 104-DN CIFX 104-DN-R CIFX 104-DN\F CIFX 104-DN-R\F	PC/104 Slot (5 V)

Table 21: PCI or PC/104 Connector for cifX cards

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3.2.2 Data on the overall Card Height of the CIFX 90- or CIFX 90E Cards Fieldbus

<table>
<tr><th>Card Type</th><th>Dimensions (L x B x D)</th><th>Note</th></tr>
<tr><td>CIFX 90-DP\F
CIFX 90-CO\F
CIFX 90-DN\F</td><td>60,0 x 45 x 9,5 mm</td><td>The height of the card elements on top of the mini-PCI cards CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F do not meet the standard specifications.</td></tr>
<tr><td>CIFX 90E-DP\F
CIFX 90E-CO\F
CIFX 90E-DN\F</td><td>51 x 30 x 11 mm
The total height of the card (D) is composed from:
+ 3,5 mm (=card height)
+ 6,4 mm (=netx 100 cooling element)
+ 1,3 mm (=element height bottom side)
= ~ 11 mm Total height of the card (D)</td><td>The height of the card elements on top of the mini-PCI Express cards CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F does not meet the standard specifications.
Note:
The element height at the bottom side of the Mini PCI Express card CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F is in accordance with the standard specifications. As the CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F card can be inserted correctly into the mini-PCI Express card slot, the element height in the Mini-PCI Express card slot of the connecting device must meet to the standard guidelines.</td></tr>
</table>

Table 22: Data on the overall Card Height of the CIFX 90- or CIFX 90E Cards Fieldbus

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3.2.3 Panel Cutout for AIFX Mounting

In order to connect the AIFX assembly or diagnosis interface to a cifX-device with AIFX connector (labeling „\F“), make sure that the housing panel of the PC or of the connecting device and the front plate of the cifX card has an appropriate cutout and holes for fastening the AIFX. The panel cutout must be dimensioned sufficiently large for the interface, display or control elements placed on the AIFX. Partial standard cutouts can be used.

Card Type	Panel Cutout
CIFX 90 Card Fieldbus (\F) CIFX 90E Card Fieldbus (\F)	at the housing panel of the PC
CIFX 104C Card Fieldbus (\F) CIFX 104C Card Fieldbus (-R\F) CIFX 104-(Fieldbus\F) CIFX 104-(Fieldbus-R\F)	on the front plate of the cifX card

Table 23: Panel Cutout at the at the Housing Panel of the PC or on the Front Plate of the cifX Card

<table>
<tr><th>Card Type</th><th>AIFX</th><th colspan="2">Panel Cutout and Holes</th></tr>
<tr><td rowspan="4">CIFX 90-DP\F
CIFX 90E-DP\F
CIFX 104C-DP\F
CIFX 104C-DP-R\F
CIFX 104-DP\F
CIFX 104-DP-R\F</td><td rowspan="4">AIFX-DP</td><td>Required Cutout</td><td>for Dsub female Connector, 9 pin</td></tr>
<tr><td>Standard cutout</td><td>D-Sub-9</td></tr>
<tr><td>Holes</td><td>2, distance between the holes 25 mm</td></tr>
<tr><td>Further Information</td><td>in section AIFX-DP Dimensioning on page 72.</td></tr>
<tr><td rowspan="4">CIFX 90-CO\F
CIFX 90E-CO\F
CIFX 104C-CO\F
CIFX 104C-CO-R\F
CIFX 104-CO\F
CIFX 104-CO-R\F</td><td rowspan="4">AIFX-CO</td><td>Required Cutout</td><td>for D-Sub male Connector, 9 pin</td></tr>
<tr><td>Standard cutout</td><td>D-Sub-9</td></tr>
<tr><td>Holes</td><td>2, distance between the holes 25 mm</td></tr>
<tr><td>Further Information</td><td>in section AIFX-CO Dimensioning on page 74.</td></tr>
<tr><td rowspan="4">CIFX 90-DN\F
CIFX 90E-DN\F
CIFX 104C-DN\F
CIFX 104C-DN-R\F
CIFX 104-DN\F
CIFX 104-DN-R\F</td><td rowspan="4">AIFX-DN</td><td>Required Cutout</td><td>for CombiCon male Connector, 5 pin</td></tr>
<tr><td>Standard cutout</td><td>D-Sub-9</td></tr>
<tr><td>Holes</td><td>2x2, distance between the holes 24,94 mm</td></tr>
<tr><td>Further Information</td><td>in section AIFX-DN Dimensioning on page 76.</td></tr>
<tr><td rowspan="4">CIFX 104C-DP\F
CIFX 104C-DP-R\F
CIFX 104-DP\F
CIFX 104-DP-R\F,
CIFX 104C-CO\F
CIFX 104C-CO-R\F
CIFX 104-CO\F
CIFX 104-CO-R\F,
CIFX 104C-DN\F
CIFX 104C-DN-R\F
CIFX 104-DN\F
CIFX 104-DN-R\F</td><td rowspan="4">AIFX-DIAG</td><td>Required Cutout</td><td>for the light channels, the rotary switches and the Mini B USB plug</td></tr>
<tr><td>Standard cutout</td><td>-</td></tr>
<tr><td>Holes</td><td>2, distance between the holes 47,1 mm</td></tr>
<tr><td>Further Information</td><td>in section AIFX-DIAG Dimensioning on page 78.</td></tr>
</table>

Table 24: Required Panel Cutout and Holes for AIFX

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3.2.4 Supply and Signaling Voltage

The following table provides the required and permissible supply voltage for each of the devices as well as the required or tolerated signaling voltage for the I/O signal pins:

Card Type	Supply Voltage	Signaling Voltage
CIFX 50-DP CIFX 50-CO CIFX 50-DN CIFX 50-CP CIFX 50-CC	+3.3 V dc ±5 %/max. 650 mA	5 V or 3.3 V
CIFX 50-2DP CIFX 50-2ASM	+3.3 V dc ±5 %/max. 700 mA	5 V or 3.3 V
CIFX 50E-DP CIFX 50E-CO CIFX 50E-DN CIFX 50E-2ASM CIFX 50E-CP CIFX 50E-CC	+3.3 V dc ±5 %/max. 800 mA	PCIe compatible
CIFX 80-DP CIFX 80-CO CIFX 80-DN	+3.3 V dc ±5 %/max. 650 mA	5 V or 3.3 V
CIFX 90-DP\F CIFX 90-CO\F CIFX 90-DN\F	+3.3 V dc ±5 %/max. 650 mA	5 V or 3.3 V
CIFX 90E-DP\F CIFX 90E-CO\F CIFX 90E-DN\F	+3.3 V dc ±5 %/max. 800 mA	PCIe compatible
CIFX 104C-DP CIFX 104C-DP-R CIFX 104C-DP\F CIFX 104C-DP-R\F CIFX 104C-CO CIFX 104C-CO-R CIFX 104C-CO\F CIFX 104C-CO-R\F CIFX 104C-DN CIFX 104C-DN-R CIFX 104C-DN\F CIFX 104C-DN-R\F	+5 V dc ±5 %/max. 500 mA order +3.3 V dc ±5 %/max. 650 mA	5 V or 3.3 V
CIFX 104-DP CIFX 104-DP-R CIFX 104-DP\F CIFX 104-DP-R\F CIFX 104-CO CIFX 104-CO-R CIFX 104-CO\F CIFX 104-CO-R\F CIFX 104-DN CIFX 104-DN-R CIFX 104-DN\F CIFX 104-DN-R\F	+5 V ±5 %/max. 500 mA	5 V Input compatible, 5 V TTL Output compatible (Uout ≥ 2,4 V @6 mA)

Table 25: Supply and Signaling Voltage

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3.2.5 System Requirements for netX Configuration Tool

The system requirements necessary for the application of the **netX Configuration Tool** are these:

- PC with 586-, Pentium® processor or higher
- Operating system: Windows® 2000 or Windows® XP
- Free space on hard disk: 50 MByte
- CD ROM drive
- RAM: min. 256 MByte
- Graphics resolution: min 1024 x 768 pixels
- Keyboard and mouse for input and operation

3.2.6 System Requirements SYCON.net

- PC with 1 GHz processor or higher
- Windows® 2000 and Windows® XP
- Internet Explorer 5.5 or higher
- Free disk space: min. 400 MByte
- DVD ROM drive
- RAM: min. 512 MByte, recommended 1024 MByte
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse

Note: If the project file is saved and opened again or it is used on another PC, the system requirements need to match. Particularly the DTMs need to be installed on the used PC.

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3.3 Requirements for Operation

Note: Upgrade older versions of the **cifX Device Driver** necessarily on the version **V0.95x**.

3.3.1 cifX Card Fieldbus (Slave)

To operate cifX cards fieldbus (Slave) properly, the following requirements must be fulfilled:

Protocols	PROFIBUS-DP Slave CANopen Slave DeviceNet Slave CompoNet Slave CC-Link Slave
Software Installation	1. The **cifX Device Driver** must be installed (from V0.95x). 2. The **netX Configuration Tool** program must be installed.
Firmware-Download	3. Using the **netX Configuration Tool** program, the user must select the firmware which is to be loaded to the cifX card fieldbus (Slave).
Parameter Setting	4. The cifX card fieldbus (Slave) must be parameterized using one of the following options: • **netX Configuration Tool** program • Application program (programming required)
Communication	5. For the communication a Master for the respective communication system is required.

Table 26: Requirements to operate cifX cards fieldbus (Slave) properly

3.3.2 cifX Card Fieldbus (Master)

To operate cifX cards fieldbus (Master) properly, the following requirements must be fulfilled:

Protocols	PROFIBUS-DP Master CANopen Master DeviceNet Master AS-Interface Master
Software Installation	1. The **cifX Device Driver** must be installed (from V0.95x).
Firmware-Download	2. Using the configuration software **SYCON.net**, the user must select the firmware which is to be loaded to the cifX card fieldbus (Master).
Configuration	3. The cifX card fieldbus (Master) must be configured using one of the following options: • Configuration Software **SYCON.net** • Application program (programming required)
Communication	For communication Slave devices for the used communication system are required.

Table 27: Requirements to operate cifX cards fieldbus (Master) properly

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3.3.3 Requirements Slot Number (Card ID)

The requirements given in the subsequent table must be met in order to:

- a cifX card is identified explicitly by the **cifX Device Driver** via its **Slot Number (Card ID)** and can be distinguished from other cifX cards in the PC.

cifX Card	**From Hardware Revision**	**Firmware File**	**Fieldbus System**	**From Firmware Version**
CIFX 50-DP	5	CIFXDPM.NXF	PROFIBUS-DP Master	2.3.x.x
		CIFXDPS.NXF	PROFIBUS-DP Slave	2.3.x.x
CIFX 50-CO	5	CIFXCOM.NXF	CANopen Master	2.3.x.x
		CIFXCOS.NXF	CANopen Slave	2.3.x.x
CIFX 50-DN	5	CIFXDNM.NXF	DeviceNet Master	2.2.x.x
		CIFXDNS.NXF	DeviceNet Slave	2.2.x.x
CIFX 50-2ASM	2	CIFX2ASM.NXF	AS-Interface Master	2.1.x.x

Table 28: Requirements Slot Number (Card ID):Hardware and Firmware

Driver	**From Version**
cifX Device Driver	0.95x
Bootloader (included in the cifX Device Driver Setup)	V1.3.x.x

Software		**From Software Version**
SYCON.net:	SYCONnet netX setup.exe	V1.201.x.x or higher

Table 29: Requirements Slot Number (Card ID): Driver and Software

For further information on the question **Slot Number (Card ID)** refer to the sections:
- *References for Slot Number (Card ID), DMA Mode* (page 19),
- *The Functions „Slot Number (Card ID)" and „DMA Mode"* (page 40),
- *Rotary Switch for Slot Number (Card ID)* (page 94),
- *Setting Slot Number (Card ID)* (page 119),
- *„Slot Number (Card ID)" and „DMA Mode" in the Software* (page 171).

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3.3.4 Requirements DMA Mode

The requirements given in the subsequent table must be met in order to:

- the cifX card operates in **DMA Mode**.

cifX Card	From Hardware Revision	Firmware File	Fieldbus System	From Firmware Version
CIFX 50-DP	1	CIFXDPM.NXF	PROFIBUS-DP Master	2.3.x.x
		CIFXDPS.NXF	PROFIBUS-DP Slave	2.3.x.x
CIFX 50-2DP	1	-	-	-
CIFX 50-CO	1	CIFXCOM.NXF	CANopen Master	2.3.x.x
		CIFXCOS.NXF	CANopen Slave	2.3.x.x
CIFX 50-DN	1	CIFXDNM.NXF	DeviceNet Master	2.2.x.x
		CIFXDNS.NXF	DeviceNet Slave	2.2.x.x
CIFX 50-2ASM	1	CIFX2ASM.NXF	AS-Interface Master	2.1.x.x
CIFX 50-CP	1	-	-	-
CIFX 50-CC	1	-	-	-
CIFX 50E-DP	*no DMA*	-	-	-
CIFX 50E-CO	*no DMA*	-	-	-
CIFX 50E-DN	*no DMA*	-	-	-
CIFX 50E-2ASM	*no DMA*	-	-	-
CIFX 50E-CP	*no DMA*	-	-	-
CIFX 50E-CC	*no DMA*	-	-	-
CIFX 80-DP	1	-	-	-
CIFX 80-CO	1	-	-	-
CIFX 80-DN	1	-	-	-
CIFX 90-DP\F	1	-	-	-
CIFX 90-CO\F	1	-	-	-
CIFX 90-DN\F	1	-	-	-
CIFX 90E-DP\F	*no DMA*	-	-	-
CIFX 90E-CO\F	*no DMA*	-	-	-
CIFX 90E-DN\F	*no DMA*	-	-	-
CIFX 104C-DP	1	-	-	-
CIFX 104C-DP-R	1	-	-	-
CIFX 104C-DP\F	1	-	-	-
CIFX 104C-DP-R\F	1	-	-	-
CIFX 104C-CO	1	-	-	-
CIFX 104C-CO-R	1	-	-	-
CIFX 104C-CO\F	1	-	-	-
CIFX 104C-CO-R\F	1	-	-	-
CIFX 104C-DN	1	-	-	-
CIFX 104C-DN-R	1	-	-	-
CIFX 104C-DN\F	1	-	-	-
CIFX 104C-DN-R\F	1	-	-	-

Table 30: Requirements DMA Mode: Hardware and Firmware

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For the hardware revisions given in *Table 29: Requirements Slot Number (Card ID): Driver and Software* on page 47, which also provide **DMA Mode**, the firmware versions required for operation in **DMA Mode** are only available for future application.

Driver	**From Version**
cifX Device Driver	0.95x
Bootloader (included in the cifX Device Driver Setup)	V1.3.x.x

Software		**From Software Version**
SYCON.net:	SYCONnet netX setup.exe	V1.201.x.x or higher

Table 31: Requirements DMA Mode: Driver and Software

For further information on the question **DMA Mode** refer to the sections:
- *References for Slot Number (Card ID), DMA Mode* (page 19),
- *The Functions „Slot Number (Card ID)“ and „DMA Mode“* (page 40),
- *„Slot Number (Card ID)“ and „DMA Mode“ in the Software* (page 171).

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4 Device Drawings and Connections

4.1 Device Drawing CIFX 50-DP

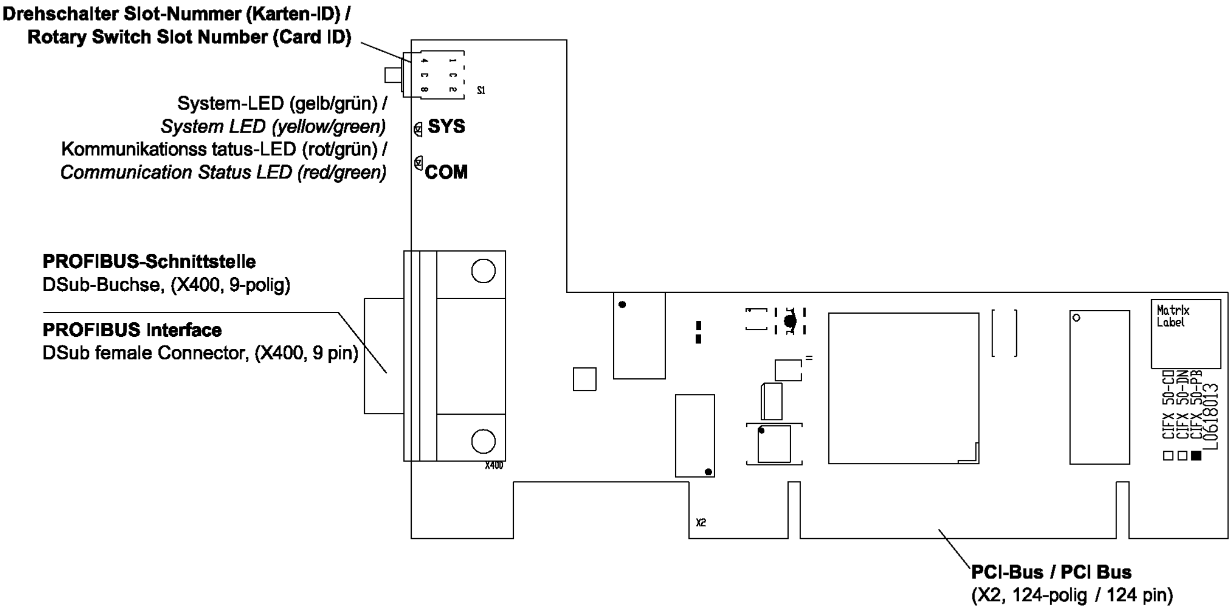

Figure 1: Device Drawing CIFX 50-DP (hardware revision 5, with Rotary Switch Slot Number (Card ID))

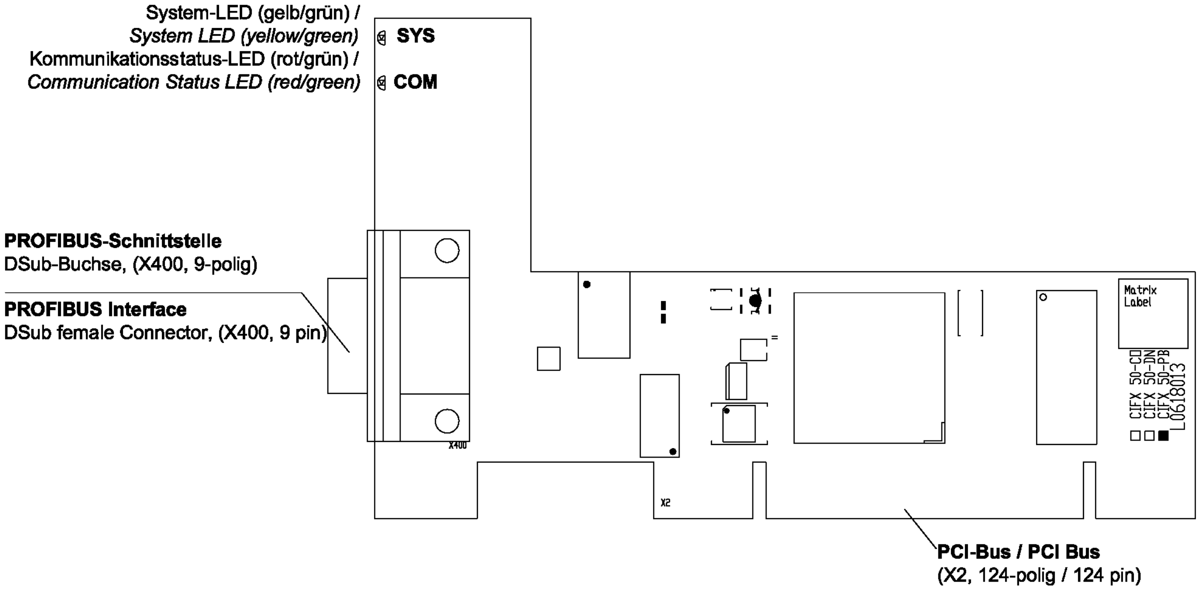

Figure 2: Device Drawing CIFX 50-DP (hardware revision 4)

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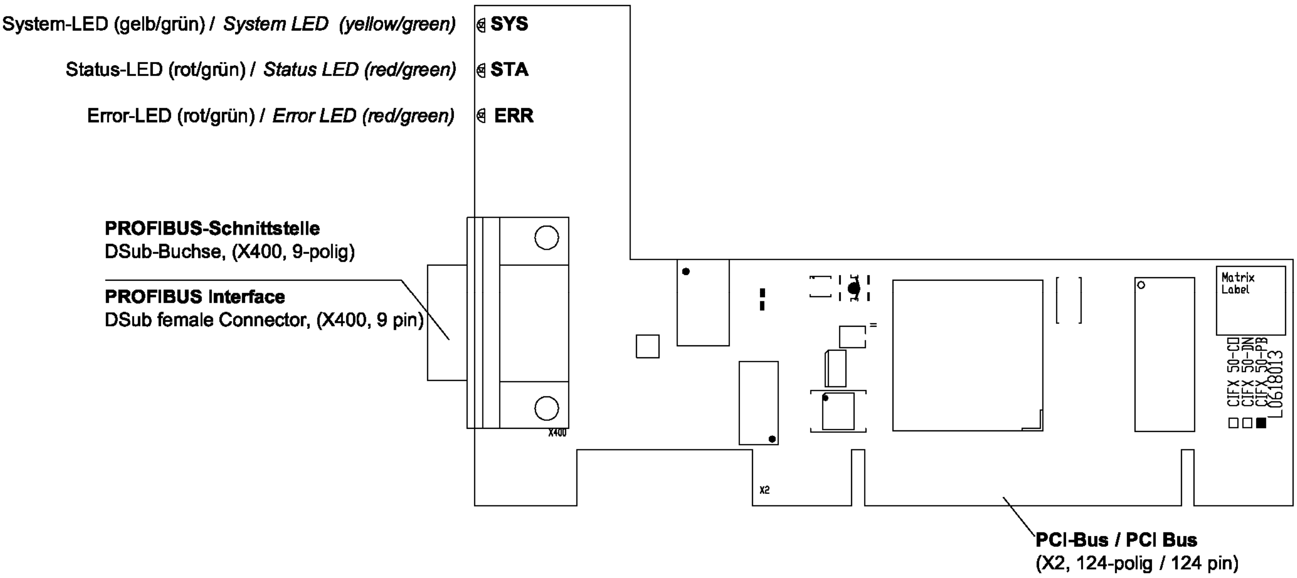

Figure 3: Device Drawing CIFX 50-DP (up to hardware revision 3)

4.2 Device Drawing CIFX 50-2DP

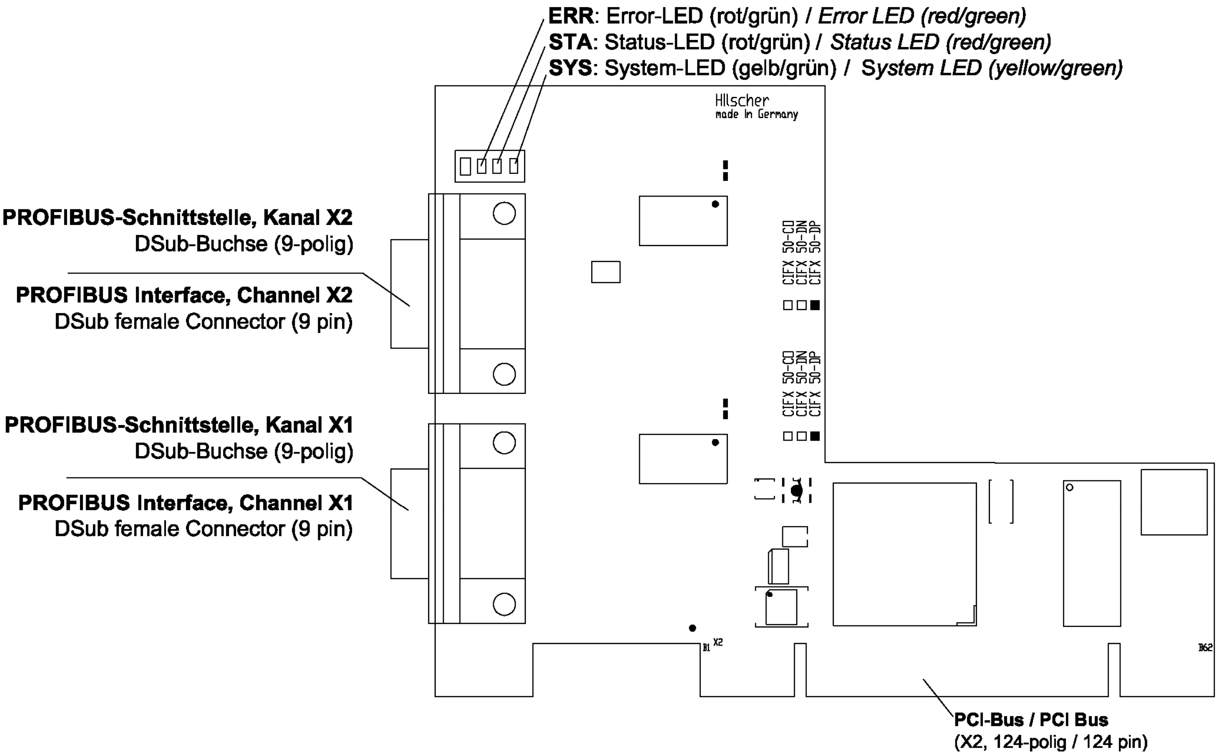

Figure 4: Device Drawing CIFX 50-2DP

4.3 Device Drawing CIFX 50-CO

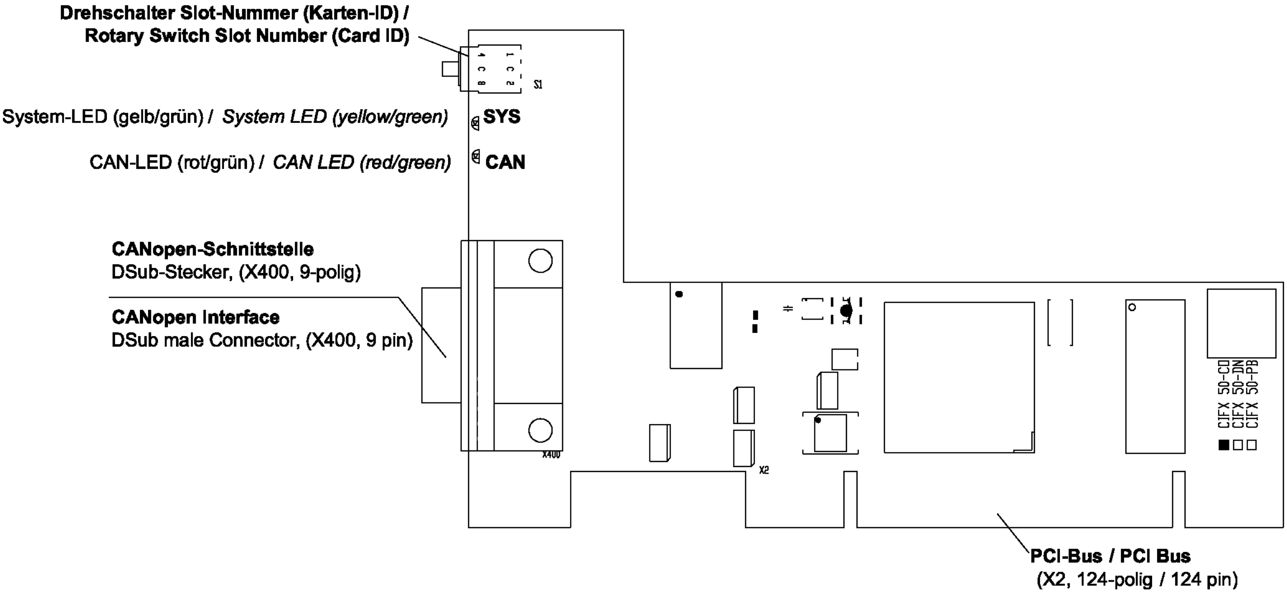

Figure 5: Device Drawing CIFX 50-CO (hardware revision 5, with Rotary Switch Slot Number (Card ID))

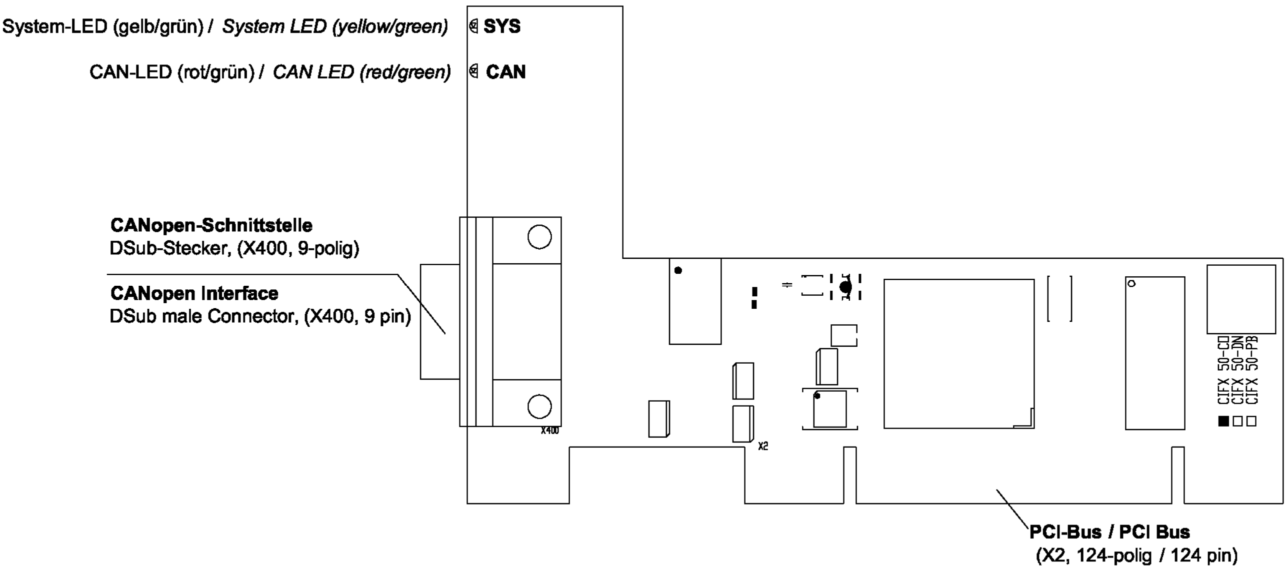

Figure 6: Device Drawing CIFX 50-CO (hardware revision 4)

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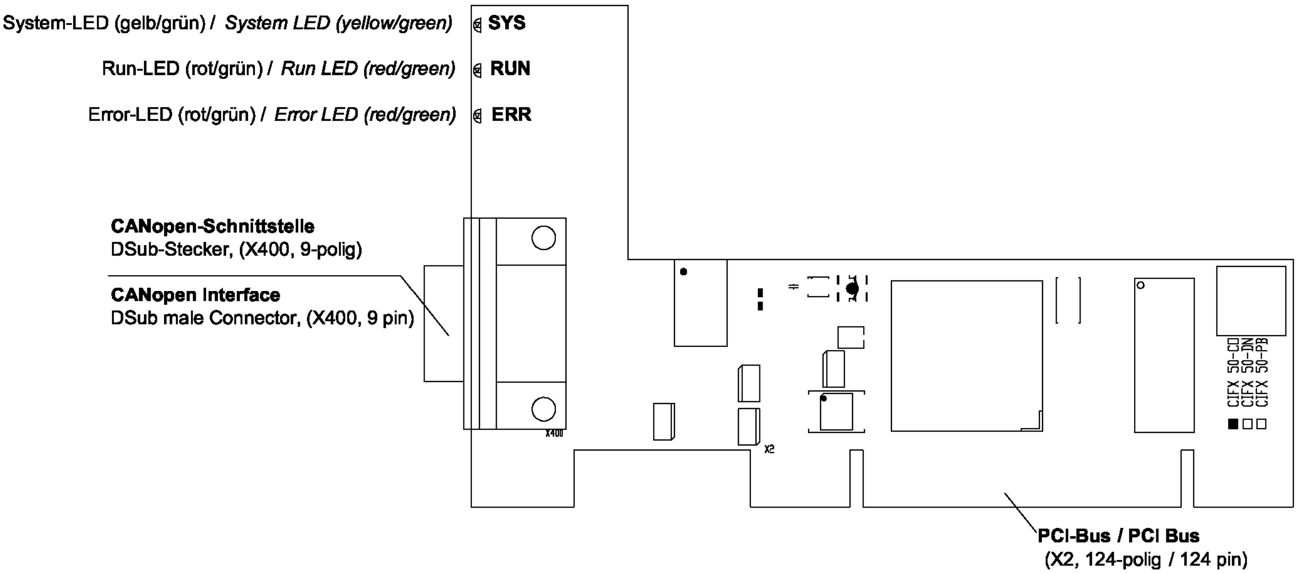

Figure 7: Device Drawing CIFX 50-CO (up to hardware revision 3)

4.4 Device Drawing CIFX 50-DN

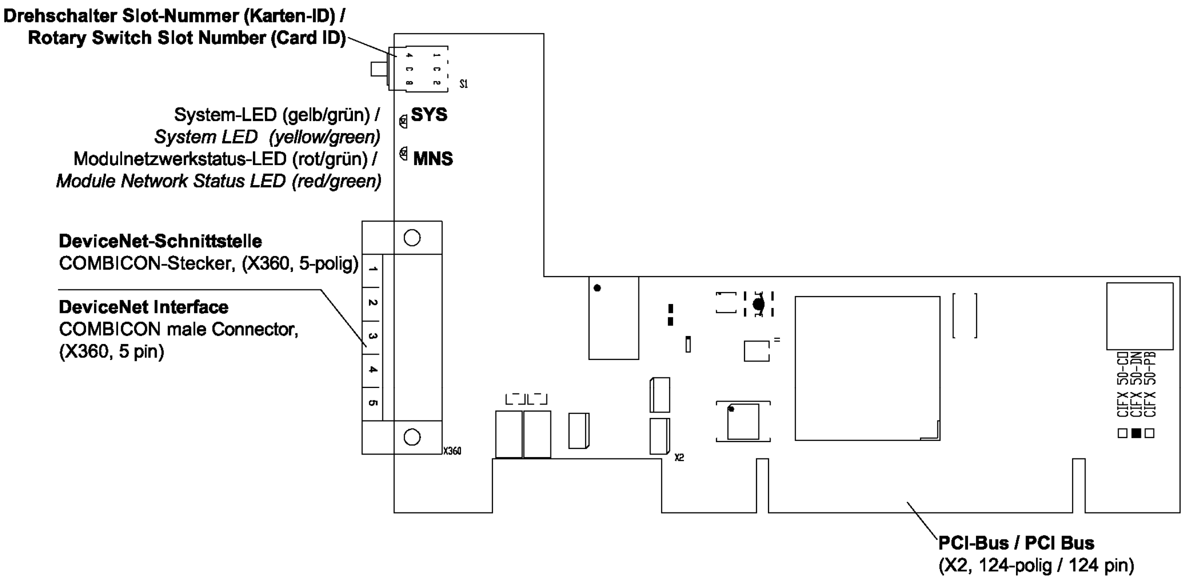

Figure 8: Device Drawing CIFX 50-DN (hardware revision 5, with Rotary Switch Slot Number (Card ID))

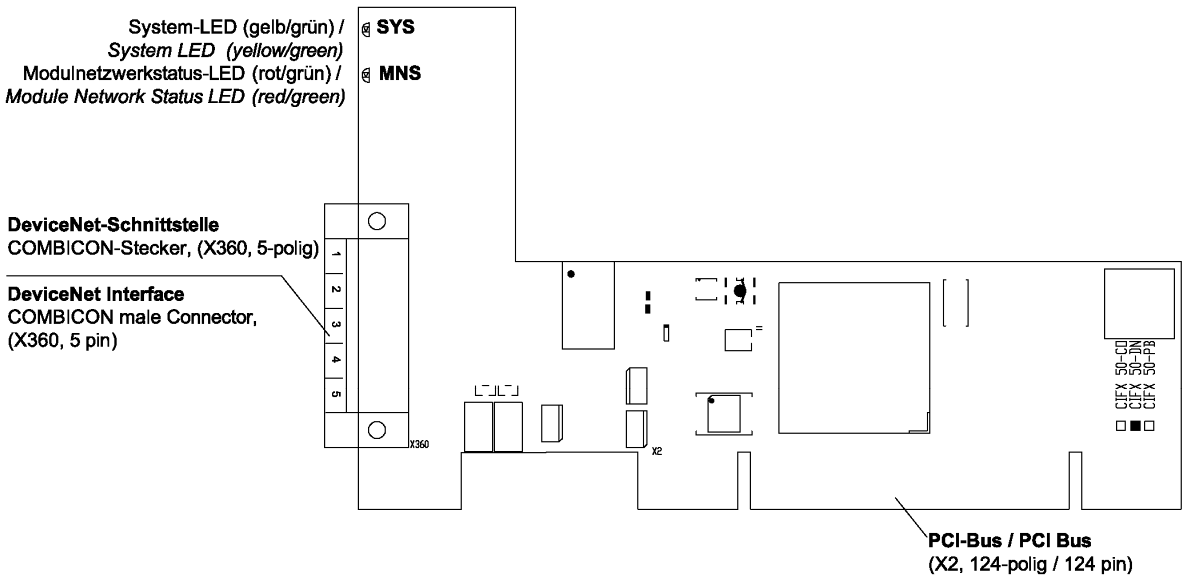

Figure 9: Device Drawing CIFX 50-DN (up to hardware revision 4)

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4.5 Device Drawing CIFX 50-2ASM

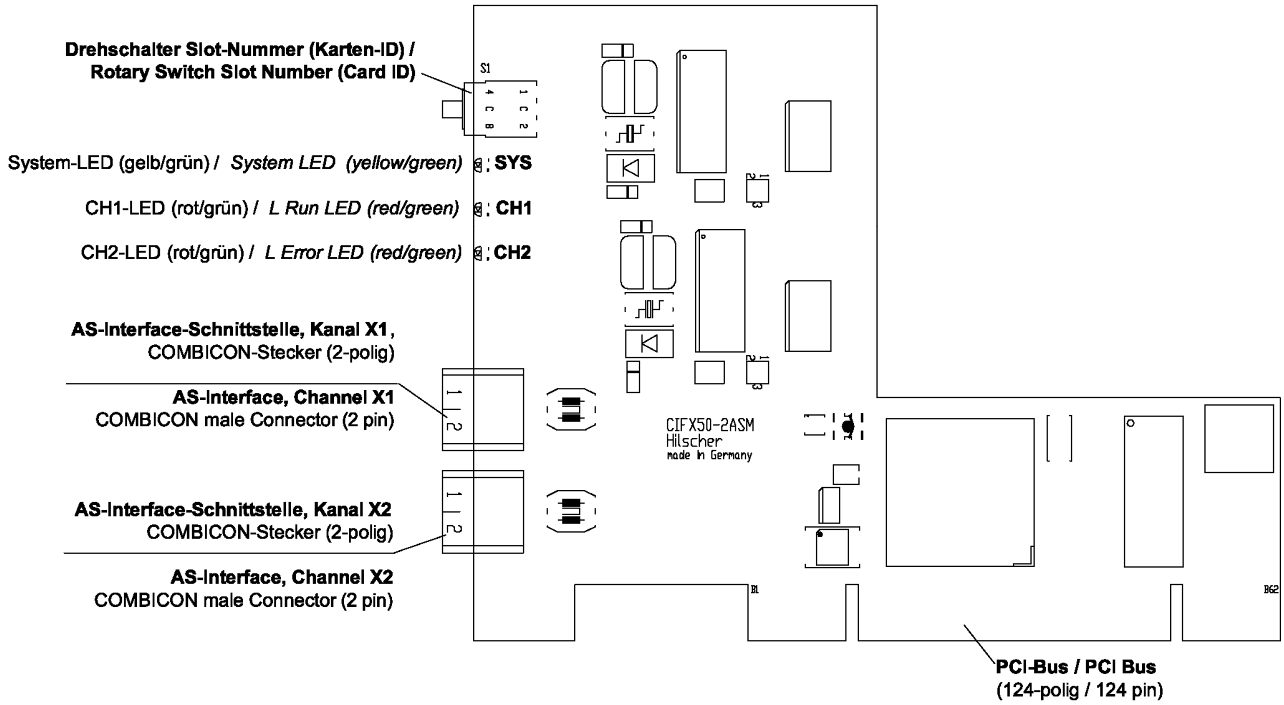

Figure 10: Device Drawing CIFX 50-2ASM
(hardware revision 2, with Rotary Switch Slot Number (Card ID))

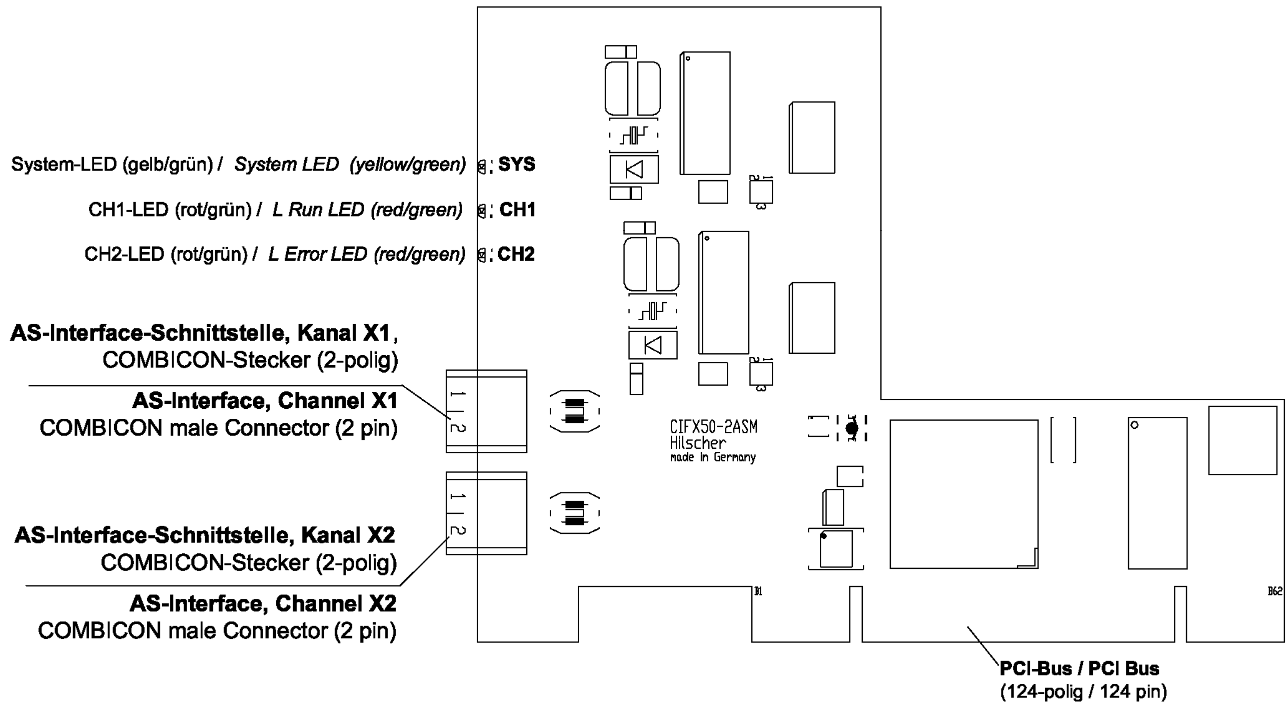

Figure 11: Device Drawing CIFX 50-2ASM (hardware revision 1)

4.6 Device Drawing CIFX 50-CP

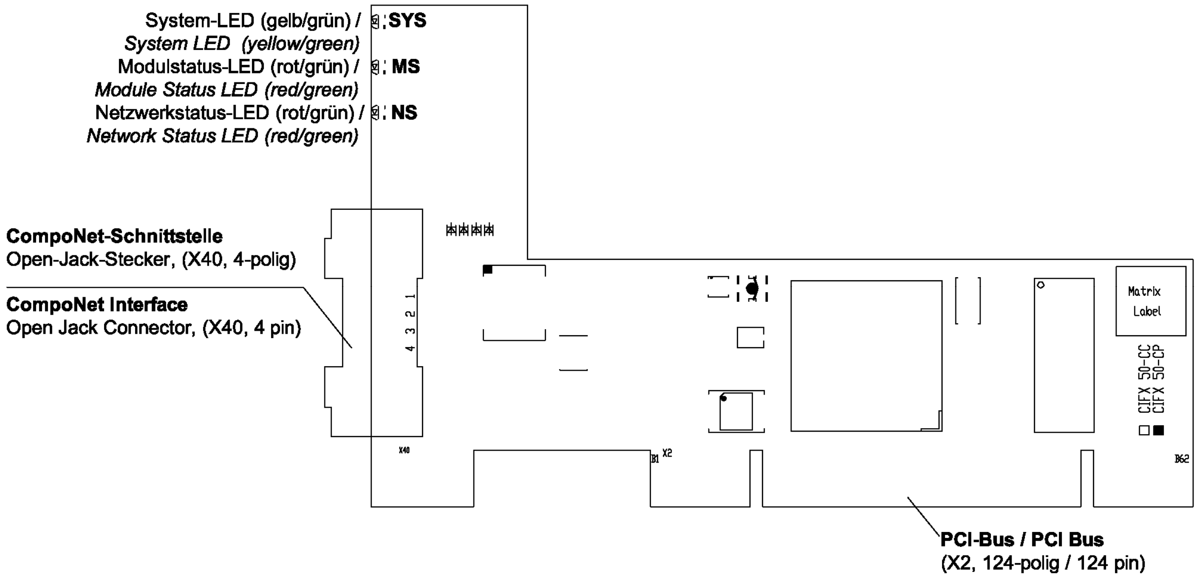

Figure 12: Device Drawing CIFX 50-CP

4.7 Device Drawing CIFX 50-CC

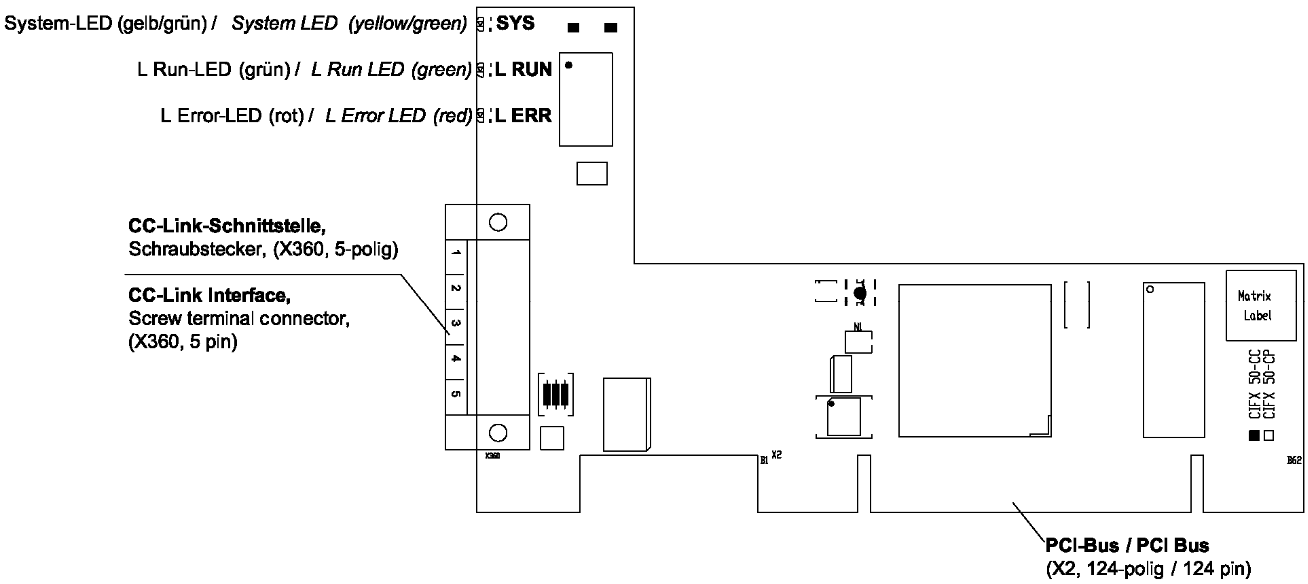

Figure 13: Device Drawing CIFX 50-CC

4.8 Device Drawing CIFX 50E-DP

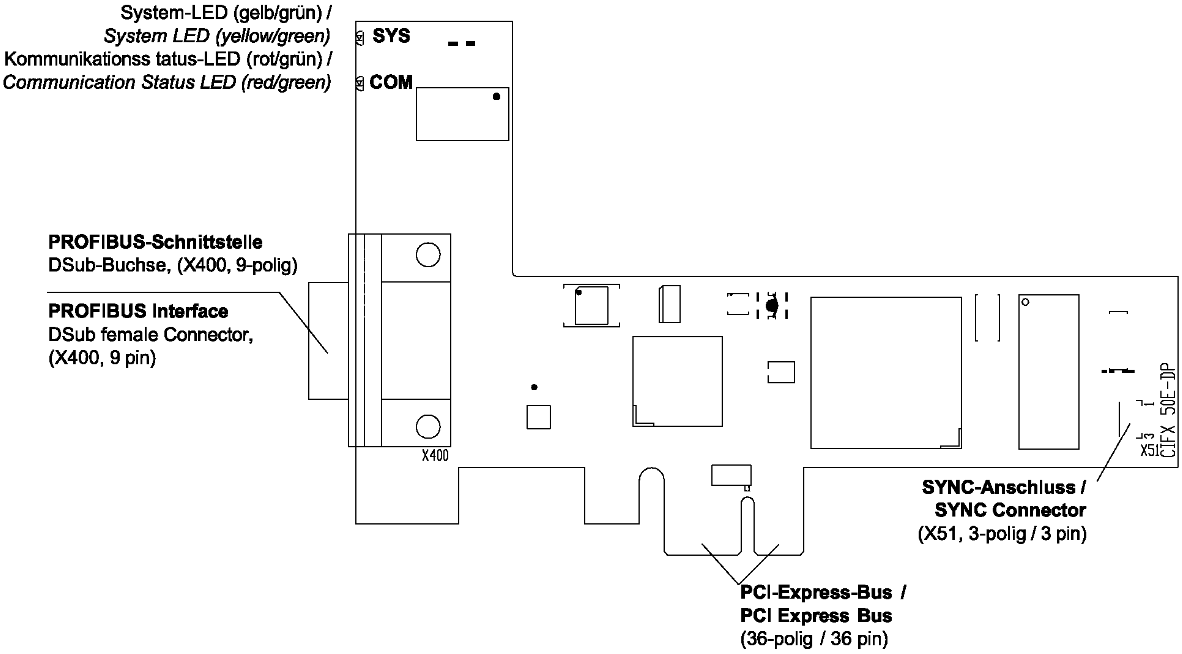

Figure 14: Device Drawing CIFX 50E-DP

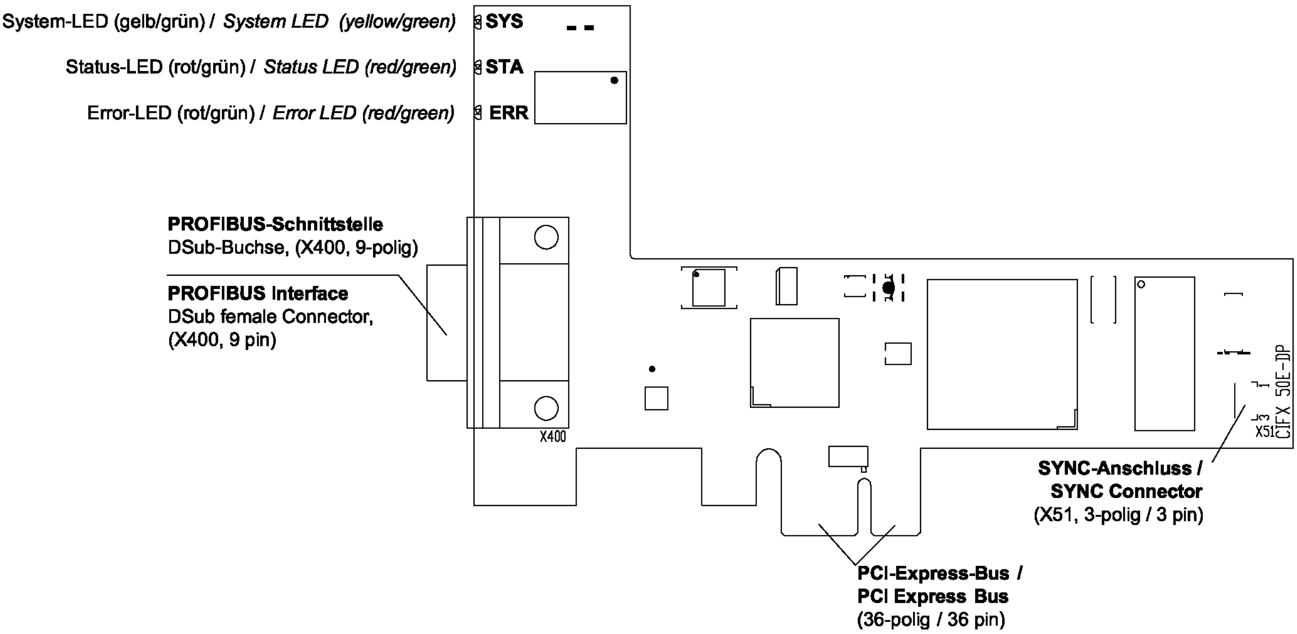

Figure 15: Device Drawing CIFX 50E-DP (up to hardware revision 2)

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4.9 Device Drawing CIFX 50E-CO

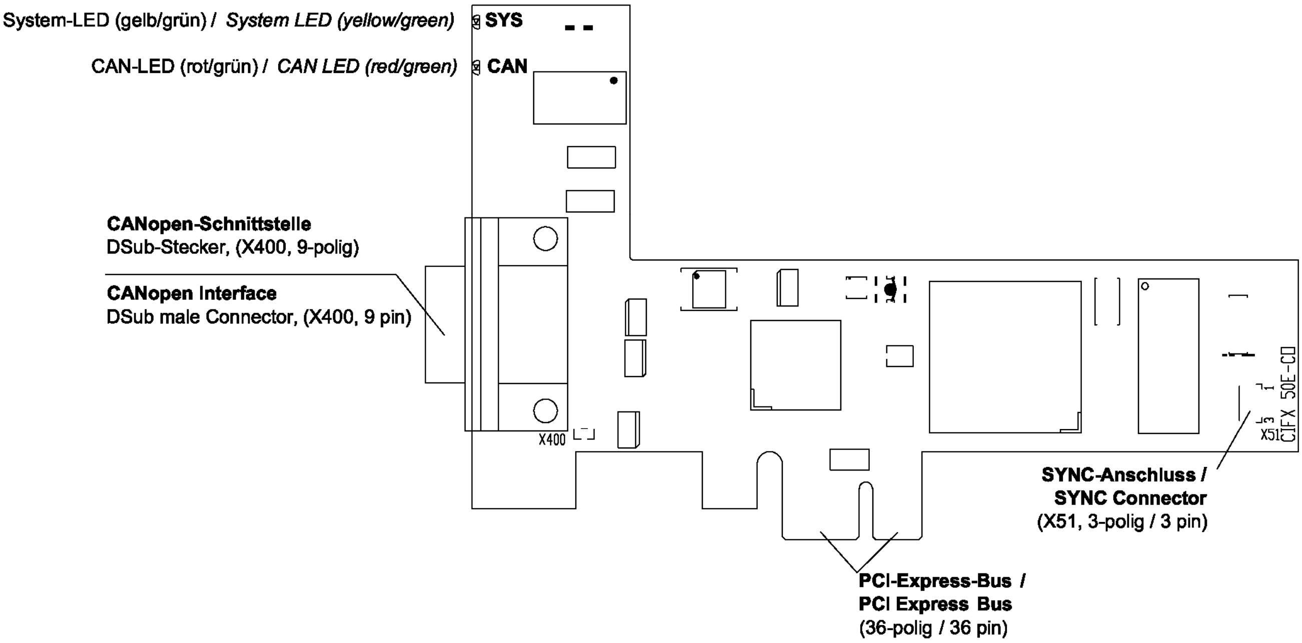

Figure 16: Device Drawing CIFX 50E-CO

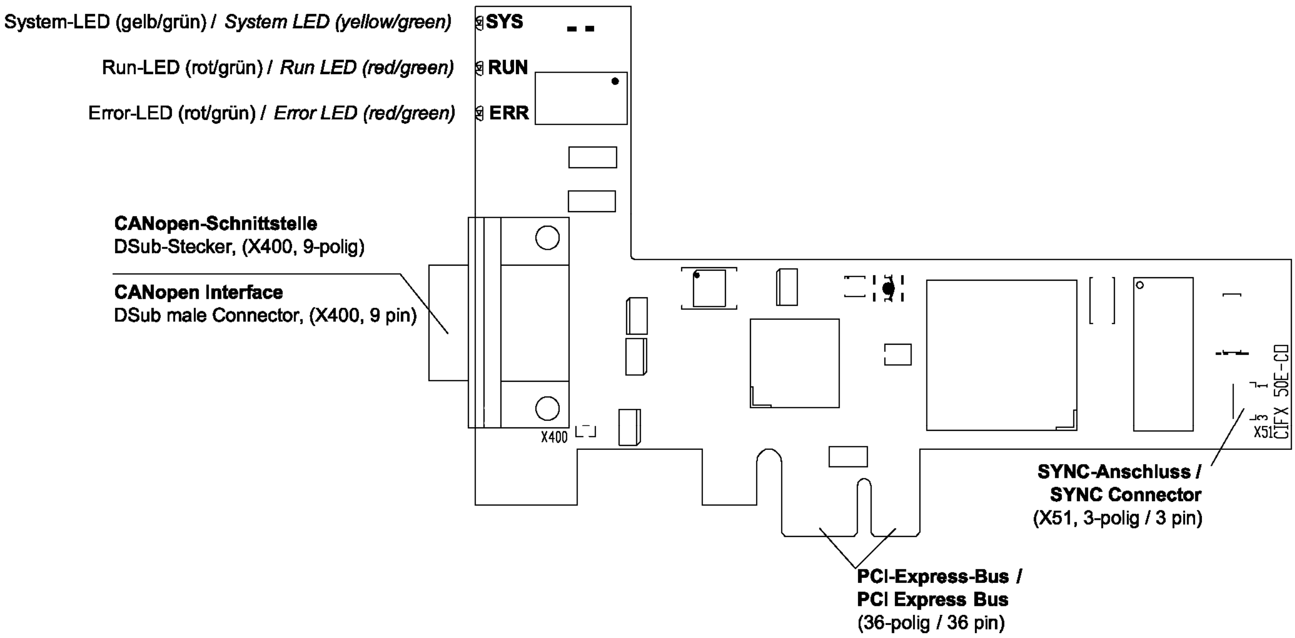

Figure 17: Device Drawing CIFX 50E-CO (up to hardware revision 1)

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4.10 Device Drawing CIFX 50E-DN

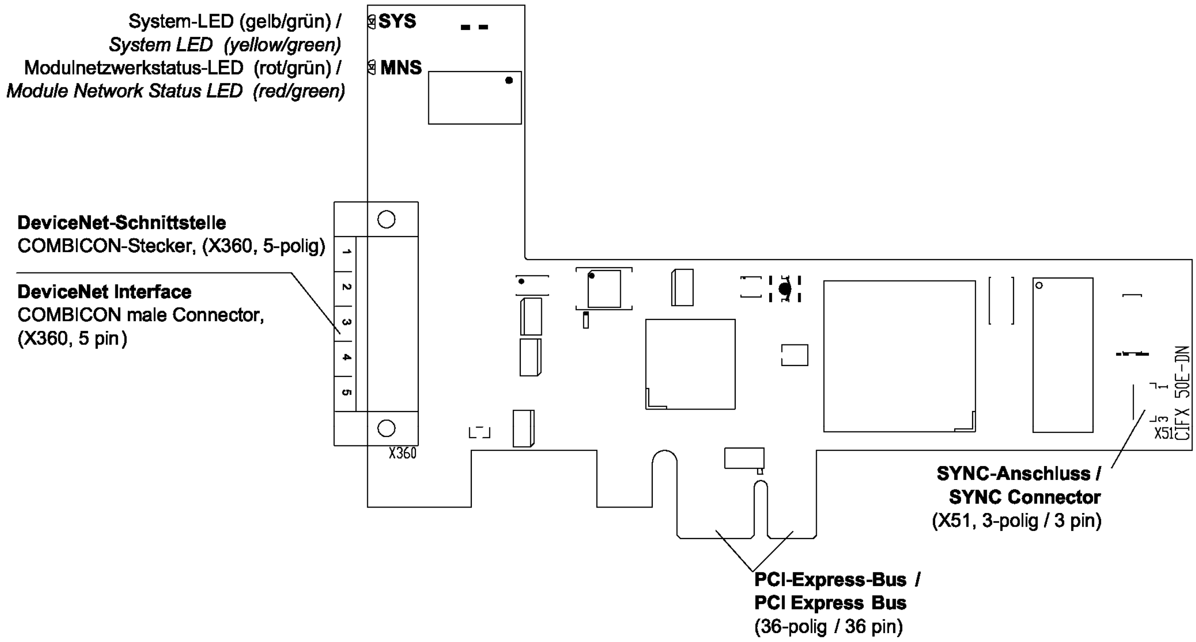

Figure 18: Device Drawing CIFX 50E-DN

4.11 Device Drawing CIFX 50E-2ASM

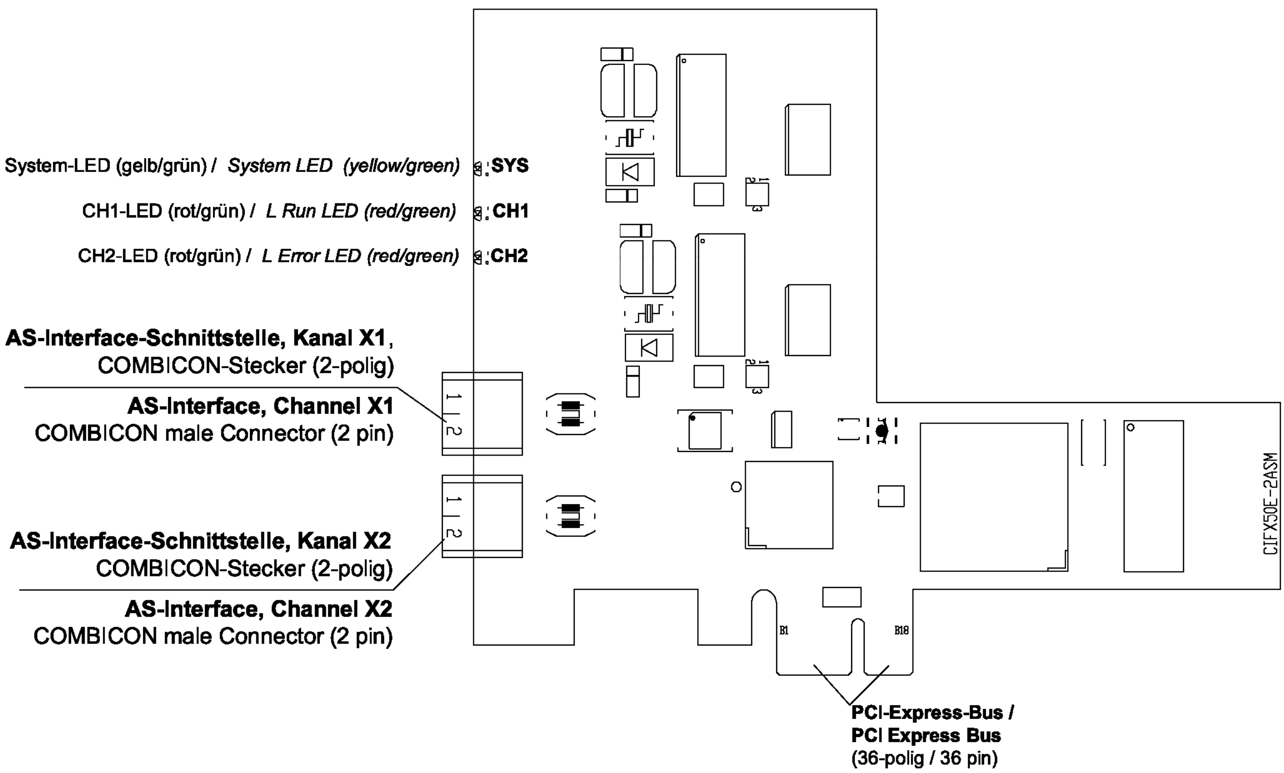

Figure 19: Device Drawing CIFX 50E-2ASM

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4.12 Device Drawing CIFX 50E-CP

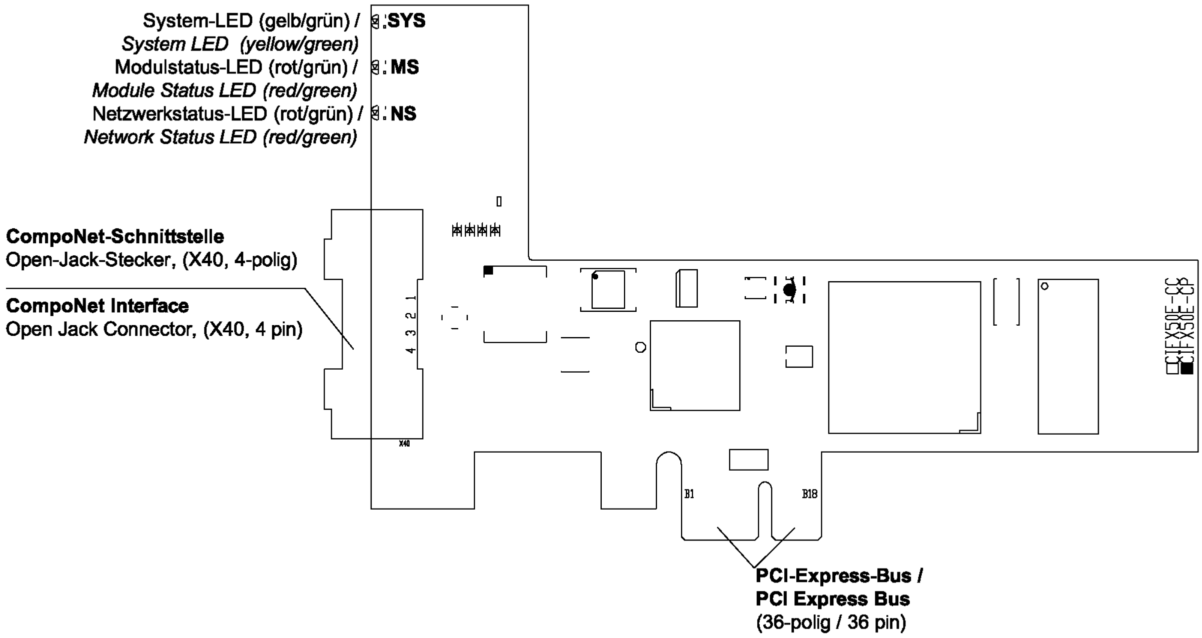

Figure 20: Device Drawing CIFX 50E-CP

4.13 Device Drawing CIFX 50E-CC

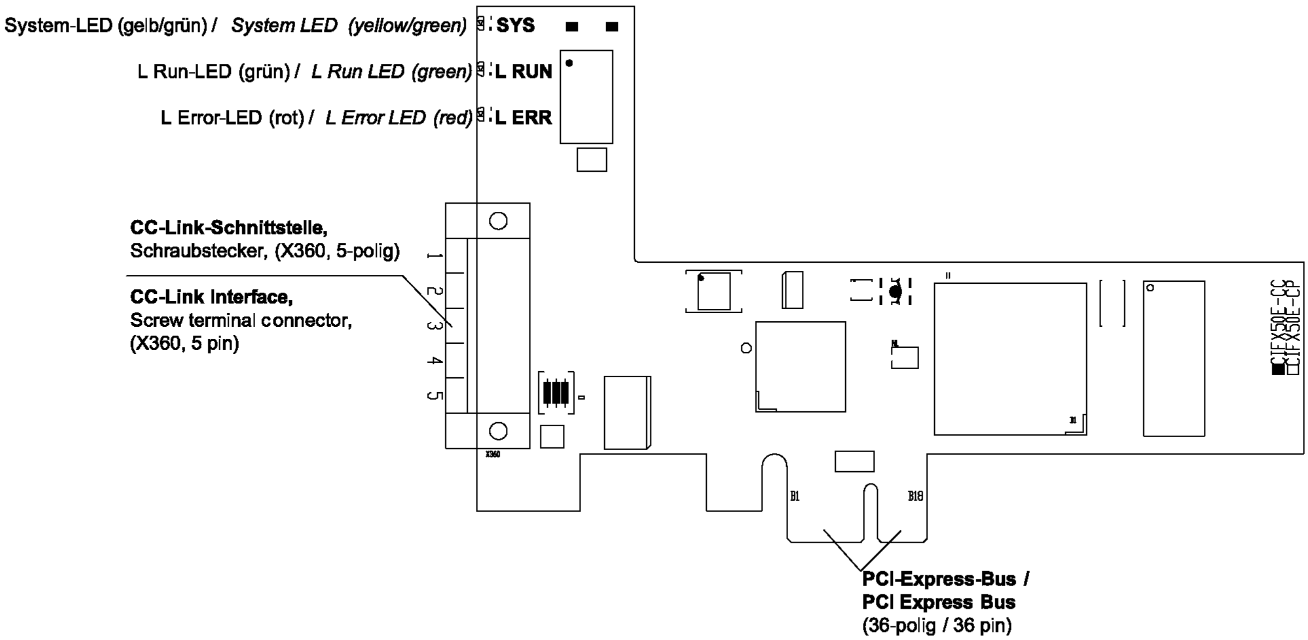

Figure 21: Device Drawing CIFX 50E-CC

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4.14 Device Drawing CIFX 80-DP

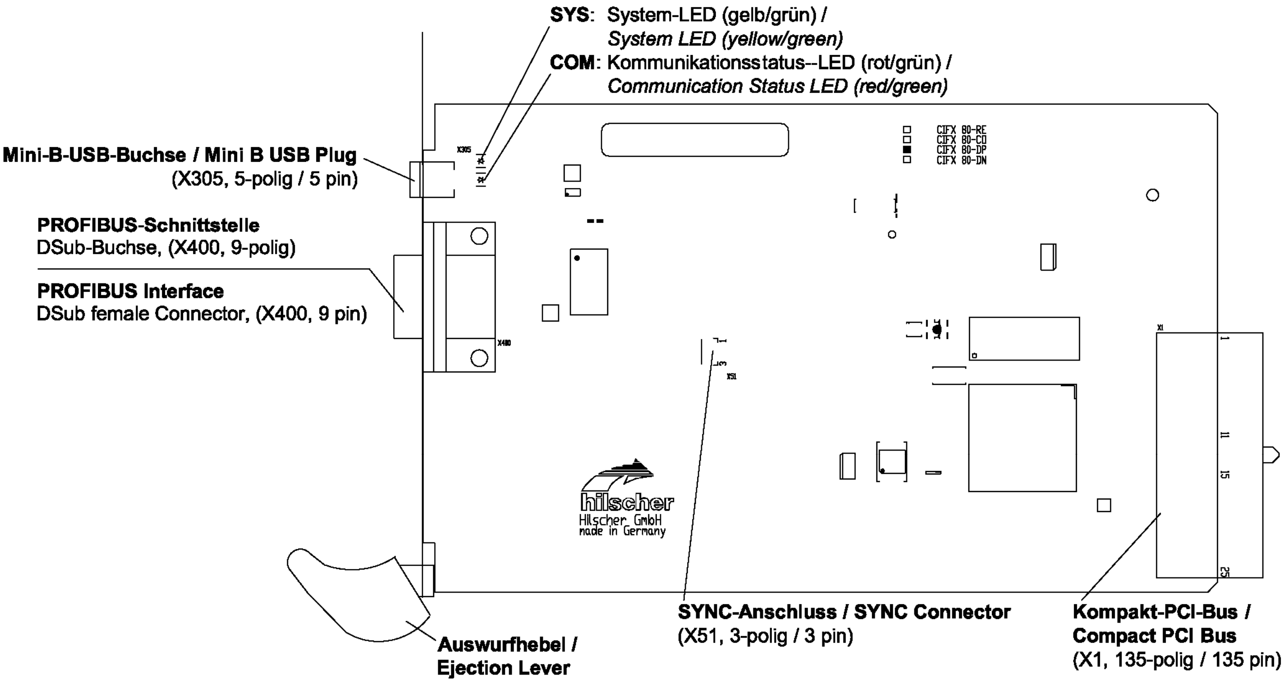

Figure 22: Device Drawing CIFX 80-DP

4.15 Device Drawing CIFX 80-CO

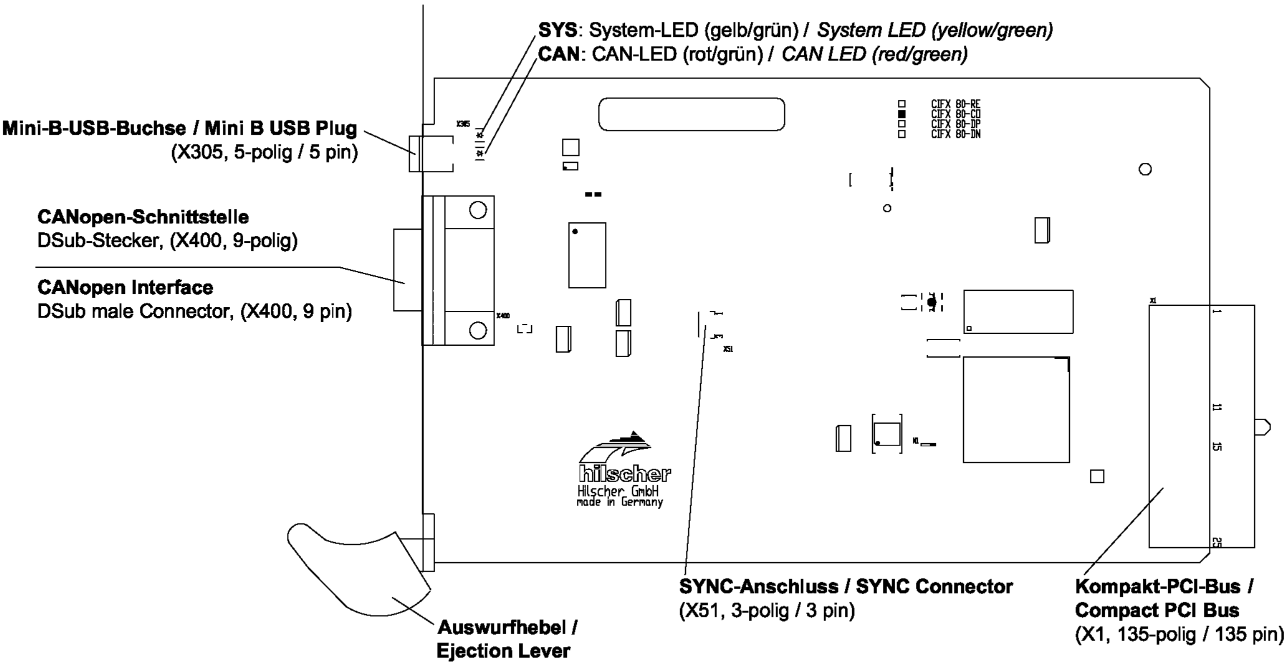

Figure 23: Device Drawing CIFX 80-CO

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4.16 Device Drawing CIFX 80-DN

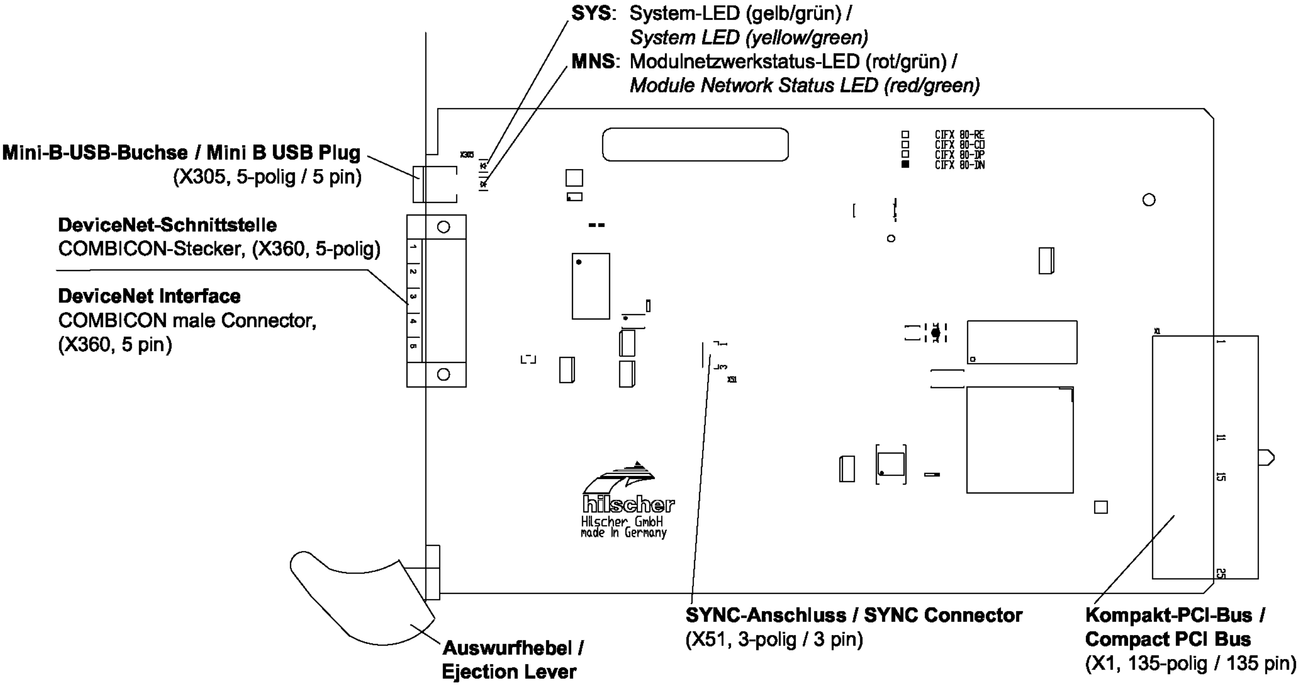

Figure 24: Device Drawing CIFX 80-DN

4.17 Device Drawing CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F

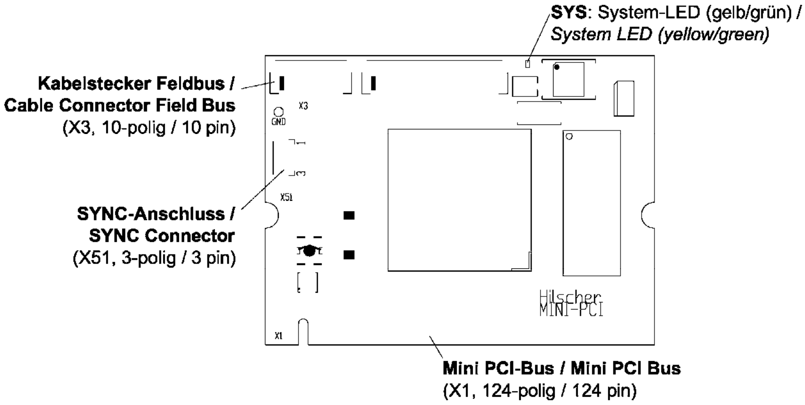

Figure 25: Device Drawing CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F

4.18 Device Drawing CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F

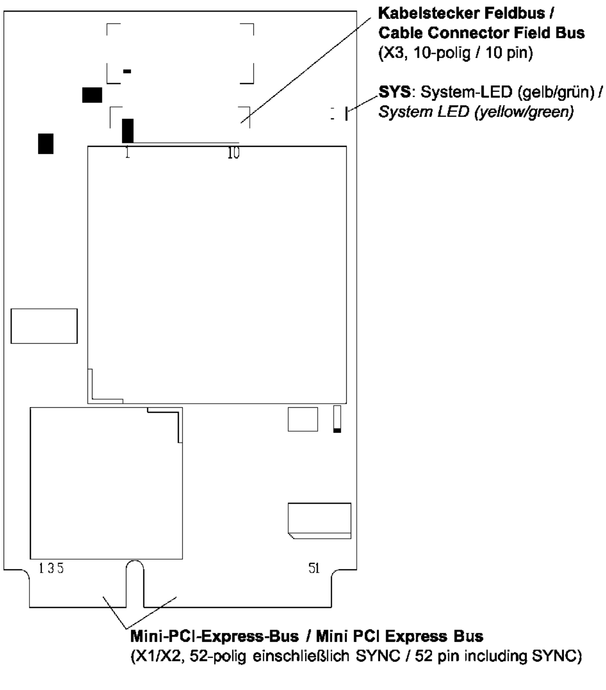

Figure 26: Device Drawing CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F

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4.19 Device Drawing CIFX 104C-DP

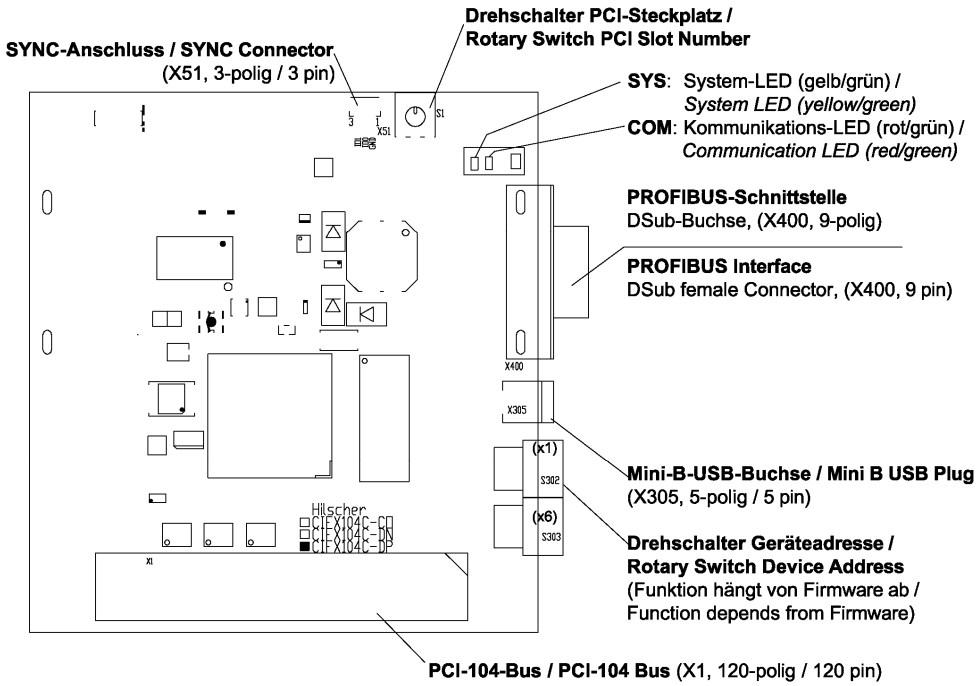

Figure 27: Device Drawing CIFX 104C-DP

4.20 Device Drawing CIFX 104C-DP-R

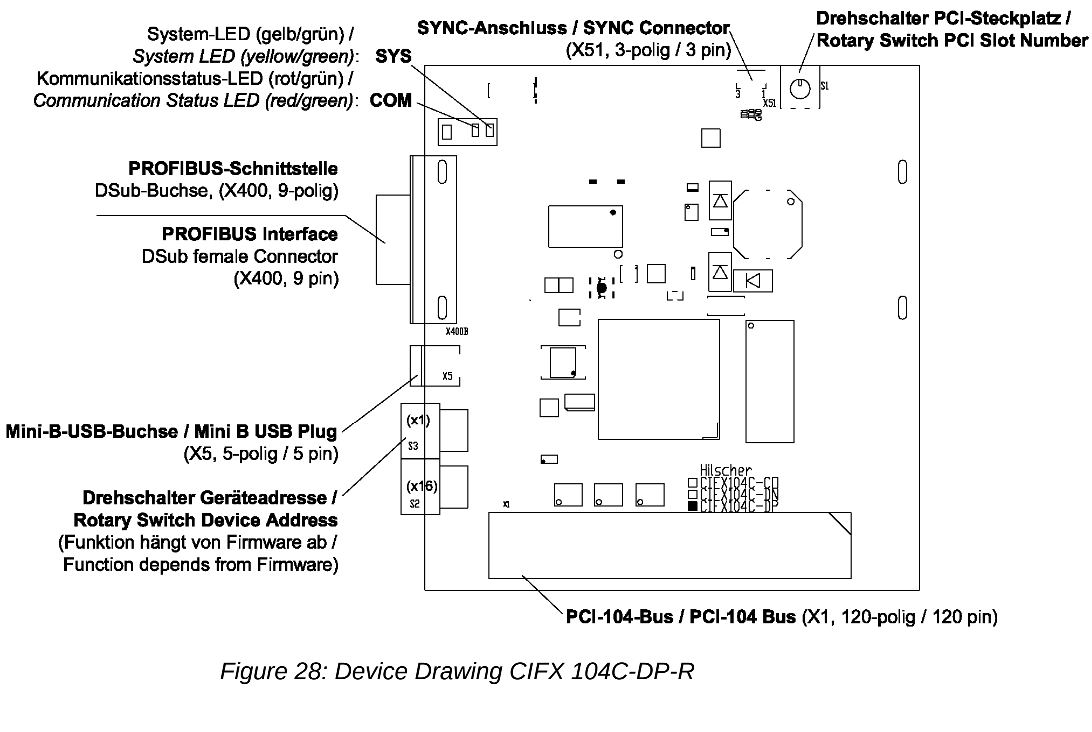

Figure 28: Device Drawing CIFX 104C-DP-R

4.21 Device Drawing CIFX 104C-CO

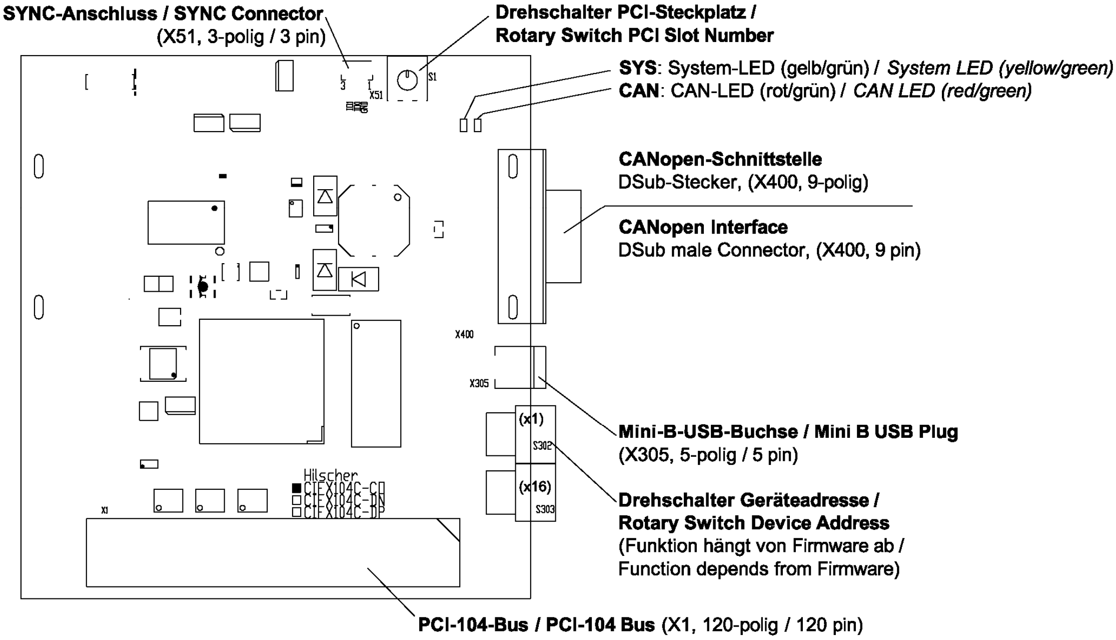

Figure 29: Device Drawing CIFX 104C-CO

4.22 Device Drawing CIFX 104C-CO-R

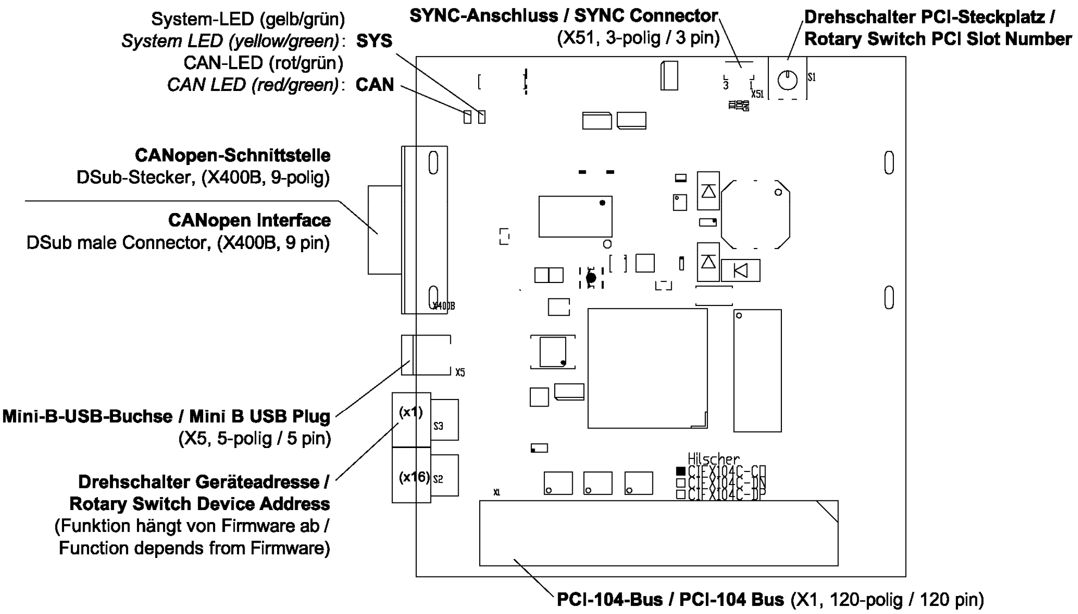

Figure 30: Device Drawing CIFX 104C-CO-R

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4.23 Device Drawing CIFX 104C-DN

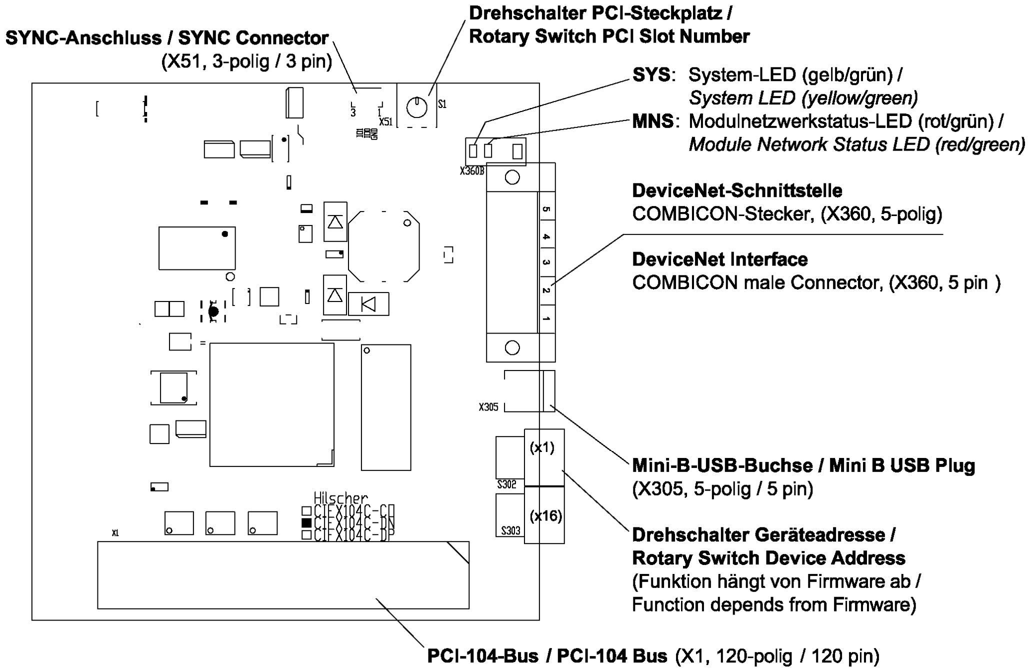

Figure 31: Device Drawing CIFX 104C-DN

4.24 Device Drawing CIFX 104C-DN-R

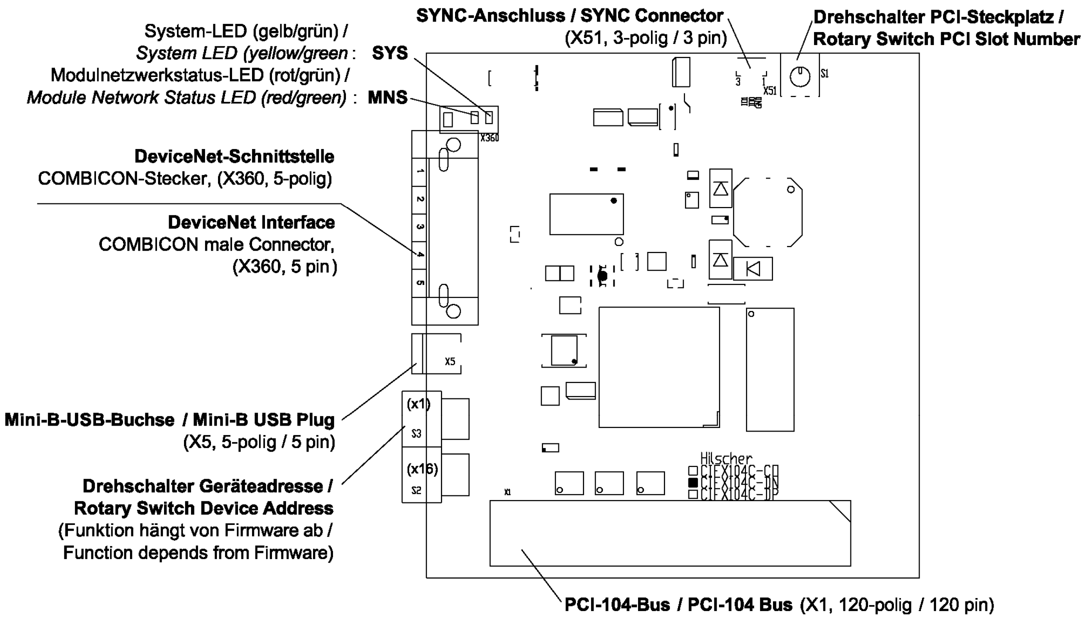

Figure 32: Device Drawing CIFX 104C-DN-R

4.25 Device Drawing CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F

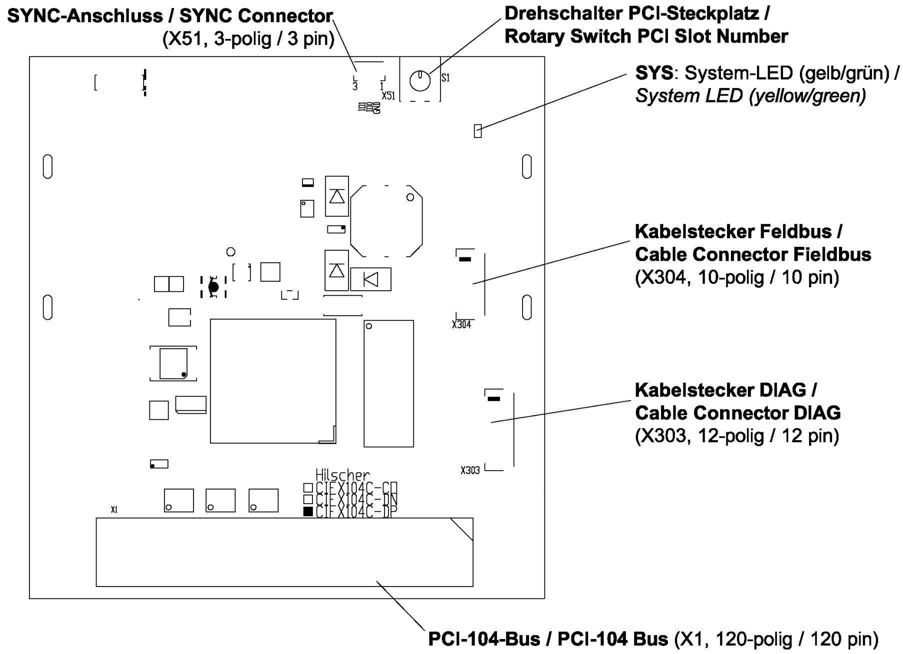

Figure 33: Device Drawing CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F

4.26 Device Drawing CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F

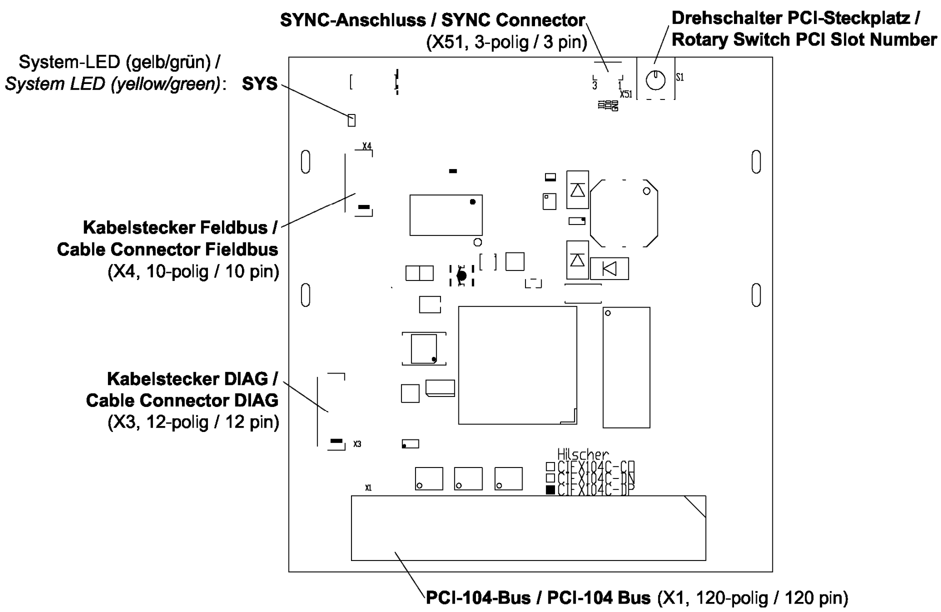

Figure 34: Device Drawing CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F

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4.27 Device Drawing CIFX 104-DP

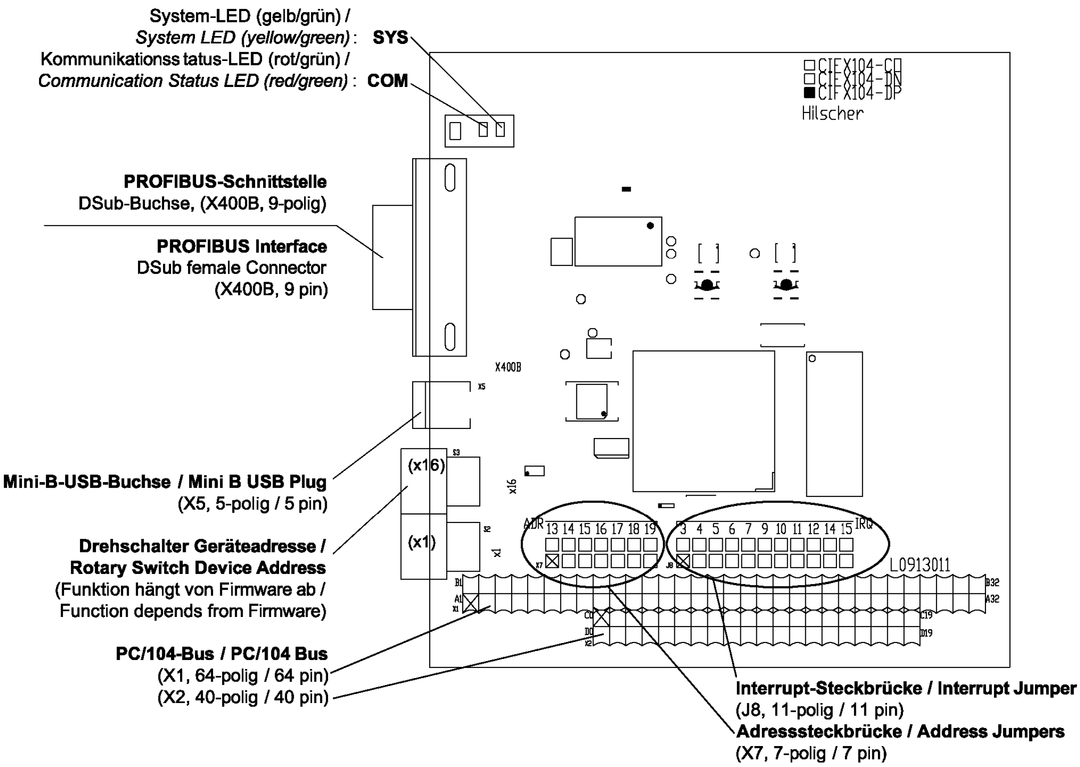

Figure 35: Device Drawing CIFX 104-DP

4.28 Device Drawing CIFX 104-DP-R

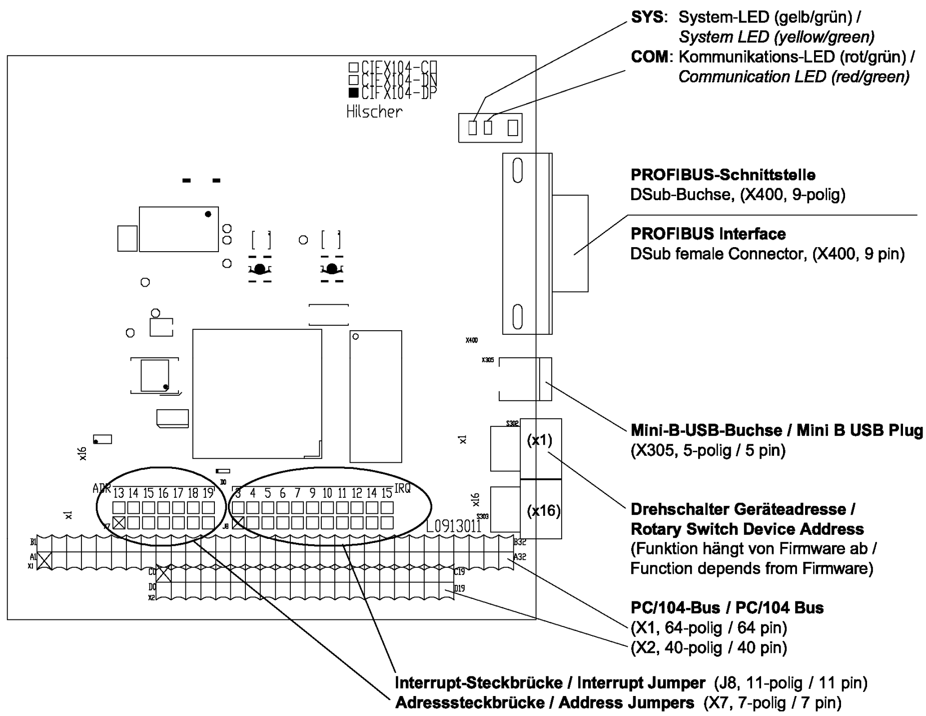

Figure 36: Device Drawing CIFX 104-DP-R

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4.29 Device Drawing CIFX 104-CO

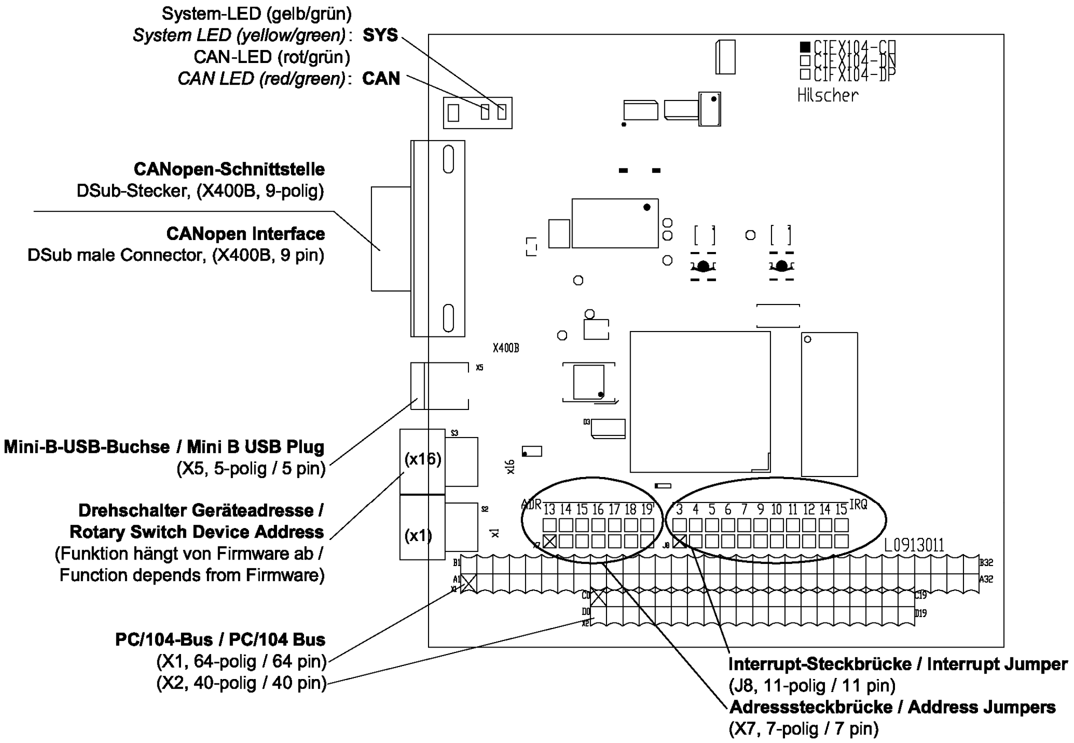

Figure 37: Device Drawing CIFX 104-CO

4.30 Device Drawing CIFX 104-CO-R

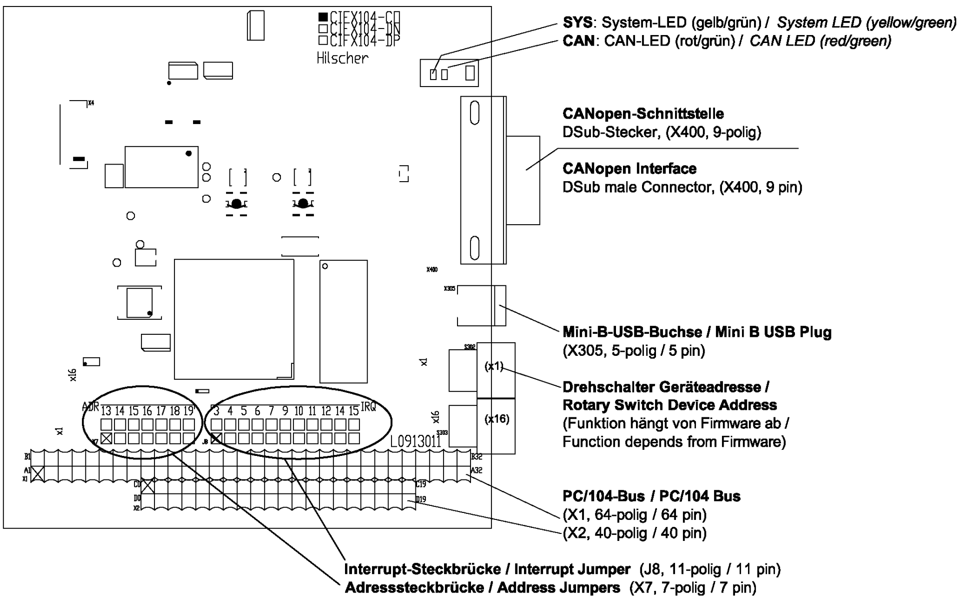

Figure 38: Device Drawing CIFX 104-CO-R

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4.31 Device Drawing CIFX 104-DN

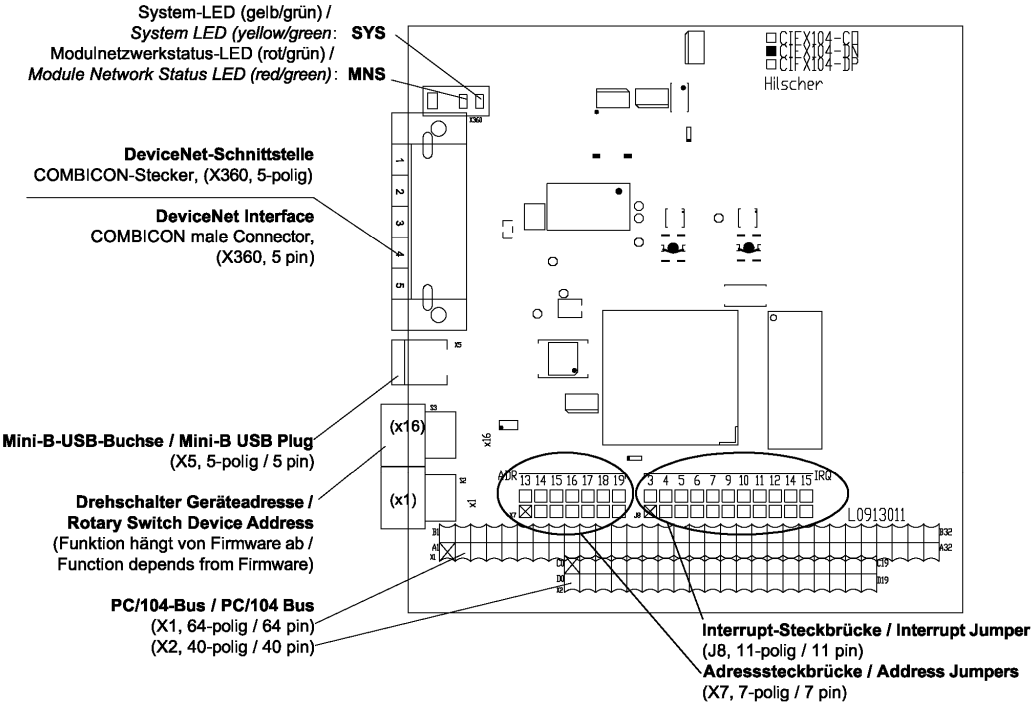

Figure 39: Device Drawing CIFX 104-DN

4.32 Device Drawing CIFX 104-DN-R

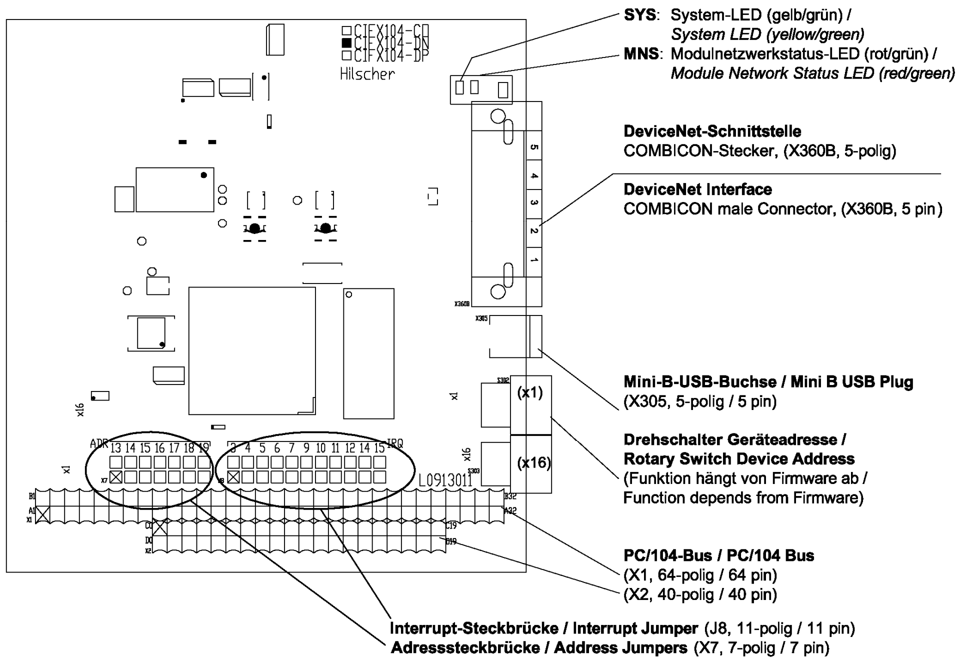

Figure 40: Device Drawing CIFX 104-DN-R

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4.33 Device Drawing CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F

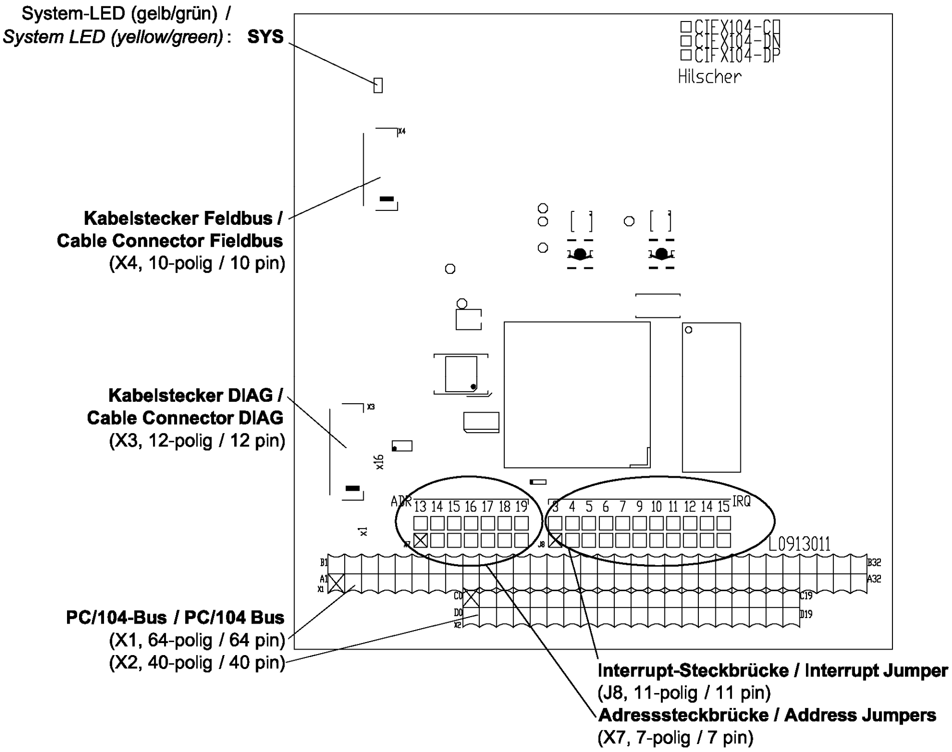

Figure 41: Device Drawing CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F

4.34 Device Drawing CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F

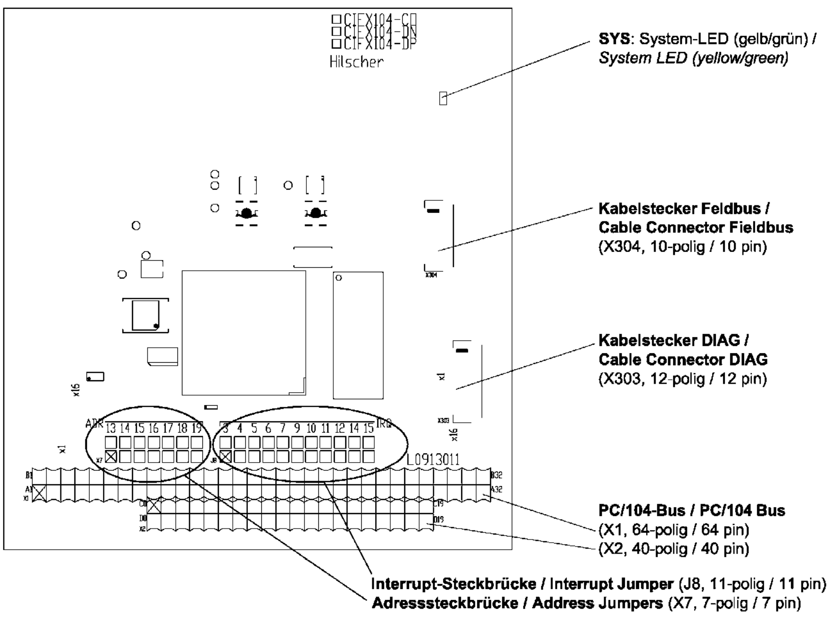

Figure 42: Device Drawing CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F

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4.35 Device Drawing Assembly interface AIFX-DP

Only for:
CIFX 90-DP, CIFX 90E-DP,
CIFX 104C-DP\F, CIFX 104C-DP-R\F,
CIFX 104-DP\F, CIFX 104-DP-R\F.

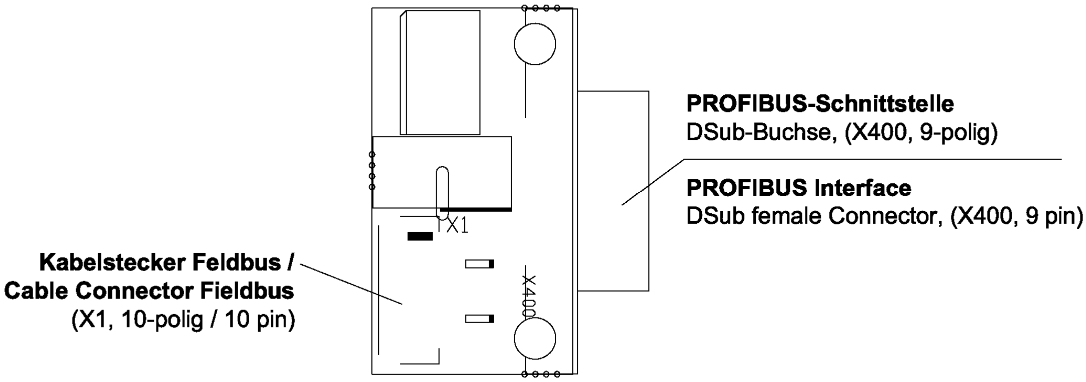

Figure 43: Device Drawing Assembly interface AIFX-DP

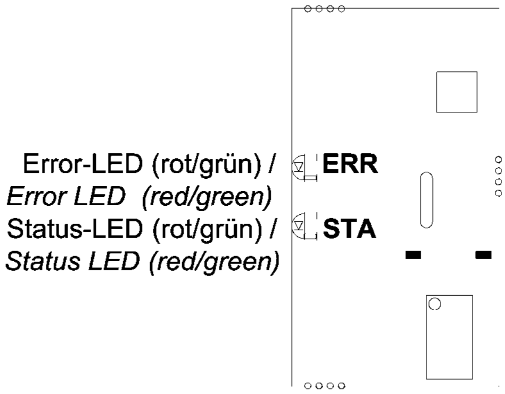

Figure 44: Device Drawing Assembly interface AIFX-DP (back side)

4.35.1 AIFX-DP Dimensioning

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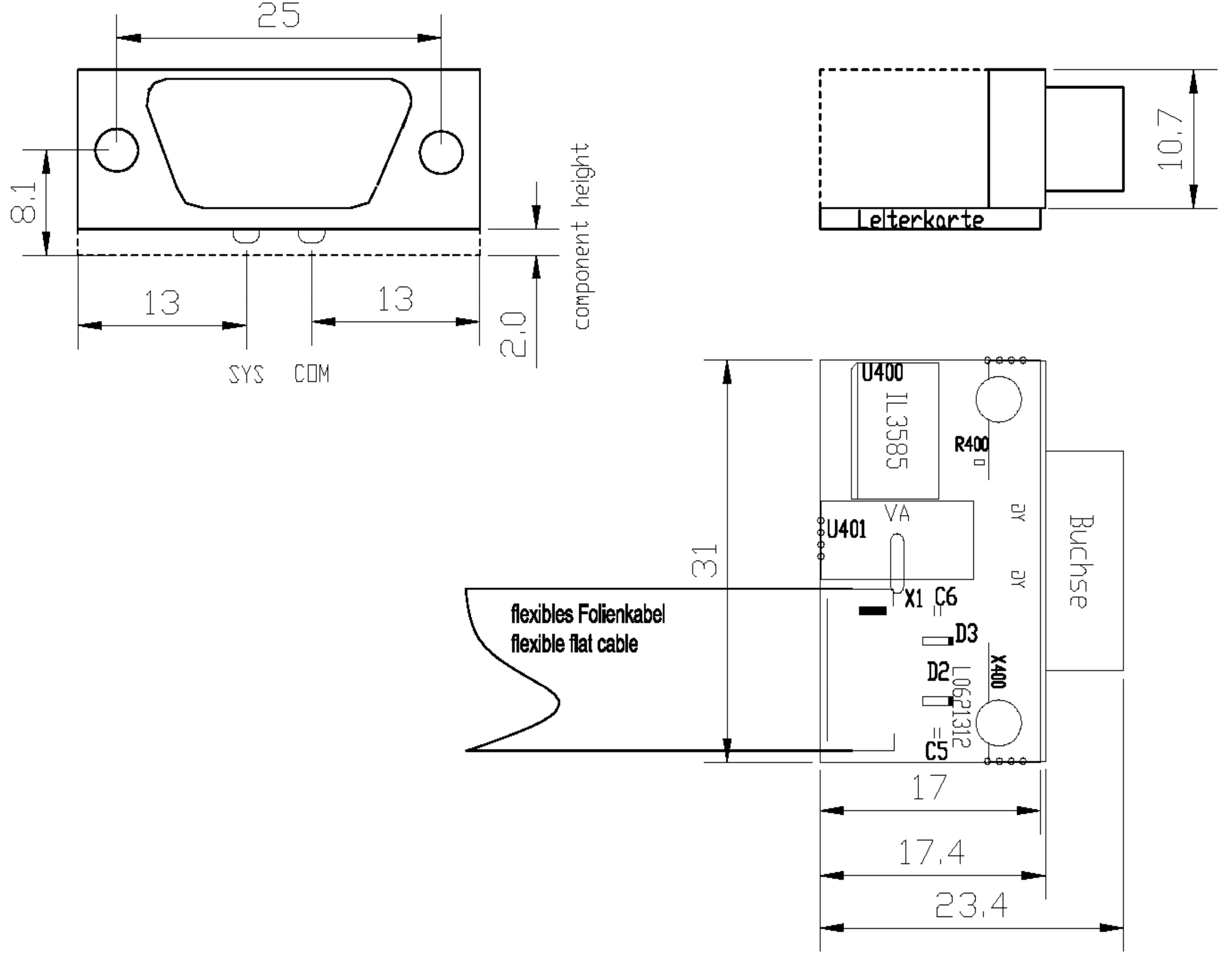

			Date	23.01.09	
			Edited	N. Racky	
			Checked	F. Wertich	
Rev.	Change	Date	Name		23.01.09

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AIFX-DP
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Bestückungsplan Fertigung
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4.36 Device Drawing Assembly interface AIFX-CO

Only for:
CIFX 90-CO, CIFX 90E-CO,
CIFX 104C-CO\F, CIFX 104C-CO-R\F,
CIFX 104-CO\F, CIFX 104-CO-R\F.

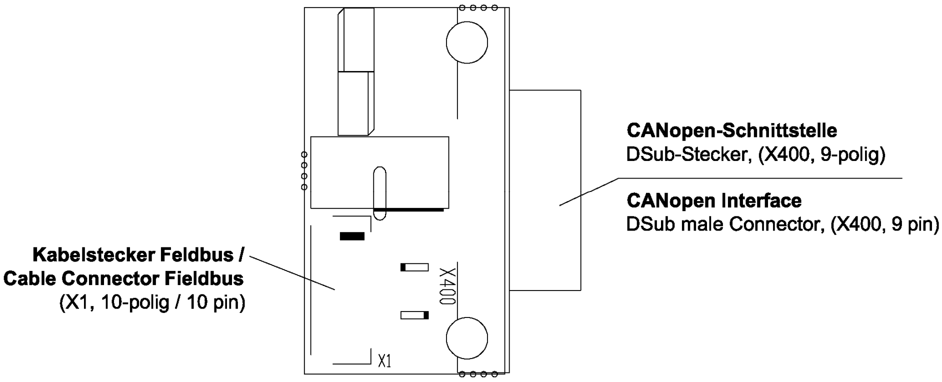

Figure 45: Device Drawing Assembly interface AIFX-CO

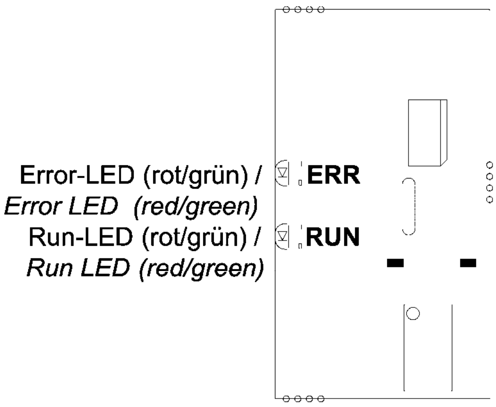

Figure 46: Device Drawing Assembly interface AIFX-CO (back side)

4.36.1 AIFX-CO Dimensioning

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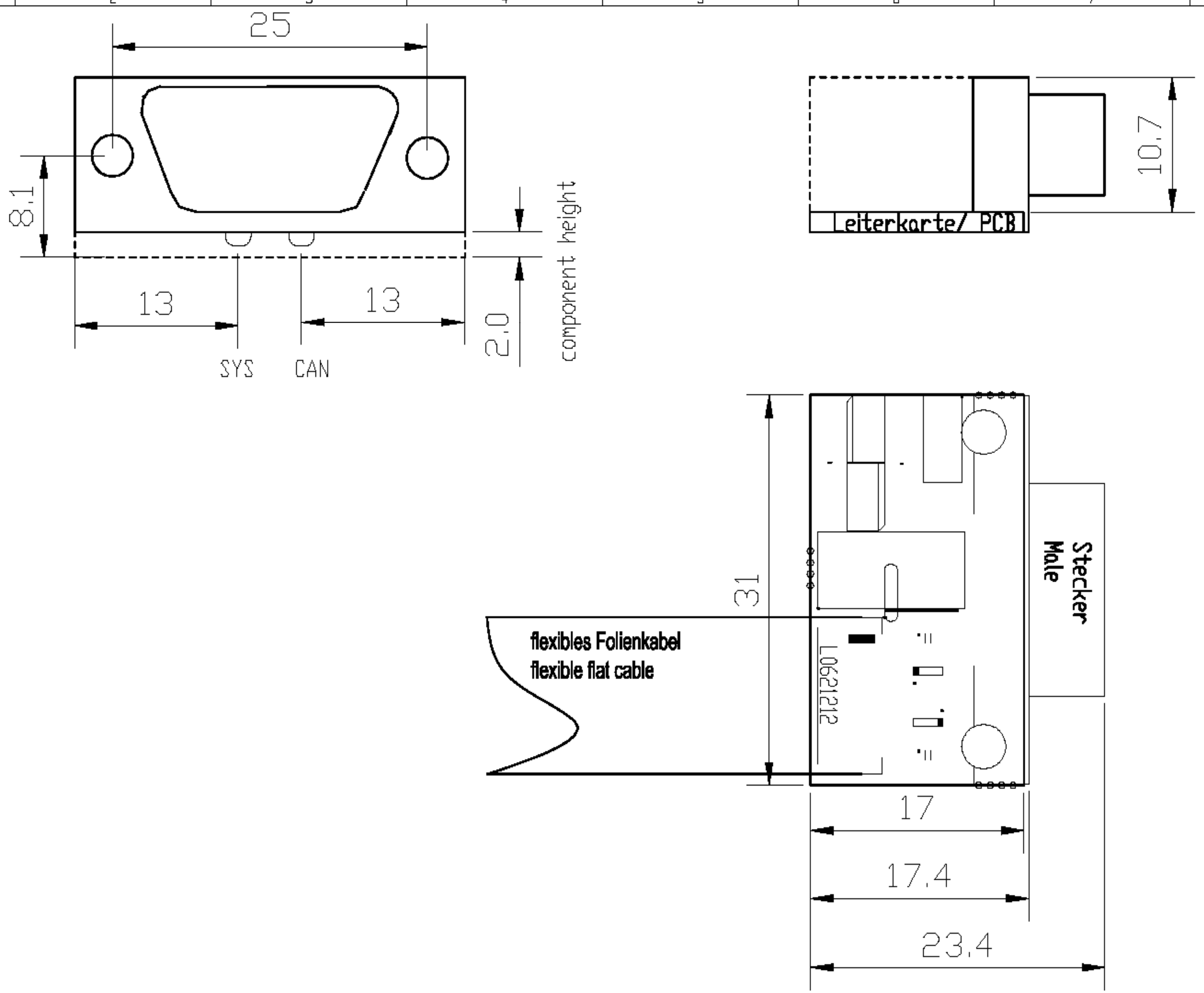

			Date	23.01.09	
			Edited	N. Racky	
Rev. Change	Date	Name	Checked	F. Wertich 23.01.09	

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4.37 Device Drawing Assembly interface AIFX-DN

Only for i:
CIFX 90-DN, CIFX 90E-DN,
CIFX 104C-DN\F, CIFX 104C-DN-R\F,
CIFX 104-DN\F, CIFX 104-DN-R\F.

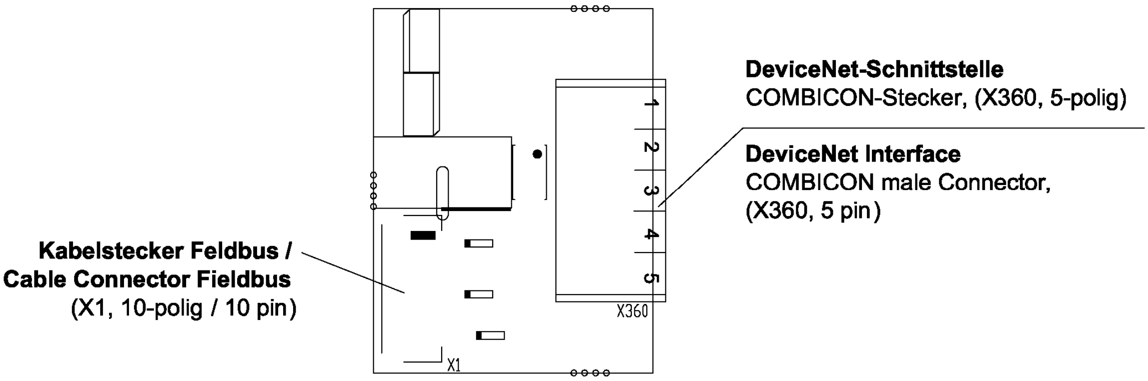


Figure 47: Device Drawing Assembly interface AIFX-DN

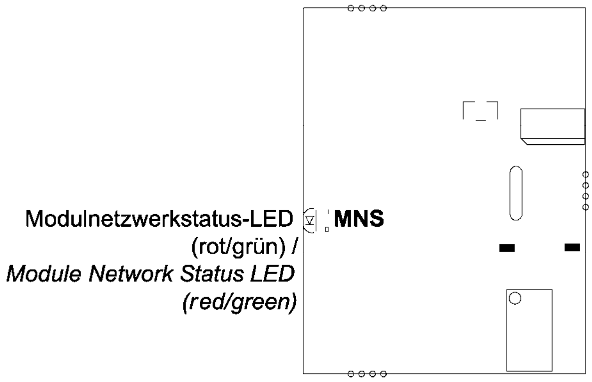


Figure 48: Device Drawing Assembly interface AIFX-DN (back side)

4.37.1 AIFX-DN Dimensioning

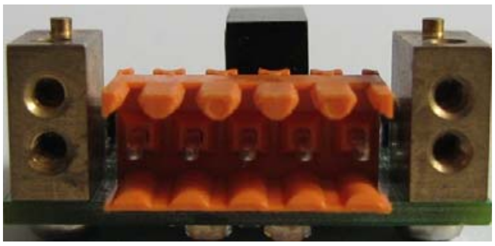
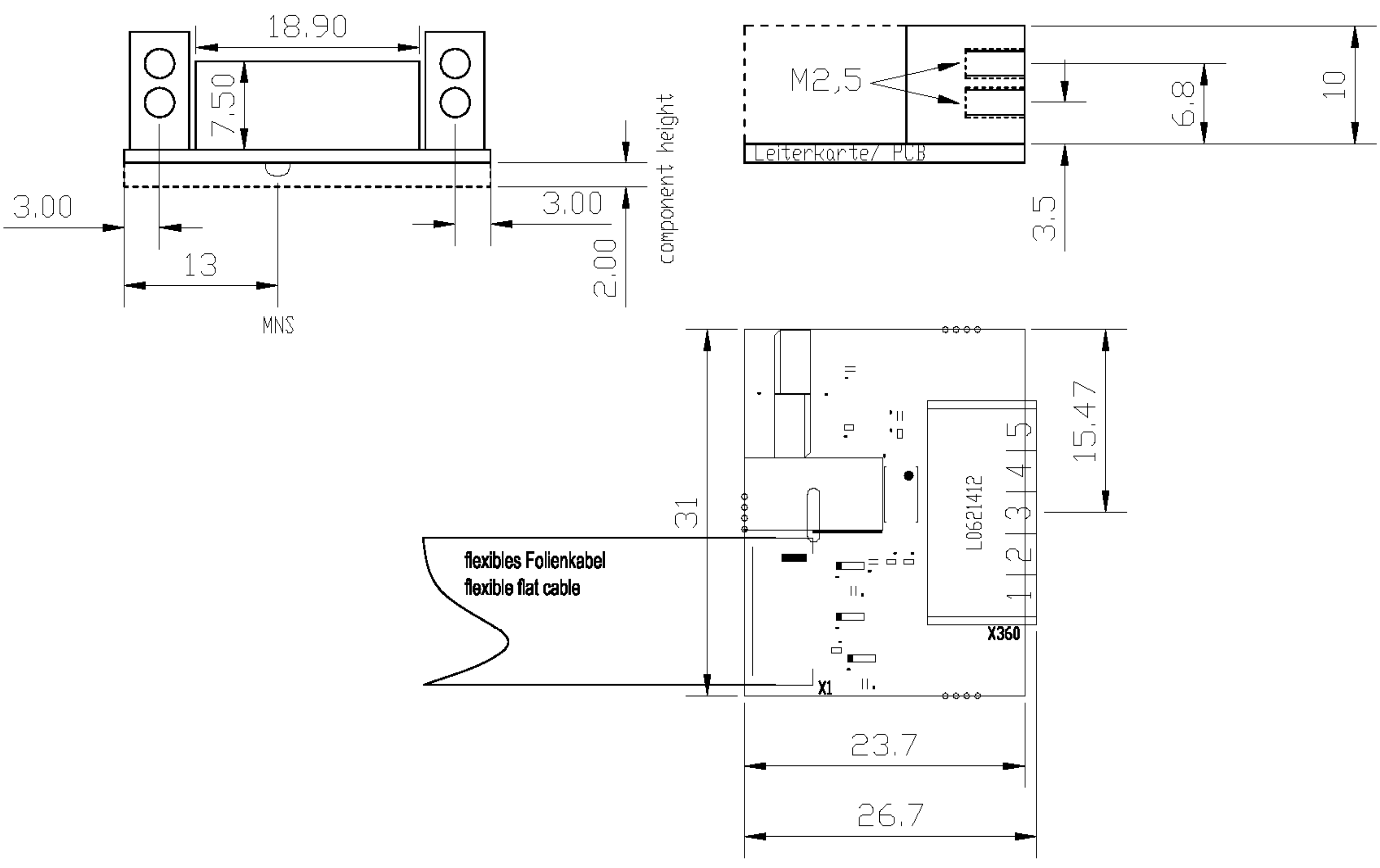


Figure 49: AIFX-DN (Front side)



Rev.	Change	Date	Name		
				Date	24.02.09
				Edited	N. Racky
				Checked	F. Wertich 26.01.09

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4.38 Device Drawing Diagnosis Interface AIFX-DIAG

Only for:
CIFX 104C-DP\F, CIFX 104C-DP-R\F,
CIFX 104-DP\F, CIFX 104-DP-R\F,
CIFX 104C-CO\F, CIFX 104C-CO-R\F,
CIFX 104-CO\F, CIFX 104-CO-R\F,
CIFX 104C-DN\F, CIFX 104C-DN-R\F,
CIFX 104-DN\F, CIFX 104-DN-R\F

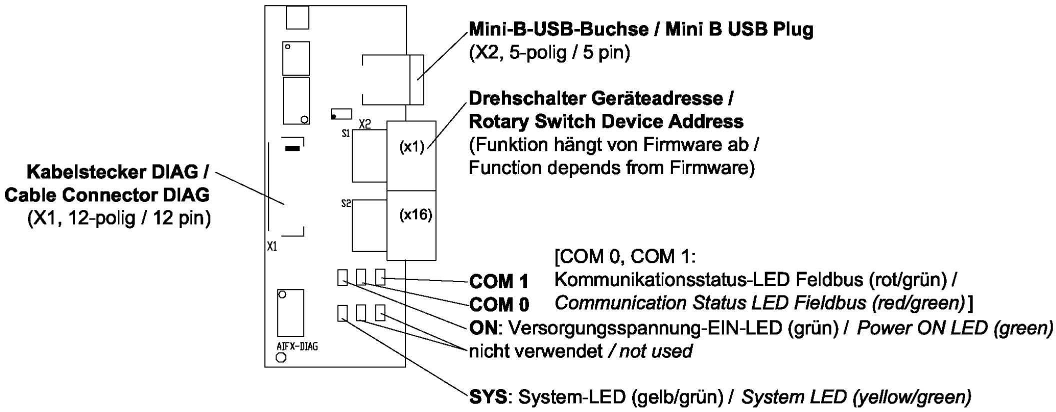

Figure 50: Device Drawing Diagnosis Interface AIFX-DIAG Fieldbus

The meaning of the LEDs COM0 and COM1 corresponds to the description in chapter *LEDs* beginning from page 249.

4.38.1 AIFX-DIAG Dimensioning

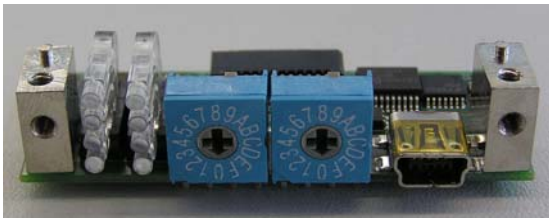

Figure 51: AIFX-DIAG (Front side)

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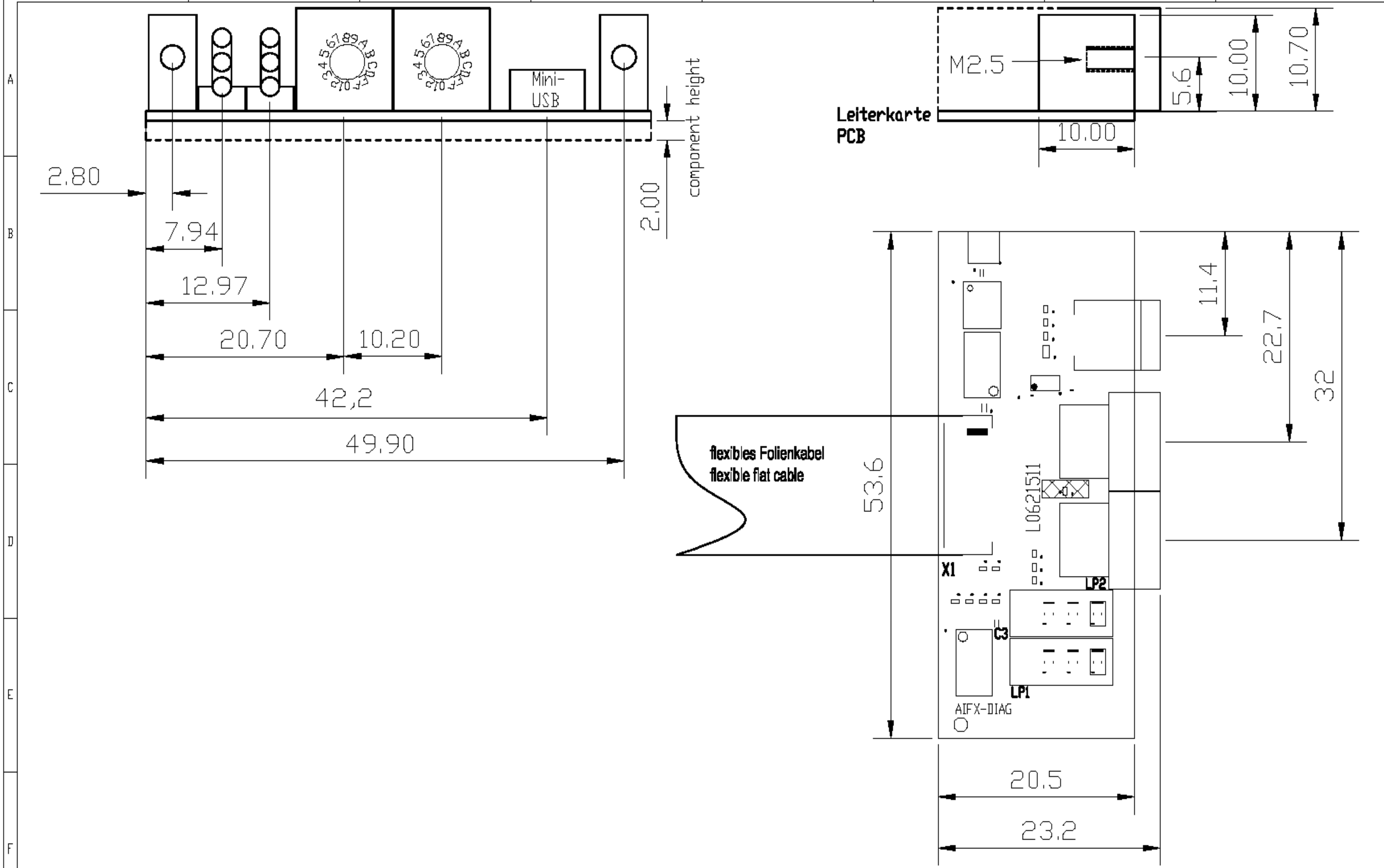

			Date	24.02.09
			Edited	N. Racky
			Checked	F. Wertich
Rev.	Change	Date	Name	26.01.09

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4.39 PROFIBUS Interface

Isolated RS-485 interface:

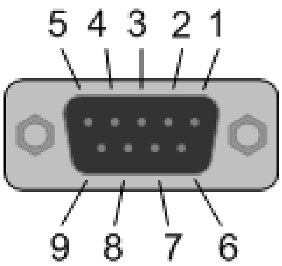

Figure 52: PROFIBUS Interface (DSub female connector, 9 pin), X400

Connection with DSub female connector	Signal	Meaning
3	RxD/TxD-P	Receive/Send Data-P respectively connection B plug
5	DGND	Reference potential
6	VP	Positive supply voltage
8	RxD/TxD-N	Receive/Send Data-N respectively connection A plug

Table 32: PROFIBUS Interface, X400

Please ensure that termination resistors are available at both ends of the cable. If special PROFIBUS connectors are being used, these resistors are often found inside the connector and must be switched on. For baud rates above 1.5 MBaud use only special connectors, which also include additional inductance.

It is not permitted to have Tstubs on PROFIBUS high baud rates. Use only a special cable which is approved for PROFIBUS-DP. Make a solid connection from the cable shield to ground at every device and make sure that there is no potential difference between the grounds at the devices.

If the cifX card is linked with only one other device on the bus, they must be at the ends of the bus line. The reason is that these devices must deliver the supply voltage for the termination resistors. Otherwise the Master can be connected at any desired position.

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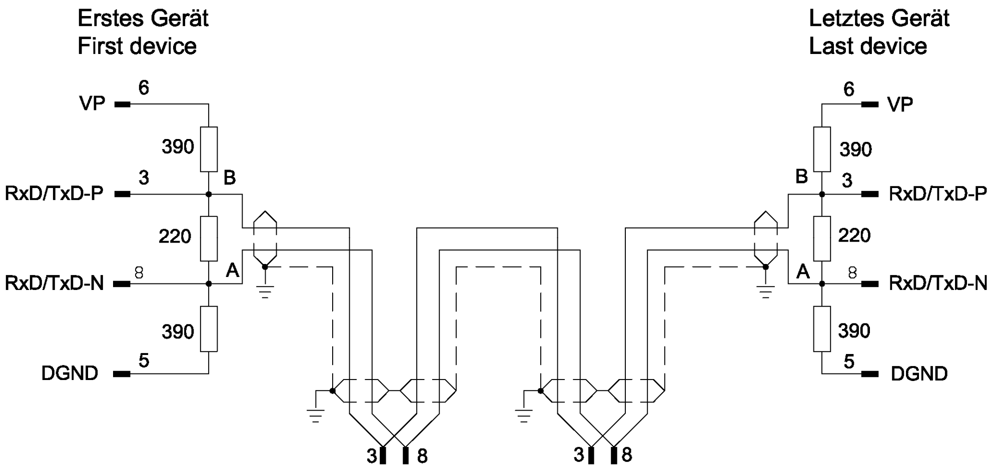

Figure 53: PROFIBUS Network

Up to 32 PROFIBUS devices can be connected to one bus segment. If several bus segments are linked to each other with repeaters, there can be up to 127 devices on the network.

The maximum length of a bus segment depends on the baud rate used. Only PROFIBUS certified cable, preferably the cable type A, should be used.

Baud rate in kBit/s	Max. distance
9,6	1.200 m
19,2	1.200 m
93,75	1.200 m
187,5	1.000 m
500	400 m
1.500	200 m
3.000	100 m
6.000	100 m
12.000	100 m

Table 33: PROFIBUS Segment Length in dependence of the Baud rate

Parameter	Value
Impendence	135…165 Ohm
Capacity	< 30 pF/m
Loop resistance	110 Ohm/km
Wire gauge	0,64 mm

Table 34: Characteristics of PROFIBUS certified Cable

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4.40 CANopen Interface

Isolated ISO 11898 interface:

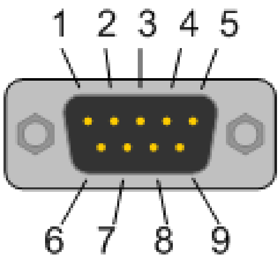

Figure 54: CANopen Interface (DSub male connector, 9 pin), X400

Connection with DSub male connector	Signal	Description
2	CAN_L	CAN_Low Bus Line
3	CAN_GND	CAN Ground
7	CAN_H	CAN High Bus Line

Table 35: CANopen Interface, X400

Please use only CAN certified cable with the following characteristics:

Parameter	Value
Impedance	108…132 Ohm
Capacity	< 50 pF/m

Table 36: Characteristics of CAN certified Cable

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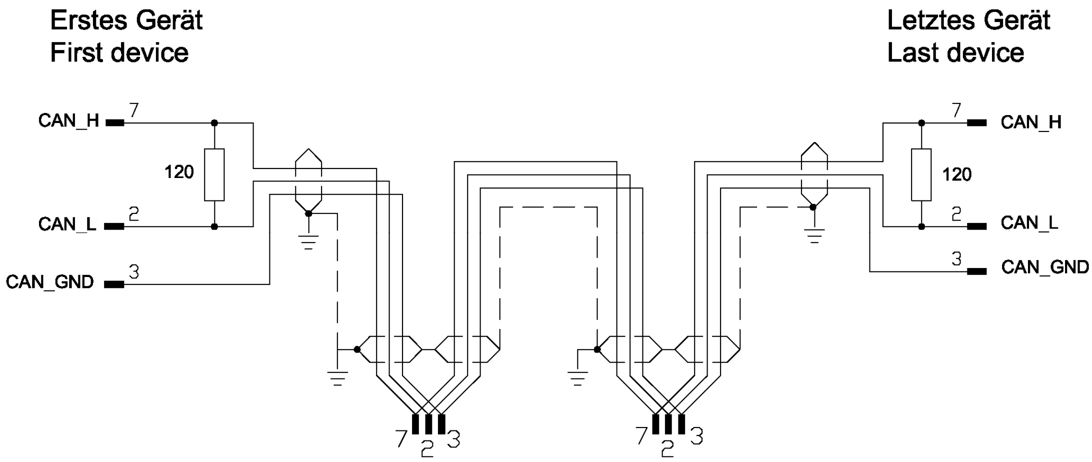

Figure 55: CAN Network

At the ends of the network there must be two resistors of 120 Ohm to terminate the cable.

It is allowed to use repeaters to increase the number of nodes, which may be connected, or to increase the maximum cable length.

Baud rate in kbits/s	Max. distance	Loop Resistance	Wire Gauge
10	1.000	26 Ohm/km	0,75...0,80 mm2
20	1.000	26 Ohm/km	0,75...0,80 mm2
50	1.000	26 Ohm/km	0,75...0,80 mm2
125	500	40 Ohm/km	0,50...0,60 mm2
250	250	40 Ohm/km	0,50...0,60 mm2
500	100	60 Ohm/km	0,34...0,60 mm2
800	50	60 Ohm/km	0,34...0,60 mm2
1.000	40	70 Ohm/km	0,25...0,34 mm2

Table 37: CAN Segment Length in dependence of the Baud rate or corresponding Loop Resistance and Wire Gauge

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4.41 DeviceNet Interface

Isolated ISO 11898 interface:

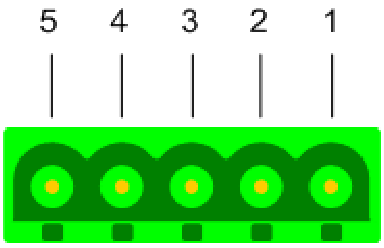

Figure 56: DeviceNet Interface (CombiCon male Connector, 5 pin), X360

Connection with CombiCon male connector	Signal	Color	Description
1	V-	Black	Reference potential DeviceNet supply voltage
2	CAN_L	Blue	CAN Low-Signal
3	Drain		Shield
4	CAN_H	White	CAN High-Signal
5	V+	Red	+24 V DeviceNet supply voltage

Table 38: DeviceNet Interface, X360

Please ensure that termination resistors with 120 Ohm are available at both ends of the cable.

Further devices can be connected via Tstubs to the bus cable. The maximum length of all Tstubs is 6 m. The whole length of the bus cable and all Tstubs does not exceed the maximum length listed in the following table. There are two different types of cables. If both cables types are used within the same network, the maximum length is:

Max. distance	Baud rate in kbits/s
Lthick + 5 x Lthin <= 500 m	at 125 kBaud
Lthick + 2,5 x Lthin <= 250 m	at 250 kBaud
Lthick + Lthin <= 100 m	at 500 kBaud

Table 39: DeviceNet Segment Length in dependence of the Baud rate

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4.42 AS-Interface Interface

The AS-Interface Master conforms to Complete Specification 2.11 (Annex B, Version 2.0) the profile M3 (Full Extended Master).

AS-Interface interface according IEC 364-4-41.

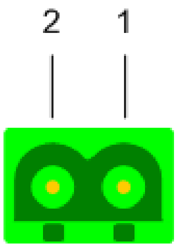

Figure 57: AS-Interface Interface (CombiCon male Connector, 2 pin)

Connection with CombiCon male connector	Signal	Description
1	AS-i +	AS-Interface positive voltage
2	AS-i -	AS-Interface negative voltage

Table 40: AS-Interface Interface

Every cable can be used, shielded or non-shielded which meets the following characteristics (at f = 167 kHz):

Parameter	Value
Resistance	< 90 mOhm/m
Capacity	< 80 pF/m
Impedance	70 ... 140 Ohm
Inductance	400 ... 1300 nH/m
Recommended cable cross section	2 x 1,5 mm²

Table 41: Properties Cable

Also possible: AS-Interface standard cable according to IEC 60352-6.

The total length of the AS-Interface line shall not exceed 100 meters. This length shall be calculated inclusive the sum of all trunk lines. Termination resistors are not needed.

The total length can be increased by repeaters.

The AS-Interface topology is a tree structure. Per channel up to 31 AS-Interfaces Slaves with any profile within the lower address range can be connected. By use of Slaves with the profile x.A.y an address doubling can be achieved. The maximally possible number of 62 Slaves per channel is reached exclusively by the use of Slaves with profile x.A.y.

The recommended voltage is in range of 29.6 V to 31.6 V. The voltage drop along the AS-Interface line between power supply and any point of the network shall not exceed 3 V.

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Note: It is strongly recommended to use a specific AS-Interface power supply in order to provide the necessary decoupling of data signals and DC power within the system.

The AS-Interface power supply can be connected at any point of the network. There shall be no connection to ground in the network apart from the port ground at the power supply.

Each channel needs its own power supply. These may not be connected with each other.

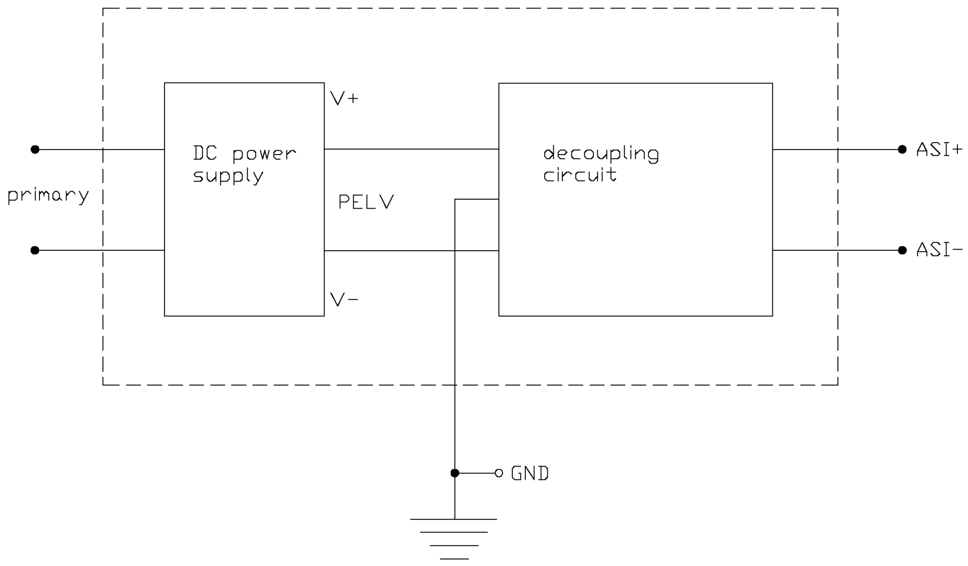

Figure 58: AS-Interface Interface Power Supply

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4.43 CompoNet Interface

4.43.1 Drawing of the CompoNet Interface

The following drawing shows the CompoNet interface:

Open Jack connector, 4-pin [1]

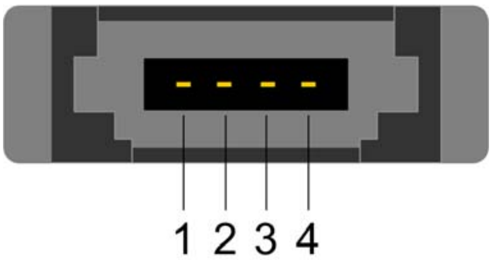

Figure 59: CompoNet Interface (Open Jack Connector, 4-pin)

Connection with Open Jack connector (pin)	Signal	Color	Description Terminal
1	BS+	Red	CompoNet positive voltage
2	BDH	White	CompoNet-High Bus Line
3	BDL	Blue	CompoNet-Low Bus Line
4	BS-	Black	CompoNet negative voltage

Table 42: CompoNet Interface

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4.43.2 Description of the CompoNet-Interface

The CompoNet-Interface has been designed as interface according to the CompoNet specification *The CIP Networks Library Volume 6: CompoNet Adaptation of CIP, Chapter 8: Physical Layer*.

Up to 32 CompoNet devices can be connected to one bus segment. If several bus segments are linked to each other with repeaters, there can be up to 384 devices on the network.

At the highest CompoNet baud rate of 4.000 kBit/s no branch lines at all are allowed in the network topology.

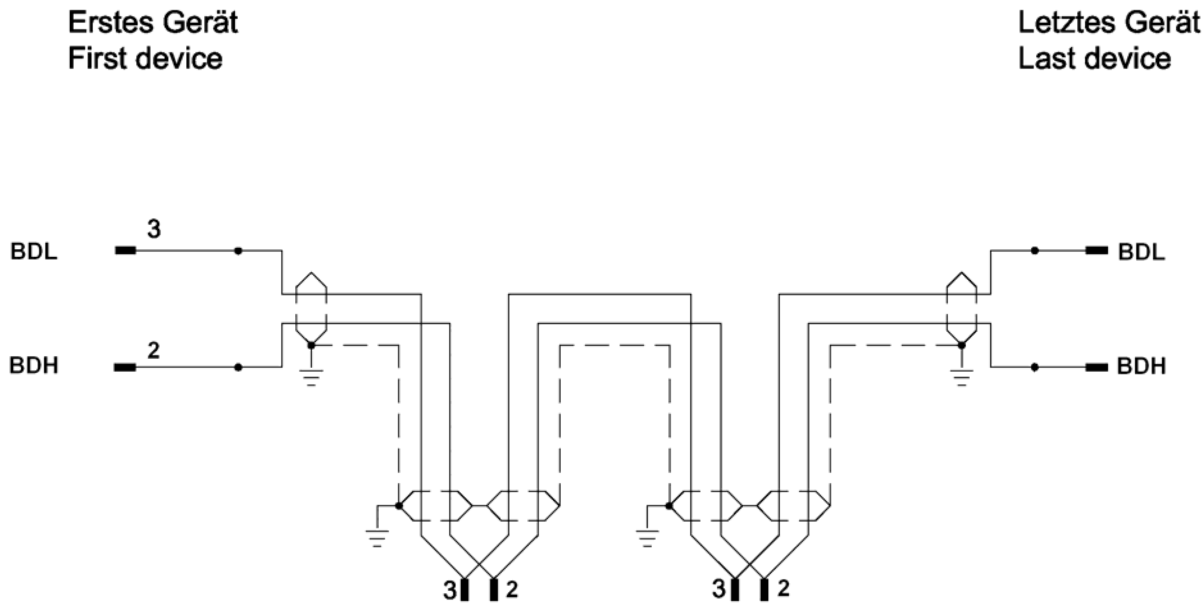

Figure 60: CompoNet Network

The maximum allowed lengths of trunk and branch lines depend from the used baud rate according to the following table:

Baudrate in kBit/s	Max. length of trunk line *without branch lines(	Max. length of a single branch line	Max. length of all branch lines altogether
93,75	500 m	6 m	120 m
1.500	100 m (30 m)	2,5 m	25 m
3.000	30 m	0,5 m	8 m
4.000	30m	0 m	0 m

Table 43: CompoNet maximum allowed Lengths of Trunk- and Branch Lines depending on the used Baud Rate

Note: At 1.500 kBit/s have the following in mind:

If no branch lines are used, the trunk line may be 100 m long. If there are any branch lines, then the length of the trunk line is limited to 30 m.

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Only use special cable which is approved for CompoNet.

There are four types of such cables available:

- Round cable of type 1 (1 twisted pair of wires)
- Round cable of type 2 (4 twisted wires)
- Flat cable of type 1 (4 parallel wires)
- Flat cable of type 2 (4 parallel wires)

The data lines of these cable types must match the following specifications

The following specifications apply to the data lines of these cable types:

Parameter	**Round cable of type 1**	**Round cable of type 2**	**Flat cable of type 1**	**Flat cable of type 2**
Impedance	82,45 … 111,55 Ω	102…132 Ω	108…132 Ω	96…132 Ω
Capacity	< 100 pF/m	< 73 pF/m	< 54,4 pF/m	< 89 pF/m
Loop resistance	<25.1 Ω/km	<25.1 Ω/km	<37.5 Ω/km	<37.5 Ω/km
Wire gauge			20*0,18 mm	20*0,18 mm
Wire cross section	0.75mm^2+/-10%	0.75mm^2+/-10%	0.5mm^2+/-10%	0.5mm^2+/-10%

Table 44: Properties for CompoNet allowed cables.

All cable types besides the round cable of type 1 provide integrated lines for supply voltage. These must match the following specifications:

Parameter	**Round cable of type 2**	**Flat cable of type 1**	**Flat cable of type 2**
Loop resistance	<25.1 Ω/km	<25.1 Ω/km	<25.1 Ω/km
Wire gauge		30*0,18 mm	30*0,18 mm
Wire cross section	0.75mm^2	0.75mm^2	0.75mm^2

Note: Assure, that on both ends of the trunk line and at the ends of eventual branch lines there are terminating resistors of 121 Ω ± 1% (1/4 W).

Master-devices already come along with integrated terminating resistors.

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4.44 CC-Link Interface

Use only a special cable which is approved for CC-Link. CC-Link specifies several shielded three-core Twisted Pair cables. It is recommended to use only one type of cable for an installation. Please ensure that termination resistors are available at both ends of the cable. The value of the termination resistor depends on the used type of cable and can be 100, 110 and respectively 130 ohms.

Isolated RS-485 interface:

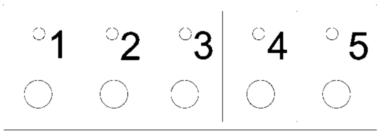

Figure 61: CC-Link Interface (Screw terminal connector, 5 pin)

Connection with Screw terminal Connector	Signal	Meaning
1	DA	Data A
2	DB	Data B
3	DG	Data Ground
4	SLD	Shield
5	FG	Field Ground

Table 45: CC-Link Interface

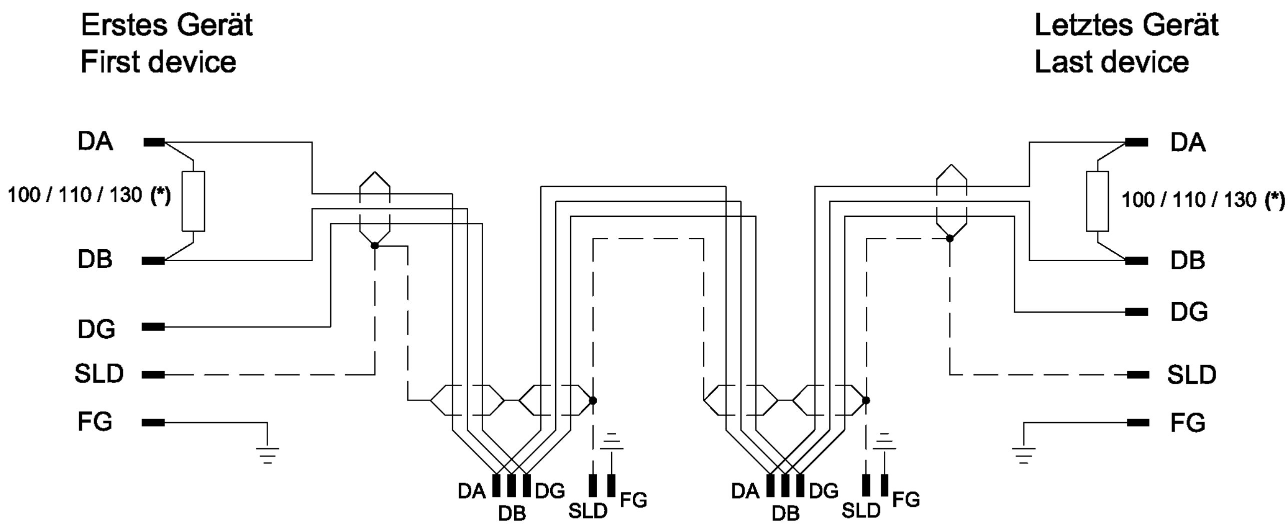

Figure 62: CC-Link Network

(*) Termination resistor depends on the used cable type(see CC-Link Cable Wiring Manual).

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The maximum length of one bus segment depends on the used baud rate. The structure of the network can be built up without or with branches. The details listed here are taken from the "CC link Cable Wiring manual" from July 2004. Also further details are contained there. The document is ready for download on www.cc-link.org.

Note: For CC-Link V2.00 the cable specification V1.10 has not been changed.

Only trunk line, without branches:

Baud rate	max. Length cable V1.00	max. Length cable V1.10 and cable V1.00 with high performance	max. length high flexible V1.10 (Type 50%)
156 kbps	1200 m	1200 m	600 m
625 kbps	600 m	900 m	450 m
2,5 Mbps	200 m	400 m	200 m
5 Mbps	150 m	160 m	80 m
10 Mbps	100 m	100 m	50 m

Table 46: Maximum length

Note: Further cable types are available with which however lower maximum lengths can be reached.

Trunk line with branch lines:

Further devices can be connected via T-branches to the bus cable, only with the baud rates 156 kbps and 625 kbps. The maximum length of all T-stubs is 8 m. The whole length of the bus cable and all T-branches does not exceed the maximum length listed in the following table.

baud rate	156 kbps	625 kbps
max. length trunk line	500 m	100 m
max. number of devices in branch line	6	6
max. cable length of branch line	8 m	8 m
max. length of all branch lines	200 m	50 m

Table 47: Maximum length

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Minimum Distance:

Between two devices a minimum distance is to be kept.

Distance between CC-Link devices	CC-Link cable V1.00	CC-Link cable V1.10
Remote device to next remote device	0.3 m or more	0.2 m or more
Remote device to next Master and/or intelligent device	1 m or more	0.2 m or more

Table 48: Minimum distance between two devices

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4.45 Mini-B USB Connector (5 Pin)

Only for:
CIFX 80-DP, CIFX 80-CO, CIFX 80-DN,
CIFX 104C-DP, CIFX 104C-CO, CIFX 104C-DN,
CIFX 104C-DP-R, CIFX 104C-CO-R, CIFX 104C-DN-R,
CIFX 104-DP, CIFX 104-CO, CIFX 104-DN,
CIFX 104-DP-R, CIFX 104-CO-R, CIFX 104-DN-R.

For:
CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F,
CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F
CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F,
CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F
when using the AIFX-DIAG.

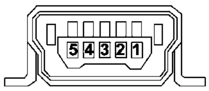

Figure 63: Mini-B USB Connector (5 Pin), S302

Pin	Name	Description
1	USB_EXT	USB Bus Power (+5 V dc, supplied externally)
2	D-	Data -
3	D+	Data +
4	ID	Not connected
5	GND	Ground

Table 49: Pin out, S302

4.46 Rotary Switch for PCI Slot Number

Only for CIFX 104C cards.

The **Rotary Switch for PCI Slot Number** is used for setting the physical PCI slot number. Max. 4 modules can be plugged on each other and each switch position must be used only once. The module next to the host controller gets the CLK number 0, the following modules respectively get the next higher CLK number.

Switch Position	Module No. PCI Slot	CLK No. (Clock)	ID-Select	INT
0, 4, 8	1	CLK 0	IDSEL 0	INTA
1, 5, 9	2	CLK 1	IDSEL 1	INTB
2, 6	3	CLK 2	IDSEL 2	INTC
3, 7	4	CLK 3	IDSEL 3	INTD

Table 50: Rotary Switch for PCI Slot Number, S1

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4.47 Rotary Switch for Slot Number (Card ID)

Only for:
CIFX 50-DP, CIFX 50-CO, CIFX 50-DN und CIFX 50-2ASM.

The **Rotary Switch Slot Number (Card ID)** serves to set the **Slot Number (Card ID)** of the cifX cards.

The **Slot Number (Card ID)** serves to distinguish cifX cards from each other clearly, especially if more cifX cards are installed into the very same PC.

The **cifX Device Driver** up to version **0.94x** identifies cifX cards via its device and serial number. For the device exchange service respectively a manual intervention is required.

The **cifX Device Driver** from version **0.950** on identifies cifX cards alternatively via its **Slot Number (Card ID)**.

Switch Position	Meaning
0	The value 0 means: ▪ no **Slot Number (Card ID)**, i. e. the **Slot Number (Card ID)** is not used, ▪ for downwards compatibility purposes, ▪ characterizes cifX cards not equipped with a **Rotary Switch Slot Number (Card ID)**; i. e. these cifX cards are identified via its device and serial number.
1 … 9	corresponds to the **Slot Number (Card ID)** 1 … 9

Table 51: Rotary Switch for Slot Number (Card ID), S1

Application:

- To distinguish cifX cards from each other clearly, especially if more cifX cards are installed into the very same PC.
- In terms of a device exchange service (replacement case): If at the replacement cifX card installed in the PC the same **Slot Number (Card ID)** is set as at the preceding cifX card, then the same firmware and configuration is loaded into the replacement cifX card, as into the preceding cifX card.
- The application program can request and use the **Slot Number (Card ID)** from the **cifX Device Driver**.

For further information about the **Slot Number (Card ID)** and the **DMA Mode** refer to the sections:
- *References for Slot Number (Card ID), DMA Mode* (page 19),
- *The Functions „Slot Number (Card ID)" and „DMA Mode"* (page40),
- *Requirements Slot Number (Card ID)* (page 47),
- *Setting Slot Number (Card ID)* (page 119),
- *„Slot Number (Card ID)" and „DMA Mode" in the Software* (page 171).

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4.48 Cable Connector

4.48.1 Pinning for Cable Connector Fieldbus X3, X304, X4

Only for:
CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F (X3) and
CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F (X3),
CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F: (X304);
CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F: (X4) ;
CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F: (X4);
CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F: (X304).

Pin	Signal
1	GND
2	+3V3 Analog
3	I2C_CLK/PIO 4
4	I2C_DATA/ PIO 5
5	XMAC2_TX
6	XMAC2_RX
7	XMAC2_IO0
8	XMAC2_IO1
9	/RSTOUT
10	(not used)

Table 52: Pinning for Cable connector Fieldbus X3, X304 or X4, Cable 10 pin Fieldbus

4.48.2 Pinning for Cable Connector DIAG

Only for:
CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F: (X303);
CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F: (X3).

Pin	Signal
1	GND
2	+3V3
3	STA2 (*FB LED COM 0*)
4	STA3 (*FB LED COM 1*)
5	USB_POS
6	USB_NEG
7	RDYn
8	RUNn
9	STA0_green (*not used*)
10	STA0_red (*not used*)
11	STA1_green (*not used*)
12	STA1_red (*not used*)

Table 53: Pinning for Cable connector DIAG X3 or X303 - Cable 12 pin USB + Status LEDs

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4.48.3 Pinning for SYNC Connector, X51

Only for:
CIFX 80-DP, CIFX 80-CO, CIFX 80-DN,
CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F,
CIFX 104C-DP, CIFX 104C-CO, CIFX 104C-DN,
CIFX 104C-DP-R, CIFX 104C-CO-R, CIFX 104C-DN-R,
CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F,
CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F.

Pin	Signal
1	GND
2	IO_0 XMAC3
3	IO_1 XMAC3

Table 54: Pinning for SYNC Connector, X51

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4.48.4 Pinning for Mini PCI Express Bus / SYNC Connector, X1/X2

Only for:
CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F (X1/X2)

The SYNC connection is realized via the mini PCI bus.

Pin (X1)	Signal	Pin (X2)	Signal
51	(not used)	52	+3.3V
49	(not used)	50	GND
47	(not used)	48	(not used)
45	(not used)	46	IO_0 XMAC3 (SYNC)
43	(not used)	44	IO_1 XMAC3 (SYNC)
41	(not used)	42	Bootloader
39	(not used)	40	GND
37	(not used)	38	USB_D+
35	GND	36	USB_D-
33	PERp0	34	GND
31	PERn0	32	(not used)
29	GND	30	(not used)
27	GND	28	(not used)
25	PETp0	26	GND
23	PETn0	24	(not used)
21	GND	22	PERST#
19	(not used)	20	(not used)
17	(not used)	18	GND
15	GND	16	(not used)
13	REFCLK+	14	(not used)
11	REFCLK-	12	(not used)
9	GND	10	(not used)
7	CLKREQ#	8	(not used)
5	(not used)	6	(not used)
3	(not used)	4	GND
1	(not used)	2	3.3V

Table 55: Pinning for Mini PCI Express Bus / SYNC Connector, X1/X2, (valid from Hardware Revision 6 on)

Pin (X2)	Signal
48	+1.5V
28	+1.5V
24	+3.3Vaux
6	1.5V

Table 56: 1.5V Power Supply Pins 6,28,48 (+1V5) from 1.5V Plane (+1V5) for the Pinning for Mini PCI Express Bus / SYNC Connector, X1/X2, (valid for Hardware Revision 1 to 5)

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4.49 Pinning for PC/104 Bus

Only for: CIFX 104-DP, CIFX 104-CO, CIFX 104-DN,
CIFX 104-DP-R, CIFX 104-CO-R, CIFX 104-DN-R,
CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F,
CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F.

The used control signals of the PC/104 bus are given in the tables below.

Pin (X1)	A	B
1		GND
2	SD7	RESET
3	SD6	+5V
4	SD5	IRQ9
5	SD4	
6	SD3	
7	SD2	
8	SD1	
9	SD0	
10	IOCHRDY	GND
11	AEN	SMEMW
12	SA19	SMEMR
13	SA18	
14	SA17	
15	SA16	
16	SA15	
17	SA14	
18	SA13	
19	SA12	
20	SA11	
21	SA10	IRQ7
22	SA9	IRQ6
23	SA8	IRQ5
24	SA7	IRQ4
25	SA6	IRQ3
26	SA5	
27	SA4	
28	SA3	
29	SA2	+5V
30	SA1	
31	SA0	GND
32	GND	GND

Table 57: Pinning for PC/104-Bus, X1
(Control Signals used on the 8 Bit Connector)

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Pin (X2)	B	C
0	GND	GND
1	SBHE	GND
2		
3		IRQ10
4		IRQ11
5		IRQ12
6		IRQ15
7		IRQ14
8		
9		
10		
11	SD9	
12	SD10	
13	SD11	
14	SD12	
15	SD13	
16	SD14	+5V
17	SD15	
18	SD16	GND
19		GND

Table 58: Pinning for PC/104-Bus, X2
(Used Control Signals on the Expansion Connector)

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5 Getting Started

5.1 Steps how to install and configure cifX Cards Fieldbus (Slave)

The following table describes the steps on how to install and to configure a cifX card fieldbus (Slave) as it is typical for many cases. The cifX card (Salve) can be configured using the **netX Configuration Tool**. In many cases also the corresponding DTM in the configuration software **SYCON.net** can be used.

Note: If the hardware gets installed at the PC before the cifX Device Driver Installation has been done, the Windows® Found New Hardware Wizard is started and the operating system Windows® asks for the driver. This is the mode, if **the hardware is installed first** and **only then the driver**.

#	Step	Description	For detailed information see section	Page
1	Installing the Hardware	Installing cifX card fieldbus (Slave): Set Starting Address and Interrupt (only for PC/104 Devices) Note:	*Installing cifX Card* *For PC/104 Devices: Set Starting Address and Interrupt*	*106* *124*
		 DANGER **Lethal Electrical Shock caused by parts with more than 50V!** Disconnect the power plug of the PC or of the connecting device. Make sure, that the power supply is off at the PC or at the connecting device.	*Electrical Shock Hazard*	*30*
		Now open the cabinet of the PC or of the connecting device. Plug in and mount the cifX card fieldbus (Slave). If necessary, connect an AIFX assembly or a AIFX diagnosis interface. Close the cabinet of the PC or connecting device. Plug in the connecting cable to the cifX card fieldbus (Master). Connect the PC or the connecting device to the power supply and switch it on.	*Installing cifX Card*	*106*
2	Setting **Slot Number (Card ID)**	Set the **Slot Number (Card ID)**: (Value 0 or a value from 1 to 9)	*Setting Slot Number (Card ID)*	*119*
3	Installing **cifX Device Driver**	Windows® recognizes a new hardware and requires the device driver, which is on the CD-ROM cifX. Enter the CD-ROM cifX in the PC and follow to the instructions of the installation wizard, to install the driver.	*Installing cifX Device Driver*	*133*
4	**DMA Mode** in the cifX Device Driver Setup	Activate the **DMA Mode** in the cifX Device Driver Setup.	*Activating DMA Mode in the cifX Device Driver* Setup	*173*

For more see next page

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#	Step	Description	For detailed information see section	Page
5	Installing **netX Configuration Tool**	Start the **netX Configuration Tool setup** program to install the **netX Configuration Tool**.	*Installing the netX Configuration Tool*	*164*
6	Configuration Steps cifX Card	In the **netX Configuration Tool**: - Select the language, - Select and download the firmware, - Set and download the cifX card fieldbus (Slave) parameters. Possibly use the corrseponding DTM in the configuration software **SYCON.net.**	*Configuration Steps cifX Card* *Configuring Slave Devices using netX Configuration Tool* See corresponding user manual under *Documentations cifX Cards*	*175* 193 23

Table 59: Installation and Configuration Steps cifX Card Fieldbus (Slave)

5.1.1 Notes for the Configuration of the Master Device

To configure the Master, an device description file is required. Please note the following notes for the configuration of the Master Device:

Fieldbus System	Note
PROFIBUS-DP Slave	To configure the Master, a GSD file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: Station Address, Ident Number, Baudrate and Config Data (the configuration data for the output and input length).
CANopen Slave	To configure the Master, an EDS file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: Node Address and Baudrate.
DeviceNet Slave	To configure the Master, an EDS file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: MAC ID, Baudrate, Produced Size, Consumed Size, Vendor ID, Product Type, Product Code, Major Rev, Minor Rev.
CompoNet Slave	To configure the Master, an EDS file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: Node Mode, MAC ID, Baudrate, Produced Data, Consumed Data, Vendor ID, Product Type, Product Code, Major Rev, Minor Rev.
CC-Link Slave	To configure the Master, a CSP file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: Slave Station Address, Baudrate, Station Type and Vendor Code.

Table 60: Notes for the Configuration of the Master Device

Further information to the device description files you find under section on *Device Description Files* page 21.

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5.2 Steps how to install and configure cifX Cards Fieldbus (Master)

The following table describes the steps to configure a cifX card fieldbus (Master) as it is typical for many cases.

#	Step	Description	For detailed information see section	Page
1	Installing the Hardware	Installing cifX card fieldbus (Master): Set Starting Address and Interrupt (only for PC/104 Devices) Note:	*Installing cifX Card* *For PC/104 Devices: Set Starting Address and Interrupt*	*106* *124*
		 **DANGER** **Lethal Electrical Shock caused by parts with more than 50V!** Disconnect the power plug of the PC or of the connecting device. Make sure, that the power supply is off at the PC or at the connecting device.	*Electrical Shock Hazard*	*30*
		Now open the cabinet of the PC or of the connecting device. Plug in and mount the cifX card fieldbus (Master). If necessary, connect an AIFX assembly or a AIFX diagnosis interface. Close the cabinet of the PC or connecting device. Plug in the connecting cable to the cifX card fieldbus (Slave). Connect the PC or the connecting device to the power supply and switch it on.	*Installing cifX Card*	*106*
2	Setting **Slot Number (Card ID)**	Set the **Slot Number (Card ID)**: (Value 0 or a value from 1 to 9)	*Setting Slot Number (Card ID)*	*119*
3	Installing **cifX Device Driver**	Windows® recognizes a new hardware and requires the device driver, which is on the CD-ROM cifX. Enter the CD-ROM cifX in the PC and follow to the instructions of the installation wizard, to install the driver.	*Installing cifX Device Driver*	*133*
4	**DMA Mode** in the cifX Device Driver Setup	Activate the **DMA Mode** in the cifX Device Driver Setup.	*Activating DMA Mode in the cifX Device Driver* Setup	*173*
5	Installing SYCON.net	Run the SYCON.net-Setup and follow to the instructions of the installation wizard.	*Installing SYCON.net*	*165*

For more see next page

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#	Step	Description	For detailed information see section	Page
6	Firmware Download	- Start configuration software **SYCON.net**, -Create new project /Open existing project, - Insert Master or Slave into configuration, - Select driver and assign device. - Select and download the firmware.	See corresponding user manual under *Documentations cifX Cards*	*23*
7	Configuration cifX card fieldbus (Master)	-Configure the cifX card fieldbus (Master).	*Device Names in SYCONnet*	*105*
8	Download Configuration	- Download the configuration to the cifX card fieldbus (Master) *. (*PROFIBUS-DP Master, CANopen Master, DeviceNet Master)		
9	Diagnostic	- Rightclick on device symbol. - Select context menu entry **Diagnosis**, - then select **Diagnosis > Station Diagnosis** or **Master Diagnosis**.		
10	I/O Monitor	- Rightclick on device symbol. - Select context menu entry **Diagnosis**, - then **Additional Tools > IO Monitor**. -Check the input or output data.		

Table 61: Installation and Configuration Steps cifX Card Fieldbus (Master)

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5.3 Device Names in SYCONnet

The following table contains the device names displayed for the single communication protocols in the configuration software SYCONnet.

The table shows the card type and which protocol can be used with this card type. Furthermore, the table shows, for which protocol which device must be selected from the device catalog to configure the cifX card with SYCON.net.

Card-Type	Protocol	DTM Specific Group	Device Name in SYCON.net
CIFX 50-DP CIFX 50-2DP* CIFX 50E-DP CIFX 80-DP CIFX 90-DP\F CIFX 90E-DP\F CIFX 104C-DP CIFX 104C-DP-R CIFX 104C-DP\F CIFX 104C-DP-R\F CIFX 104-DP CIFX 104-DP-R CIFX 104-DP\F CIFX 104-DP-R\F	PROFIBUS-DP Master	Master	CIFX DP/DPM ** for each PROFIBUS channel one CIFX DP/DPM*
	PROFIBUS-DP Slave	Gateway/ Stand Alone Slave	CIFX DP/DPS
CIFX 50-CO CIFX 50E-CO CIFX 80-CO CIFX 90-CO\F CIFX 90E-CO\F CIFX 104C-CO CIFX 104C-CO-R CIFX 104C-CO\F CIFX 104C-CO-R\F CIFX 104-CO CIFX 104-CO-R CIFX 104-CO\F CIFX 104-CO-R\F	CANopen Master	Master	CIFX CO/COM
	CANopen Slave	Gateway/ Stand Alone Slave	CIFX CO/COS
CIFX 50-DN CIFX 50E-DN CIFX 80-DN CIFX 90-DN\F CIFX 90E-DN\F CIFX 104C-DN CIFX 104C-DN-R CIFX 104C-DN\F CIFX 104C-DN-R\F CIFX 104-DN CIFX 104-DN-R CIFX 104-DN\F CIFX 104-DN-R\F	DeviceNet Master	Master	CIFX DN/DNM
	DeviceNet Slave	Gateway/ Stand Alone Slave	CIFX DN/DNS
CIFX 50-2ASM CIFX 50E-2ASM*	AS-Interface Master	Master	CIFX AS/ASM ** for each AS-Interface channel one CIFX AS/ASM*
CIFX 50-CP CIFX 50E-CP	CompoNet Slave	Slave	CIFX CP/CPS
CIFX 50-CC CIFX 50E-CC	CC-Link Slave	Slave	CIFX CC/CCS

Table 62: Device Names in SYCON.net by Communication Protocol

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6 Installing cifX Card

For the card installation check any hints in the overview in chapter *Getting Started* on page 100.

6.1 Safety Instructions

Obey to the following safety advices, when installing the cifX card.

6.1.1 Electrical Shock Hazard

DANGER!

Lethal Electrical Shock caused by parts with more than 50V!

- HAZARDOUS VOLTAGE inside of the PC or of the connecting device.
- Therefore first disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.
- Open the PC cabinet and install or remove the cifX card only after disconnecting power.

USA:

DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- HAZARDOUS VOLTAGE inside of the PC or of the connecting device.
- Therefore first disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.
- Open the PC cabinet and install or remove the cifX card only after disconnecting power.

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6.2 Property Damage Messages

Obey to the following property damage messages, when installing the cifX card.

6.2.1 Device Destruction by exceeding allowed Supply Voltage

For all CIFX 50, CIFX 50E, CIFX 80, CIFX 90 and CIFX 90E devices you must follow this instruction:

NOTICE

Device Destruction!

- Use only 3.3 V for supply voltage to operate the card.
  Operation with 5 V supply voltage leads to device destruction.

USA:

NOTICE

Device Destruction!

- Use only 3.3 V for supply voltage to operate the card.
  Operation with 5 V supply voltage leads to device destruction.

6.2.2 Device Destruction by exceeding allowed Signaling Voltage

Adhere for all cifX cards described in this manual the instruction hereafter:

NOTICE

Device Destruction!

- All I/O signal pins at the cifX card tolerate only a specified signaling voltage!
- Operation with a signaling voltage other than the specified signaling voltage may lead to severe damage to the cifX card!

For detailed information on the supply and signaling voltage of the cifX cards described in this manual, refer to section *Supply and Signaling Voltage* on page 44.

USA:

NOTICE

Device Destruction!

- All I/O signal pins at the cifX card tolerate only a specified signaling voltage!
- Operation with a signaling voltage other than the specified signaling voltage may lead to severe damage to the cifX card!

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6.2.3 Electrostatically sensitive Devices

Adhere to the necessary safety precautions for components that are vulnerable with electrostatic discharge.

NOTICE

Electrostatically sensitive Devices

- To prevent damage to the PC and the cifX, make sure, that the cifX card is grounded via the endplate and the PC and make sure, that you are discharged when you mount/demount the cifX card.

USA:

NOTICE

Electrostatically sensitive Devices

- To prevent damage to the PC and the cifX, make sure, that the cifX card is grounded via the endplate and the PC and make sure, that you are discharged when you mount/demount the cifX card.

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6.3 CIFX 50- or CIFX 50E Card Fieldbus

For installation of the following CIFX 50- or CIFX 50E cards fieldbus

- CIFX 50-DP, CIFX 50-2DP, CIFX 50E-DP,
- CIFX 50-CO, CIFX 50E-CO,
- CIFX 50-DN, CIFX 50E-DN,
- CIFX 50-2ASM-, CIFX 50E-2ASM-,
- CIFX 50-CP, CIFX 50E-CP,
- CIFX 50-CC, CIFX 50E-CC

handle as follows:

DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- Disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.

1. Open the cabinet of the PC or of the connecting device.
2. Plug in the CIFX 50 card fieldbus on a free PCI slot,
   or plug in the CIFX 50E card fieldbus on a free PCI express slot.
3. Fix the CIFX 50- or CIFX 50E card fieldbus using the hole intended.
4. Close the cabinet of the PC or connecting device.
5. Connect the PC or the connecting device to the power supply and switch it on.

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6.4 CIFX 80 Card Fieldbus

For installation of the

- CIFX 80-DP,
- CIFX 80-CO,
- CIFX 80-DN

card handle as follows:

⚠ DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- Disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.

1. Open the cabinet of the PC or of the connecting device.
2. Possibly remove a blank plate.
3. Put down the ejection lever at the CIFX 80 card fieldbus.
4. Plug in the CIFX 80 card fieldbus to a free compact PCI slot.

➢ Fasten the CIFX 80 card fieldbus.

➢ Tip up the lever and click in.

5. Screw the CIFX 80 card fieldbus with two screws onto the wholes above and below.
6. Close the cabinet of the PC or connecting device.
7. Connect the PC or the connecting device to the power supply and switch it on..

Note: To remove the CIFX 80 card fieldbus from the compact PCI slot, first press the grey button at the ejection lever and then press the ejection lever downwards.

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6.5 CIFX 90- or CIFX 90E Card Fieldbus

For installation of the following CIFX 90- or CIFX 90E cards fieldbus

- CIFX 90-DP\F, CIFX 90E-DP\F,
- CIFX 90-CO\F, CIFX 90E-CO\F,
- CIFX 90-DN\F, CIFX 90E-DN\F,

handle as follows:

⚠ DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- Disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.

---

1. Open the cabinet of the PC or of the connecting device.

CIFX 90 card fieldbus:

2. Plug in the CIFX 90 card fieldbus in the Mini PCI socket on the mainboard.
3. Press the clamps at the Mini PCI socket until they snap in, to fasten the CIFX 90 card fieldbus to the mainboard.

CIFX 90E card fieldbus:

Note: As the CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F card can be inserted correctly into the mini-PCI Express card slot, the element height in the Mini-PCI Express card slot of the connecting device must meet to the standard guidelines.

---

4. Plug in the CIFX 90E card fieldbus in the PCI Express Mini Card System Connector on the mainboard.
5. Press down the card until it snaps into place.

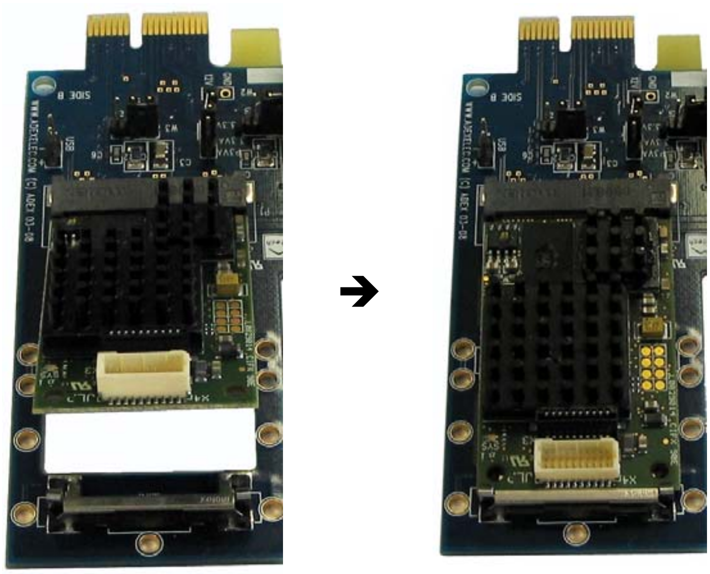

Figure 64: Plug in the CIFX 90E card fieldbus in the PCI Express Mini Card System Connector on the mainboard and press down the card until it snaps into place.

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Connecting the AIFX Fieldbus

To connect the AIFX-fieldbus assembly interface (AIFX-DP, AIFX-CO or AIFX-DN):

6. Connect the cable connector fieldbus X1 on the AIFX-fieldbus assembly interface with the cable.

Important! The contacts on the connection cable must face up!.

Figure 65: Connect the cable connector fieldbus X1 on the AIFX-fieldbus assembly interface with the cable. (Example in this figure: AIFX-DP)

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7. Connect the cable connector fieldbus X3 on the CIFX 90 or CIFX 90E card fieldbus with the cable.

Important! The contacts on the connection cable must face up!.

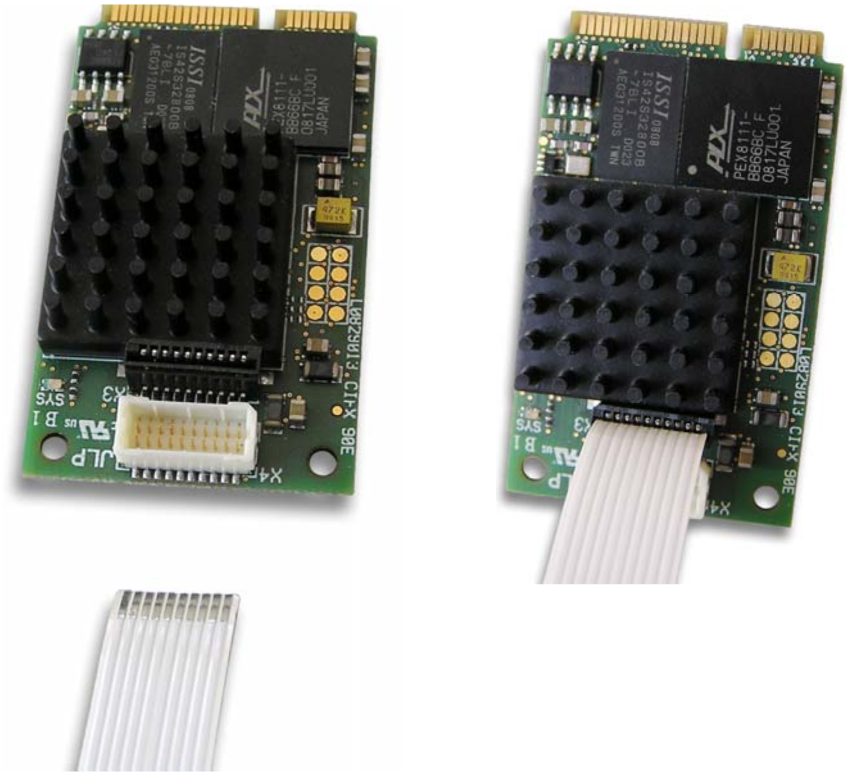

Figure 66: Connect the cable connector fieldbus X3 on the CIFX 90E card fieldbus with the cable. (*Example in this figure)*

8. Mount the AIFX-fieldbus at the PC device.

Only then:

9. Close the cabinet of the PC or connecting device.
10. Connect the PC or the connecting device to the power supply and switch it on.

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6.6 CIFX 104C Card Fieldbus

For installation of the following CIFX 104C cards fieldbus

- CIFX 104C-DP, CIFX 104C-DP-R,
- CIFX 104C-CO, CIFX 104C-CO-R,
- CIFX 104C-DN, CIFX 104C-DN-R,

handle as follows:

⚠ DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- Disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.

1. Open the cabinet of the PC or of the connecting device.
2. Plug in the CIFX 104C card fieldbus on a free PCI slot for PCI-104 cards.
3. Fix the CIFX 104C card fieldbus to the mainboard using 4 spacing bolts and screws intended. The scope of delivery does not include spacing bolts and screws.
4. Close the cabinet of the PC or connecting device.
5. Connect the PC or the connecting device to the power supply and switch it on..

6.7 CIFX 104C Card Fieldbus (\F)

For installation of the following CIFX 104C card fieldbus (\F)

- CIFX 104C-DP\F, CIFX 104C-DP-R\F,
- CIFX 104C-CO\F, CIFX 104C-CO-R\F,
- CIFX 104C-DN\F, CIFX 104C-DN-R\F,

handle as follows:

⚠ DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- Disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.

1. Open the cabinet of the PC or of the connecting device.
2. Plug in the CIFX 104-C card fieldbus (\F) on a free PCI-104 slot.
3. Fix the CIFX 104-C card fieldbus (\F) to the mainboard using 4 spacing bolts and screws intended. The scope of delivery does not include spacing bolts and screws.

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Connecting the AIFX-Fieldbus

To connect the assembly interface AIFX-fieldbus (AIFX-DP, AIFX-CO or AIFX-DN):

4. Connect the cable connector fieldbus X1 on the assembly interface AIFX-fieldbus with the cable.

Important! The contacts on the connection cable must face up!.

Figure 67: Connect the cable connector fieldbus X1 on the AIFX-fieldbus assembly interface with the cable. (Example in this figure: AIFX-DP)

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5. Connect the cable connector fieldbus X4 (or X304) on the CIFX 104-C card fieldbus (\F) with the cable.

Important! The contacts on the connection cable must face up!.

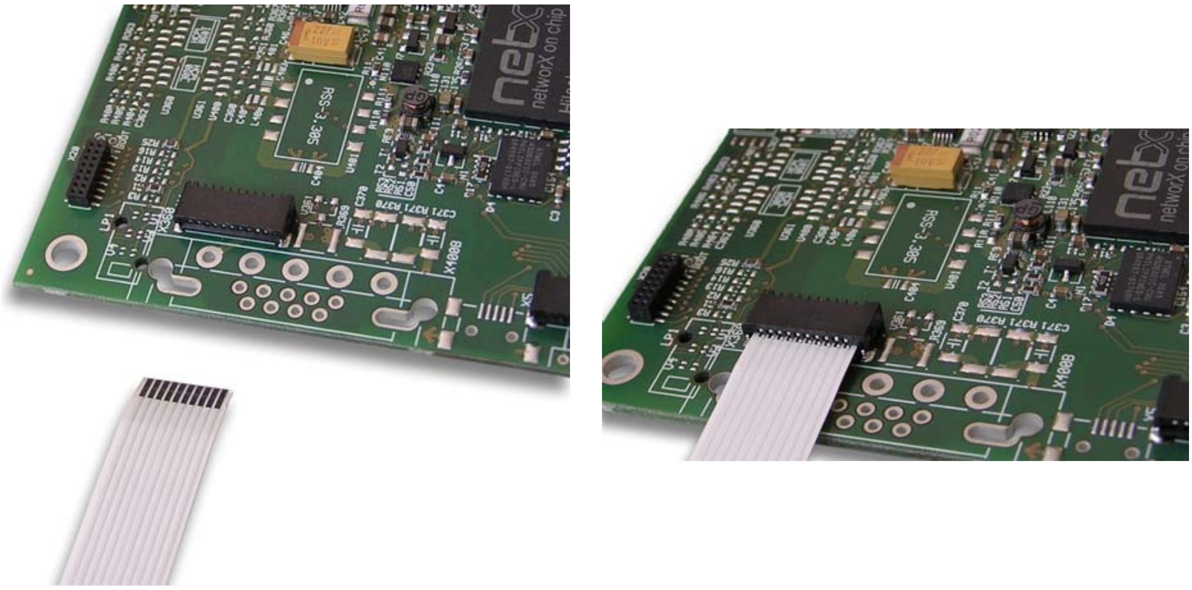

Figure 68: Connect the cable connector fieldbus X4 on the CIFX 104-C Card Fieldbus (\F) with the cable. (*Example in this figure)*

6. Mount the AIFX-fieldbus on the front plate of the cifX card.

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Connecting the AIFX-DIAG

To connect the diagnosis interface AIFX-DIAG:

7. Connect the cable connector DIAG X 1 on the diagnosis interface AIFX-DIAG with the cable.

Important! The contacts on the connection cable must face up!.

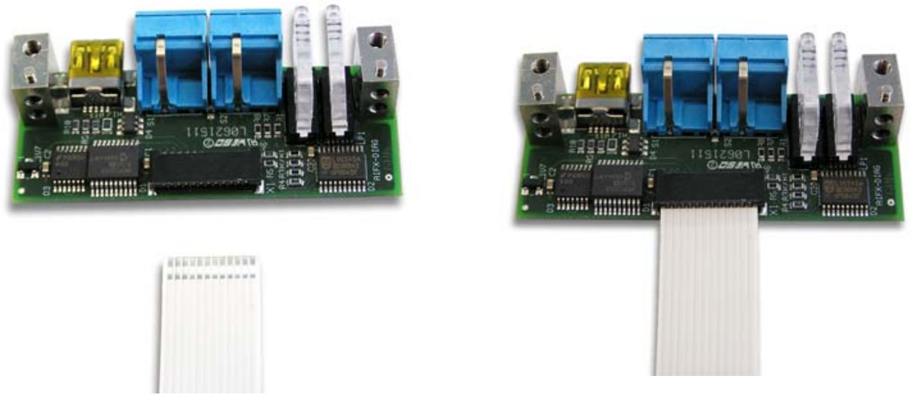

Figure 69: Connect the cable connector DIAG X 1 on the diagnosis interface AIFX-DIAG with the cable

8. Connect the cable connector DIAG X3 (or X303) on the CIFX 104-C card fieldbus (\F) with the cable.

Important! The contacts on the connection cable must face up!.

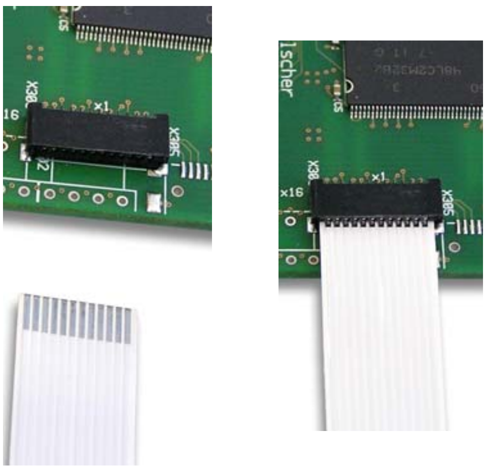

Figure 70: Connect the cable connector DIAG X3 on the CIFX 104-C Card Fieldbus (-R\F) with the cable. (*Example in this figure)*

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9. Mount the AIFX-DIAG on the front plate of the cifX card.

After that:

10. Close the cabinet of the PC or connecting device.
11. Connect the PC or the connecting device to the power supply and switch it on.

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6.8 Setting Slot Number (Card ID)

The **Slot Number (Card ID)** must be set at the cifX card using the **Rotary Switch Slot Number (Card ID)**.

Setting **Slot Number (Card ID)**:

➢ Set the value 0 or a value from 1 to 9.

Switch Position	Meaning
0	The value 0 means: ▪ no **Slot Number (Card ID)**, i. e. the **Slot Number (Card ID)** is not used, ▪ for downwards compatibility purposes, ▪ characterizes cifX cards not equipped with a **Rotary Switch Slot Number (Card ID)**; i. e. these cifX cards are identified via its device and serial number.
1 … 9	corresponds to the **Slot Number (Card ID)** 1 … 9

Table 63: Rotary Switch for Slot Number (Card ID)

For further information about the **Slot Number (Card ID)** and the **DMA Mode** refer to the sections:
- *References for Slot Number (Card ID), DMA Mode* (page 19),
- *The Functions „Slot Number (Card ID)" and „DMA Mode"* (page40),
- *Requirements Slot Number (Card ID)* (page 47),
- *Rotary Switch for Slot Number (Card ID)* (page 94),
- *„Slot Number (Card ID)" and „DMA Mode" in the Software* (page 171).

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6.8.1 Front Plate CIFX 50-DP

The figure below shows the front plate of the CIFX 50-DP card. From hardware revision 5 on, the **Rotary Switch Slot Number (Card ID)** is provided.

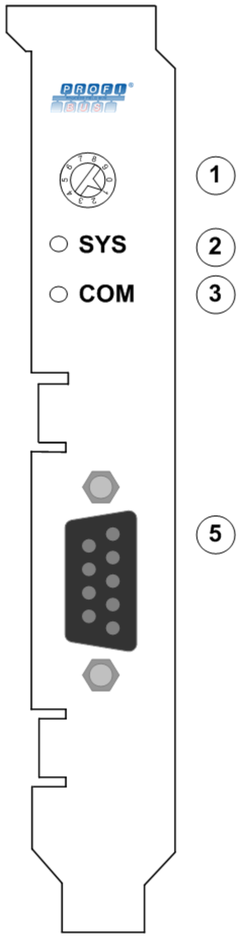
Front Plate CIFX 50-DP	Name
	**Rotary Switch Slot Number (Card ID)** The figure shows the rotary switch in position 1.
	LED **SYS**
	LED **COM**
	PROFIBUS Interface

Table 64: Front Plate CIFX 50-DP

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6.8.2 Front Plate CIFX 50-CO

The figure below shows the front plate of the CIFX 50-CO card. From hardware revision 5 on, the **Rotary Switch Slot Number (Card ID)** is provided.

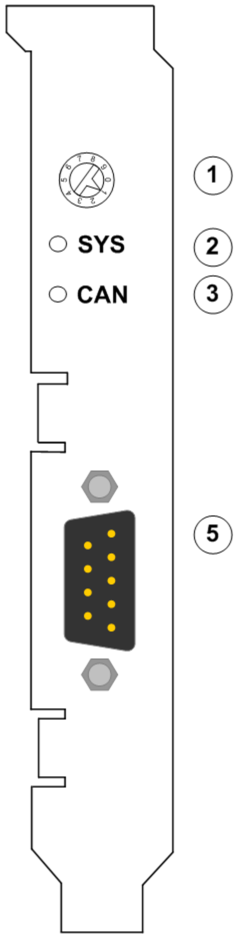
Front Plate CIFX 50-DP		Name
	1	**Rotary Switch Slot Number (Card ID)** The figure shows the rotary switch in position 1.
	2	LED **SYS**
	3	LED **CAN**
	5	CANopen Interface

Table 65: Front Plate CIFX 50-CO

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6.8.3 Front Plate CIFX 50-DN

The figure below shows the front plate of the CIFX 50-DN card. From hardware revision 5 on, the **Rotary Switch Slot Number (Card ID)** is provided.

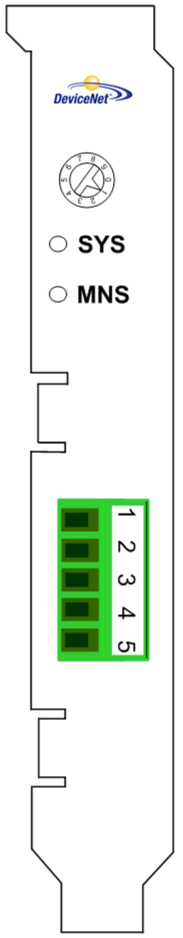
Front Plate CIFX 50-DP		Name
	1	**Rotary Switch Slot Number (Card ID)** The figure shows the rotary switch in position 1.
	2	LED **SYS**
	3	LED **MNS**
	5	DeviceNet Interface

Table 66: Front Plate CIFX 50-DN

6.8.4 Front Plate CIFX 50-2ASM

The figure below shows the front plate of the CIFX 50-2ASM card. From hardware revision 2 on, the **Rotary Switch Slot Number (Card ID)** is provided.

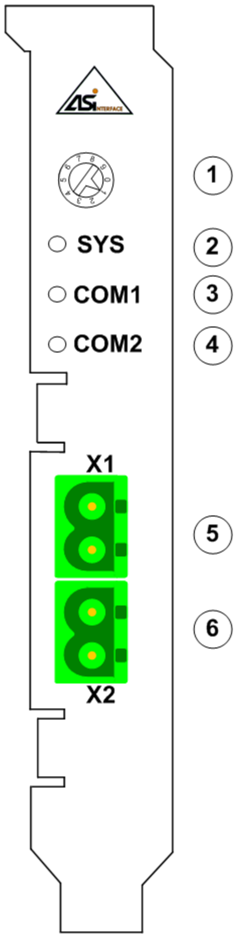
Front Plate CIFX 50-2ASM	Name
	
	Rotary Switch Slot Number (Card ID) The figure shows the rotary switch in position 1.
	LED **SYS**
	LED **COM1**
	LED **COM2**
	AS-Interface Interface X1 (Channel 1)
	AS-Interface Interface X2 (Channel 2)

Table 67: Front Plate CIFX 50-2ASM

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6.9 For PC/104 Devices: Set Starting Address and Interrupt

To set the starting address and or an interrupt for PC/104 cards, proceed as follows:

Important! Make sure that the configured memory areas and interrupts are not used by another PC component.

1. In order to identify and prevent such errors:

- ➢ Start the **Device Manager**.
- ➢ Select **menu View > Resources by type**.
- ➩ The used **Memory** respectively the **interrupt (IRQ) resources** are shown.
- ➢ Search for a free memory area:

The possible memory area is between C0000 and F8000 (hex):

The card can be used in poll mode or in interrupt mode.

- ➢ If the cards should be used in interrupt mode, then search for a free interrupt:

Possible interrupts are 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15

2. Configure the start address of the cifX PC/104 device.

Note: Please note that the PC/104 device requires a free memory area of 16 KByte between 0x0xC0000 und 0xFBFFF is necessary.

Address	A19	A18	A17	A16	A15	A14
C0000			X	X	X	X
C4000			X	X	X	
C8000			X	X		X
CC000			X	X		
D0000			X		X	X
D4000			X		X	
D8000			X			X
DC000			X			
E0000				X	X	X
E4000				X	X	
E8000				X		X
EC000				X		
F0000					X	X
F4000					X	
F8000						X

Interrrupt	3	…	12	14	15
15					X
14				X	
12			X		
…					
3	X				

Table 68: Addressing of an PC/104 Card with 16 KByte Dual-Port Memory (X = Jumper closed)

3. If you are using the interrupt mode, set up a free interrupt on the PC/104 device.

For polling operation mode interrupt jumpers are not required.

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Note: The default setting is address D0000 and no interrupt (**Basis Configuration 0**). To change the address select **Basis Configuration 1**. The interrupt and the address can be changed under **Basis Configuration 2**.

Note: On some PCs it is not possible to find a free ISA memory area between C0000–FF000 or a free ISA interrupt in the Device Manager. This is Windows 2000®/Windows® XP ACPI (Advanced Configuration and Power Management Interface) depending. Please check at first if your PC is ACPI compatible and you are using the latest BIOS version for your mainboard. Are there still problems to find available ISA resources, you can try to run Windows® 2000/Windows® XP in "Standard PC" mode (ACPI disabled). Therefore the ACPI-HAL of Windows® 2000/Windows® XP must be replaced with the STANDARD-PC-HAL or Windows® 2000/Windows® XP must be installed new. Please contact Microsoft how to change the Windows® 2000/Windows® XP-HAL, because this can make your installation unusable.

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6.10 CIFX 104-Fieldbus Cards (PC/104)

For installation of the following CIFX 104-fieldbus cards

- CIFX 104-DP, CIFX 104-DP-R,
- CIFX 104-CO, CIFX 104-CO-R,
- CIFX 104-DN, CIFX 104-DN-R,

handle as follows:

1. If you are using the interrupt mode, set up a free interrupt on the PC/104 device.

For polling operation mode interrupt jumpers are not required.

⚠ DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- Disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.

2. Open the cabinet of the PC or of the connecting device.
3. Plug in the CIFX 104-fieldbus card on a free PC/104 slot.
4. Fix the CIFX 104-fieldbus card to the mainboard using 4 spacing bolts and screws intended. The scope of delivery does not include spacing bolts and screws.
5. Close the cabinet of the PC or connecting device.
6. Connect the PC or the connecting device to the power supply and switch it on.

6.11 CIFX 104-Fieldbus\F Cards (PC/104)

For installation of the following CIFX 104-fieldbus\F cards

- CIFX 104-DP\F, CIFX 104-DP-R\F,
- CIFX 104-CO\F, CIFX 104-CO-R\F,
- CIFX 104-DN\F, CIFX 104-DN-R\F,

handle as follows:

1. If you are using the interrupt mode, set up a free interrupt on the PC/104 device.

For polling operation mode interrupt jumpers are not required.

DANGER

Lethal Electrical Shock caused by parts with more than 50V!

- Disconnect the power plug of the PC or of the connecting device.
- Make sure, that the power supply is off at the PC or at the connecting device.

2. Open the cabinet of the PC or of the connecting device.
3. Plug in the CIFX 104-fieldbus\F card on a free PC/104 slot.
4. Fix the CIFX 104-fieldbus\F card to the mainboard using 4 spacing bolts and screws intended. The scope of delivery does not include spacing bolts and screws.

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<u>Connecting the AIFX-Fieldbus</u>

To connect the assembly interface AIFX-fieldbus (AIFX-DP, AIFX-CO or AIFX-DN):

5. Connect the cable connector fieldbus X1on the assembly interface AIFX-fieldbus with the cable.

Important! The contacts on the connection cable must face up!.

Figure 71: Connect the cable connector fieldbus X1 on the AIFX-fieldbus assembly interface with the cable. (Example in this figure: AIFX-DP)

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6. Connect the cable connector fieldbus X4 (or X304) on the CIFX 104-fieldbus\F card with the cable.

Important! The contacts on the connection cable must face up!.

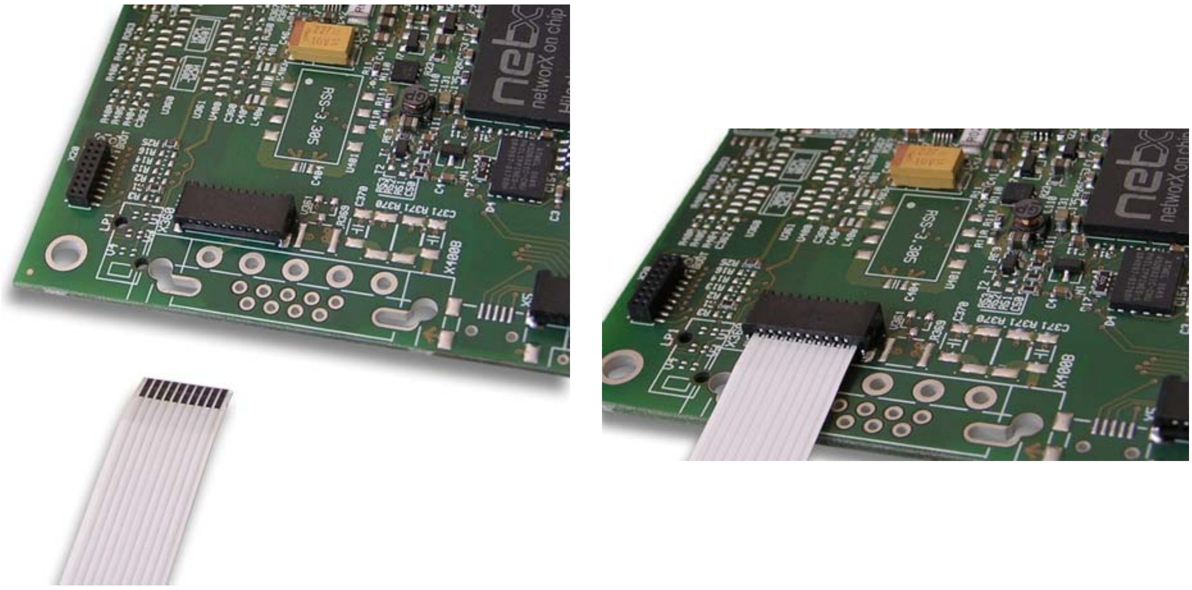

Figure 72: Connect the cable connector fieldbus X4 on the CIFX 104-fieldbus\F card with the cable. (*Example in this figure)*

7. Mount the AIFX-fieldbus on the front plate of the cifx device.

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Connecting the AIFX-DIAG

To connect the diagnosis interface AIFX-DIAG:

8. Connect the cable connector DIAG X1on the diagnosis interface AIFX-DIAG with the cable.

Important! The contacts on the connection cable must face up!.

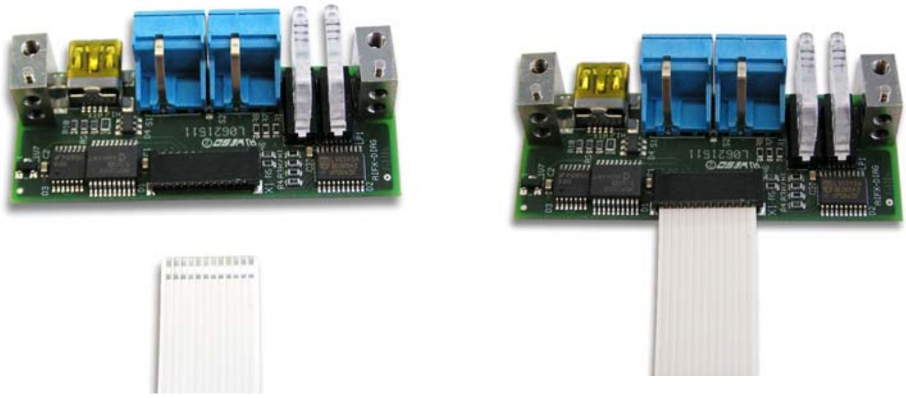

Figure 73: Connect the cable connector DIAG X 1 on the diagnosis interface AIFX-DIAG with the cable

9. Connect the cable connector DIAG X3 (or X303) on the CIFX 104-fieldbus\F card with the cable.

Important! The contacts on the connection cable must face up!.

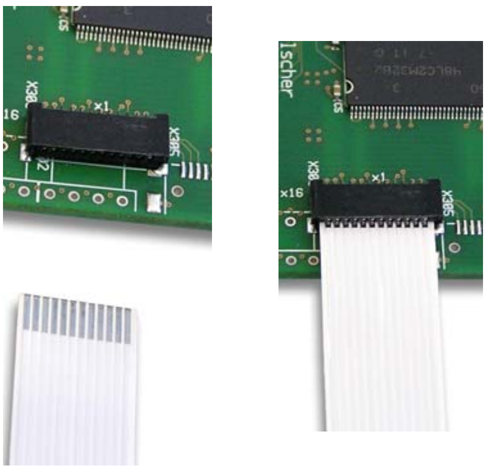

Figure 74: Connect the cable connector DIAG X3 on the CIFX 104-fieldbus\F card with the cable. (*Example in this figure)*

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10. Mount the AIFX-DIAG on the front plate of the cifx device.

After that:

11. Close the cabinet of the PC or connecting device.
12. Connect the PC or the connecting device to the power supply and switch it on.

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7 Installing Software

7.1 Installing the cifX Device Driver via Setup

You can install the cifX Device Driver via the cifX Device Driver Setup before the hardware has been installed.

Note: If the driver is installed via the cifX Device Driver Setup *cifX Device Driver setup.exe*, that means, **the driver gets installed first** and **only then the hardware**.

To install the **cifX Device Driver** before the hardware is installed, proceed as described hereafter:

1. Start the cifX Device Driver Setup.

➢ Put the cifX installation CD into the CD-ROM drive of your PC.

➢ In the NETX startup screen click to the menu *Software and Tools > cifX Drivers*.

➢ Click to the *Windows* folder.

Or

➢ On the CD open the directory *[drive letter]:\Driver\Windows*.

➢ Start the setup by double-clicking to the setup file *cifX Device Driver setup.exe*.

➩ The window **Select a language** is displayed.

2. Select the language.
3. Install the cifX Device Driver.

➢ Therefore follow to the instructions on the screen.

➩ The **cifX Device Driver InstallShield Wizard** guides you through the installation.

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7.2 Installing cifX Device Driver

Note: If the hardware gets installed at the PC before the cifX Device Driver Installation has been done, the Windows® Found New Hardware Wizard is started and the operating system Windows® asks for the driver. This is the mode, if **the hardware is installed first** and **only then the driver**.

To install the **cifX Device Driver** after the hardware was installed, proceed as described hereafter:

1. After installation of the cifX card restart your PC.

Windows® 2000 and Windows® XP recognize the cifX card automatically.

➮ The message **Found New Hardware** is displayed and the **Found new Hardware Wizard** is started.

2. Select No, not this time.

➢ Click to **Next >**.

3. Select Install from a list or specific location (Advanced).

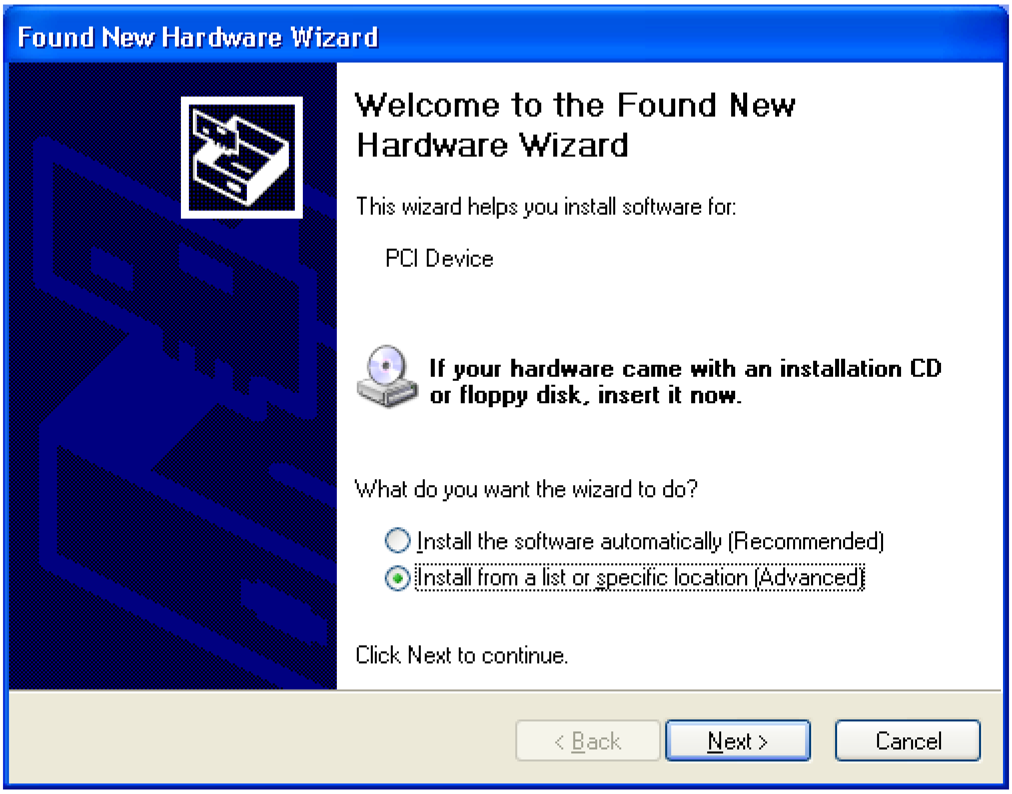

Figure 75: Found new Hardware Wizard - Indicate Software Source

4. Insert the installation CD now.

➢ Click to **Next >**.

➮ The **Found new Hardware Wizard** asks you to select the research- and installation options.

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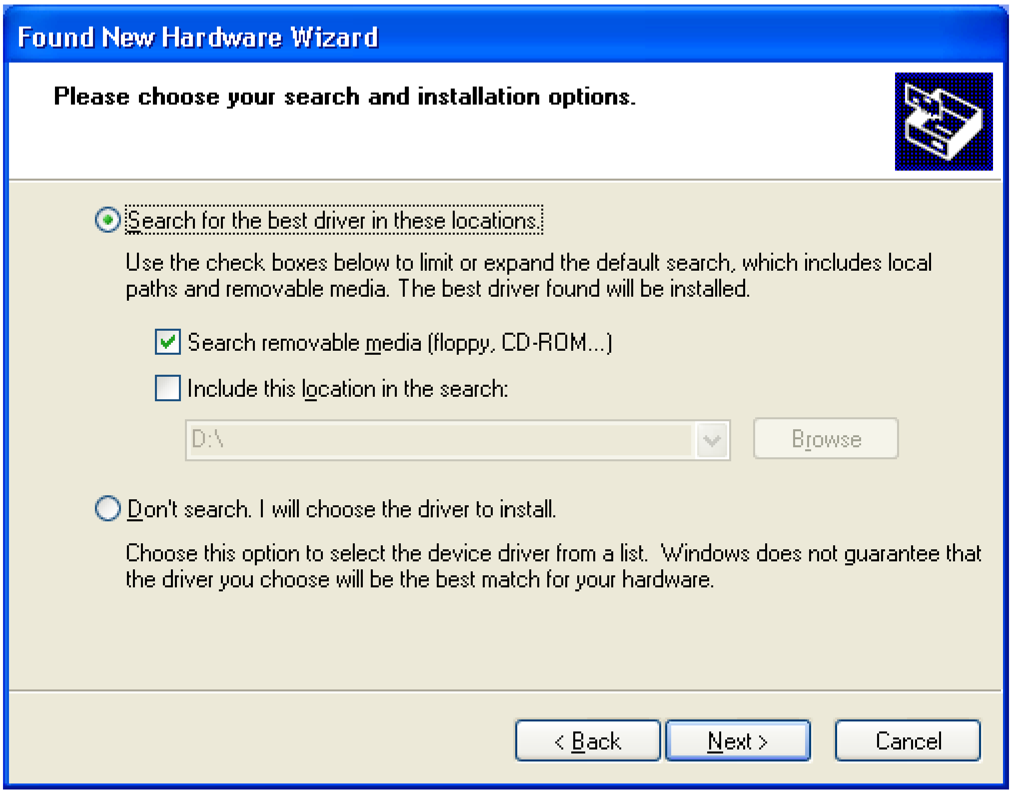

Figure 76: Found new Hardware Wizard - Select research- and installation options

5. Select Search for the best driver in these locations.
6. Activate Search removable media (floppy, CD-ROM...).

➢ Click to **Next >**.

➩ The driver software for the **cifX Device Driver** gets installed.

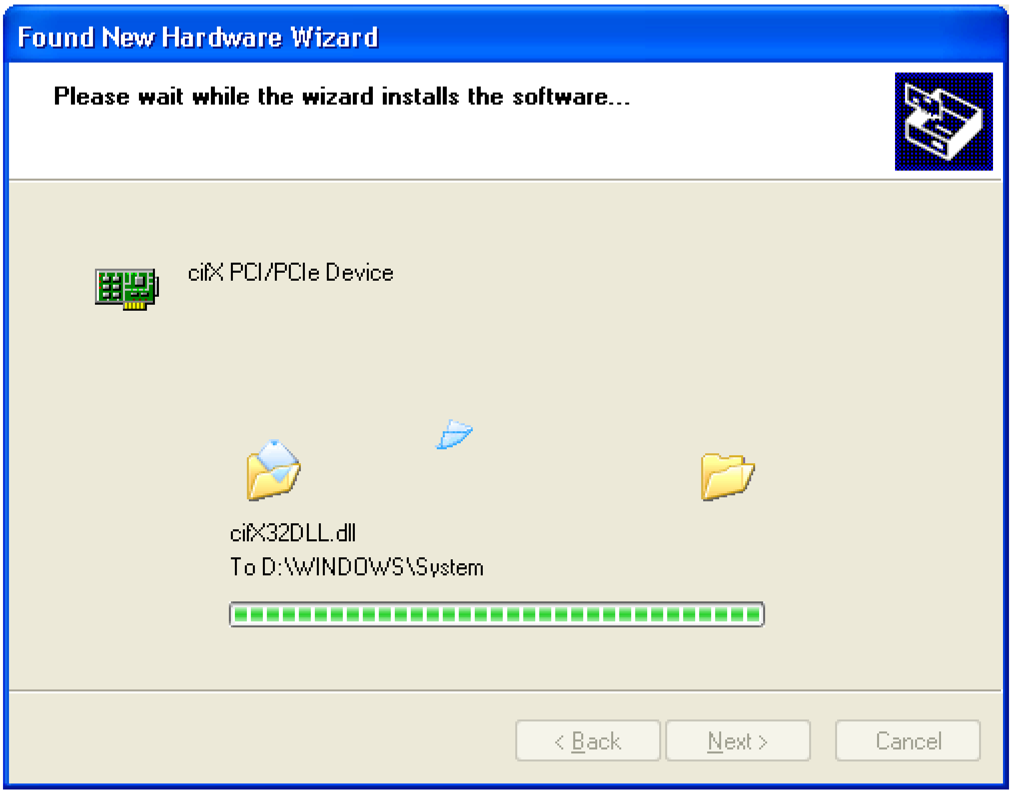

Figure 77: Found new Hardware Wizard - Software gets installed (Example with PCI devices)

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➪ The **Found new Hardware Wizard** indicates the **cifX PCI/PCIe Device** software installation is complete.

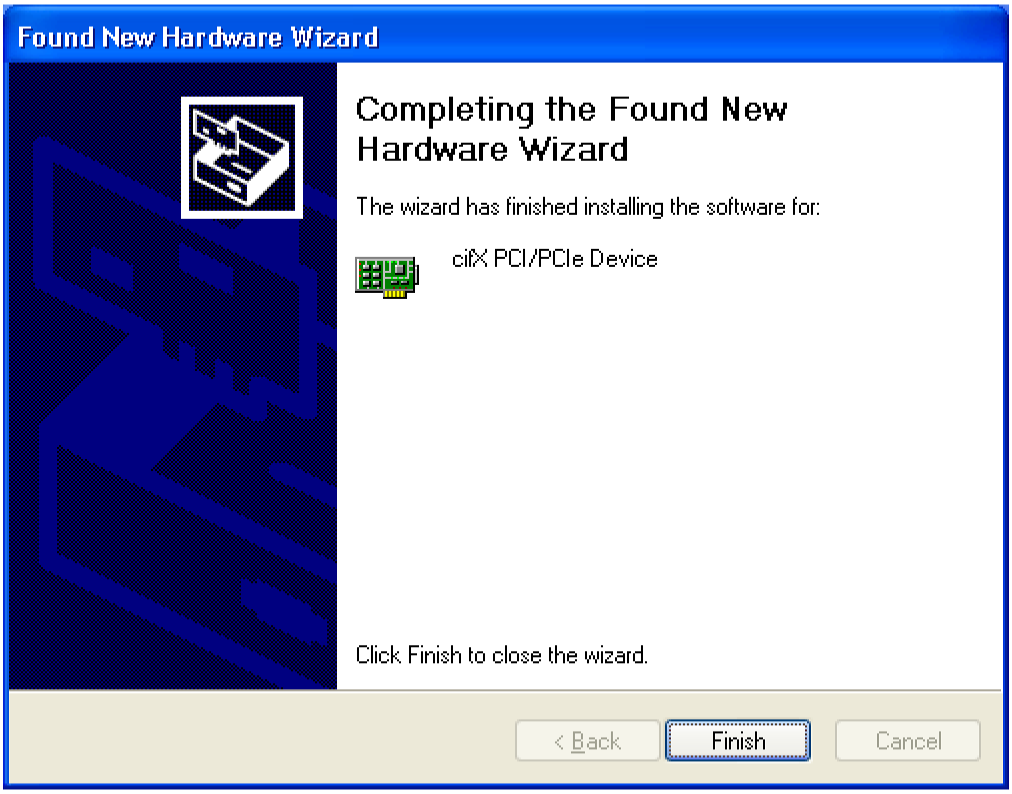

Figure 78: Found new Hardware Wizard - Software installation has been completed (Example with PCI devices)

7. Click in Found new Hardware Wizard > Completing the Found new Hardware Wizard to Finish.

➪ The installation of the **cifX Device Driver** is complete.

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8. Check in the **Computer Manager**, if your cifX card installed correctly.

➢ Therefore open the **Computer Manager** as follows: Desktop symbol **My Computer >** rightclick **Properties >** window **System Properties >** tab **Hardware >** button **Computer Manager**.

➢ Check, if the view of your **Computer Manager** corresponds to the marked area in the view hereafter.

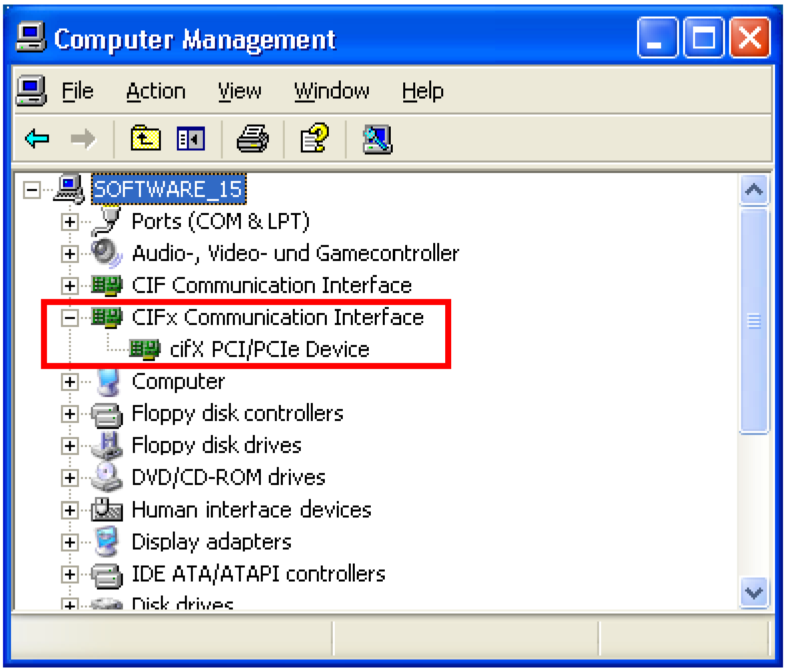

Figure 79: Device Manager > cifXPCI/PCIe Device - correctly installed (Example with PCI devices)

Note: The cifX card still must be configured.

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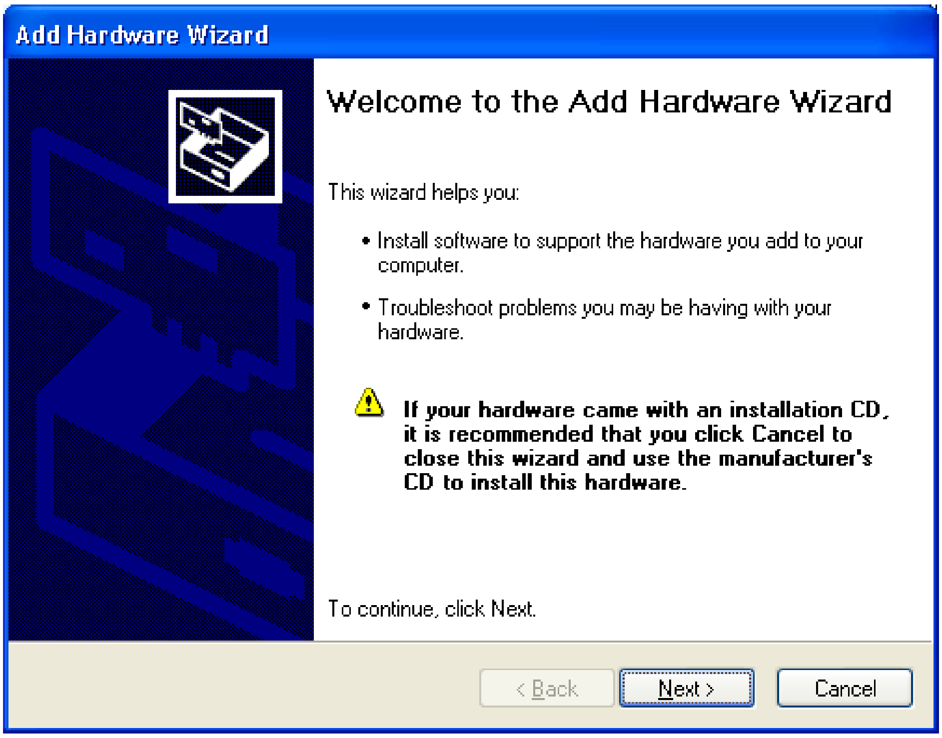
7.3 Install CIFX 104 (ISA) – Windows XP

Precondition: The CIFX Device Driver was already installed on the used PC. If this is not the case yet, then run the setup program **cifX Device Driver Setup.exe**. This setup program installs the driver and the required INF files.

Do the following steps to install a CIFX 104 card, e. g. to reserve the memory range and if necessary one interrupt at the operating system for the card:

1. Start the Hardware Wizard

- Click **Start > Control Panel**.
- Then click **Add Hardware**



- Click **Next >**

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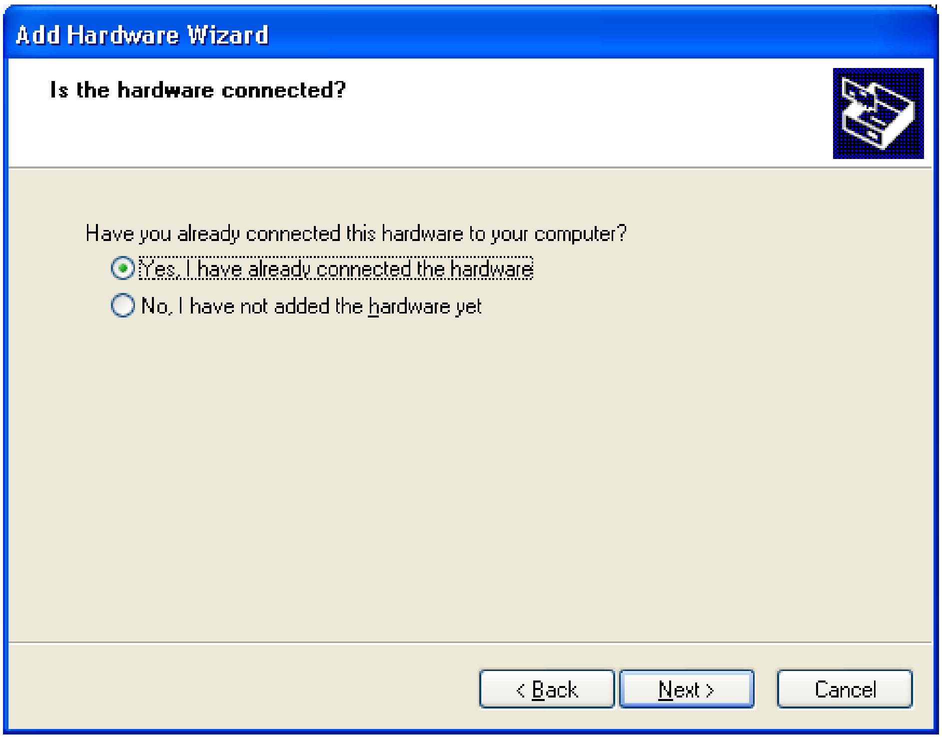
2. Hardware Wizard

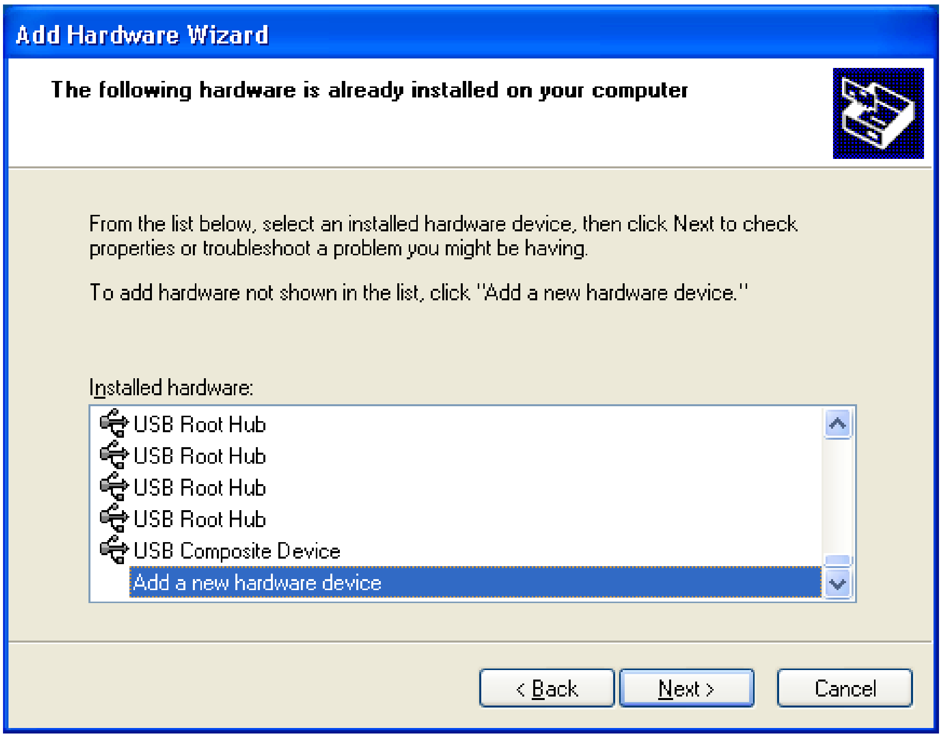
➢ Select **Yes, I have already connected the hardware**



➢ Click **Next >**

➢ Move the scoll bar to the bottom to display the end of the list **Installed Hardware**.

➢ Select **Add a new hardware device**.



➢ Click **Next >**

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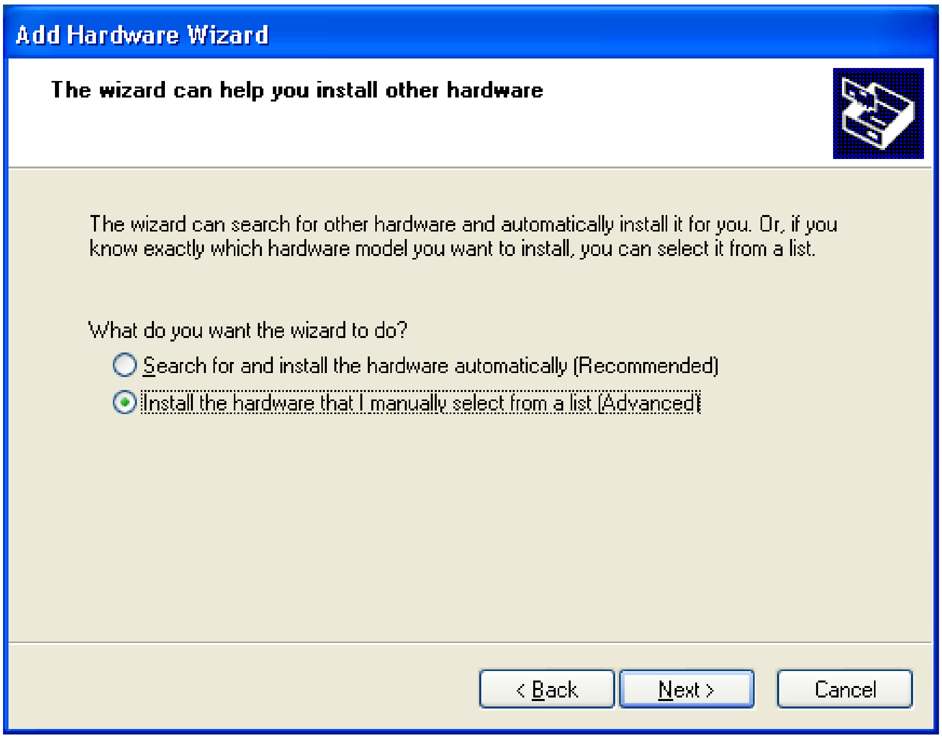
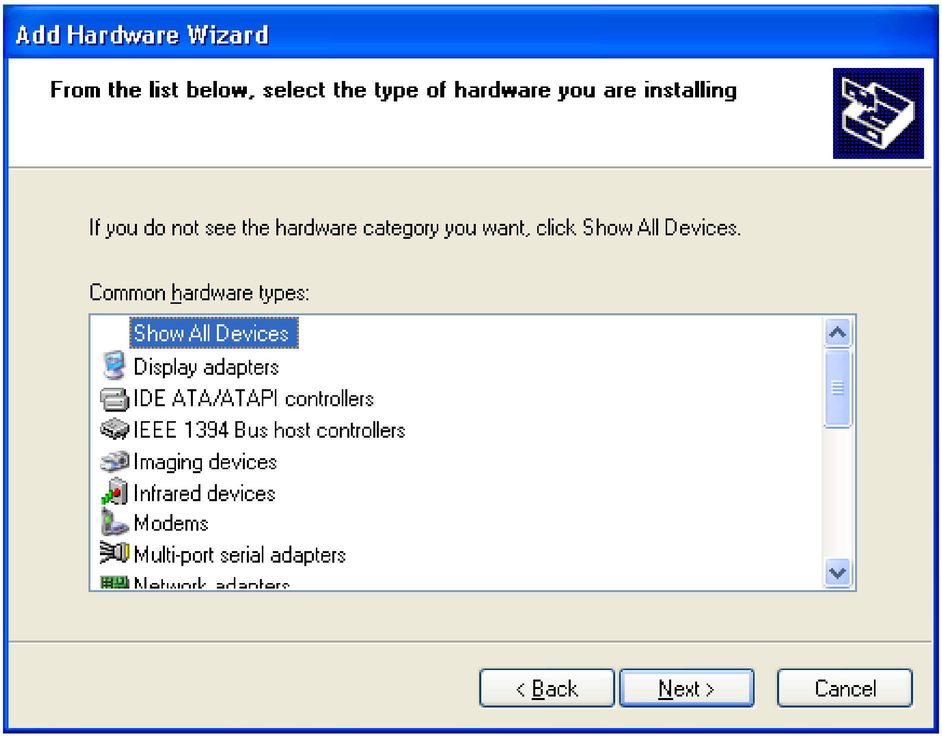
- Select **Install the hardware that I manually select from a list (Advanced)**



- Click **Next >**

- Select **Show All Devices**



- Click **Next >**

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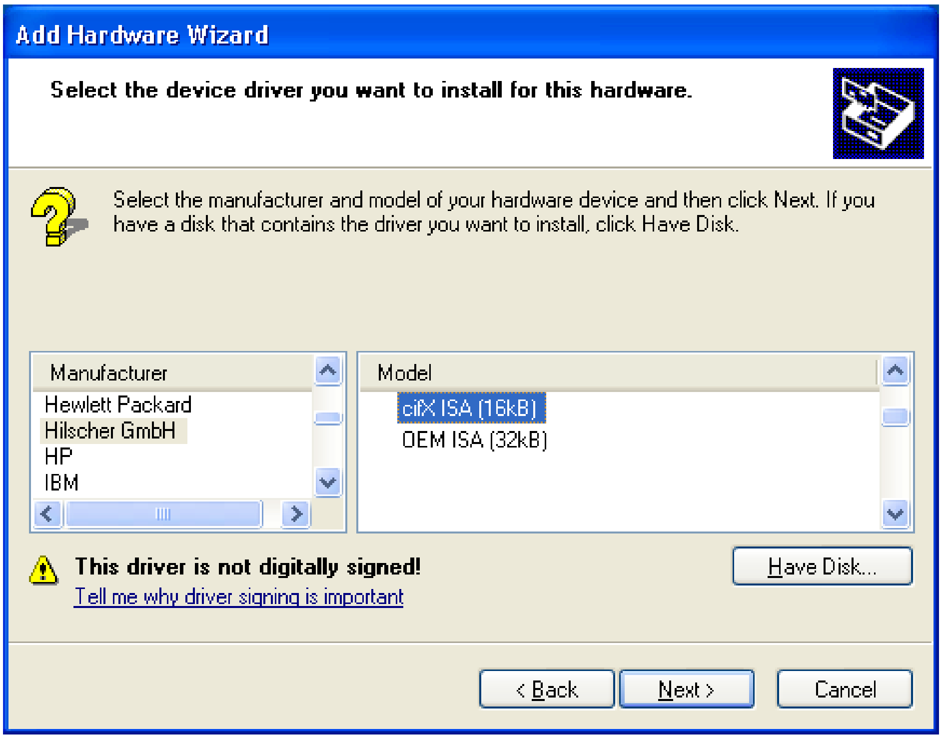
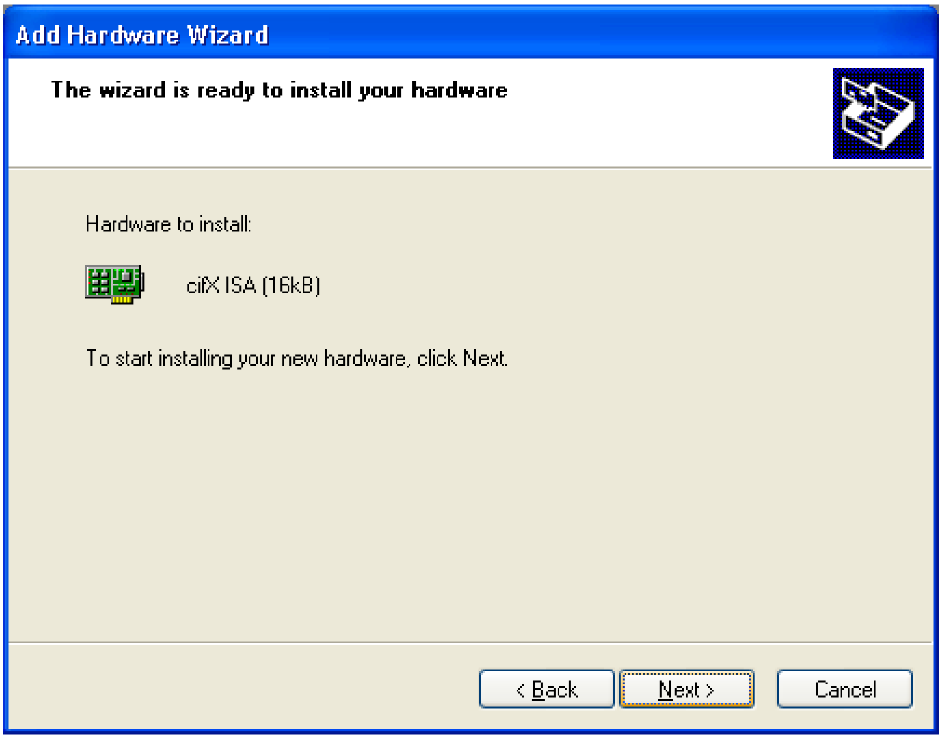
- Select from the list of **Manufacturer** > **Hilscher GmbH**
- Then select from the list of **Model** > **cifX ISA (16kB)**



- Click **Next >**

3. Install

- Click **Next >**



- The cifX Device Driver is installed

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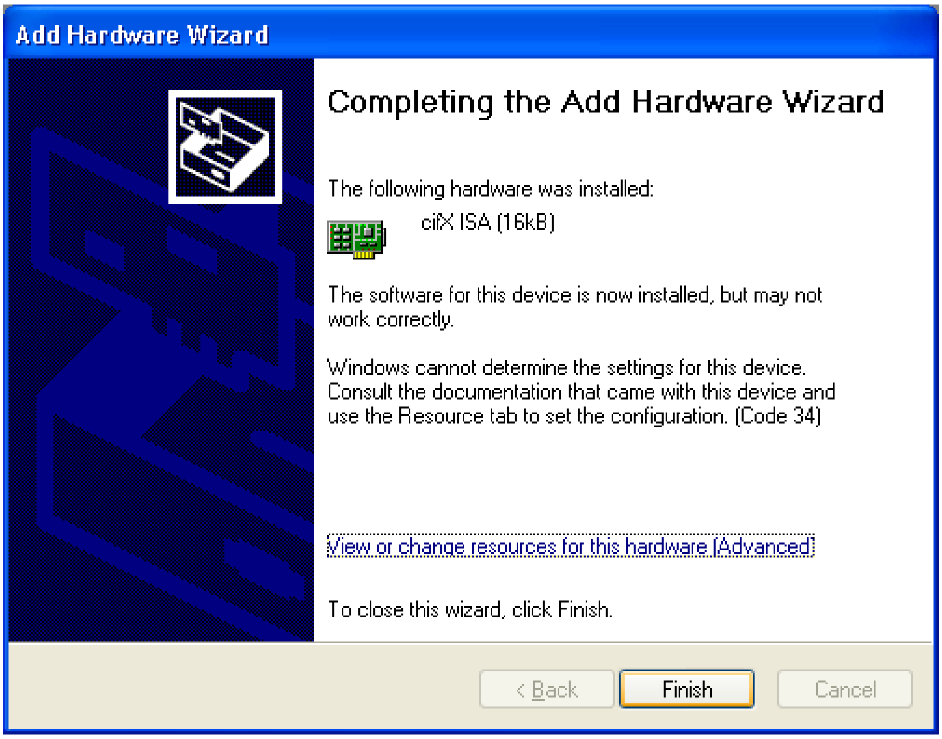
4. Finish or change resources

➢ If the CIFX 104 card is jumpered for memory address D0000 and no interrupt jumper is set on the CIFX 104 card (polling), then click **Finish**.



➢ If you have clicked on Finish, then restart the PC.

➢ If the CIFX 104 card is jumpered for a memory address other than D0000 and no interrupt jumper is set on the CIFX 104 card (polling), then click **View of change resources for this hardware (Advanced)**. Continue with section *Select Memory Address for polling (Basic Configuration 0001)* on page 143.

➢ If the CIFX 104 card is to be used with interrupt then click **View of change resources for this hardware (Advanced)**. Continue with section *Select Memory Address and interrupt (Basic Configuration 0002)* on page 146.

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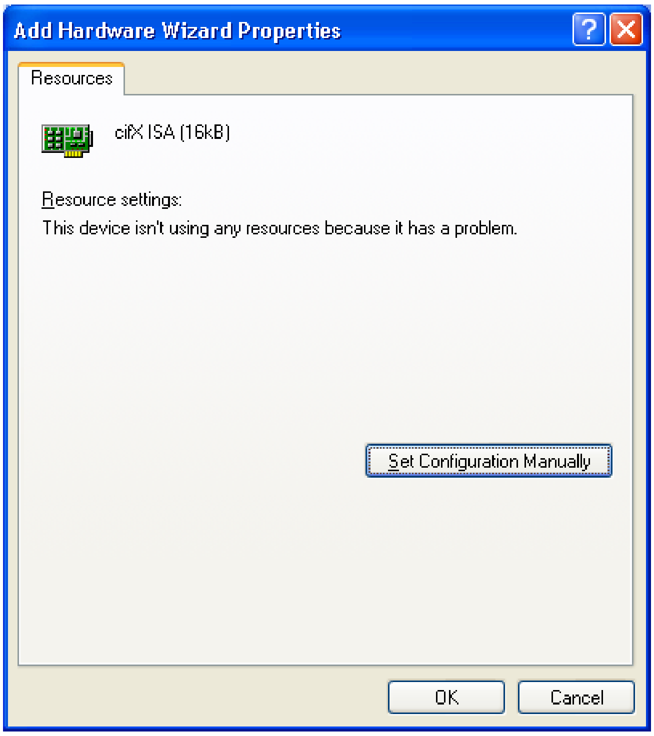
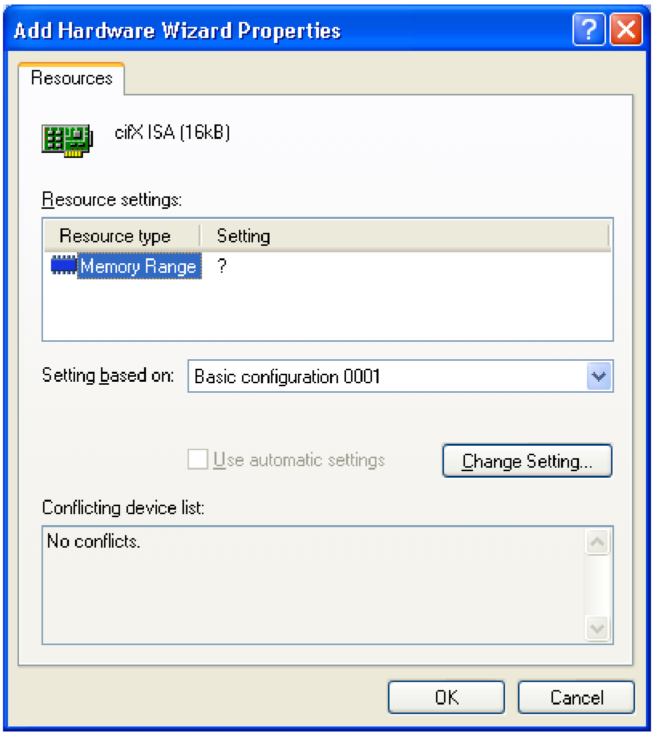
Select Memory Address for polling (Basic Configuration 0001)

- Click **Set Configuration Manually**

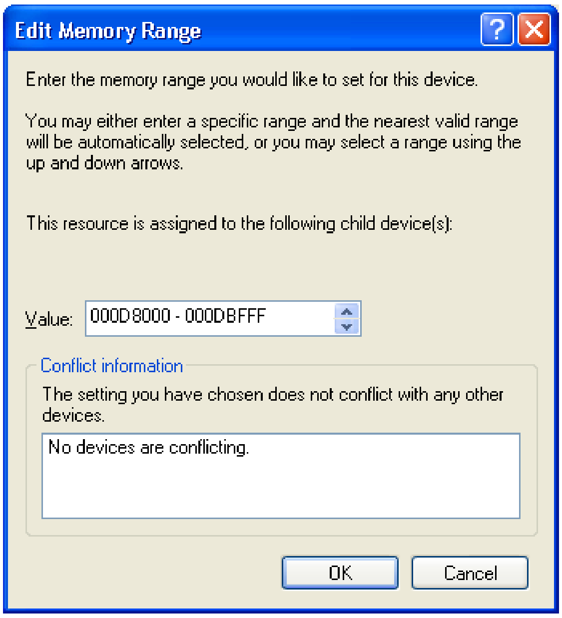


- At **Settings based on** select **Basic configuration 0001**.
- Select **Memory Range**

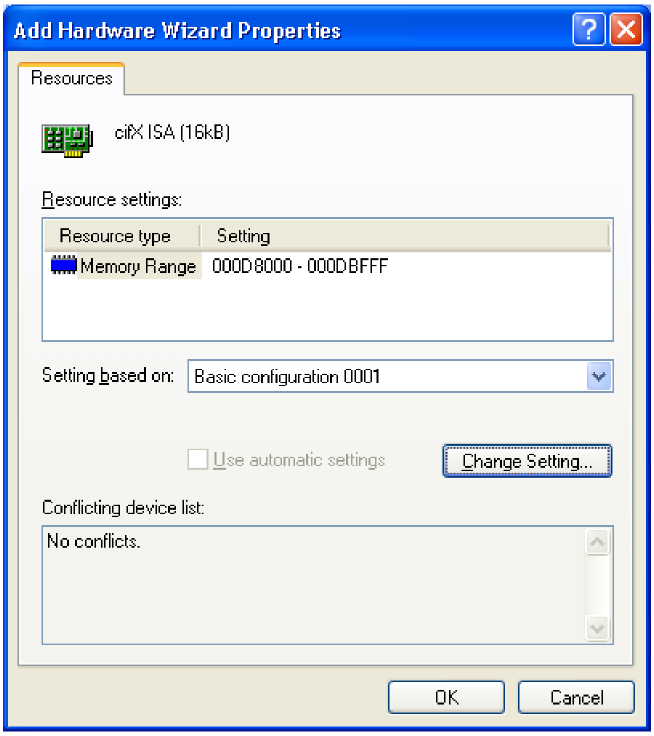


- Click **Change Settings**

➢ Set the memory address: e. g. address D8000

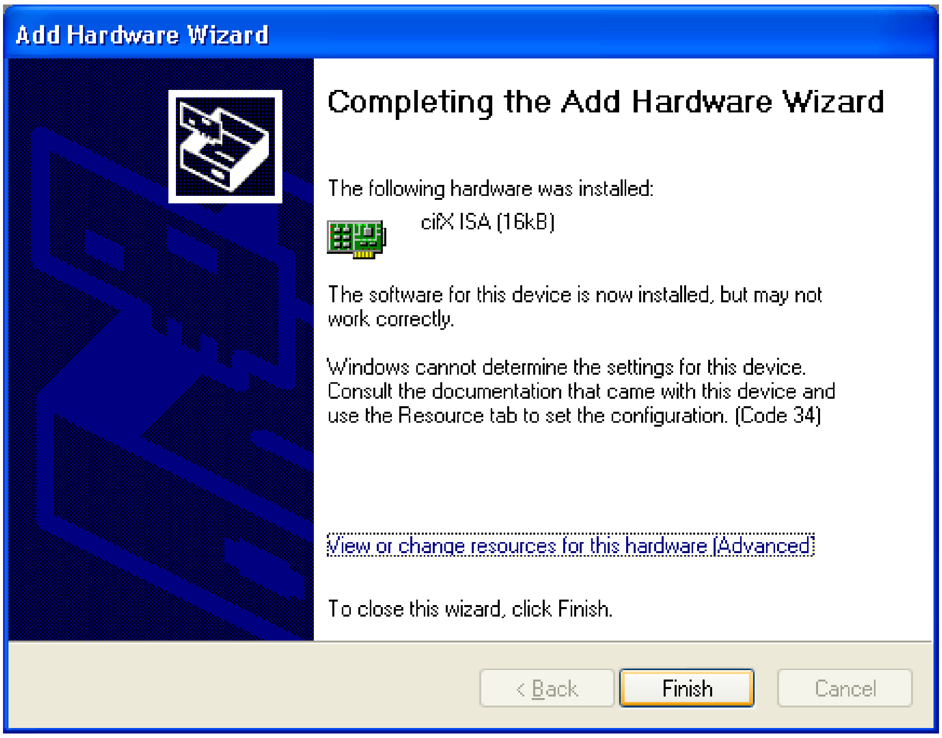


➢ Click **OK**



➢ Click **OK**

- Click **Finish**.



- Restart the PC.

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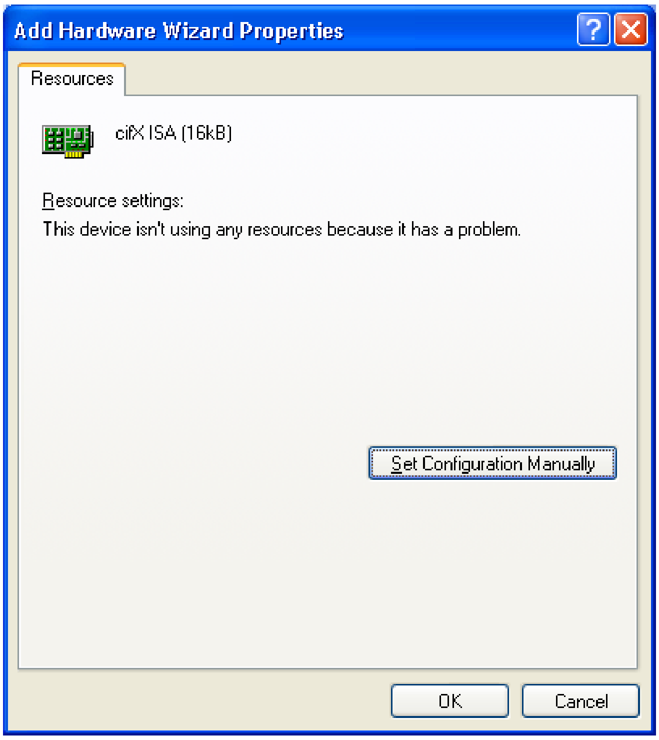
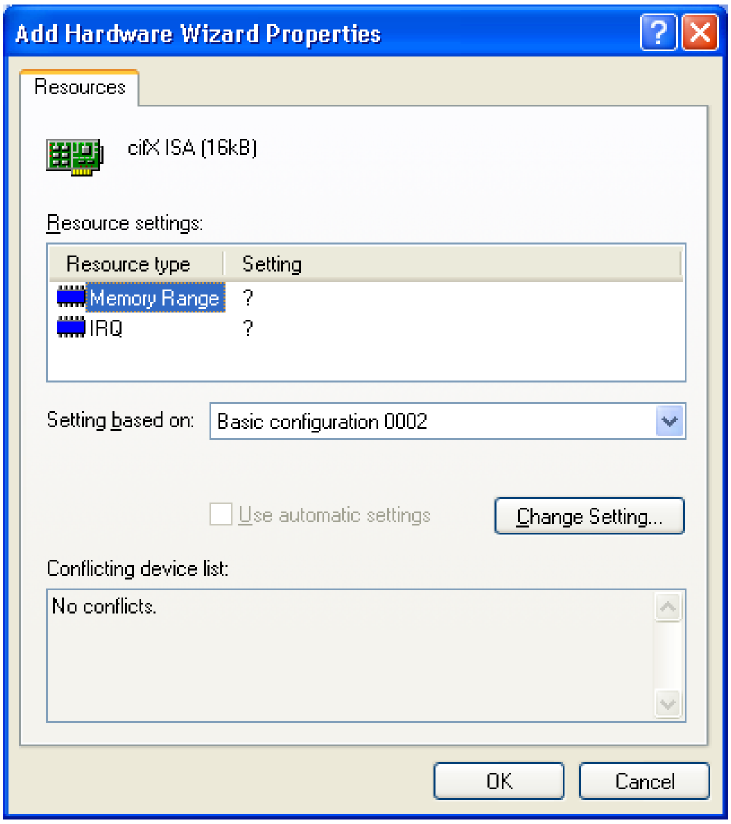
Select Memory Address and interrupt (Basic Configuration 0002)

➢ Click **Set Configuration Manually**



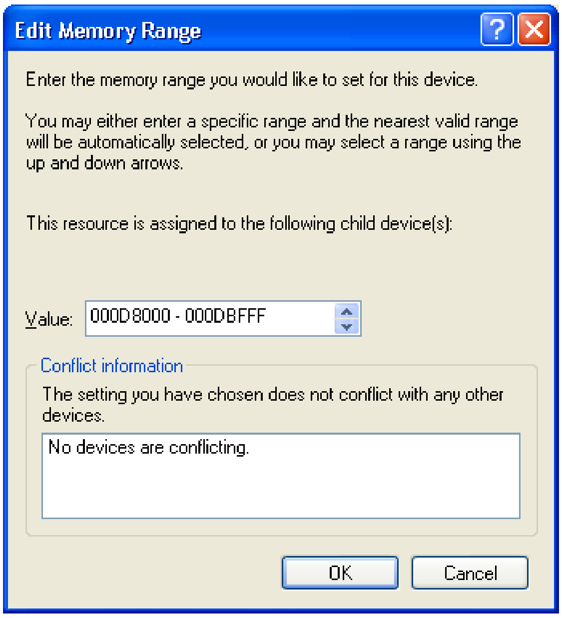
➢ At **Settings based on** select **Basic configuration 0002**.

➢ Select **Memory Range**



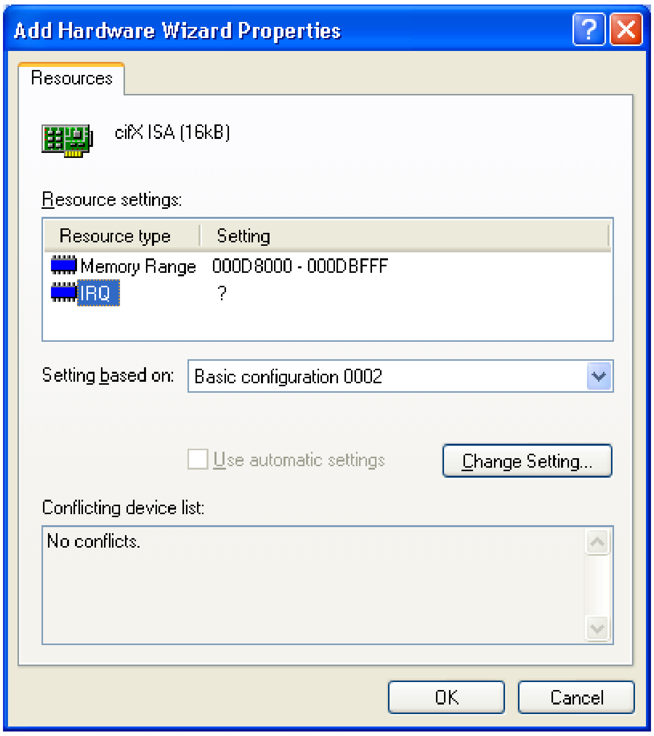
➢ Click **Change Settings**

- Set the memory address: e. g. address D8000



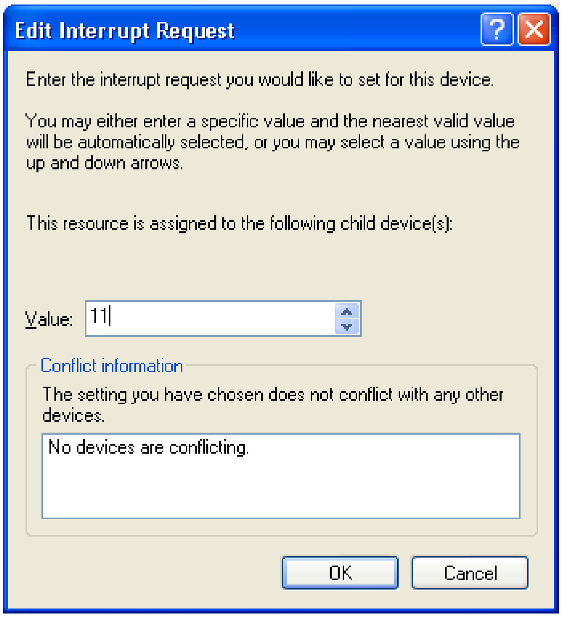
- Click **OK**

- Select **IRQ**

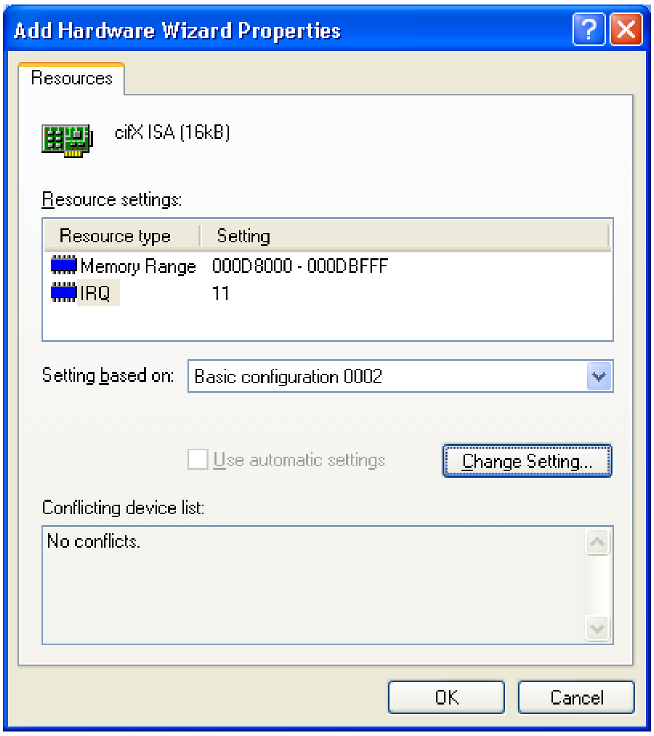


- Click **Change Settings**

- Set the interrupt number: e. g. interrupt 11

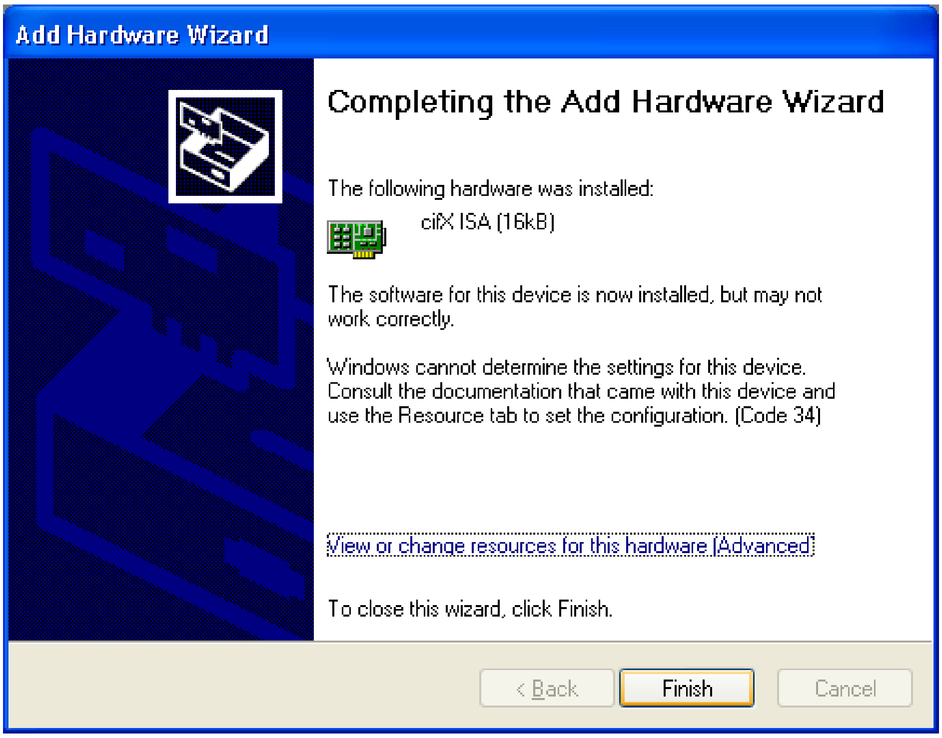


- Click **OK**



- Click **OK**

➢ Click **Finish**.



➢ Restart the PC.

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Check in the Device Manager if the cifx ISA is installed properly

- Open the **Device Manager**: Desktop symbol **My Computer >** right mouse button **Properties >** Tab **Hardware >** button **Device Manager.**
- Check, if the display in the **Device Manager** shows **cifX ISA (16kB)**

If an exclamation mark is shown with **cifx ISA (16kB)**

- If an exclamation mark is shown with **cifx ISA (16kB)**, then either a resource conflict exists or the requested resources are not available.
- Select from the context menu on **cifx ISA (16kB) > Properties.**
- Select the tab **Resources**.
- Change the setting for the memory range respectively the interrupt with **Set Configuration Manually**, as described in section *Select Memory Address for polling (Basic Configuration 0001)* on page 143 or in section *Select Memory Address and interrupt (Basic Configuration 0002)* on page 146.

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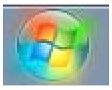
7.4 Install CIFX 104 (ISA) – Windows 7

Precondition: The CIFX Device Driver was already installed on the used PC. If this is not the case yet, then run the setup program **cifX Device Driver Setup.exe**. This setup program installs the driver and the required INF files.

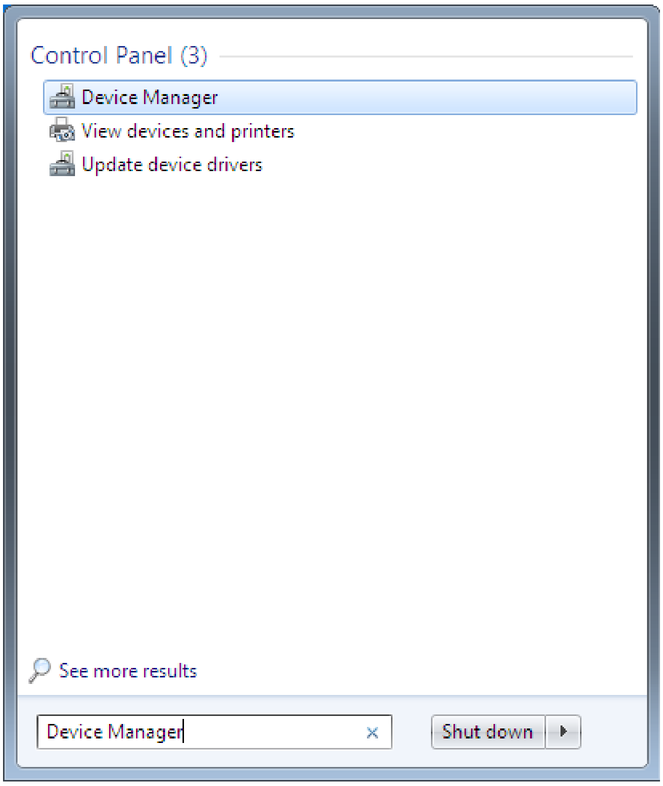
Do the following steps to install a CIFX 104 card, e. g. to reserve the memory range and if necessary one interrupt at the operating system for the card:

1. Open Start

➢ Click on Start 

2. Search and start the Device Manager

➢ Enter **Device Manager** into the search field

↳ 

➢ Click on Device Manager

↳ The Device Manager starts

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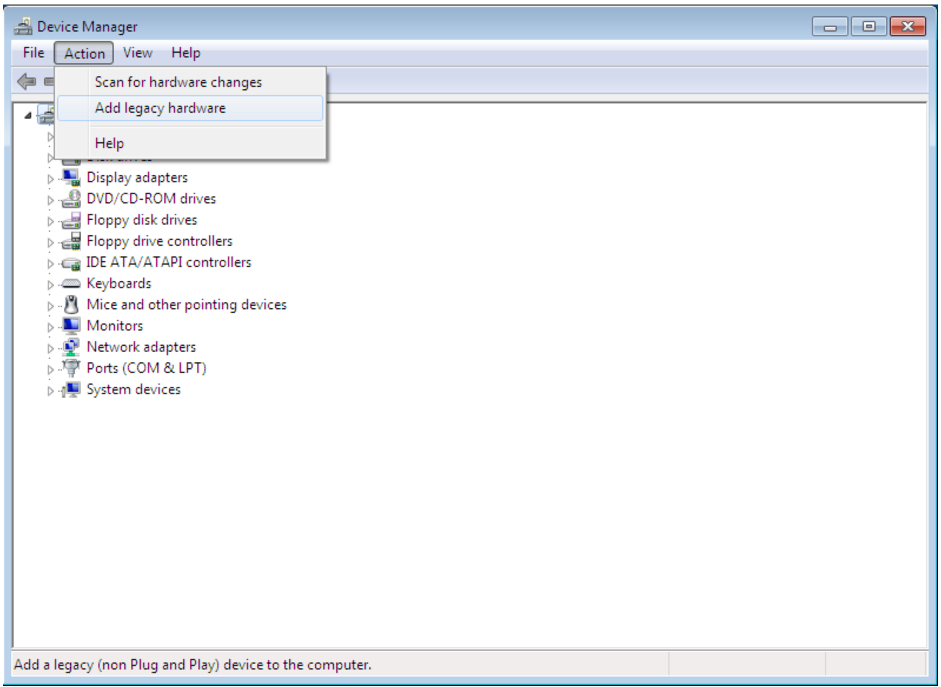
3. Add legacy hardware

➢ In the Device manager click on the any element of the tree, e. g. select the top element of the tree

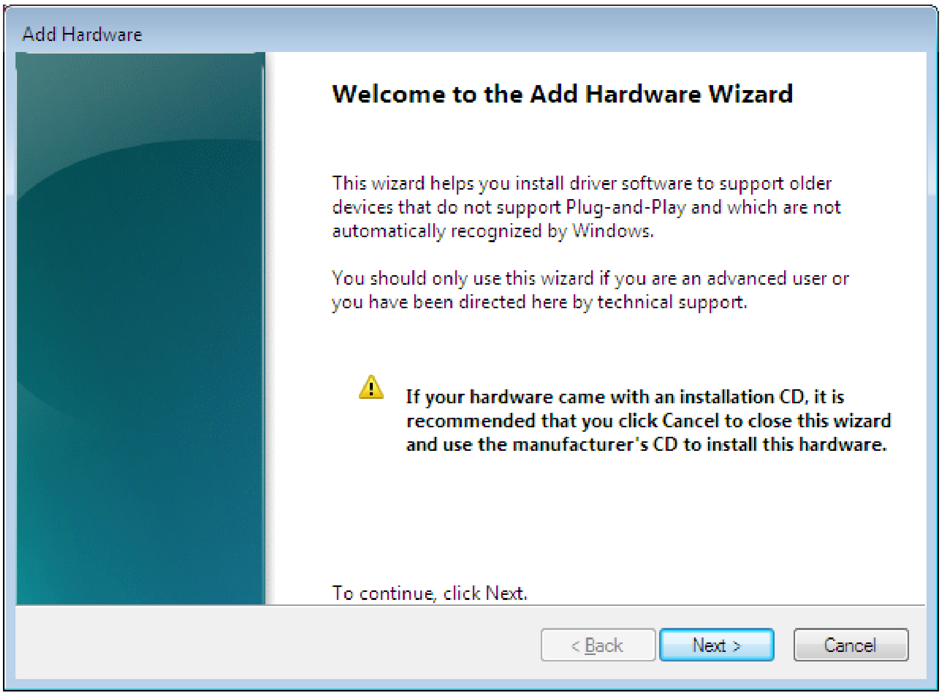
➢ Select from the menu **Action > Add legacy hardware**



➭ The Hardware Wizard starts

4. Hardware Wizard

➢ Click **Next >**



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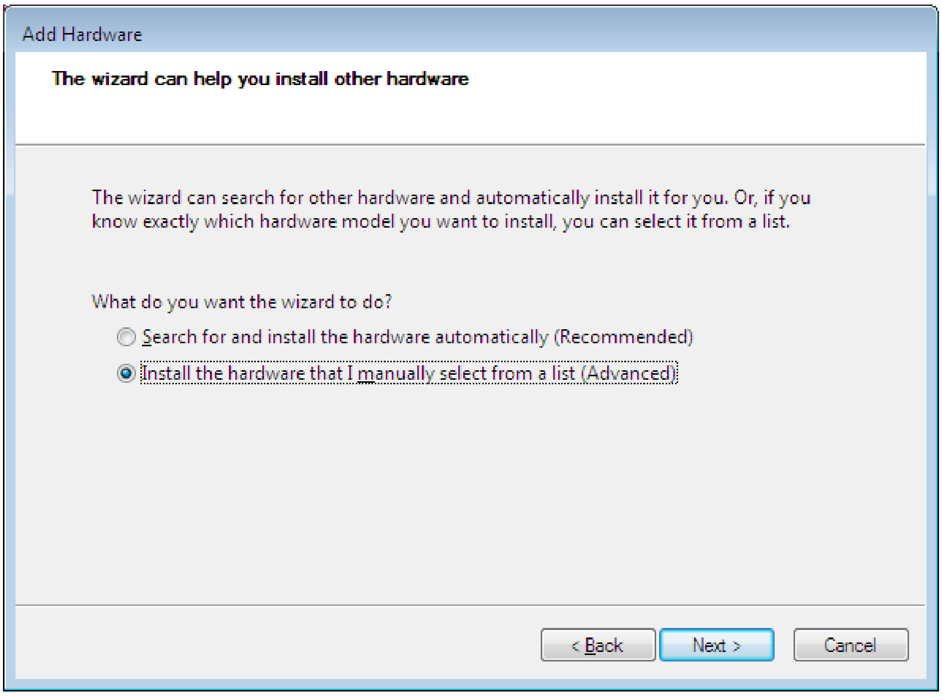
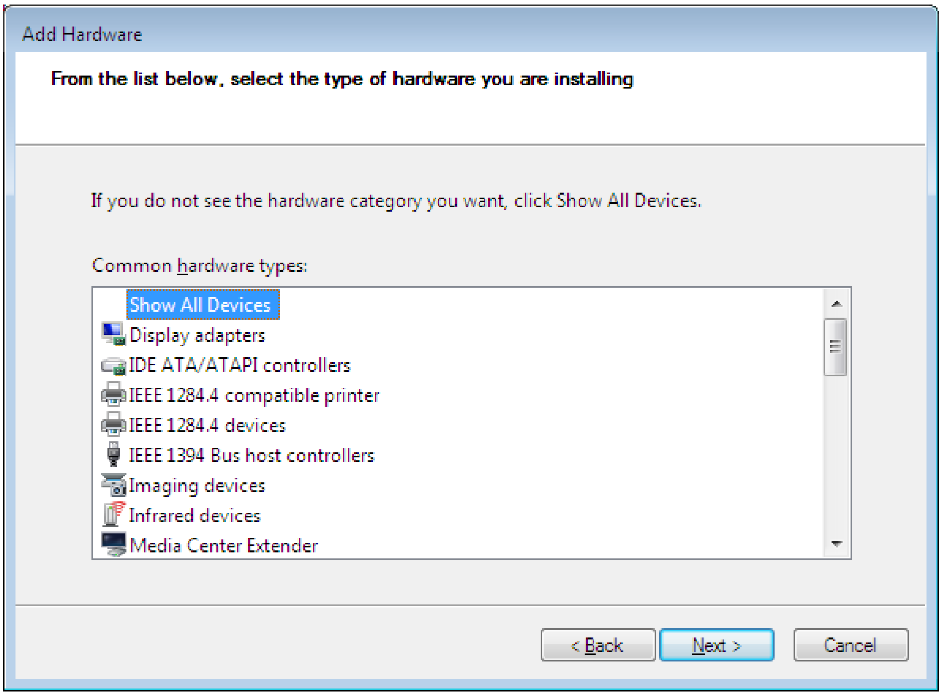
- Select **Install the hardware that I manually select from a list (Advanced)**



- Click **Next >**

- Select **Show All Devices**



- Click **Next >**

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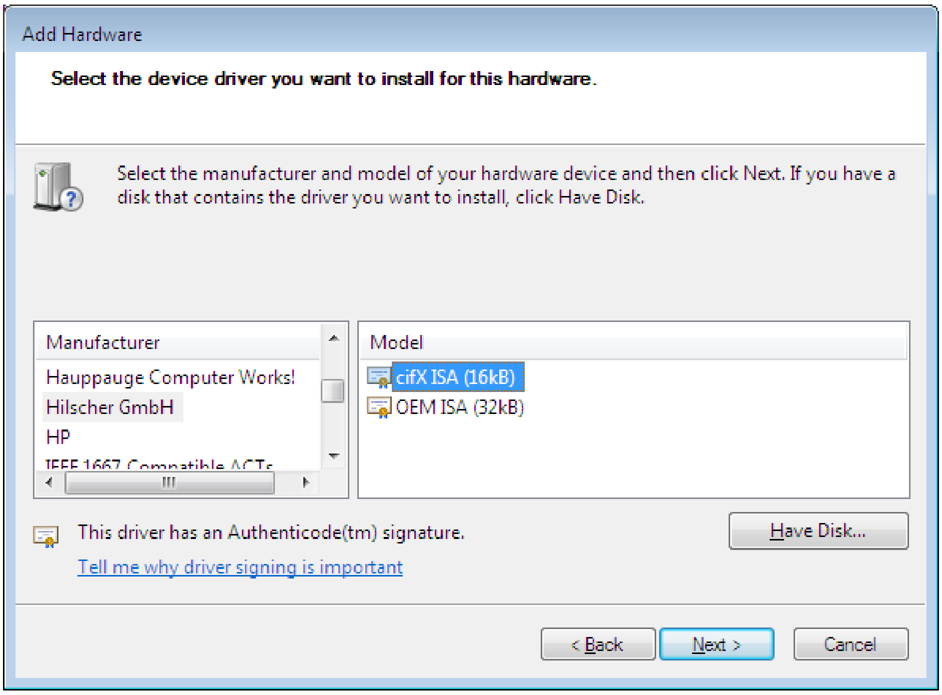
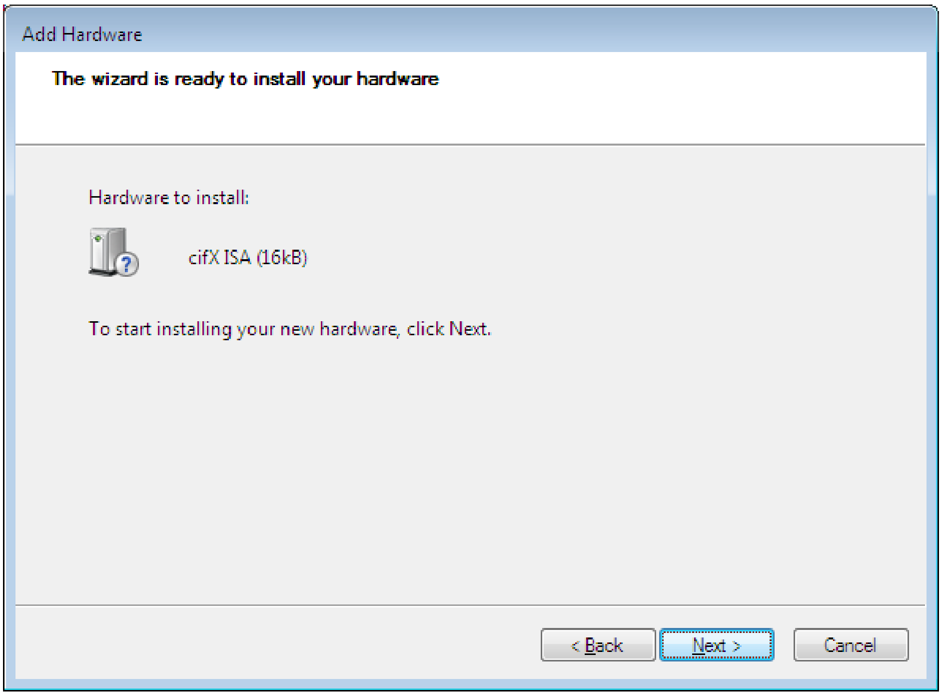
- Wait until windows has created the device list. This can take a while.
- Select from the list of **Manufacturer** > **Hilscher GmbH**
- Then select from the list of **Model** > **cifX ISA (16kB)**



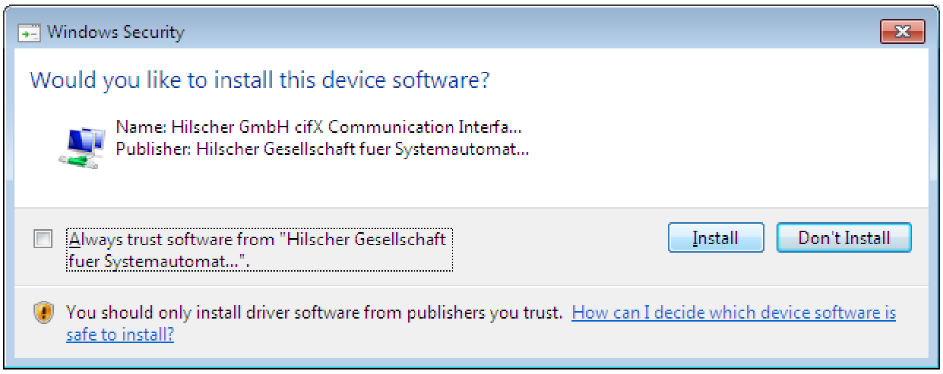
- Click **Next >**

- Click **Next >**



5. Install

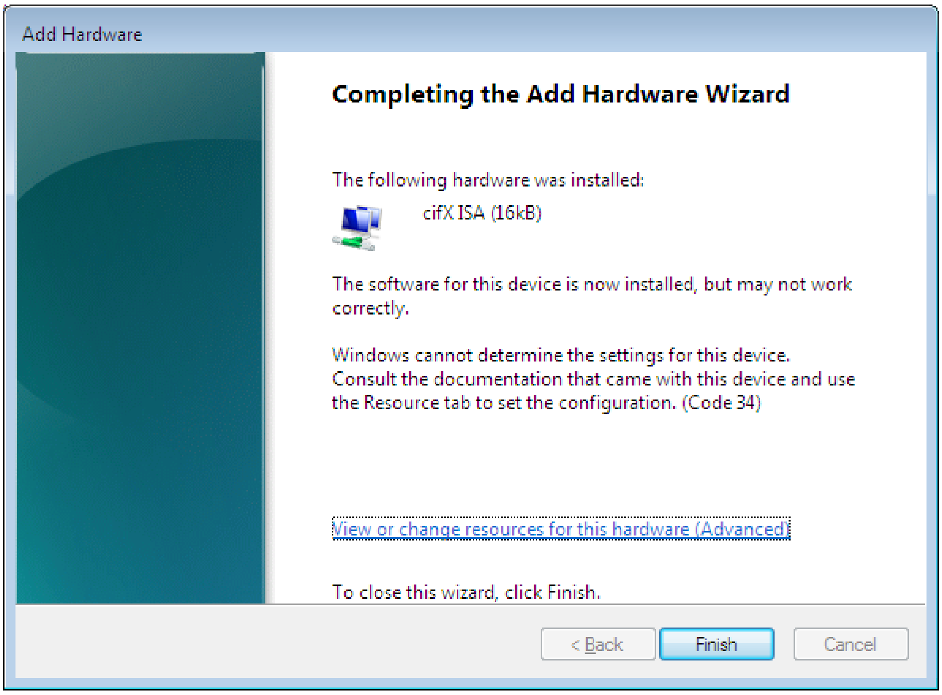
➢ If the Windows Security asks, then click **Install**



The cifX Device Driver is installed

6. Finish or change resources

➢ If the CIFX 104 card is jumpered for memory address D0000 <u>and</u> no interrupt jumper is set on the CIFX 104 card (polling), then click **Finish**.



➢ If you have clicked on Finish, then restart the PC.

➢ If the CIFX 104 card is jumpered for a memory address other than D0000 <u>and</u> no interrupt jumper is set on the CIFX 104 card (polling), then click **View of change resources for this hardware (Advanced)**. Continue with section *Select Memory Address for polling (Basic Configuration 0001)* on page 156.

➢ If the CIFX 104 card is to be used with interrupt then click **View of change resources for this hardware (Advanced)**. Continue with section *Select Memory Address and interrupt (Basic Configuration 0002)* on page 159.

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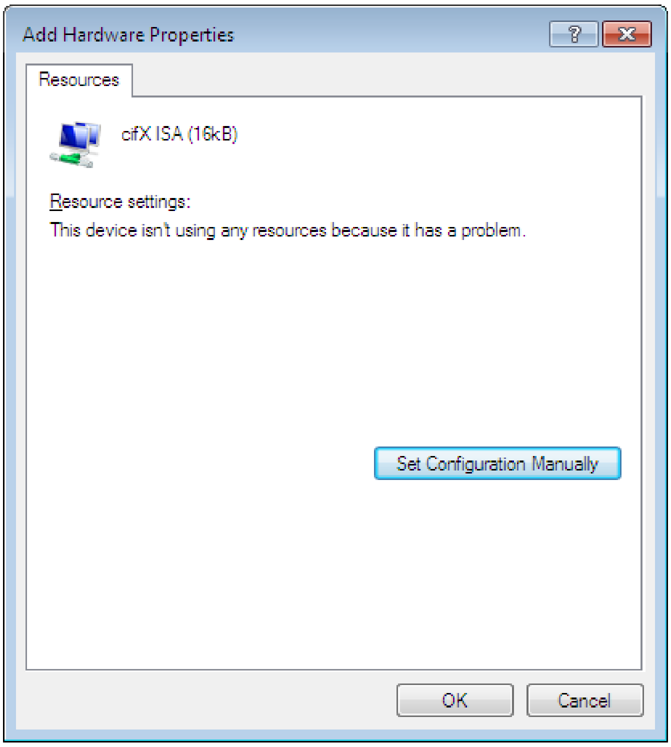
Select Memory Address for polling (Basic Configuration 0001)

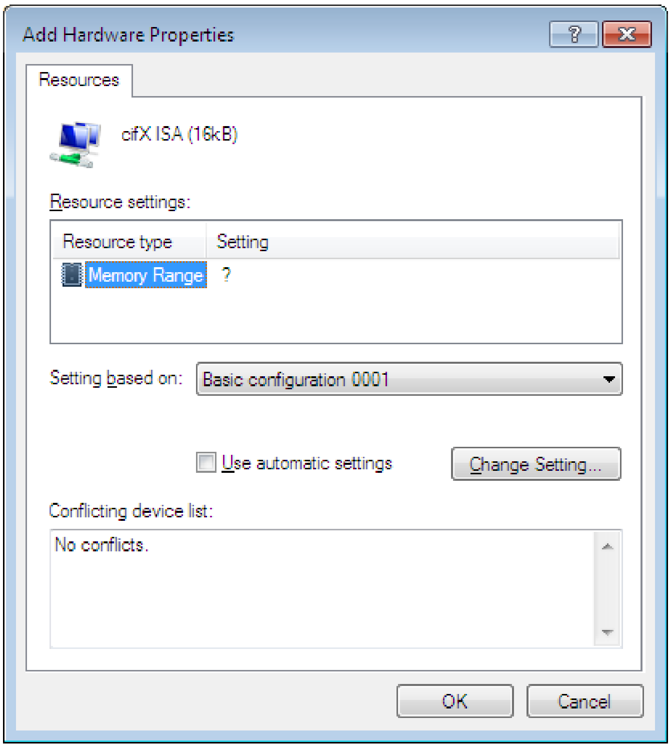
➢ Click **Set Configuration Manually**



➢ Uncheck **Use automatic settings**

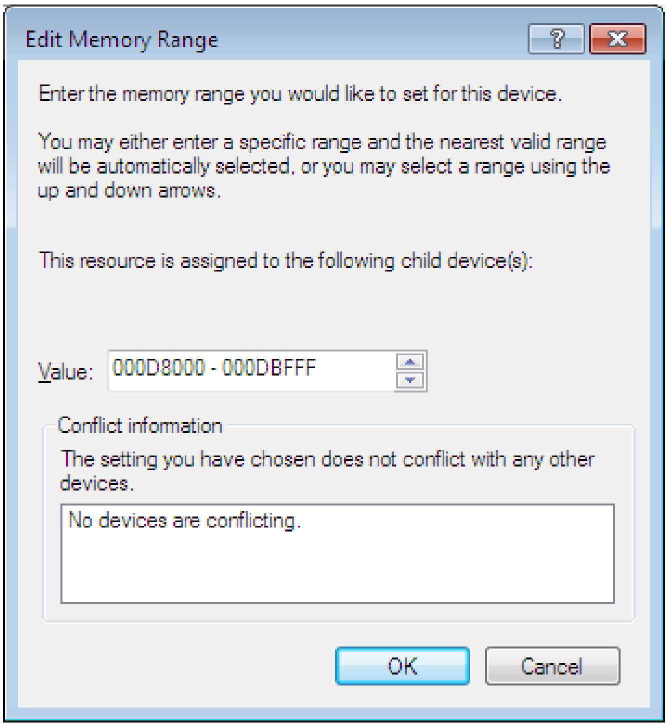
➢ At **Settings based on** select **Basic configuration 0001**.

➢ Select **Memory Range**

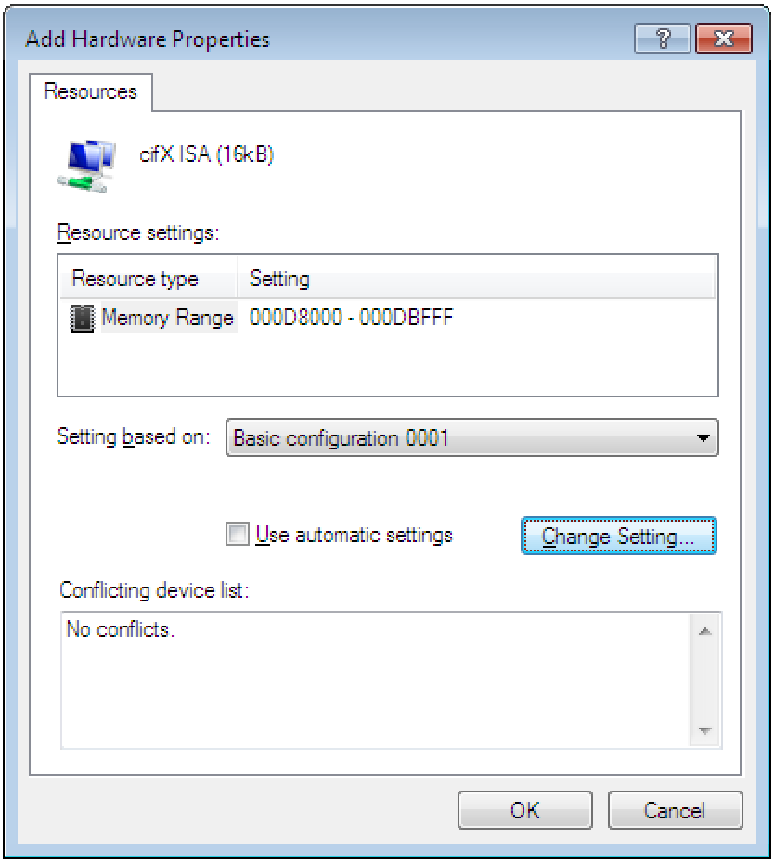


➢ Click **Change Settings**

- Set the memory address: e. g. address D8000



- Click **OK**



- Click **OK**

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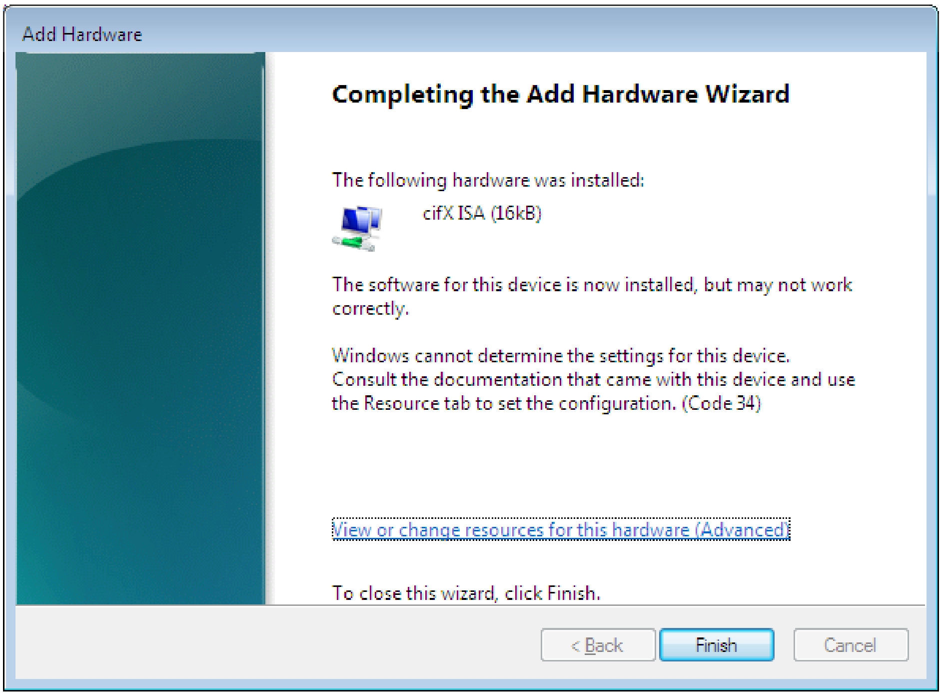
➢ Click **Finish**.



➢ Restart the PC.

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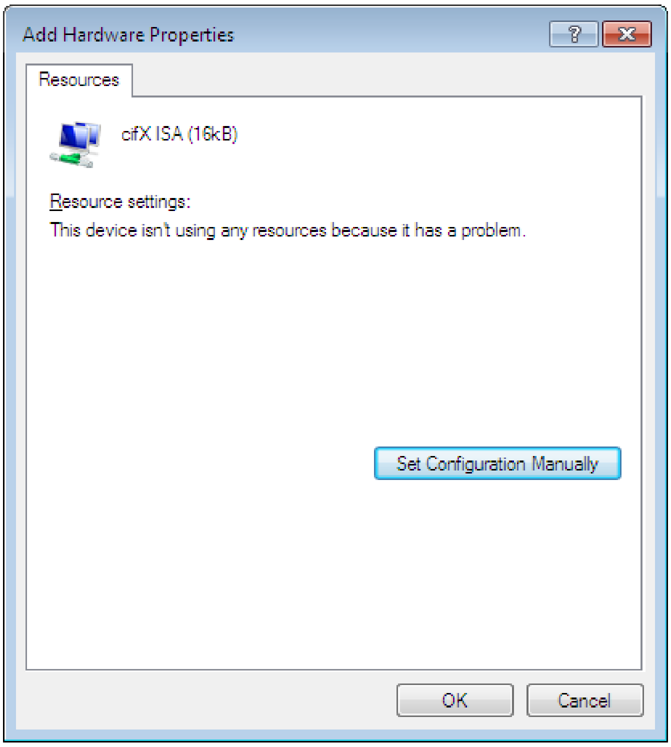
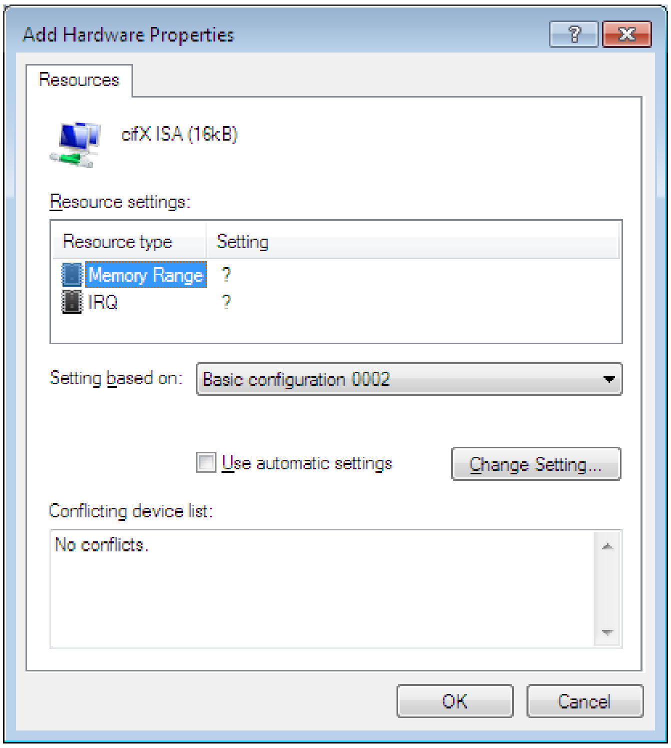
Select Memory Address and interrupt (Basic Configuration 0002)

- Click **Set Configuration Manually**



- Uncheck **Use automatic settings**
- At **Settings based on** select **Basic configuration 0002**.
- Select **Memory Range**



- Click **Change Settings**

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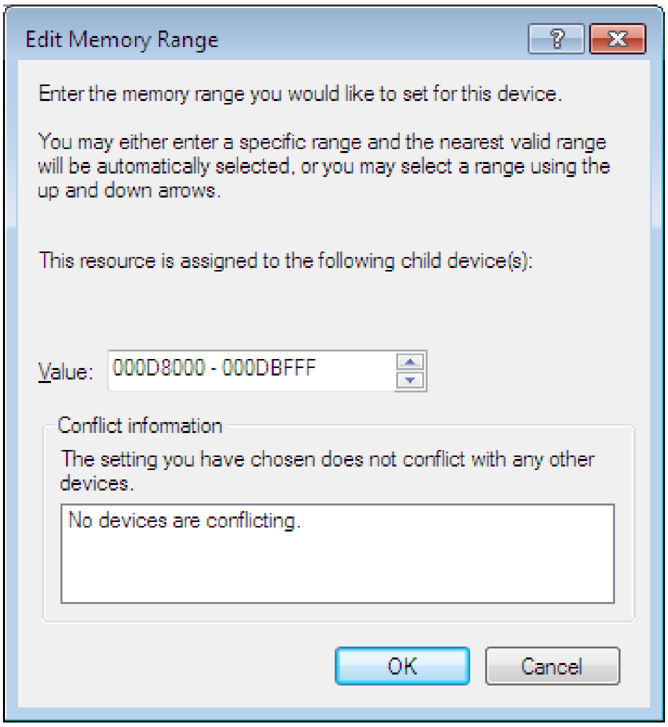
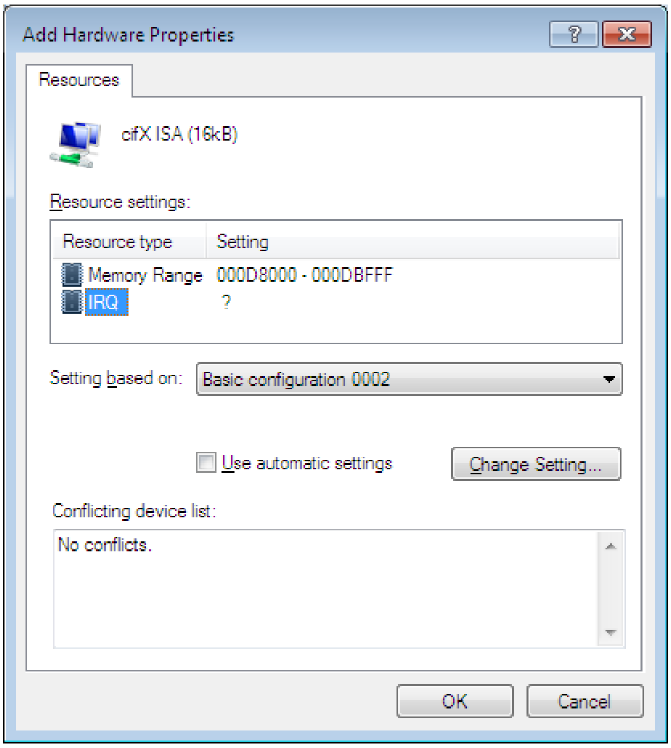
- Set the memory address: e. g. address D8000



- Click **OK**

- Select **IRQ**



- Click **Change Settings**

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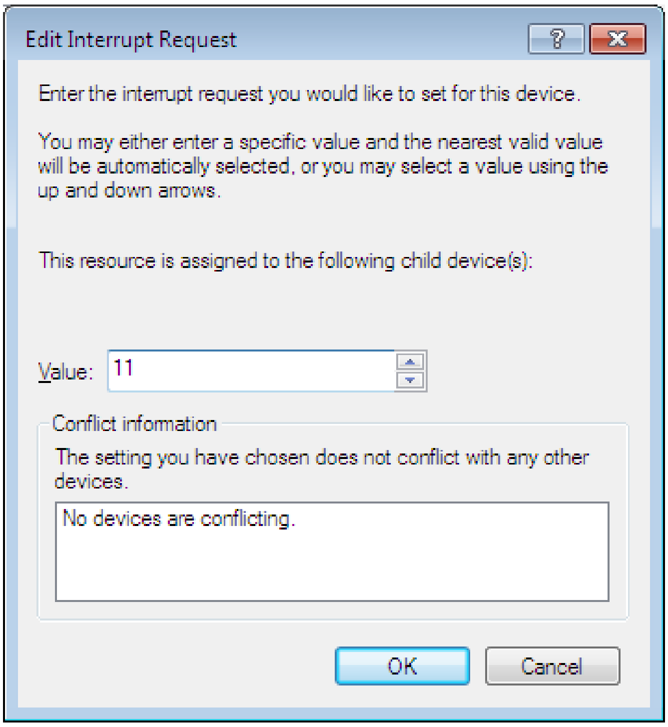
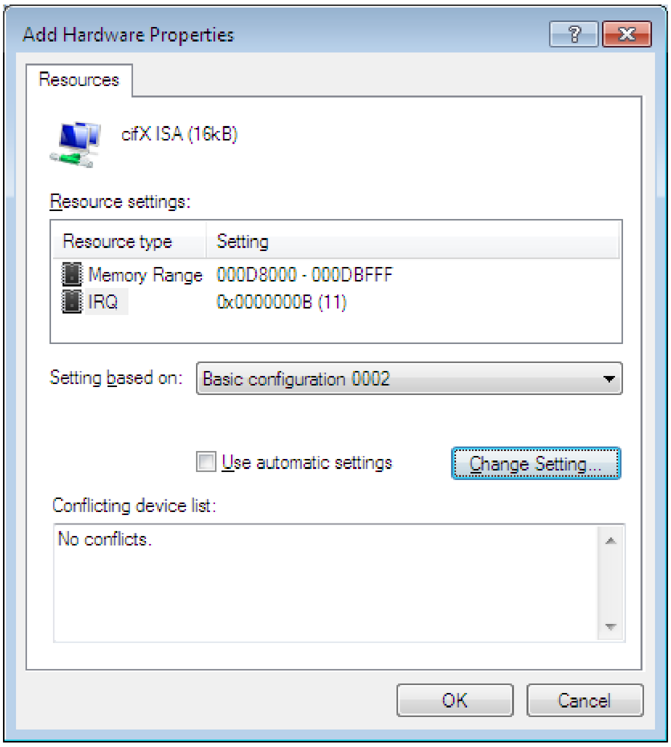
➢ Set the interrupt number: e. g. interrupt 11



➢ Click **OK**



➢ Click **OK**

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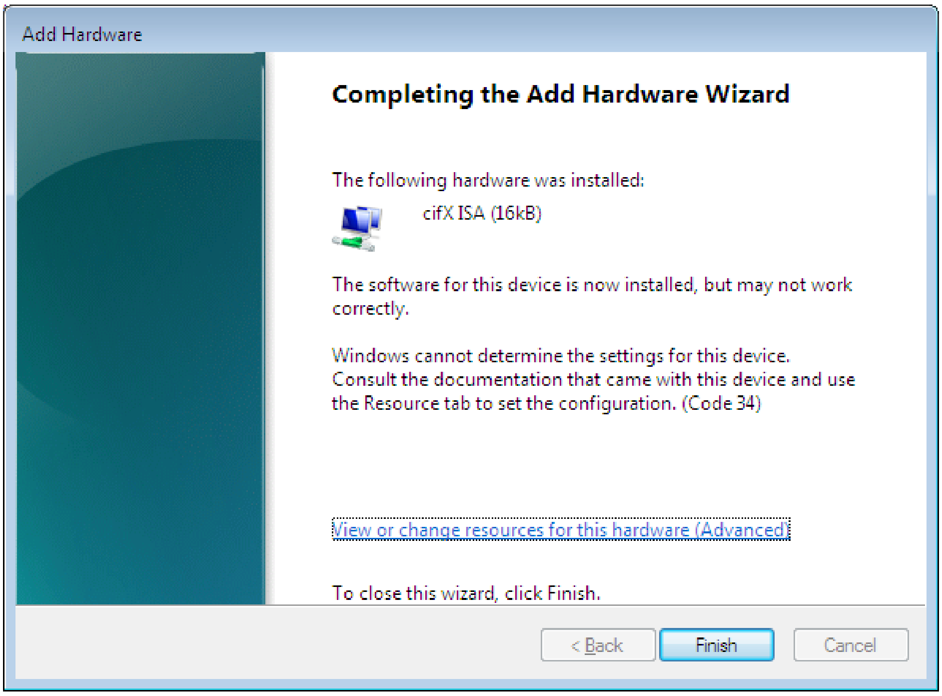
➢ Click **Finish**.



➢ Restart the PC.

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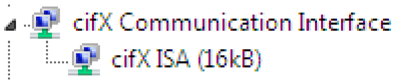
Check in the Device Manager if the cifx ISA is installed properly

- Open the **Device Manager**.
- Check, if the display in the **Device Manager** shows **cifX ISA (16kB)**



If an exclamation mark is shown with **cifx ISA (16kB)**

- If an exclamation mark is shown with **cifx ISA (16kB)**, then either a resource conflict exists or the requested resources are not available.
- Select from the context menu on **cifx ISA (16kB) > Properties.**
- Select the tab **Resources**.
- Change the setting for the memory range respectively the interrupt with **Set Configuration Manually**, as described in section *Select Memory Address for polling (Basic Configuration 0001)* on page 156 or in section *Select Memory Address and interrupt (Basic Configuration 0002)* on page 159.

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7.5 Installing the netX Configuration Tool

After the **cifX Device Driver** is installed start the netX Configuration Tool setup program to install the **netX Configuration Tool**:

Therefore:

- Close all application programs on the system!
- Insert the cifX CD to the local CD ROM drive.
- Start in the directory **Software** the netX Configuration Tool setup program and execute the installation steps according to the instructions at the screen.

Or:

- Select **netX Configuration Tool** of the autostart menu.

7.5.1 Uninstalling the netX Configuration Tool

To uninstall the **netX Configuration Tool**:

- Select **Start > Control Panel > Software**
- Click **Remove** in the list beside the entry **netX Configuration Tool**.
- Answer the following question with **Yes**.
- The **netX Configuration Tool** will be removed.

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7.6 Installing SYCON.net

To install the configuration software **SYCON.net**:

➢ Close all application programs on the system!

➢ Insert the cifX CD to the local CD ROM drive.

➢ Start in the directory **Software** the SYCON.net setup program *SYCONnet netX setup.exe*.

Or:

➢ Select **SYCON.net** of the autostart menu.

Note: Administrator privileges are required on Windows® 2000/ Windows® XP systems for installation!

➢ Choose **System Installation** from the start screen.

➢ The installation program asks for the components to be installed.

➢ Answer these questions with **Yes** or **No**.

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7.6.1 Steps how to install SYCOn.net

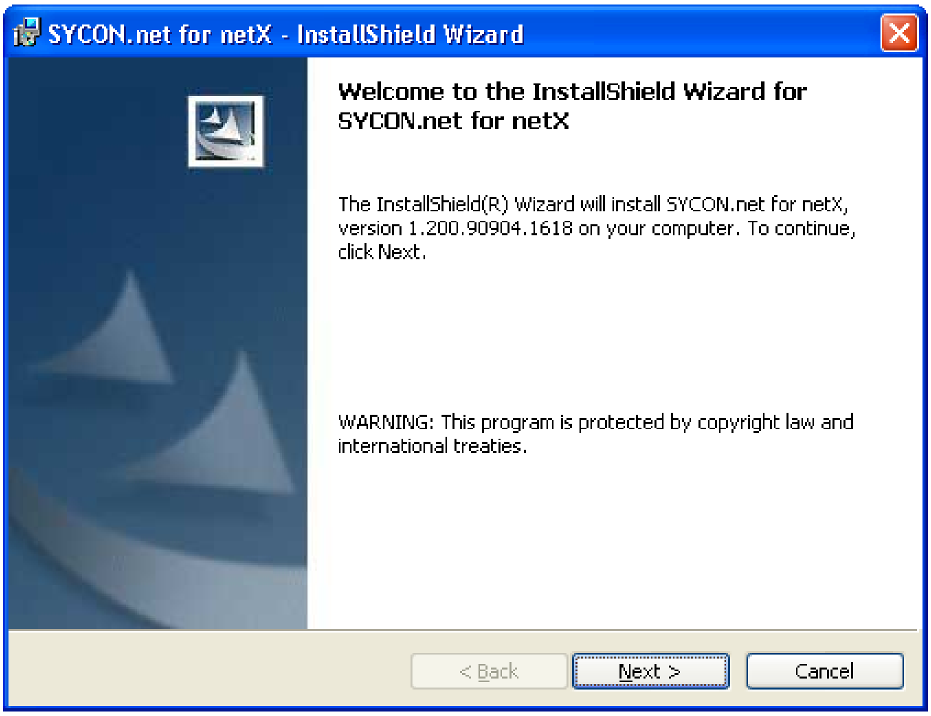
1. Language for the setup

➢ Select the language for the setup

➢ Click on **OK**.

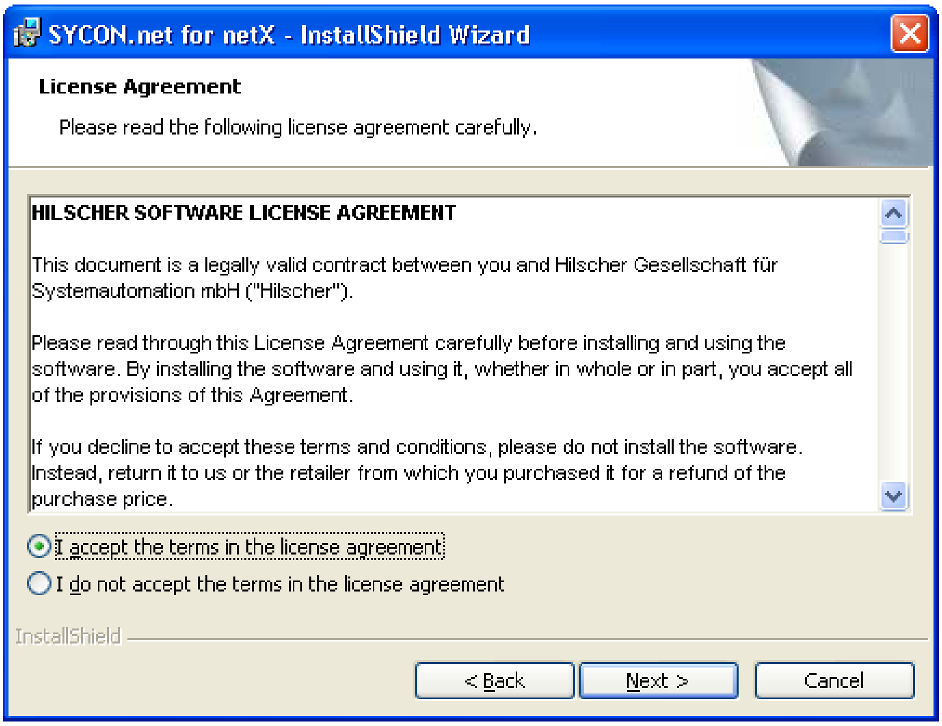
2. Continue installation

➢ Click on **Next >** to continue the installation.



3. Accept license agreement

➢ Select **I accept the terms in the license agreement**, when you agree to it.

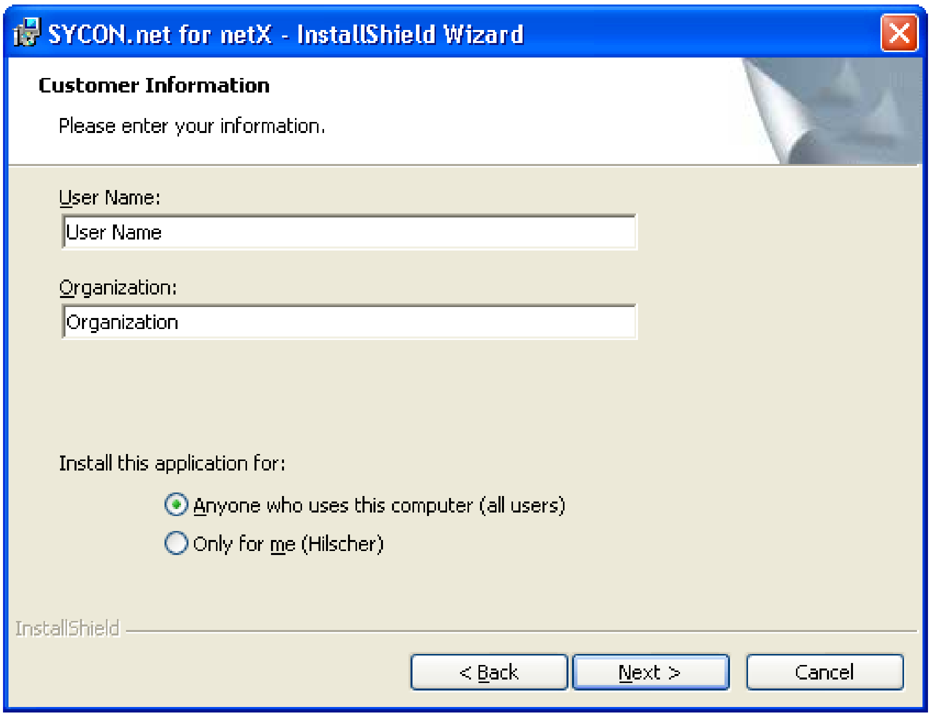


➢ Click on **Next >** to continue the installation.

4. Enter user information

➢ Enter the user name

➢ Enter the name of the organization



➢ Click on **Next >** to continue the installation.

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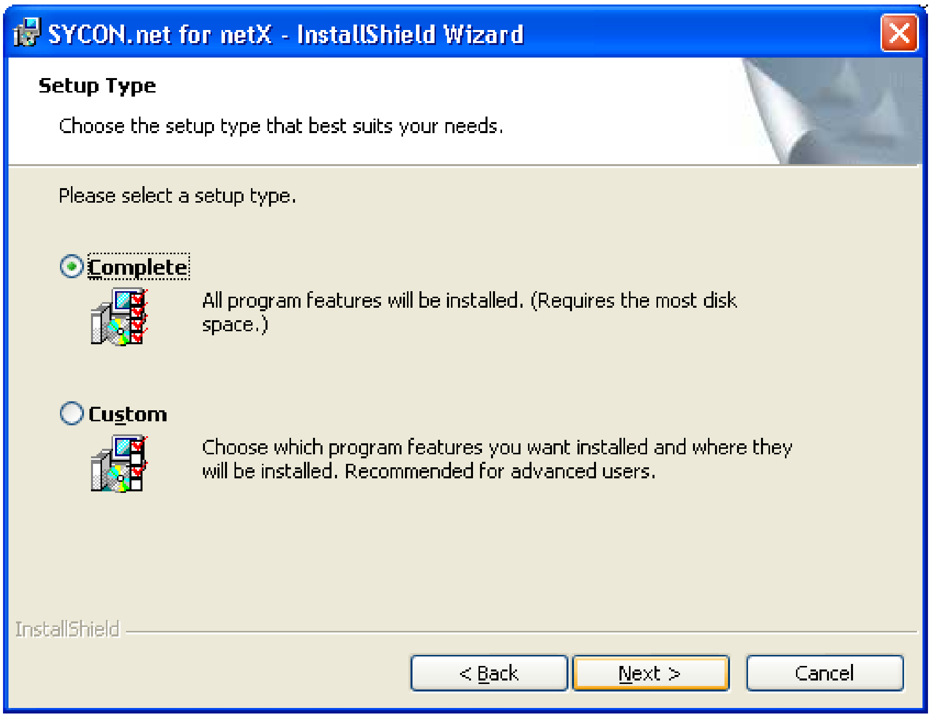
5. Select setup type

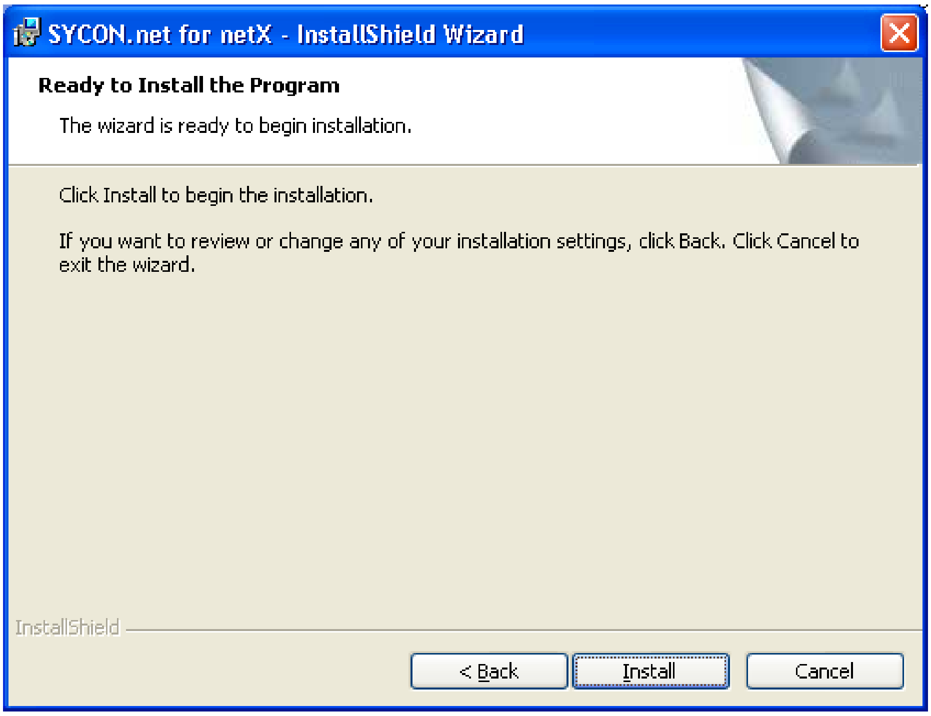
➢ Select **Complete** when you want to install the complete software.



➢ Click on **Next >** to continue the installation.

6. Installation

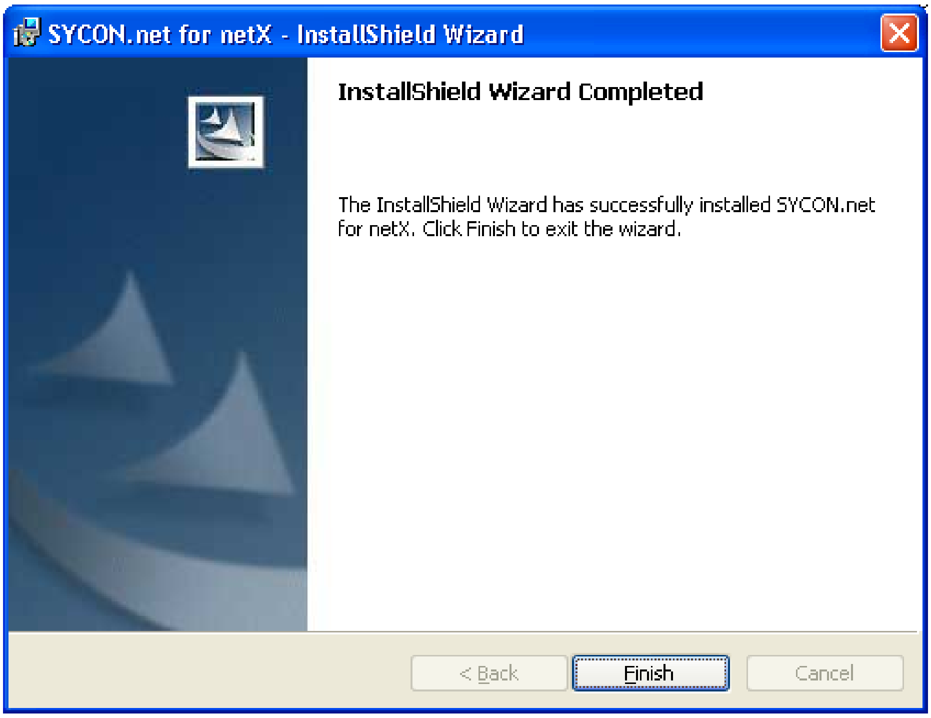
➢ Click on **Install** to do the installation now.



➩ The components are installed. This will take several minutes.

7. Finish installation

➢ Click on **Finish**



➢ The software is installed.

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7.7 „Slot Number (Card ID)“ and „DMA Mode“ in the Software

7.7.1 Slot Number (Card ID) in the cifX Device Driver Setup

This section describes how the **Slot Number (Card ID)** is displayed in the cifX Device Driver setup program.

Precondition: Previously a **Slot Number (Card ID)** between 1 and 9 has been set at the cifX card (refer to section *Setting Slot Number (Card ID)*, on page 119).

The description below uses for **Slot Number (Card ID)** the value „1“.

o Open the **cifX Setup** program in the control panel.

➢ Select **Start > Control Panel**.

➢ Double click on the **cifX Setup** symbol.

➩ The cifx Driver setup program starts.

o Select **cifX**.

➢ Select under **Device List** > **Active Devices** the entry **cifX0** or **cifX1**.

➩ The field **Slot Number** shows the **Slot Number (Card ID)** for the cifX card. For this description the **Slot Number (Card ID)** has the value „1“.

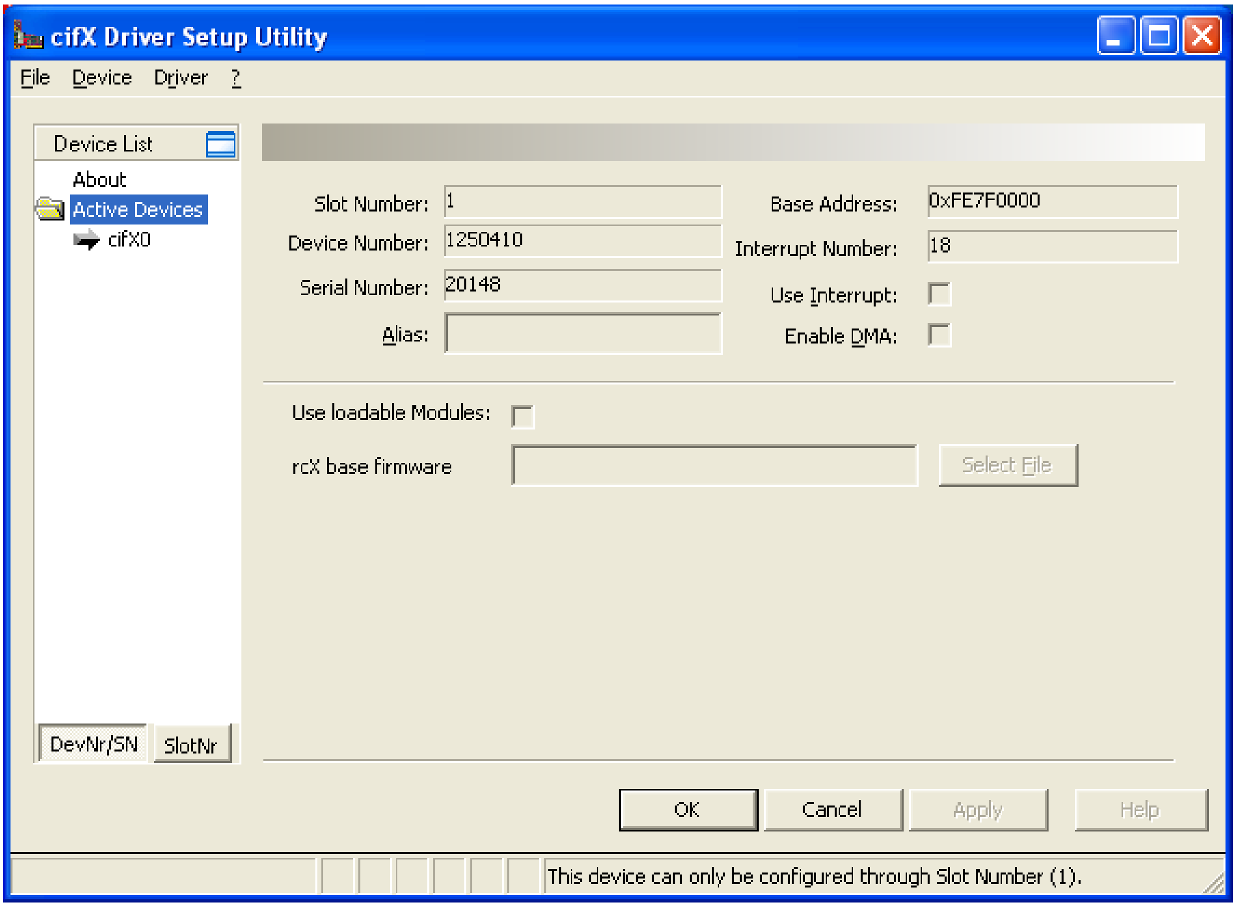

Figure 80: Slot Number (Card ID) in the cifX Device Driver Setup

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Oder:

- o Switch to **SlotNr** presentation.
- ➢ Click under **Device List** on **SlotNr**.
- ➢ Click under **Device List** on **Slot 1**.

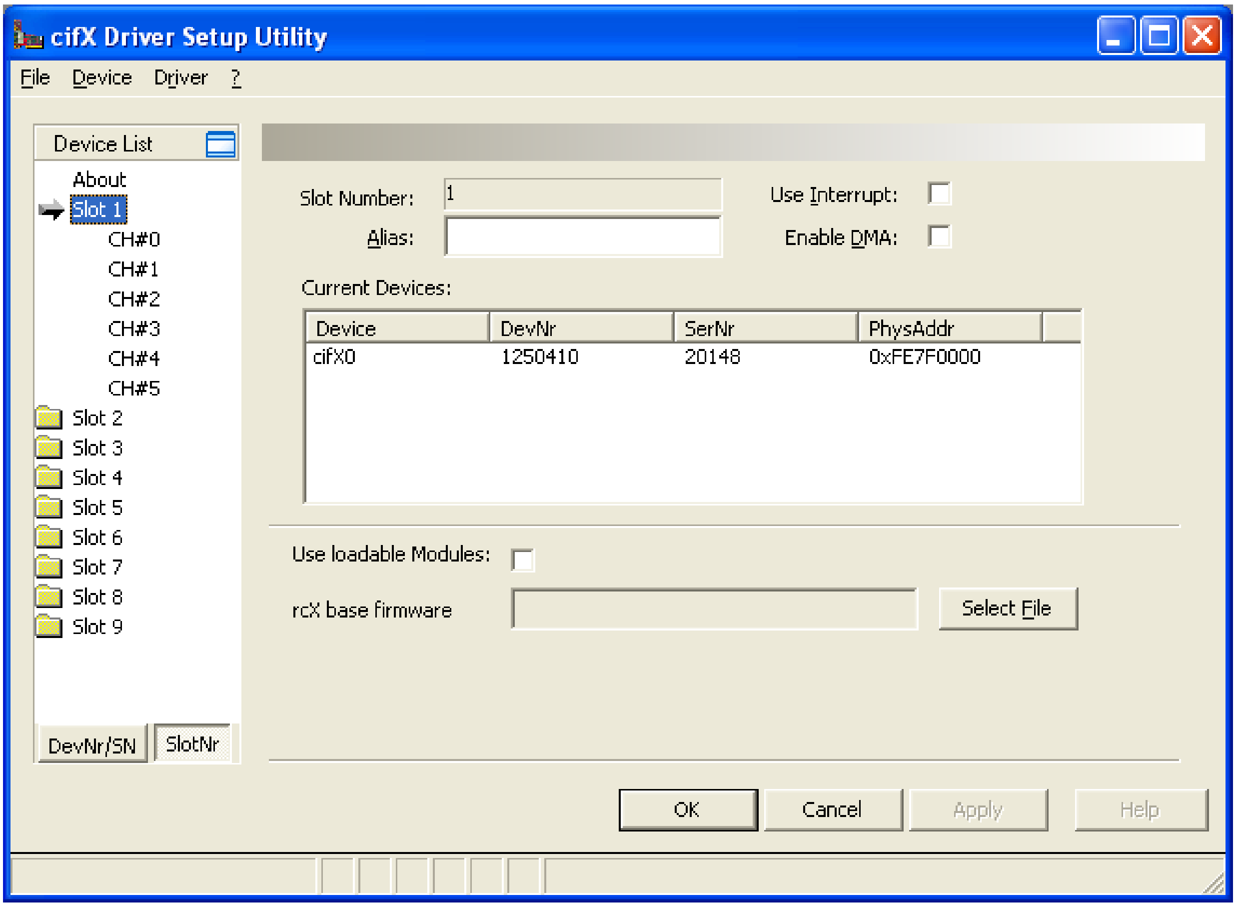

Figure 81: Slot Number (Card ID) in the cifX Device Driver Setup, „SlotNr“ selected

7.7.2 Activating DMA Mode in the cifX Device Driver Setup

This section describes how to activate the **DMA Mode** in the cifX Device Driver setup program.

Case 1: Previously a **Slot Number (Card ID)** between 1 and 9 has been set at the cifX card (refer to section *Setting Slot Number (Card ID)*, on page 119).

Case 2: Previously the **Slot Number (Card ID)** value 0 has been set at the cifX card or the cifX card is not equipped with a **Rotary Switch Slot Number (Card ID)**.

The description below refers to case 1 and uses for **Slot Number (Card ID)** the value „1“.

1. Switch to **SlotNr** presentation.

➢ Click under **Device List** on **SlotNr**.

➢ Click under **Device List** on **Slot 1**.

2. Activate **DMA Mode**

➢ Check **Enable DMA**.

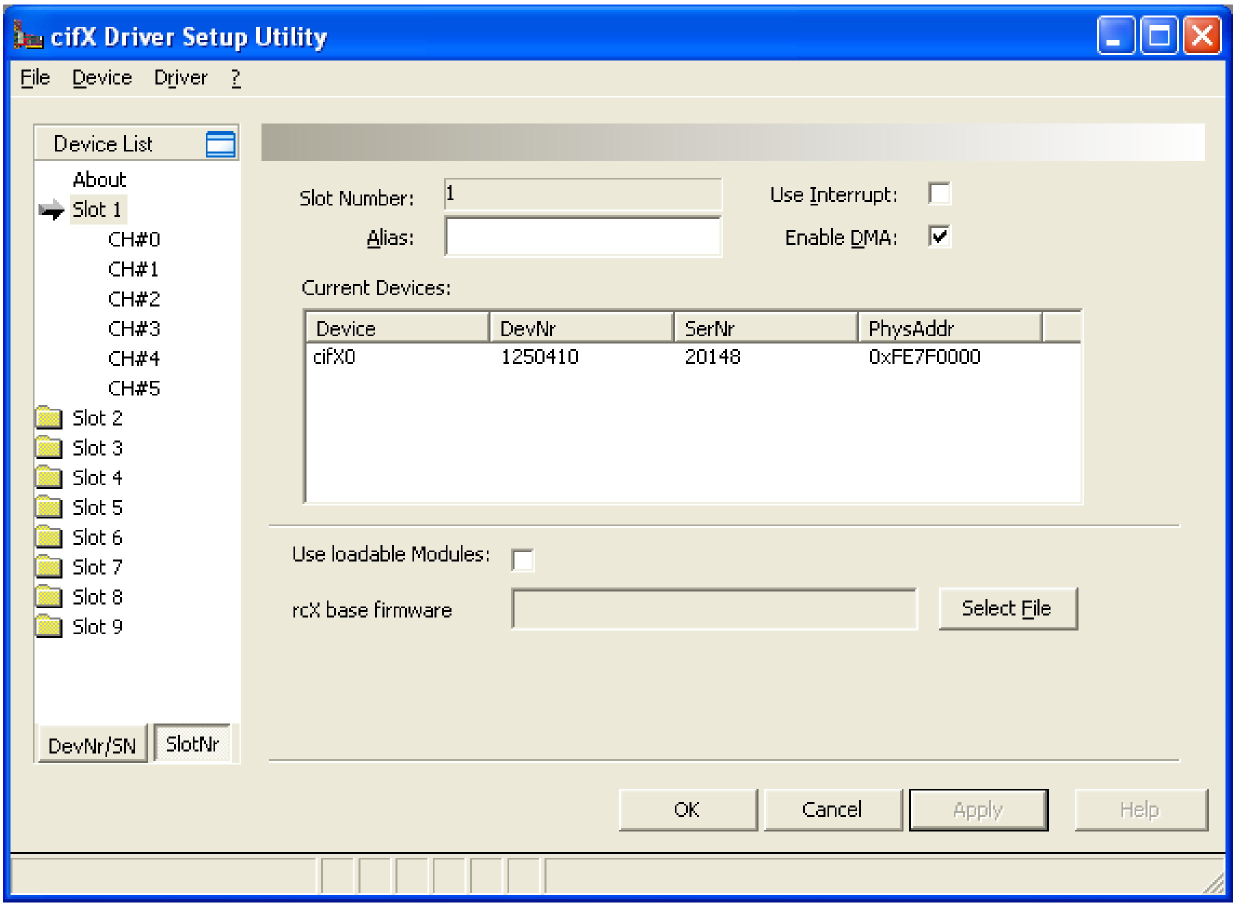

Figure 82: Activating DMA Mode in the cifX Device Driver Setup

3. Apply Settings

➢ Click **Apply**

➾ The **DMA Mode** is activated.

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7.7.3 Slot Number (Card ID) in the Configuration Software

In the **Device Assignment** in the column **Slot number** the **Slot-Nummer (Karten-ID)** is displayed preset at the cifX card via the Rotary Switch Slot Number (Card ID).

The indication **n/a** means that no **Slot-Nummer (Karten-ID)** exists. This occurs, if the cifX card is not equipped with a **Rotary Switch Slot Number (Card ID)** or for cifX cards equipped with a **Rotary Switch Slot Number (Card ID)**, if the rotary switch is set to the value 0 (zero).

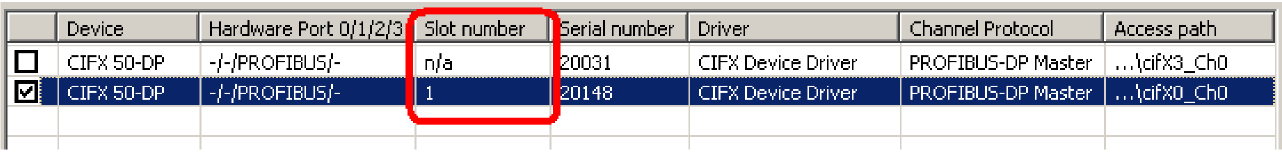

Figure 83: Slot Number (Card ID) in the Device Assignment

Parameter	Meaning	Range of Value / Value
Slot number	Shows the **Slot Number (Card ID)** preset at the cifX card via the **Rotary Switch Slot Number (Card ID)**. The indication **n/a** means that no **Slot-Nummer (Karten-ID)** exists. This occurs, if the cifX card is not equipped with a **Rotary Switch Slot Number (Card ID)** or for cifX cards equipped with a **Rotary Switch Slot Number (Card ID)**, if the rotary switch is set to the value 0 (zero).	1 to 9, n/a

Table 69: Slot Number (Card ID) in the Device Assignment

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8 Overview netX Configuration Tool

The chapter **netX Configuration Tool** provides information on how to configure the device parameters of a fieldbus Slave and what can be read from the diagnostic window.

8.1 Configuration Steps cifX Card

The following table describes the main steps how to configure a netX based device, if the following requirements are fulfilled:

- The device hardware must be installed and operational.
- The **netX Configuration Tool** including the device driver must be installed.

No.	Step	Short Description	For detailed information see section	Page
1	Starting the netX Configuration Tool	➢ Select **Start > Programs > Hilscher GmbH > netX Configuration Tool**	*Working with netX Configuration Tool*	183
2	Selecting the Language	➢ Select in the **Select Language Icon Bar** the language icon for the desired language of the graphical user interface.	*Working with netX Configuration Tool*	183
3	Selecting the Firmware Protocol	➢ Select in the **Select Network Icon Bar** the firmware button for the firmware (Slave device) you intend to use with your device. If all firmware symbols are greyed out: ➢ Make sure once more, the device is operational. ➢ Right click to the navigation area. ➢ Select the context menu **Reload**, to reestablish a connection to the device.	*Working with netX Configuration Tool* *Reload*	183 178
4	Setting the Parameters	Click in the navigation area to the **Configuration** push button. ➢ Set the configuration parameters for the Slave to be used. If you are not sure about the meaning of a single configuration parameter, we recommend to read the respective documentation or to choose the default value.	*Working with netX Configuration Tool* *Configuring Slave Devices using netX Configuration Tool*	183 193
5	Downloading and save the Firmware and the Configuration	Click to **Apply**. The firmware and the configuration are downloaded to the device. The configuration is saved to the hard disk.	*Working with netX Configuration Tool*	183
6	Starting the Communication and checking the Diagnostic Data	➢ Click to **Diagnostic** in the navigation area. ➢ Click to **Start**. The communication to the Master is started. ➢ Check the device communication with help of the displayed diagnostic data. Open the extended **Diagnostic** pane: ➢ Click **Extended >>**.	*Diagnostic Dialog* *'Extended' Diagnosis*	208 212
7	How to quit the netX Configuration Tool	➢ Click to **OK** or **Cancel** to quit the **netX Configuration Tool**.	*Working with netX Configuration Tool*	183

Table 70: netX Configuration Tool Configuration Steps

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8.2 Starting netX Configuration Tool

1. Make sure the device is correctly supplied with power and is operational.
2. Start the **netX Configuration Tool.**

➢ Select **Start > Programs > Hilscher GmbH > netX Configuration Tool.**

8.3 Introduction to the Dialog Structure

The graphical user interface of the **netX Configuration Tool** is composed of different areas and elements listed hereafter:

1. A header area containing the **Select Network and Language Bar** and the **Device Identification,**
2. The **Navigation Area** (area on the left side) including the menu buttons **Configuration, Diagnostic** and **IO Monitor** and depending on the device additional menu buttons (at the lower side of the navigation area),
3. The **Dialog Pane** (main area on the right side),
4. The general buttons **OK, Cancel, Apply, Help,**
5. The **Status Bar** containing information e. g. the online-state of the **netX Configuration Tool.**

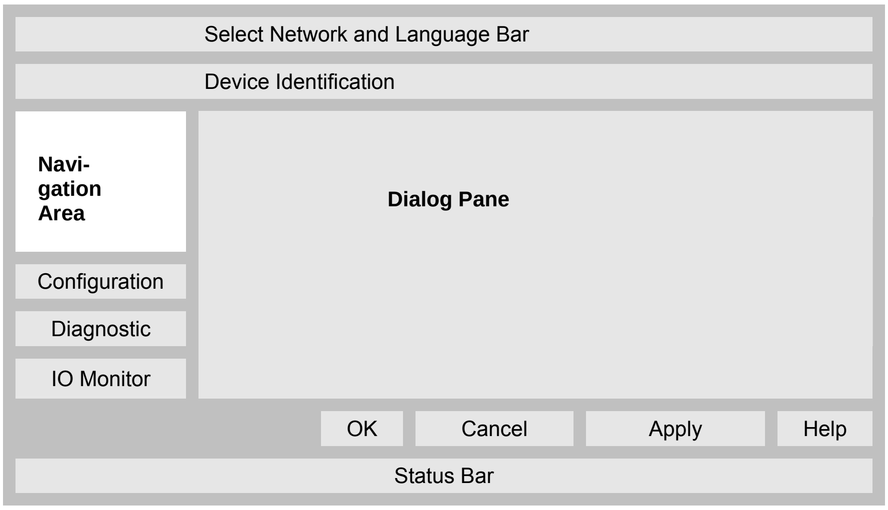

*Figure 84: Dialog Structure of **netX Configuration Tool***

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8.3.1 Select Network/Language Icon Bar and Device Identification

Select Network Icon Bar

Fieldbus device is connected

Ethernet device is connected

Figure 85: Select Network Icon Bar (Example)

Language Icon Bar

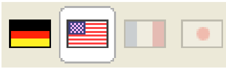

Figure 86: Select Language Icon Bar (only English and German yet)

Device Identification

The **Device Identification** shows the information about the connected device.

Parameter	Meaning
IO Device	Name of the device
Vendor	Vendor name of the device
HW Device ID	Identification number of the hardware device
HW Vendor ID	Identification number of the hardware vendor
Firmware	Name of the currently loaded firmware
Version	Version of the currently loaded firmware

Table 71: Device Identification

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8.3.2 Navigation Area

The **Navigation Area** at the left side of the **netX Configuration Tool** shows:

- the installed drivers and devices as a folder structure (at the upper side of the navigation area),
- the menu buttons **Configuration** and **Diagnostic** and depending on the device additional menu buttons (at the lower side of the navigation area). This menu buttons give access to the dialog panes **Configuration** and **Diagnostic** and depending on the device further panes.

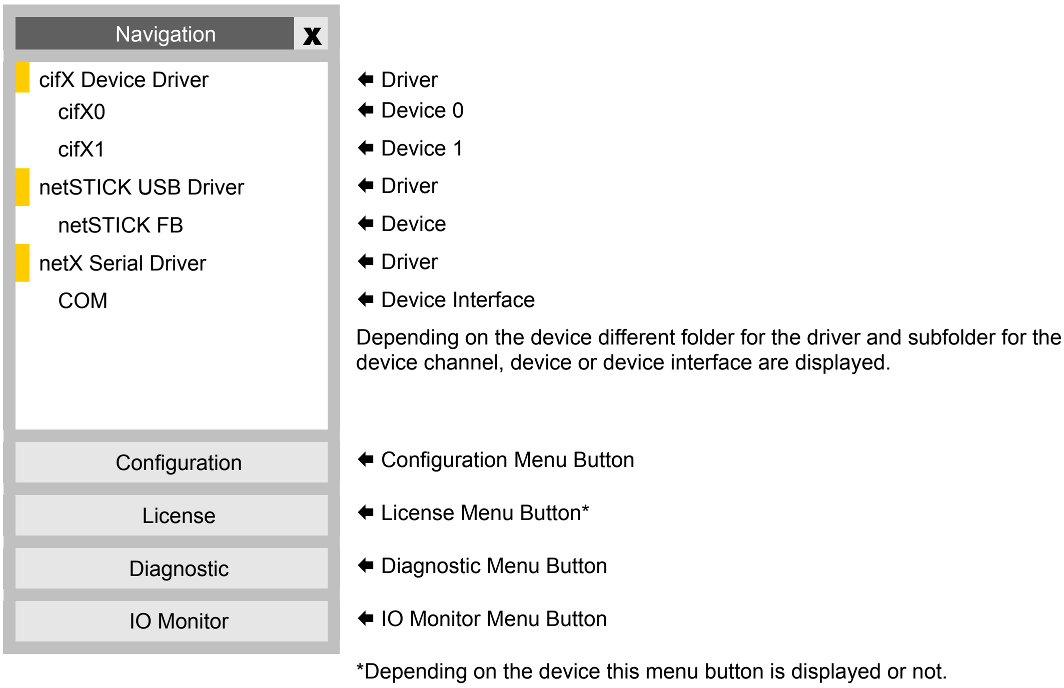

Figure 87: Navigation Area - Example

Note: The scope of functions of the **netX Configuration Tool** depends from the installation setup used. Therefore depending on the device the displayed navigation folders and menu buttons may differ from the example given here.

Reload

If the netX Configuration Tool is not connected to the device:

- ➢ Make sure once more, the device is operational.

Then reestablish a connection to the device:

- ➢ Right click to the navigation area.
- ➢ Select the context menu **Reload**.

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Hide/display Navigation

The **Navigation Area** can be hidden or it can be displayed again.

Control	Meaning
	Window button to hide the navigation area, (at the right side of the navigation title bar).
	**Navigation** button to open the navigation area, (at the lower left corner of the dialog pane).

Table 72: Hide/display Navigation

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8.3.3 Dialog Pane

At the dialog pane the configuration or the diagnostic panes are opened via the corresponding Menu Button in the navigation area.

Configuration	
	In the **Configuration** pane the parameters of the currently loaded firmware are displayed and can be edited there, provided that a firmware has already been loaded. For further information see section *Configuring Slave Devices using netX Configuration Tool* on page 193.
Lizense	
	In the **License** pane you can order and download licenses for Master protocols or utilities. For further information see section *License* on page 186.
Diagnostic, IO Monitor	
	In the **Diagnostic** pane diagnosis information can be displayed. Via **Start** and **Stop** the communication to the Master device can be started or stopped. For further information see section *Diagnostic Dialog* on page 208 and section ***'Extended' Diagnosis*** on page 212.
	Also the **IO Monitor** is provided for test and diagnosis purposes. For further information, refer to section *IO Monitor* on page 247.

Table 73: Overview Dialog Panes

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8.3.4 General Buttons

The table below explains the general buttons and controls in the **netX Configuration Tool** user interface.

Button	Meaning
OK	If the firmware or the configuration has not been changed and you click to the **OK** button, the **netX Configuration Tool** is closed.
	If the firmware or the configuration has been changed and you click to the **OK** button, the request is displayed **Do you want to download the new firmware and the new configuration on the device?** ➢ Select the **Yes** button, if you want to download the firmware/configuration directly to the device and then quit the **netX Configuration Tool**. The configuration is saved to the hard disk of the PC. Or ➢ Select the **No** button, if you want to quit the **netX Configuration Tool**. Or ➢ Select the **Cancel** button, if you want to cancel the procedure and to return to the main pane.
Cancel	If the firmware or the configuration has been changed and you click to the **Cancel** button, the request is displayed **The configuration was changed. Do you want to save it before closing the application?** ➢ Select the **Yes** button, if you want to save the configuration. The configuration will be saved to the hard disk of the PC but it is not downloaded to the device. Or ➢ Select the **No** button, if you want to quit the **netX Configuration Tool**.
Apply	If the firmware or the configuration has not been changed and the offline and the online configuration are identical the **Apply** button is grayed out.
	If the firmware or the configuration has been changed and you click to the **Apply** button, the request is displayed **Do you want to download the new firmware and the new configuration on the device?** ➢ Select the **Yes** button, if you want to download the firmware/configuration directly to the device. The configuration is saved to the hard disk of the PC. Or ➢ Select the **Cancel** button, if you want to cancel the procedure and to return to the main pane.
Help	To open the **netX Configuration Tool** online help, click on the **Help** button.
Default	To reset the parameters to the default state, click the **Default** button in the configuration pane.
Enable	If 'Enabled' is unchecked, the default value is used.

Table 74: General Buttons and Contols

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8.3.5 Status Bar

The **Status Bar** displays information about the current state of the **netX Configuration Tool**. The current activity, e.g. download, is signaled graphically via icons in the status bar. Furthermore the status message and the tool version are displayed here.

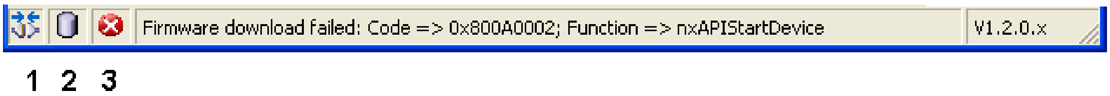

Figure 88: Status Bar: Status Fields 1 to 3, Status Messages, Version

Status Field	Icon/Meaning	
1	**DTM Connection States**	
		**Connecting**: Icon going closed = Device is going online
		**Connected**: Icon closed = Device is online
		**Disconnected**: Icon opened = Device is offline
2	**Data Source States**	
		**Data set**: The displayed data are read out from the instance data set (database).
		**Valid Modified**: Parameter is changed (not equal to data source).
3	**Device Diagnosis Status**	
		**Save operation succeeded**: The save operation has been successful.
		Further messages due to successful handling of device data.
		**Off-specification**: The device is operating outside its specified range or internal diagnosis indicates deviations from measured or set values due to internal problems in the device or process characteristics.
		**Save operation failed**: The save operation has failed.
		Further fail operation messages due to incorrect communication due to malfunction in the field device or its peripherals.

Table 75: Status Bar Icons

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8.4 Working with netX Configuration Tool

To work with the **netX Configuration Tool** follow the steps described hereafter:

1. Make sure the device is correctly supplied with power and is operational.
2. Start the **netX Configuration Tool**:

➢ Select **Start > Programs > Hilscher GmbH > netX Configuration Tool**.

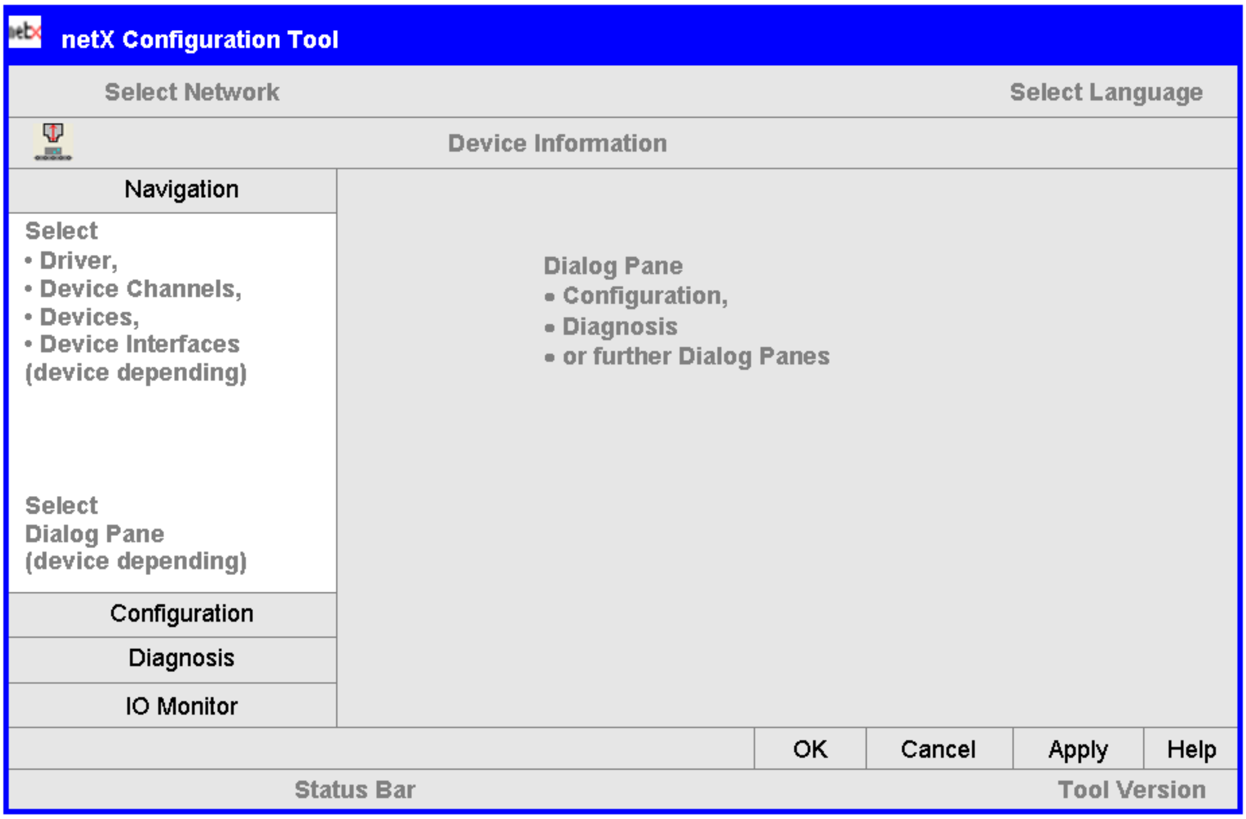

*Figure 89: **netX Configuration Tool** – Comments to the User Interface*

➩ After the **netX Configuration Tool** has been started, the **Select Network/Language Icon Bar** is activated. The **Device Identification** shows the information about the connected device.

Note: - *device dependent* -
1. If, in the navigation area, the folder **netX Serial Driver/COMx** is selected, the firmware and the device are requested via the serial interface and displayed. The corresponding firmware button is activated automatically. The device pane is activated and updated online.
2. In the **Select Network Icon Bar** some firmware buttons will only be displayed depending by the device.

3. Select the Language:

➢ Select in the **Select Language Icon Bar** the language icon for the language in which the graphical user interface shall be displayed.

Icon	Language
	German
	English
	French
	Japanese

Table 76: Select Language Icon Bar (currently English and German)

➩ The graphical user interface of the **netX Configuration Tool** is displayed in the corresponding language.

4. Select the Firmware Protocol:

➢ Select in the **Select Network Icon Bar** the button for the Slave device firmware required for your device.

Fieldbus

Firmware Button	Firmware
	PROFIBUS DP-Slave
	CANopen Slave
	DeviceNet Slave
	CompoNet Slave
	CC-Link Slave

Real-Time Ethernet

Firmware Button	Firmware
	PROFINET IO-Device
	EtherCAT-Slave
	EtherNet/IP-Adapter (Slave)
	Open Modbus/TCP
	SERCOS III Slave
	Powerlink Controlled Node/Slave

Table 77: Select Network Icon Bar: Firmware Fieldbus Buttons and Real-Time Ethernet System

If all firmware symbols in the **Select Network Icon Bar** are greyed out, the **netX Configuration Tool** is not connected to the device:

➢ In this case make sure once more, the device is operational.

Then reestablish a connection to the device:

➢ Right click to the navigation area.

➢ Select the context menu **Reload**.

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5. Set Parameters:

➢ Click in the navigation area on the **Configuration** button to open the **Configuration** pane.

➢ Set the parameters in the **Configuration** pane.

6. Download the Firmware and the Configuration:

➢ Click the**Apply** button.

➩ The selected firmware and the configuration are directly downloaded to the device. The configuration is saved to the hard disk of the PC. The download is signaled:

- In the status bar successively the messages are displayed: „Firmware download started“, „Configuration download started“, „Configuration download succeeded“.
- The corresponding progress bar is displayed.

7. Starting the Communication and checking the Diagnostic Data

➢ Click in the navigation area to the **Diagnostic** button to open the **Diagnostic** pane.

➢ Click on **Start** to start the communication to the Master device.

➢ Check the device communication with help of the displayed diagnostic data.

8. How to quit the **netX Configuration Tool**

➢ Select the button **OK** or **Cancel** to quit the **netX Configuration Tool**.

For further information refer to the chapter *Configuring Slave Devices using netX Configuration Tool* on page 193, to the section *General Buttons* on page 181 and to section *Diagnostic Dialog* on page 208 and to section *'Extended' Diagnosis* on page 212.

8.5 License

In the **License** pane you can:

- check, which licenses are present in the device,
- order licenses,
- transfer license files to the device.

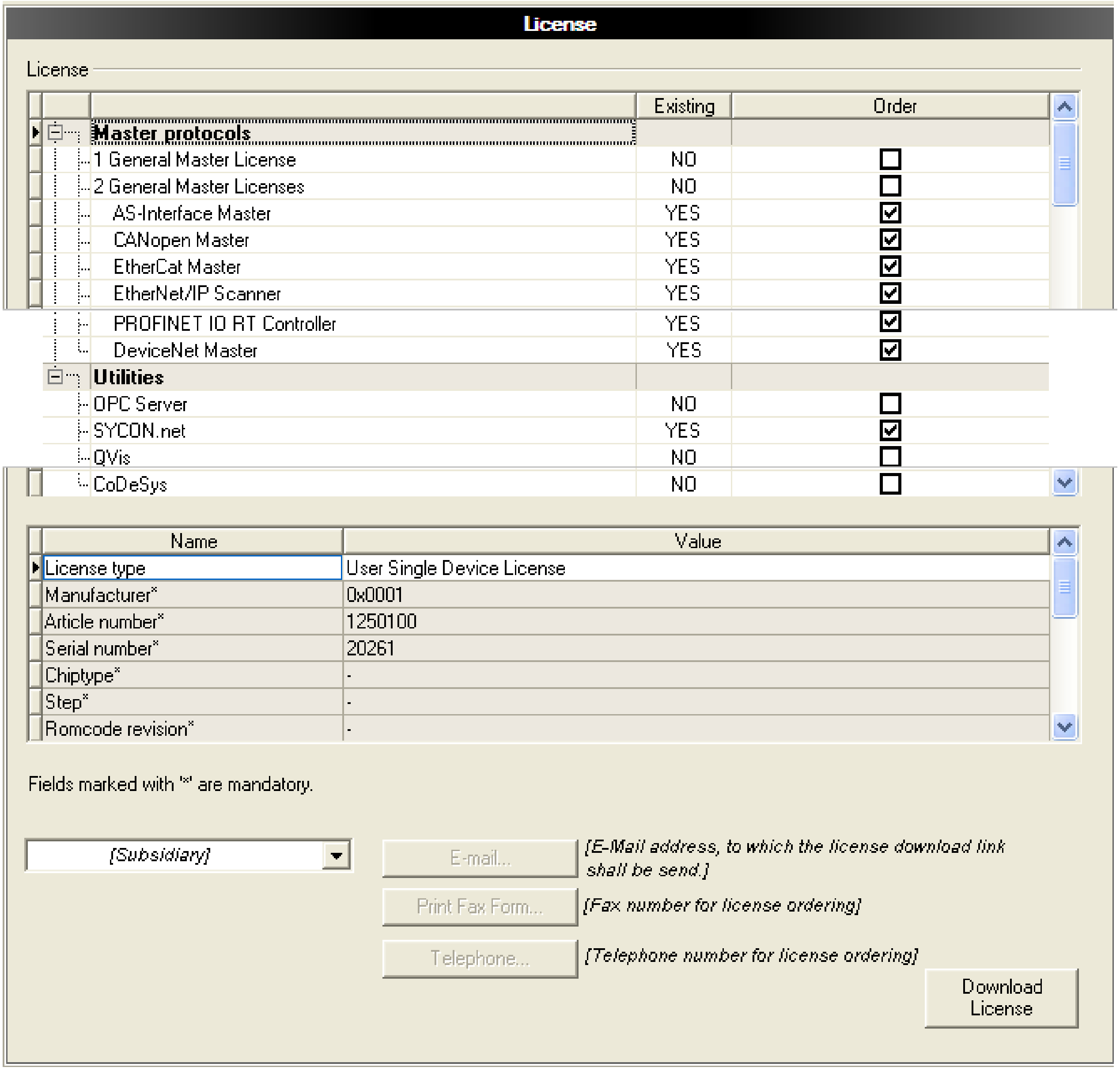

Figure 90: License Pane

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8.5.1 Which licenses are present in the Device?

Check in the **License** pane which licenses are present in the device.

- Therefore click to the **Master Protocols** or **Utilities** folder to expand it.

➩ The column **Existing** indicates which licenses are present in the device.

License for Protocols

1 General Master License.

On the device maximally 1 communication protocol with master function can be implemented.

2 General Master Licenses.

On the device maximally 2 communication protocols with master function can be implemented.

License for Utilities

SYCON.net, OPC Server, QVis or CoDeSys

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8.5.2 How to order a license

To order a license proceed as follows:

- Select the required licenses,
- Enter the ordering data and
- Send your order via E Mail, Fax or Telephone.

8.5.2.1 Selecting the License

1. Open the **License** pane:

➢ Click in the **Navigation Area** to the **License** push button to open the **License** pane.

In the **License** pane:

2. Under **License** click to the **Master Protocols** folder to expand it.
3. In the column **Order** check the checkbox for the desired number of licenses:
   1 General Master License or *2 General Master Licenses.*

And/Or:

4. Under **License** click to the **Utilies** folder to expand it.
5. In the column **Order** check the checkbox for:
   SYCON.net, *OPC Server, QVis* or *CoDeSys.*

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8.5.2.2 Entering the Order Data

1. In the **License** pane under **Name** enter any obligatory order data.
2. Select in the list field **[subsidiary]** the entry for the subsidiary to which the order shall be send.

<u>**Device Data (order data read from the device)**</u>

The following order data read from the device are displayed in the **License** pane:

- Manufacturer
- Device number
- Serial number
- Chiptype
- Step (chip revision)
- Romcode revision
- Checksum (checksum of the device data)

<u>**Data to manage the Order**</u>

<u>Mandatory</u> data to the order request (editable fields in the **License** pane):

- Licensetype (User Single Device License):
- First Name
- Surname
- E Mail (E-Mail address, to which the license download link shall be send.)
- Telephone
- Fax
- Company
- Addresse
- Country
- City, State, Zip

Additional order data, <u>not mandatory</u> (editable fields in the **License** pane):

- Order number
- Value added tax identification number

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8.5.2.3 Ordering the License by E Mail

➢ Click to the button **E Mail.**

➩ A prepared ordering E Mail **License request** is opened, to the E Mail address of the subsidiary, to which the order shall be send.

➩ This ordering E Mail contains the automatically generated file *EmailOrderRequest_[Devicenumber]_[Serialnumber].xml* with a summary info of the order information.

[E mail address subsidiary]

License request

EmailOrderRequest_01712180_00020016.xml (5 KB)

```
=====================================================
                 netX License Order
=====================================================
[Address data subsidiary]
Licensee Information
-----------------------------------------------------
First Name:        Hans
Surname:           Mustermann
e-Mail:            mustermann@musterfirma.com
Telephone:         004971156678
Fax:               0049711566790
Company:           Musterfirma
Address:           Musterstrasse 7
Country:           Deutschland
City Zip:          67000
Order Number:
Tax Ident. Number:

License Type
-----------------------------------------------------
User Single Device License

Device Information
-----------------------------------------------------
Manufacturer:  00000001
Device Number: 01712180
Serial Number: 00020016
Chip Type:     00000002
Step:          00000000
Romcode Revision: 00000002

Ordered Licenses
-----------------------------------------------------
Master Protocols:

>    1 General Master License
>    AS-Interface Master
>    CANopen Master
>    EtherCat Master
>    EtherNet/IP Scanner
>    PROFIBUS Master
>    PROFINET IO RT Controller
>    DeviceNet Master

Utilities:

>    SYCON.net
```

Figure 91: Example: ordering E Mail License request

➢ Send the ordering E Mail **License request.**

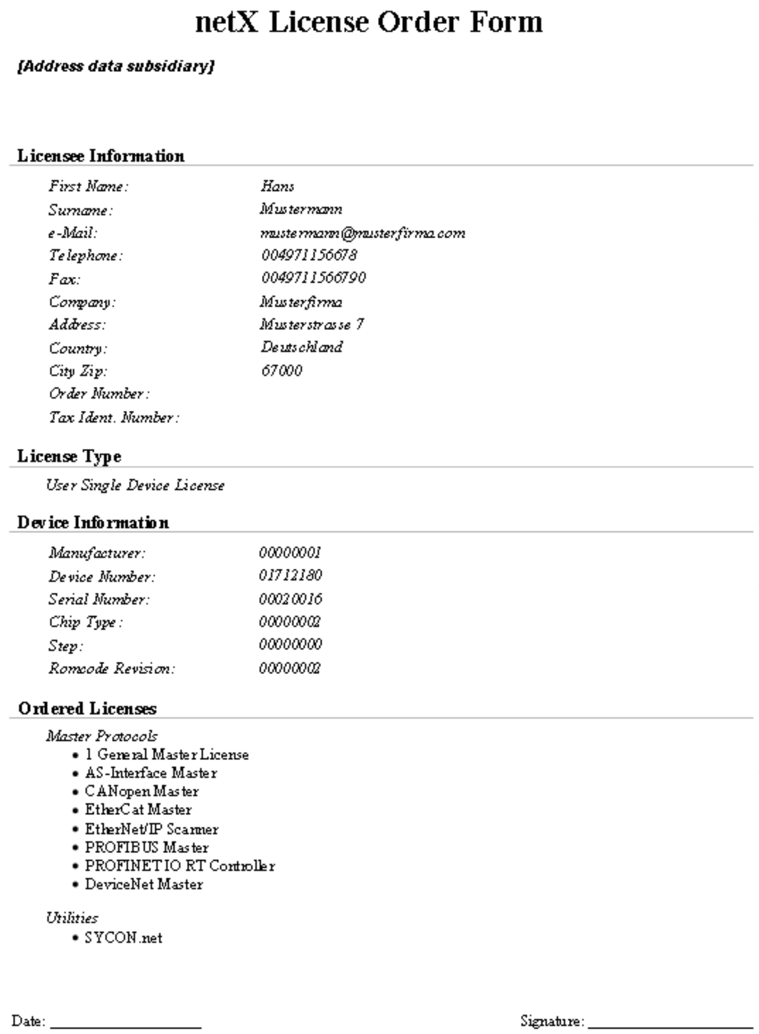
➩ The order process is complete.

8.5.2.4 Or ordering the License by Fax or by Telephone:

➢ Click to the button **Print Fax Form** or **Telephone.**

Note: If your browser does not display the order data or the window **Move Element** or **Copy Element** are displayed, check the safety settings of your system.

➩ The summary of the ordering data *PrintOrderRequest_[Devicenumber]_[Serialnumber].html* **netX License Order Form** is opened in a browser window.



netX License Order Form

[Address data subsidiary]

Licensee Information

First Name:	*Hans*
Surname:	*Mustermann*
e-Mail:	*mustermann@musterfirma.com*
Telephone:	*004971156678*
Fax:	*0049711566790*
Company:	*Musterfirma*
Address:	*Musterstrasse 7*
Country:	*Deutschland*
City Zip:	*67000*
Order Number:	
Tax Ident. Number:	

License Type

User Single Device License

Device Information

Manufacturer:	*00000001*
Device Number:	*01712180*
Serial Number:	*00020016*
Chip Type:	*00000002*
Step:	*00000000*
Romcode Revision:	*00000002*

Ordered Licenses

Master Protocols

- 1 General Master License
- AS-Interface Master
- CANopen Master
- EtherCat Master
- EtherNet/IP Scanner
- PROFIBUS Master
- PROFINET IO RT Controller
- DeviceNet Master

Utilities

- SYCON.net

Date: ________________ Signature: ________________

Figure 92: Example: order data form netX License Order Form

➢ Print out the order data form **netX License Order Form** and send it by fax.

Or:

➢ Keep ready the order data form and communicate the order data via telephone.

➩ The order process is complete.

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8.5.3 How to get the License and transfer it to the Device

Licenses are delivered as license files.

Note: License files can only be delivered via E Mail.

➮ The license file is delivered via E Mail. The E Mail contains a link to download the license file.

After the license file has been delivered you transfer the received license file into the device.

1. Download the license file **.nxl* to your system.

➢ Therefore open the E Mail.

➢ Click to the **Link for the Download of the license file** and download it to your system.

2. Transfer the license file **.nxl* to the device.

➢ In the **License** pane click to the button **Download License.**

➢ In the file selection window **Open** select the license file *netX License Files (*.nxl)* and click to the button **Open.**

➮ Then the license is present in the device an will be activated at the next reset of the device.

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9 Configuring Slave Devices using netX Configuration Tool

The current parameters of the selected firmware protocol are displayed in the **Configuration** pane. The configuration parameters can be edited.

- Click in the navigation area to the **Configuration** button to open the **Configuration** pane.

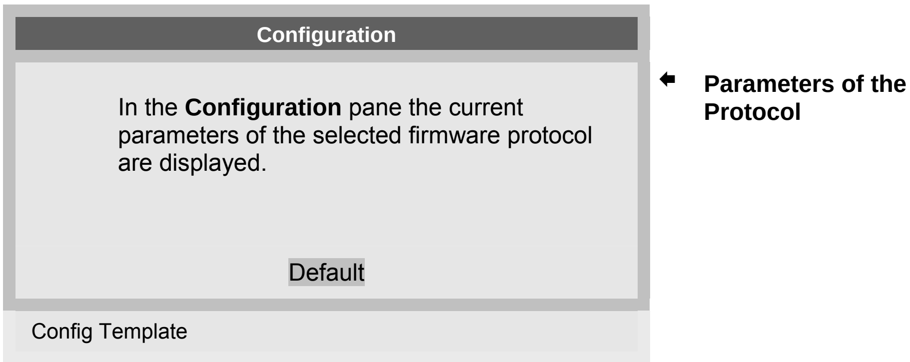

Figure 93: Configuration Pane

The window **Configuation** is described separately for each protocol. Therefor refer to the overview in the section *Overview* on page 196.

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9.1 Details on Configuration

Default

With the **Default** button the parameters can be reset to the default state.

Enable

If 'Enabled' is unchecked, the default value is used.

Error during Data Input

Error	Action
Parameter validation error! Input field cannot be empty.	Enter data.
Input validation error! Input field accepts only digits.	Enter only digits.
Input validation error! Input field accepts only digits and letters from A to F.	Enter only digits and letters from A to F.

Table 78: Error during Data Input

Configuration Template

Create new Configuration Template:

➢ In the field **Config Template**  enter a name for the new configuration template.

➢ Select .

➩ The settings in the **Configuration** window are saved in the new configuration template in a template XML file.

The XML files are *cifX_Templates.xml*, *netIC_Templates.xml* or *nxstk_Templates.xml* on the PC in the directory *Application Data \ Hilscher GmbH \ netX Configuration Tool \ Project*.

Open Configuration Template:

To access to the configuration settings stored in the configuration template the appropriate configuration template must be opened.

➢ Select the required configuration template via .

➩ All settings stored in the configuration template are displayed in the window **Configuration** and can be applied.

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Change Configuration Template:

- Open the required configuration template via .
- Adjust the settings in the **configuration** window.
- Select .
- The changes of the configuration template are saved.

Delete Configuration Template:

- Open the configuration template to be deleted via .
- Select .
- The configuration template is deleted.

Field / Button	Meaning
[NEW] Type name here...	Field to enter the name for the template configuration
	Saving the configuration template.
	Selecting a configuration template.
	Deleting a configuration template.

Table 79: Config Template

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9.2 Overview Configuration Parameters

Any **Parameters of the Protocol** are described in the subsections listed in the table hereafter.

Section	Subsection	Page
Configuration Parameters Fieldbus Systems	*PROFIBUS-DP Slave Parameters*	*197*
	CANopen Slave Parameters	*199*
	DeviceNet Slave Parameters	*201*
	CompoNet Slave Parameters	*203*
	CC-Link Slave Parameters	*206*

Table 80: Descriptions Configuration Parameters Real-Time Fieldbus Systems

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9.3 Configuration Parameters Fieldbus Systems

9.3.1 PROFIBUS-DP Slave Parameters

Parameter	Meaning	Range of Value/Value
Interface		
Bus Startup	Communication start application controlled or automatic	Application controlled, Automatic (Default)
Watchdog Time [ms]	Watchdog time within which the device watchdog must be retriggered from the application program while the application program monitoring is activated. When the watchdog time value is equal to 0 the application program monitoring is deactivated.	[0, 20 … 65535] ms, default = 1000 ms, 0 = Off
I/O Data Status	Status of the input or the output data. For each input and output data the following status information (in Byte) is memorized in the dual-port memory: Status 0 = None (default) Status 1 = 1 Byte (for future use) Status 2 = 4 Byte (for future use)	None, (1 Byte, 4 Byte) Default: None
Ident		
Ident Number	PROFIBUS Identification Number	0x00000000 ... 0x0000FFFF (hex), Default: CIFX DP/DPS: 0x000000B69 (hex)
Enable	If 'Enabled' is unchecked, the default value is used.	
Bus		
Station Address	PROFIBUS address of the device	0 … 126
Baudrate	Network Baud Rate	9,6 kBit/s, 19,2 kBit/s, 93,75 kBit/s, 187,5 kBit/s, 500 kBit/s, 1,5 MBit/s, 3 MBit/s, 6 MBit/s, 12 MBit/s, 31,25 kBit/s, 45,45 kBit/s, Auto-Detect (Default)
Extras	DPV1 Enable: If checked, DPV1 is supported or the DPV1 functions are activated.	Default: checked
	Sync supported: If checked, the Slave stack supports the SYNC command or the SYNC mode is activated.	
	Freeze supported: If checked, the Slave stack supports the FREEZE command or the FREEZE mode is activated.	
	Fail safe supported: If checked, the FAILSAFE operation is supported or the FAILSAFE mode is activated.	
	Address change not allowed: If checked, the Slave stack supports the Set Slave Address command. The bus address can be changed via the Master.	

Further see next Page

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Parameter	Meaning	Range of Value/Value
Data		
Output or Input	**Module:** for output modules for input modules	 1 … 4 5 … 8
	Type: Byte or Word	„Byte“ (Default), „Word“ each with consistency
	Size: The number of Bytes or Words in the module.	0, 1, 2, 3, 4, 8, 12, 16, 20, 32, 64 (Byte, Words)
Output Data Bytes	Total of the output identifier bytes of the modules 1 to 4	0 … 244, Default: 2
Input Data Bytes	Total of the input identifier bytes of the modules 5 to 8	0 … 244, Default: 2
Custom data	Custom data: If unchecked the field Configuration Data shows the output and input identifier bytes, which results from the settings of the output modules and input modules. If checked the field Configuration Data is editable. Output and input identifier bytes can be entered into the Configuration Data field to configure the device. Then, the settings of the output modules and input modules have no meaning.	Default: unchecked
Configuration Data	Configuration data for the output and input identifier bytes. The identifier bytes consists of the **Type** and the **Size**. The identifier bytes are the general identifier bytes according to the PROFIBUS standard.	Default: A1, 91 hex

Table 81: Parameters - PROFIBUS-DP Slave (Part 2)

Note: The input and output modules each work with ’consistency’.

Note: To configure the Master, a GSD file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: Station Address, Ident Number, Baudrate and Config Data (the configuration data for the output and input length).

9.3.2 CANopen Slave Parameters

Parameter	Meaning	Range of Value/Value
Interface		
Bus Startup	Communication start application controlled or automatic	Application controlled, Automatic (Default)
Watchdog Time [ms]	Watchdog time within which the device watchdog must be retriggered from the application program while the application program monitoring is activated. When the watchdog time value is equal to 0 the application program monitoring is deactivated.	[0, 20 … 65535] ms, default = 1000 ms, 0 = Off
I/O Data Status	Status of the input or the output data. For each input and output data the following status information (in Byte) is memorized in the dual-port memory: Status 0 = None (default) Status 1 = 1 Byte (for future use) Status 2 = 4 Byte (for future use)	None, (1 Byte, 4 Byte) Default: None
Ident		
Enabled	If 'Enabled' is unchecked, for the single Ident parameters each the respective default value is used.	
Vendor ID	Identification number of the manufacturer	0x00000000 ... 0x0000FFFF (hex), Hilscher: 0x00000044 (hex)
Product Code	Product code of the device as specified by the manufacturer	0x00000000 ... 0xFFFFFFFF (hex), Default: CIFX CO/COS: 0x001314C4 (hex)
Revision Number	Revision number of the device as specified by the manufacturer	0x00000000 ... 0xFFFFFFFF (hex), Default: 0x00020000 (hex)
Serial Number	Serial number of the device	0x00000000 ... 0xFFFFFFFF (hex)
Bus		
Node Address	Node ID of CANopen slave	1 … 127, Default: 2
Baudrate	Baud rate of CANopen connection	1 Mbaud, 800 Kbaud, 500 Kbaud, 250 Kbaud, 125 Kbaud, 100 Kbaud, 50 Kbaud, 20 Kbaud, 10 Kbaud, Default: 1 MBaud

For more see next page

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Parameter	Meaning	Range of Value/Value
Data		
Send Object/ Receive Object	**Send Object**: Send object index **Receive Object**: Receive object index	0x00002000 ... 0x00002003 (hex) 0x00002200 ... 0x00002203 (hex)
	Size: Number of data Bytes to send per send object or number of data Bytes to receive per send object.	128
Output Data Bytes	Total output data Bytes of all send objects	512, Default: 512 Bytes*
Input Data Bytes	Total intput data Bytes of all receive objects	512, Default: 512 Bytes*

Table 82: CANopen Slave Parameters

Note: To configure the Master, an EDS file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: Node Address and Baudrate.

Note: *The maximum number of output data bytes and input data bytes is for the device 512 bytes each. The number of output data bytes and input data bytes is not adjustable in the Slave and therefore greyed out in the dialog.

The number of output data bytes and input data bytes, which are to be transferred effectively between the CANopen Master and Slave, are configured in the used CANopen Master. The CANopen Master configures the device during establishing the communication and set the number of output data bytes and input data bytes at this same time.

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9.3.3 DeviceNet Slave Parameters

Parameter	Meaning	Range of Value/Value
Interface		
Bus Startup	Communication start application controlled or automatic	Application controlled, Automatic (Default)
Watchdog Time [ms]	Watchdog time within which the device watchdog must be retriggered from the application program while the application program monitoring is activated. When the watchdog time value is equal to 0 the application program monitoring is deactivated.	[0, 20 … 65535] ms, default = 1000 ms, 0 = Off
I/O Data Status	Status of the input or the output data. For each input and output data the following status information (in Byte) is memorized in the dual-port memory: Status 0 = None (default) Status 1 = 1 Byte (for future use) Status 2 = 4 Byte (for future use)	None, (1 Byte, 4 Byte) Default: None
Ident		
Enabled	If 'Enabled' is unchecked, for the single Ident parameters each the respective default value is used.	
Vendor ID	Identification number of the manufacturer	0x00000000 ... 0x0000FFFF (hex), Hilscher: 0x00000011B (hex)
Product Code	Product code of the device	0x00000000 ... 0xFFFFFFFF (hex), Default CIFX DN/DNS: 0x0000001C (hex)
Serial Number	Serial number of the device	0x00000000 ... 0xFFFFFFFF (hex)
Product Type	Communication Adapter	0x00000000 ... 0x0000FFFF (hex), Default: 0x00000000C (hex)
Minor Rev	Minor Revision	1 ... 255, Default: 1
Major Rev	Major Revision	1 ... 255, Default: 1
Product Name	The variable Product Name is a text string that should represent a short description of the product/product family.	0 ... 31 ASCII Characters

For more see next page

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Parameter	Meaning	Range of Value/Value
Bus		
MAC ID	This parameter defines the DeviceNet address of the device within the network.	0 … 63, Default: 2
Baudrate	Baud rate of DeviceNet connection	500 kBaud, 250 kBaud, 125 kBaud, Default: 500 kBaud
Extras	Ignore address switch: address switches are always ignored	Default: unchecked
	Continue on CAN bus off: Unchecked: A device reset by the user is necessary in case of a CAN bus off event (e. g. short circuit of the data lines) Checked: The device tries independently to continue operation in case of a CAN bus off event	Default: unchecked
	Continue On Loss of Network Power (NP): Function not supported	Default: unchecked
	Receive-Idle Clear Data: Unchecked: Received data keep their last state in case of idle state Checked: Received data were set to zero in case of idle state	Default: unchecked
	Receive Idle keeps Data: Function not supported	Default: unchecked
Data		
Prod. Data Length	Produced data length sets the number of send bytes.	0 … 255, Default: 8
Cons. Data Length	Consumed data length sets the number of receive bytes.	0 … 255, Default: 8

Table 83: DeviceNet Slave Parameters

Note: To configure the Master, an EDS file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: MAC ID, Baudrate, Produced Size, Consumed Size, Vendor ID, Product Type, Product Code, Major Rev, Minor Rev.

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9.3.4 CompoNet Slave Parameters

Parameter	Meaning	Range of Value/Value
Interface		
Bus Startup	Communication start application controlled or automatic	Application controlled, Automatic (Default)
Watchdog Time [ms]	Watchdog time within which the device watchdog must be retriggered from the application program while the application program monitoring is activated. When the watchdog time value is equal to 0 the application program monitoring is deactivated.	[0, 20 … 65535] ms, default = 1000 ms, 0 = Off
I/O Data Status	Status of the input or the output data. For each input and output data the following status information (in Byte) is memorized in the dual-port memory: Status 0 = None (default) Status 1 = 1 Byte (for future use) Status 2 = 4 Byte (for future use)	None, (1 Byte, 4 Byte) Default: None
Ident		
Enable	If ‘Enable’ is unchecked, for the single Ident parameters each the respective default value is used.	
Vendor ID	Identification number of the manufacturer *If the value 0x00000000 (hex) is entered, the software uses the internal Hilscher ID 0x0000011B (hex).*	0x00000000 ... 0x0000FFFF (hex), Hilscher: 0x0000011B (hex)
Product Code	Product code of the device *The software uses the entered value.*	0x00000000 ... 0xFFFFFFFF (hex), Default: CIFX CP/CPS: 0x00000201 (hex)
Serial Number	Serial number of the device *If the value 0x00000000 (hex) is entered, the software uses the internal device serial number.*	0x00000000 ... 0xFFFFFFFF (hex)
Product Type	Communication Adapter *If the value 0x00000000 (hex) is entered, the software uses the value 0x0000000C (hex).*	0x00000000 ... 0x0000FFFF (hex), Default: 0x0000000C (hex)
Major Rev	Major Revision *If the value 0 is entered, the software uses the value 1.*	0 ... 255, Default: 1
Minor Rev	Minor Revision *If the value 0 is entered, the software uses the value 1.*	0 ... 255, Default: 1
Product Name	The variable Product Name is a text string that should represent a short description of the product/product family. *If no product name is entered, the device uses an internal default name.*	0 ... 31 ASCII Characters

For more see next page

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Parameter	Meaning	Range of Value/Value
Bus		
Node Mode	Node Mode of the CompoNet Slave	Word MIX Slave, Word IN Slave, Word OUT Slave, Bit MIX Slave, Bit IN Slave, Bit OUT Slave, Default: Word MIX Slave
Node Address	Node Address of the CompoNet Slave	Default: 2
MAC ID	The MAC ID defines the CompoNet address of the device within the network. The MAC ID is calculated from the selected **Node Type** and from the selected **Node Address** according to the following table. In this field the MAC ID is only displayed. **Node Type** / **Node Address** / **MAC ID** Word IN / 0-0x3F / 0x0-0x3F (0-63) Word OUT / 0-0x3F / 0x40-0x7F (64-127) Word MIX / 0-0x3F / 0x0-0x3F (0-63) Bit IN / 0-0x7F / 0x80-0xFF (128-255) Bit OUT / 0-0x7F / 0x100-0x17F (256-383) Bit MIX / 0-0x7F / 0x80-0xFF (128-255)	0 … 383, Default: 2 (when using the default values for node type and node address)
Baudrate	Baud rate of the CompoNet connection	Auto-Detect, 93,75 kbps, 1,5 Mbps, 3 Mbps, 4 Mbps Default: Auto-Detect

For more see next page

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Parameter	Meaning	Range of Value/Value
Data		
Produced Data	Produced Data sets the number of send points (Bits). Produced data can be selected for the Node Type „IN“ and „MIXED“, for „OUT“ it is grayed out.	Node Type „Bit“: 2, 4 (Points), Default: 2 Node Type „Word“: 8, 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 170, 192, 208, 224, 240, 256 (Points), Default:16
Size (Produced Data)	The number of bytes in the module for the produced data.	1 … 32 (Bytes)* [*= 8 … 256 Points] Default Node Type „Bit“: 1 Node Type „Word“: 2
Consumed Data	Consumed Data sets the number of receive points (Bits). Consumed data can be selected for the Node Type „OUT“ and „MIXED“, for „IN“ it is grayed out.	Node Type „Bit“: 2, 4 (Points), Default: 2 Node Type „Word“: 8, 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 170, 192, 208, 224, 240, 256 (Points), Default:16
Size (Consumed Data)	The number of bytes in the module for the consumed data.	1 … 32 (Bytes)* [*= 8 … 256 Points] Default Node Type „Bit“: 1 Node Type „Word“: 2

Table 84: CompoNet Slave Parameters

Note: To configure the Master, an EDS file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication. Important parameters are: Node Mode, MAC ID, Baudrate, Produced Data, Consumed Data, Vendor ID, Product Type, Product Code, Major Rev, Minor Rev.

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9.3.5 CC-Link Slave Parameters

Parameter	Meaning	Range of Value/Value
Interface		
Bus Startup	Communication start application controlled or automatic	Application controlled, Automatic (Default)
Watchdog Time [ms]	Watchdog time within which the device watchdog must be retriggered from the application program while the application program monitoring is activated. When the watchdog time value is equal to 0 the application program monitoring is deactivated.	[0, 20 … 65535] ms, default = 1000 ms, 0 = Off
I/O Data Status	Status of the input or the output data. For each input and output data the following status information (in Byte) is memorized in the dual-port memory: Status 0 = None (default) Status 1 = 1 Byte (for future use) Status 2 = 4 Byte (for future use)	None, (1 Byte, 4 Byte) Default: None
Ident		
Enabled	If 'Enabled' is unchecked, for the single Ident parameters each the respective default value is used.	
Vendor Code	Code for the Vendor	0 ... 65535 bzw. 0x00000000 ... 0x0000FFFF (hex), Hilscher: 0x00000352 (hex)
Model Type	Model type	0 ... 255, Default CIFX CC/CCS: 1
Software Version	Software version	0 ... 63, Default: 2
Bus		
Station Address	Station address of CC-Link Slave Note: The number of occupied stations plus station address must not exceed the parameter range	1 ... 64, Default: 1
Baud Rate	Network transmission rate	156 kBaud (Default) 625 kBaud 2500 kBaud 5 MBaud 10 MBaud
Hold last received Output Data	Hold Clear Mode; Behavior in case of bus error Clear output data (unchecked) Hold last received output data (checked)	Defualt: unchecked

For more see next page

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Parameter	Meaning	Range of Value/Value
Data		
CC-Link Version	CC-Link Version 1 CC-Link Version 2	1 (Default) 2
Station Type	Type of CC-Link station Remote I/O Station: Remote Device Station	 0 (Default) 1
Number of Stations	Number of occupied stations Remote I/O Station: Remote Device Station:	 1 (Default) 1 ... 4
Extension Cycle	Number of extension cycles Allowed numbers for CC-Link version 1: Single/One cycle Allowed numbers for CC-Link version 2: Single/One cycle Double/Two cycles Quadruple/Four cycles Octuple/Eight cycles	 1 1 (Default) 2 4 8
IO-Data Bytes	The number of IO-Data bytes depends on the following settings: station type, number of stations and number extension cycles. The number of stations can only be configured with station type Remote Device Station version 1 and version 2 and the number of extension cycles can only be configured with version 2. Firmware/stack works according to CC-Link Version 2.0 input data output data Firmware/stack works according to CC-Link Version 1.11 input data output data	 12 … 368 Bytes 12 … 368 Bytes 4 … 48 Bytes 4 … 48 Bytes Default: 4

Table 85: CC-Link Slave Parameters

Note: To configure the Master, a CSP file (device description file) is required. The settings in the used Master must comply with the settings in the Slave to establish communication.

Important parameters are: Slave Station Address, Baudrate, Station Type and Vendor Code. For CC-Link Version 2.00 are important: number of cycles as well as number of extension cycles.

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10 Diagnostic with netX Configuration Tool

10.1 Diagnostic Dialog

10.1.1 'General' Dialog

In the general **Diagnostic** dialog information regarding the device state and other general diagnosis parameters are displayed.

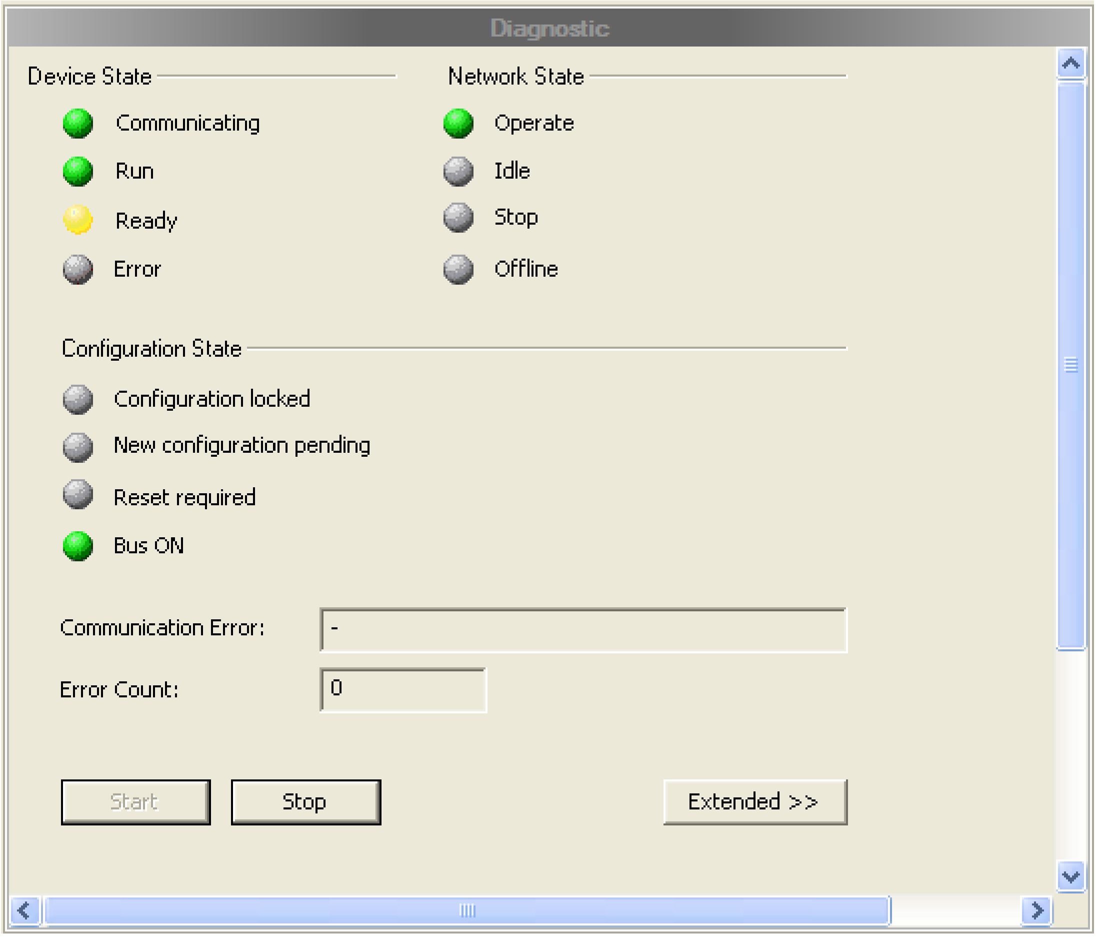

Figure 94: General Diagnostic

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LED	Meaning	Color	State
Device State			
Communicating	Shows whether the Slave device executes the network communication.	(green)	COMMUNICATING
		(gray)	Not COMMUNICATING
Run	Shows whether the Slave device has been configured correctly.	(green)	Configuration OK
		(gray)	Configuration not OK
Ready	Shows whether the Slave device has been started correctly. The Slave device waits for a configuration.	(yellow)	Device READY
		(gray)	Device not READY
Error	Shows whether the Slave device records a device status error. For further information about the error characteristics and the number of counted errors refer to the extended diagnosis.	(red)	ERROR
		(gray)	No ERROR
Network State			
Operate	Shows whether the Slave device is in data exchange. In a cyclic data exchange the input data or the output data of the Master are transmitted to the Slave.	(green)	In OPERATION state
		(gray)	Not in OPERATION state
Idle	Shows whether the Slave device is in idle state.	(yellow)	In IDLE state
		(gray)	Not in IDLE state
Stop	Shows whether the Slave device is in Stop state: There is no cyclic data exchange at the Slave network. The Slave device was stopped by the application program or it changed to the Stop state because of a bus error.	(red)	In STOP state
		(gray)	Not in STOP state
Offline	The Slave is offline as long as it does not have a valid configuration.	(yellow)	In OFFLINE state
		(gray)	Not in OFFLINE state
Configuration State			
Configuration locked	Shows whether the Slave device configuration is locked, to avoid the configuration data are typed over.	(yellow)	Configuration LOCKED
		(gray)	Configuration not LOCKED
New Configura-tion pending	Shows whether a new Slave device configuration is available.	(yellow)	New Configuration pending
		(gray)	No new Configuration pending
Reset required	Shows whether a firmware reset is required as a new Slave device configuration has been loaded into the device.	(yellow)	RESET required
		(gray)	No RESET required
Bus ON	Shows whether the bus communication was started or stopped. I. e., whether the device is active on the bus or no bus communication to the device is possible and no response telegrams are sent.	(green)	Bus ON
		(gray)	Bus OFF

Table 86: Diagnostic (General)

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Parameter	Meaning
Communication Error	Indicates the name of the communication error. If the cause of error is resolved, the value is set to zero again.
Error Count	This field holds the total number of errors detected since power-up, respectively after reset. The protocol stack counts all sorts of errors in this field no matter if they were network related or caused internally.

Table 87: Parameter Diagnostic (General)

Start/Stop Communication	
	**Start** is enabled, if the communication has been stopped before or if the configuration requires this (for **Bus startup** ‚Application Controlled’). Start the the communication to the Master: ➢ Click **Start**. ➩ The device communicates at the bus.
	**Stop** is enabled, if the communication has been started. Stop the the communication to the Master: ➢ Click **Stop**. ➩ Die Kommunikation des Gerätes am Bus wird gestoppt.
Extended >>	
	Open the extended **Diagnostic**: ➢ Click **Extended >>**. ➩ The window extended **Diagnostic** is displayed.

Table 88: Start/Stop Communication, Extended >>

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10.1.2 'Extended' Dialog

In the extended **Diagnostic** dialog under **Tasks Information** a task can be seleced to have access to the exteded diagnosis information of this task.

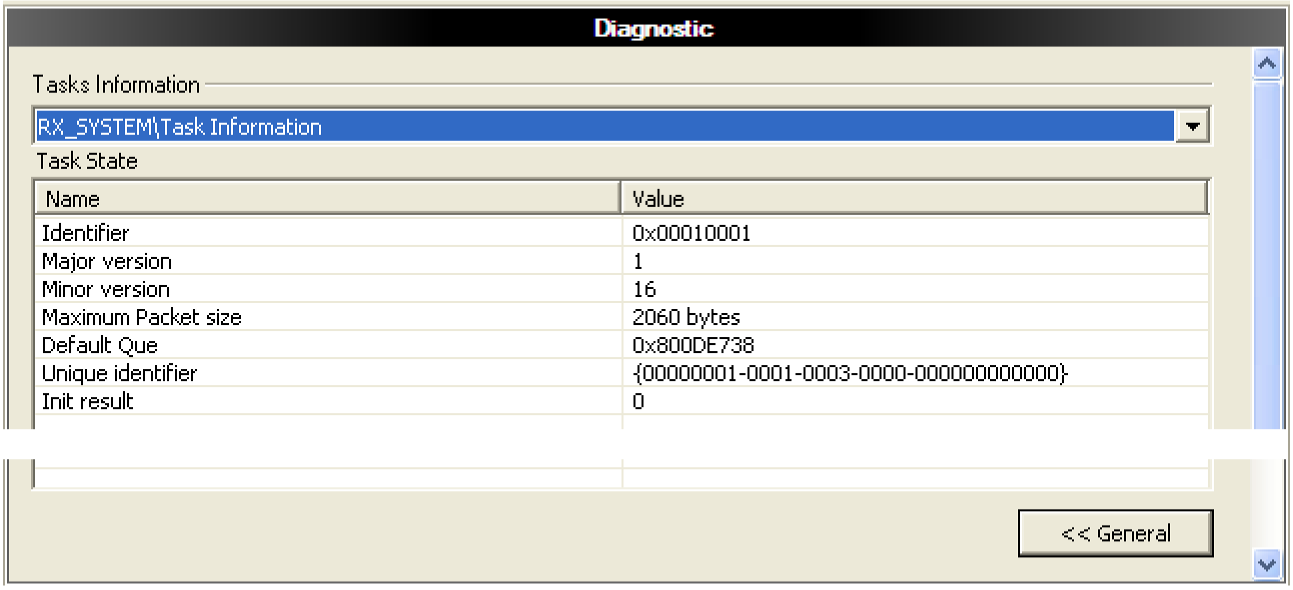


Figure 95: Example general Diagnostic

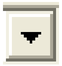
Tasks Information / Task State	
	Select Task: ➢ Click **Tasks Information** . ➢ Select a task. ➩ The extended diagnosis information of this task are displayed in the **Task State** window. For the descriptions of the exteded diagnosis refer to the section *'Extended' Diagnosis* on page 212.
<< General	
	Open the general **Diagnostic:** ➢ Click **<< General.** ➩ The window general **Diagnostic** is displayed.

Table 89: Tasks Information / Task State, << General

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10.2 'Extended' Diagnosis

The **Extended Diagnosis** of the **netX Configuration Tool** helps to find communication and configuration errors. Therefore it contains a list of diagnosis structures as online counter, states and parameters.

Overview Dialog Panes "Extended Diagnosis"

For an overview of the descriptions of the dialogue windows under **Extended Diagnosis** for every communication system refer to the following subsections.

Subsection/ Communication System	**Manual Page**
PROFIBUS Slave	213
CC-Link Slave	214
CANopen Slave	215
DeviceNet-Slave	216

Table 90: Overview Extended Diagnosis

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10.2.1 PROFIBUS Slave

Dialog Panes "Extended Diagnosis" PROFIBUS Slave

The table below gives an overview for the **Extended Diagnosis** dialog panes descriptions:

Folder Name in the Navigation Area	Dialog Pane	Manual Page
RX-SYSTEM	*Task Information*	217
	IniBatch Status	218
DPM_COM0_SMBX	*Task Information*	217
DPM_COM0_RMBX	*Task Information*	217
PROFIBUS_DL	*Task Information*	217
PROFIBUS_FSPMS	*Task Information*	217
	Extended Diagnosis	220
	Config Data	221
	Parameter Data	222
	Code Diagnosis	219
PROFIBUS_APS	*Task Information*	217

Table 91: Descriptions of the Dialog Panes Extended Diagnosis PROFIBUS Slave

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10.2.2 CC-Link Slave

alog Panes “Extended Diagnosis” CC-Link Slave

The table below gives an overview for the **Extended Diagnosis** dialog panes descriptions:

Folder Name in the Navigation Area	Dialog Pane	Manual Page
RX-SYSTEM	*Task Information*	217
	IniBatch Status	218
DPM_COM0_SMBX	*Task Information*	217
DPM_COM0_RMBX	*Task Information*	217
CCLINK_SLAVE	*Task Information*	217
	Configuration	223
	Commands	225
	Interrupts	226
	XC receive area	227
	XC config area	228
	XC status area	229
	XC management area	230
	XC triple buffer area	232
	XC reserved area	233
CCLINK_APS	*Task Information*	217
	Slave configuration	234
	Commands	235
	DPM data exchange	236

Table 92: Descriptions of the Dialog Panes Extended Diagnosis CC-Link Slave

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10.2.3 CANopen Slave

Dialog Panes "Extended Diagnosis" CANopen Slave

The table below gives an overview for the **Extended Diagnosis** dialog panes descriptions:

Folder Name in the Navigation Area	**Dialog Pane**	**Manual Page**
RX-SYSTEM	*Task Information*	217
	IniBatch Status	218
DPM_COM0_SMBX	*Task Information*	217
DPM_COM0_RMBX	*Task Information*	217
CANOPEN_DL	*Task Information*	217
CANOPEN_SLAVE	*Task Information*	217
	Common Diagnostic	***237***
	Commands	238
CANOPEN_APS	*Task Information*	217
	Slave configuration	240
	Commands	241

Table 93: Descriptions of the Dialog Panes Extended Diagnosis CANopen Slave

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10.2.4 DeviceNet-Slave

Dialog Panes "Extended Diagnosis" DeviceNet Slave

The table below gives an overview for the **Extended Diagnosis** dialog panes descriptions:

Folder Name in the Navigation Area	Dialog Pane	Manual Page
RX-SYSTEM	*Task Information*	217
	IniBatch Status	218
DPM_COMO_SMBX	*Task Information*	217
DPM_COMO_RMBX	*Task Information*	217
DNS_FAL	*Task Information*	217
	DNS Common Status	*242*
	AP Commands Counter	*243*
	CAN Command Counter	*243*
	Timer Counter	*244*
DNS_AP	*Task Information*	217
CAN_DL	*Task Information*	217
	AP Commands Counter	245
	CAN Driver Status	246

Table 94: Descriptions of the Dialog Panes Extended Diagnosis DeviceNet Slave

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10.3 Task Information

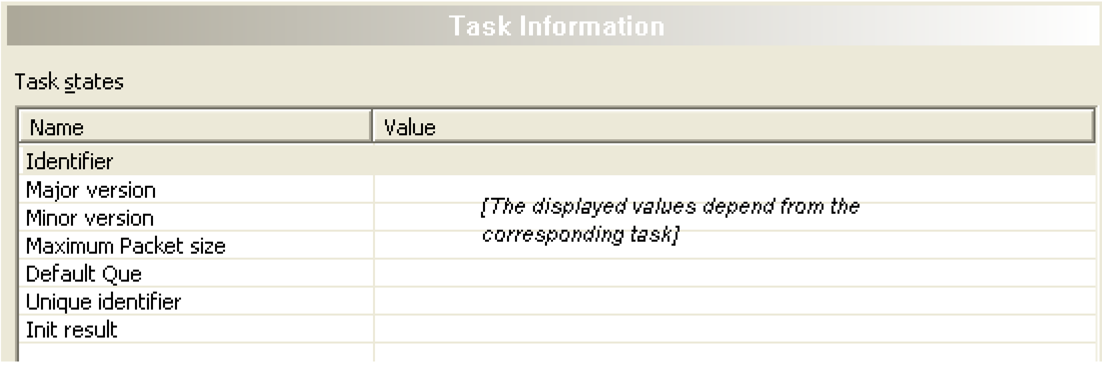

Figure 96: Extended Diagnosis > [Folder Name] > Task Information Example Display

Name	Description
Identifier	Identification number of the task
Major version	Task version, contains incompatible changes
Minor version	Task version, contains compatible changes
Maximum package size	Maximum package size, which the task sends
Default Queue	Queue handle, which is accessible via DPM by mailbox.
UUID	Unique user ID, 16 Byte indicator used for task identification and its affiliation e. g. to a stack (therein different identification data are coded in).
Init result	Error Code, 0= no Error The description of the error codes can be found in this manual or in the corresponding software reference manuals.

Table 95: Extended Diagnosis > [Folder Name] > Task Information

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10.4 IniBatch Status

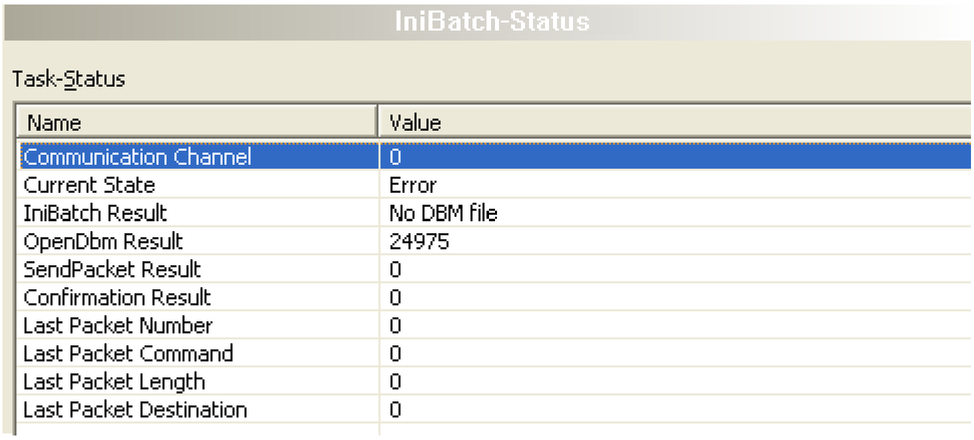

Figure 97: Extended Diagnosis > [Folder Name] > IniBatch Status Example Display

Name	Description
Communication Channel	Number of the communication channel used by the device.
Current State	0 =Idle; 1 =IniBatch packets in progress; 2 =Retrying to send last packet; 3 = Error
IniBatch Result	0 = Ok; 1 = No DBM file; 2 = No Packet table; 3 = No data set available; 4 = Data set is shorter than packet length; 5 = Packet Buffer is shorter than Packet length; 6 = Invalid packet destination; 7 = Logical queue not defined 8 = Send packet failed; 9 = Too many retries; 10 = Error in confirmation packet status
OpenDbm Result	Error when opening the IniBatch data base Under "OpenDbm Result" the error code is typed in, when "IniBatch Result" == "No DBM file" (1) is.
SendPacket Result	Error when sending a packet Under "SendPacket Result" the error code is typed in, when "IniBatch Result" == “send packet failed" (8) is.
Confirmation Result	Confirmation error when sending packets Under "Confirmation Result" the package specific error code from the ulSta is typed in, when "IniBatch Result " == "Error in confirmation packet status" (10) is.
Last Packet Number	Value depends by the communication system.
Last Packet Command	Value depends by the communication system.
Last Packet Length	Value depends by the communication system.
Last Packet Destination	Value depends by the communication system.

Table 96: Extended Diagnosis > [Folder Name] > IniBatch Status

The task status "Confirmation Result" is bus specific. The other task statuses are rcx-related error codes.

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10.5 Code Diagnosis

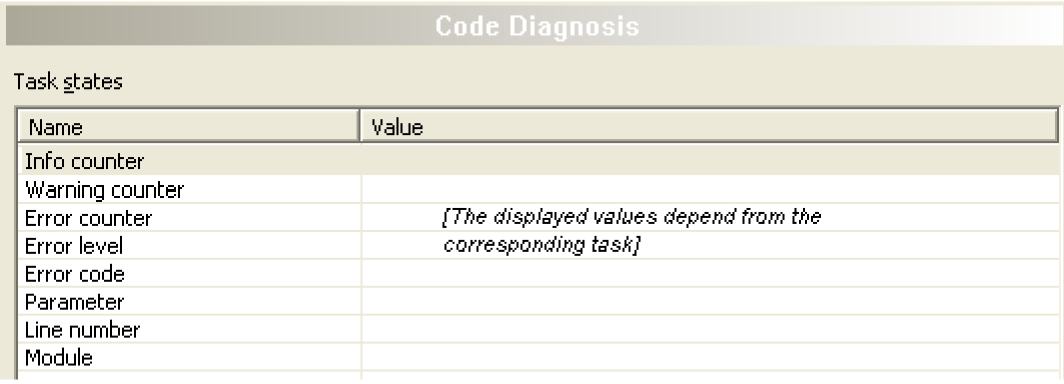

Figure 98: Extended Diagnosis > [Folder Name] > Code Diagnosis Example Display EtherNet/IP Adapter

Name	Description
Info Counter	Counter for information reports
Warning Counter	Counter for warning reports
Error Counter	Counter for errors
Error Level	Level of the last occurred error
Error Code	Code of the last occurred error
Parameter	Additional information to the error
Line number	Line number inside the software module
Module	Software module

Table 97: Extended Diagnosis > [Folder Name] > Code Diagnosis

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10.6 PROFIBUS Slave

10.6.1 PROFIBUS_FSPMS

10.6.1.1 Extended Diagnosis

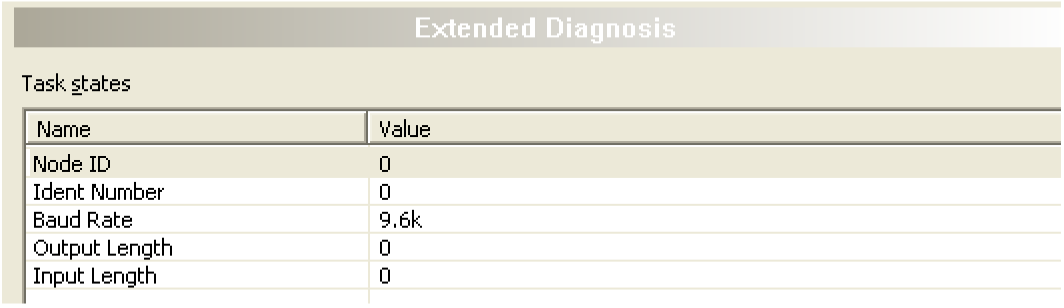

Figure 99: Extended Diagnosis > PROFIBUS_FSPMS > Extended Diagnosis

<table>
<tr><th>Name</th><th colspan="2">Description</th></tr>
<tr><td>Node ID</td><td colspan="2">PROFIBUS address of the device,
Range of value: 0 … 125</td></tr>
<tr><td>Ident Number</td><td colspan="2">PROFIBUS Identification Number,
Range of value: 0 … 65535, Default: 0x0A12</td></tr>
<tr><td>Baud Rate</td><td>9,6 kBit/s
19,2 kBit/s
93,75 kBit/s
187,5 kBit/s
500 kBit/s
1,5 MBit/s</td><td>3 MBit/s
6 MBit/s
12 MBit/s
31,25 kBit/s
45,45 kBit/s
Auto detect</td></tr>
<tr><td>Output Length</td><td colspan="2">Number of the output bytes
Range of value: 0 … 244</td></tr>
<tr><td>Input Length</td><td colspan="2">Number of the input bytes
Range of value: 0 … 244</td></tr>
</table>

Table 98: Extended Diagnosis > PROFIBUS_FSPMS > Extended Diagnosis

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10.6.1.2 Config Data

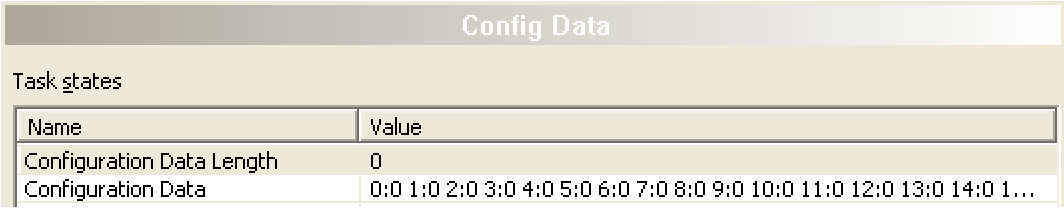

Figure 100: Extended Diagnosis > PROFIBUS_FSPMS > Config Data

Name	Description
Configuration Data Length	Number of the configuration data in byte Describes how many bytes of the configuration data are valid.
Configuration Data	Left value: numbering of every configuration data byte Right value: value of the respective configuration data byte

Table 99: Extended Diagnosis > PROFIBUS_FSPMS > Config Data

Note: To view the **Value** column completely, double click to the right border of the column head. Move to the left or the right column side using the scroll bar.

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10.6.1.3 Parameter Data

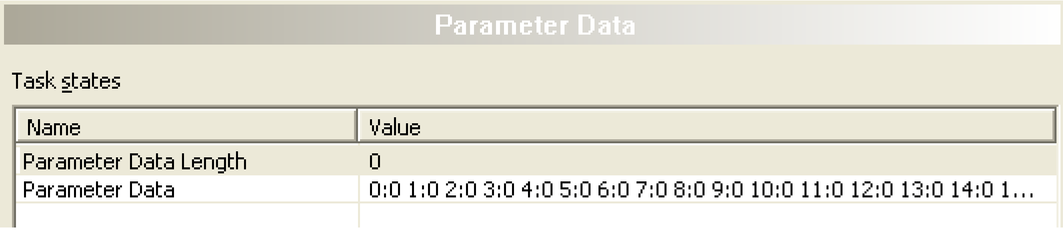

Figure 101: Extended Diagnosis > PROFIBUS_FSPMS > Parameter Data

Name	Description
Parameter Data Length	Number of the parameter data in byte Describes how many bytes of the parameter data are valid.
Parameter Data	Left value: numbering of every parameter data byte Right value: value of the respective parameter data byte

Table 100: Extended Diagnosis > PROFIBUS_FSPMS > Parameter Data

Note: To view the **Value** column completely, double click to the right border of the column head. Move to the left or the right column side using the scroll bar.

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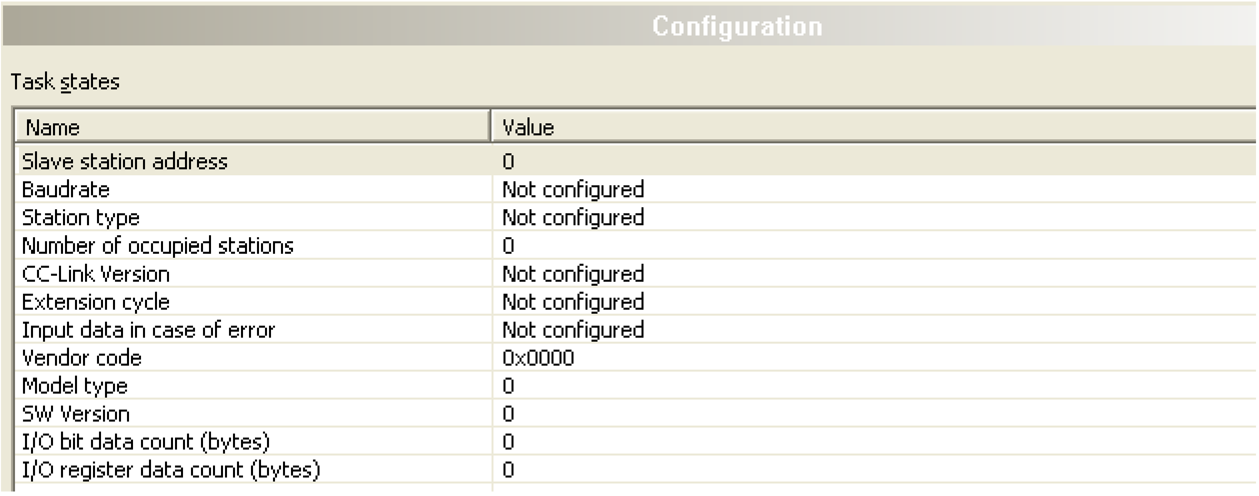
10.7 CC-Link Slave

10.7.1 CCLINK_SLAVE

10.7.1.1 Configuration



Name	Value
Slave station address	0
Baudrate	Not configured
Station type	Not configured
Number of occupied stations	0
CC-Link Version	Not configured
Extension cycle	Not configured
Input data in case of error	Not configured
Vendor code	0x0000
Model type	0
SW Version	0
I/O bit data count (bytes)	0
I/O register data count (bytes)	0

Figure 102: Extended Diagnosis > CCLINK_SLAVE > Configuration

Name	Description
Slave station address	Station address of CC-Link Slave Note: The number of occupied stations plus station address must not exceed the parameter range Range of value: 1 ... 64
Baudrate	0 = Not configured; 1 = 156kBaud; 2 = 625kBaud; 3 = 2500kBaud; 4 = 5MBaud; 5 = 10MBaud
Station type	0 = Not configured; 1 = Remote I/O Station; 2 = Remote Device Station; 3 = Intelligent Device Station
Number of occupied stations	Number of occupied stations Remote I/O Station: 1 (Default) Remote Device Station: 1 ... 4
CC Link Version	0 = Not configured; 1 = Version 1 Mode; 2 = Version 2 Mode
Extension cycle	Number of extension cycles 0 = Not configured; 1 = Single/One cycle; 2 = Double/Two cycles; 3 = Quadruple/Four cycles; 4 = Octuple/Eight cycles Allowed numbers for CC-Link version 1: Single Allowed numbers for CC-Link version 2: Single, Double, Quadruple, Octuple

More see next page

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Name	Description
Input data in case of error	0 = Not configured; 1 = Clear; 2 = Hold
Vendor code	Vendor code (If corresponding bit in ulCcLinkFlags parameter is set) Range of value: 0 ... 65535, Default: 0x0352
Model type	Model type (If corresponding bit in ulCcLinkFlags parameter is set) Range of value: 0 ... 255
SW Version	Software version (If corresponding bit in ulCcLinkFlags parameter is set) Range of value: 0 ... 63, Default: 1
I/O bit data count (bytes)	to be defined
I/O register data count (bytes)	to be defined

Table 101: Extended Diagnosis > CCLINK_SLAVE > Configuration

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10.7.1.2 Commands

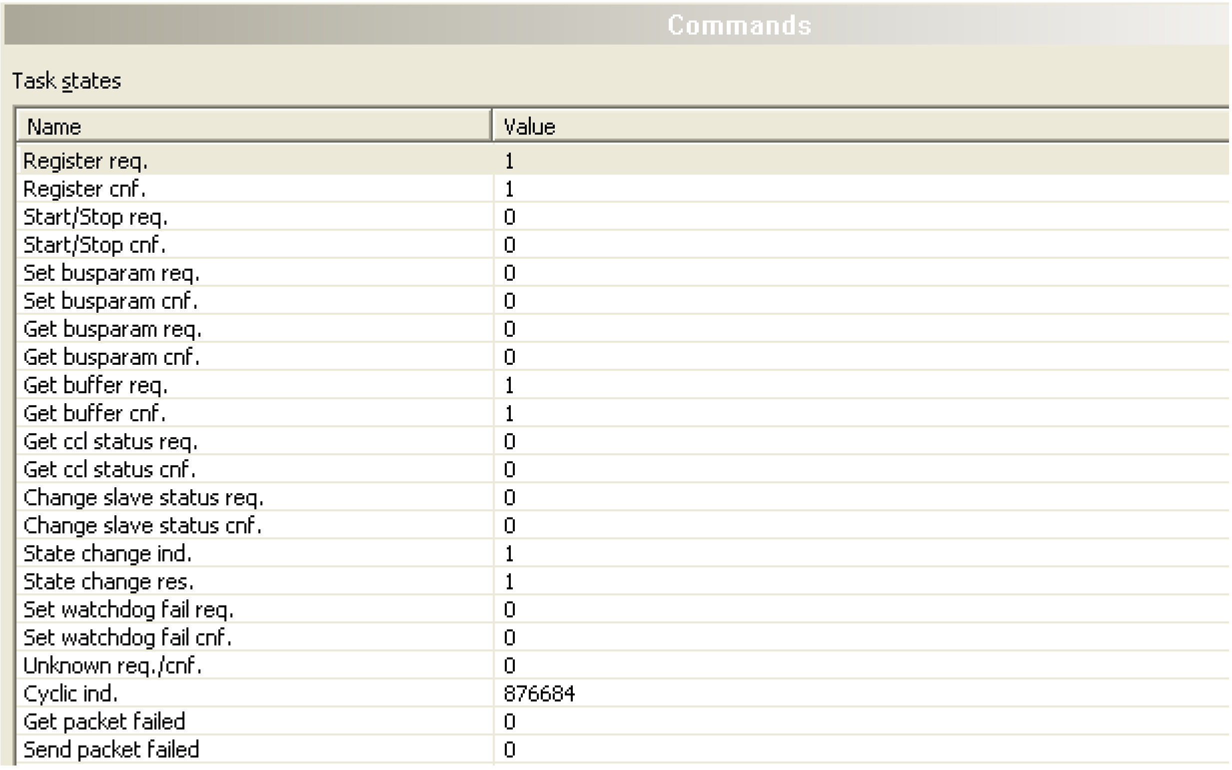

Figure 103: Extended Diagnosis > CCLINK_SLAVE > Commands

Name	**Description**
[*Service*]	Diagnosis counter of the encapsulation layer. Indicates the services processed. (The services of the single packets are described in the API manual.)
Get packet failed	Number of errors during requesting a packet
Send packet failed	Number of errors during sending a packet

Table 102: Extended Diagnosis > CCLINK_SLAVE > Commands

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10.7.1.3 Interrupts

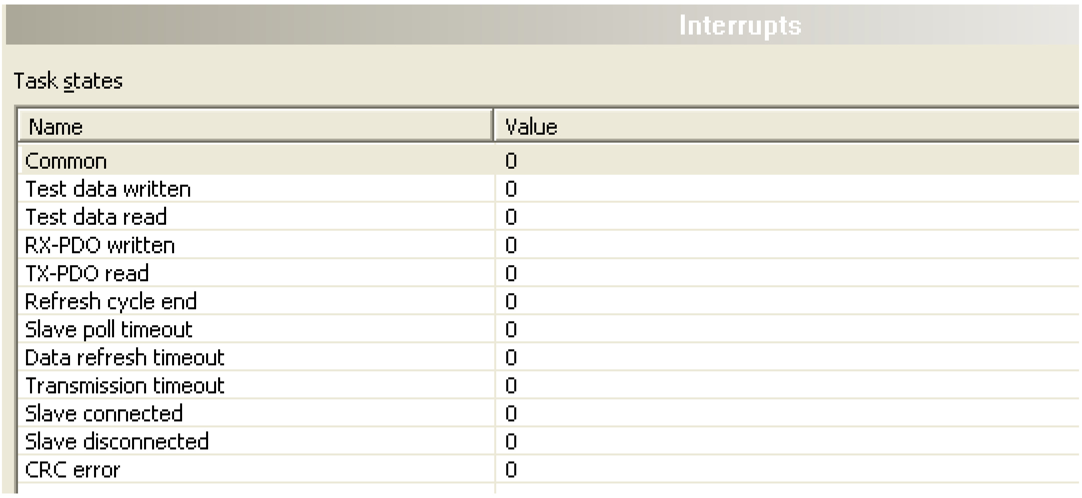

Figure 104: Extended Diagnosis > CCLINK_SLAVE > Interrupts

Name	Description
[*Service*]	Diagnosis counter of the encapsulation layer. Indicates the services processed. (The services of the single packets are described in the API manual.)

Table 103: Extended Diagnosis > CCLINK_SLAVE > Interrrupts

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10.7.1.4 XC receive area

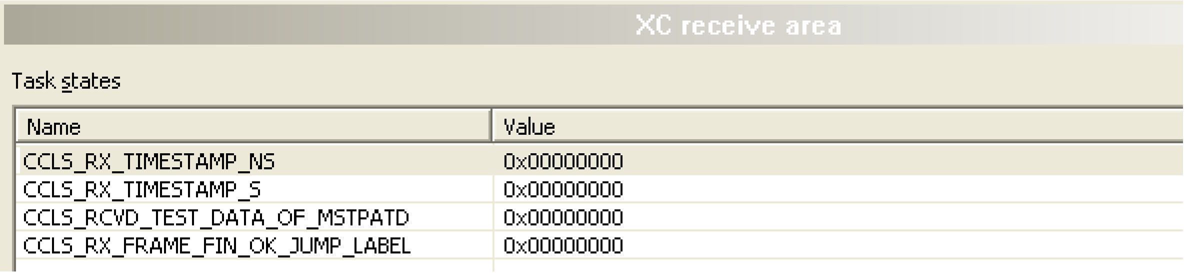

Figure 105: Extended Diagnosis > CCLINK_SLAVE > XC receive area

ID	Value	Description
CCLS_RX_TIMESTAMP_NS	0x00000000	RX_TIMESTAMP_NS
CCLS_RX_TIMESTAMP_S	0x00000000	RX_TIMESTAMP_S
CCLS_RCVD_TEST_DATA_OF_MSTPATD	0x00000000	RCVD_TEST_DATA_OF_ MSTPATD
CCLS_RX_FRAME_FIN_OK_JUMP_LABEL	0x00000000	RX_FRAME_FIN_OK_JUMP_ LABEL

Table 104: Extended Diagnosis > CCLINK_SLAVE > XC receive area

10.7.1.5 XC config area

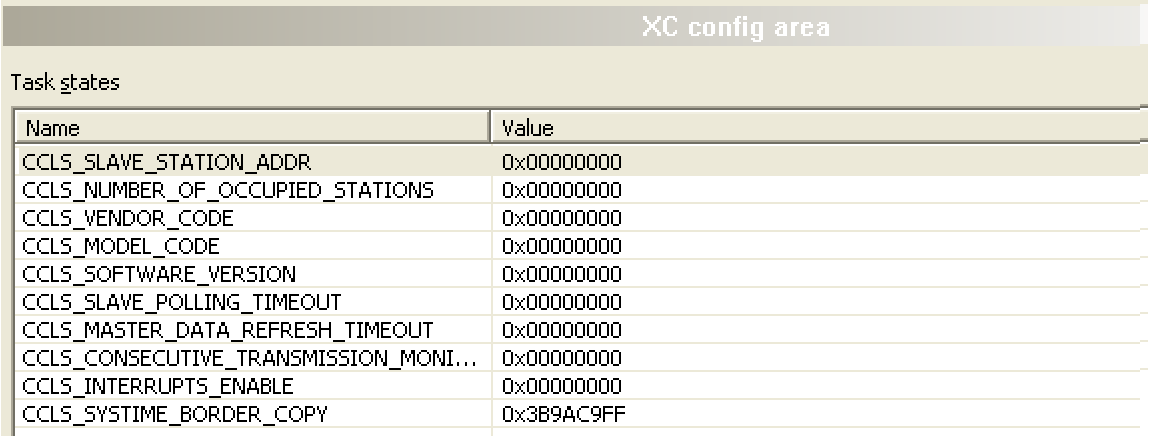

Figure 106: Extended Diagnosis > CCLINK_SLAVE > XC config area

ID	Value	Description
CCLS_SLAVE_STATION_ADDR	0x00000000	SLAVE_STATION_ADDR
CCLS_NUMBER_OF_OCCUPIED_STATIONS	0x00000000	NUMBER_OF_OCCUPIED_STATIONS
CCLS_VENDOR_CODE	0x00000000	VENDOR_CODE
CCLS_MODEL_CODE	0x00000000	MODEL_CODE
CCLS_SOFTWARE_VERSION	0x00000000	SOFTWARE_VERSION
CCLS_SLAVE_POLLING_TIMEOUT	0x00000000	SLAVE_POLLING_TIMEOUT
CCLS_MASTER_DATA_REFRESH_TIMEOUT	0x00000000	MASTER_DATA_REFRESH_TIMEOUT
CCLS_CONSECUTIVE_TRANSMISSION_MONITORING_TIMEOUT	0x00000000	CONSECUTIVE_TRANSMISSION_MONITORING_TIMEOUT
CCLS_INTERRUPTS_ENABLE	0x00000000	INTERRUPTS_ENABLE
CCLS_SYSTIME_BORDER_COPY	0x00000000	SYSTIME_BORDER_COPY

Table 105: Extended Diagnosis > CCLINK_SLAVE > XC config area

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10.7.1.6 XC status area

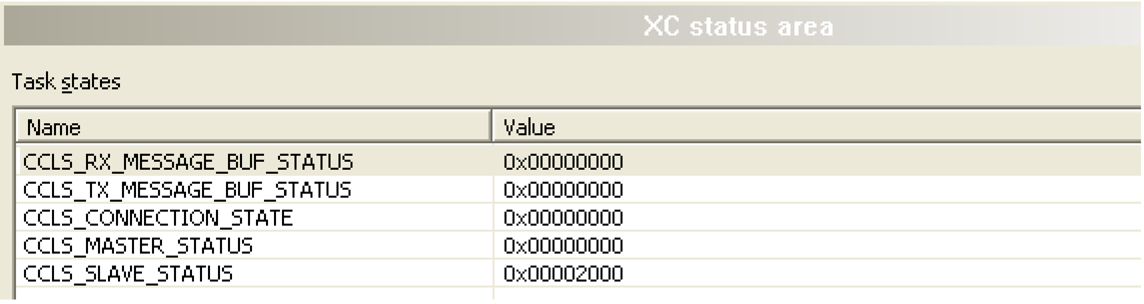

Figure 107: Extended Diagnosis > CCLINK_SLAVE > XC status area

ID	Value	Description
CCLS_RX_MESSAGE_BUF_STATUS	0x00000000	RX_MESSAGE_BUF_STATUS
CCLS_TX_MESSAGE_BUF_STATUS	0x00000000	TX_MESSAGE_BUF_STATUS
CCLS_CONNECTION_STATE	0x00000000	CONNECTION_STATE
CCLS_MASTER_STATUS	0x00000000	MASTER_STATUS
CCLS_SLAVE_STATUS	0x00000000	SLAVE_STATUS

Table 106: Extended Diagnosis > CCLINK_SLAVE > XC status area

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10.7.1.7 XC management area

XC management area

Task states

Name	Value
CCLS_SLAVE_FRAMES_FC_FD_TRANSMITTE...	0x00000000
CCLS_SLAVE_FRAMES_FE_FF_TRANSMITTED...	0x00000000
CCLS_MASTER_FRAMES_FA_RECEIVED_OK	0x00000000
CCLS_MASTER_FRAMES_FC_RECEIVED_OK	0x00000000
CCLS_MASTER_FRAMES_FD_RECEIVED_OK	0x00000000
CCLS_MASTER_FRAMES_FE_RECEIVED_OK	0x00000000
CCLS_MASTER_FRAMES_FF_RECEIVED_OK	0x00000000
CCLS_SLAVE_FRAMES_FC_RECEIVED_OK	0x00000000
CCLS_SLAVE_FRAMES_FD_RECEIVED_OK	0x00000000
CCLS_SLAVE_FRAMES_FE_RECEIVED_OK	0x00000000
CCLS_SLAVE_FRAMES_FF_RECEIVED_OK	0x00000000
CCLS_UNKNOWN_FRAMES_RECEIVED_OK	0x00000000
CCLS_SLAVE_POLLING_TIMEOUT_ERRORS	0x00000000
CCLS_MASTER_DATA_REFRESH_TIMEOUT_E...	0x00000000
CCLS_CONSECUTIVE_TRANSMISSION_MONI...	0x00000000
CCLS_CRC_ERRORS	0x00000000
CCLS_ABORT_ERRORS	0x00000000
CCLS_FORMAT_ERRORS	0x00000000
CCLS_LENGTH_ERRORS	0x00000000
CCLS_URX_FIFO_OVERFLOW_ERRORS	0x00000000
CCLS_MESSAGES_DROPPED_DUE_MESSAGE_...	0x00000000

Figure 108: Extended Diagnosis > CCLINK_SLAVE > XC management area

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ID	Value	Description
CCLS_SLAVE_FRAMES_FC_FD_TRANSMITTED_OK	0x00000000	SLAVE_FRAMES_FC_FD_TRANSMITTED_OK
CCLS_SLAVE_FRAMES_FE_FF_TRANSMITTED_OK	0x00000000	SLAVE_FRAMES_FE_FF_TRANSMITTED_OK
CCLS_MASTER_FRAMES_FA_RECEIVED_OK	0x00000000	MASTER_FRAMES_FA_RECEIVED_OK
CCLS_MASTER_FRAMES_FC_RECEIVED_OK	0x00000000	MASTER_FRAMES_FC_RECEIVED_OK
CCLS_MASTER_FRAMES_FD_RECEIVED_OK	0x00000000	MASTER_FRAMES_FD_RECEIVED_OK
CCLS_MASTER_FRAMES_FE_RECEIVED_OK	0x00000000	MASTER_FRAMES_FE_RECEIVED_OK
CCLS_MASTER_FRAMES_FF_RECEIVED_OK	0x00000000	MASTER_FRAMES_FF_RECEIVED_OK
CCLS_SLAVE_FRAMES_FC_RECEIVED_OK	0x00000000	SLAVE_FRAMES_FC_RECEIVED_OK
CCLS_SLAVE_FRAMES_FD_RECEIVED_OK	0x00000000	SLAVE_FRAMES_FD_RECEIVED_OK
CCLS_SLAVE_FRAMES_FE_RECEIVED_OK	0x00000000	SLAVE_FRAMES_FE_RECEIVED_OK
CCLS_SLAVE_FRAMES_FF_RECEIVED_OK	0x00000000	SLAVE_FRAMES_FF_RECEIVED_OK
CCLS_UNKNOWN_FRAMES_RECEIVED_OK	0x00000000	UNKNOWN_FRAMES_RECEIVED_OK
CCLS_SLAVE_POLLING_TIMEOUT_ERRORS	0x00000000	SLAVE_POLLING_TIMEOUT_ERRORS
CCLS_MASTER_DATA_REFRESH_TIMEOUT_ERRORS	0x00000000	MASTER_DATA_REFRESH_TIMEOUT_ERRORS
CCLS_CONSECUTIVE_TRANSMISSION_MONITORING_TIMEOUT_ERRORS	0x00000000	CONSECUTIVE_TRANS-MISSION_MONITORING_TIMEOUT_ERRORS
CCLS_CRC_ERRORS	0x00000000	CRC_ERRORS
CCLS_ABORT_ERRORS	0x00000000	ABORT_ERRORS
CCLS_FORMAT_ERRORS	0x00000000	FORMAT_ERRORS
CCLS_LENGTH_ERRORS	0x00000000	LENGTH_ERRORS
CCLS_URX_FIFO_OVERFLOW_ERRORS	0x00000000	URX_FIFO_OVERFLOW_ERRORS
CCLS_MESSAGES_DROPPED_DUE_MESSAGE_BUF_FULL	0x00000000	MESSAGES_DROPPED_DUE_MESSAGE_BUF_FULL

Table 107: Extended Diagnosis > CCLINK_SLAVE > XC management area

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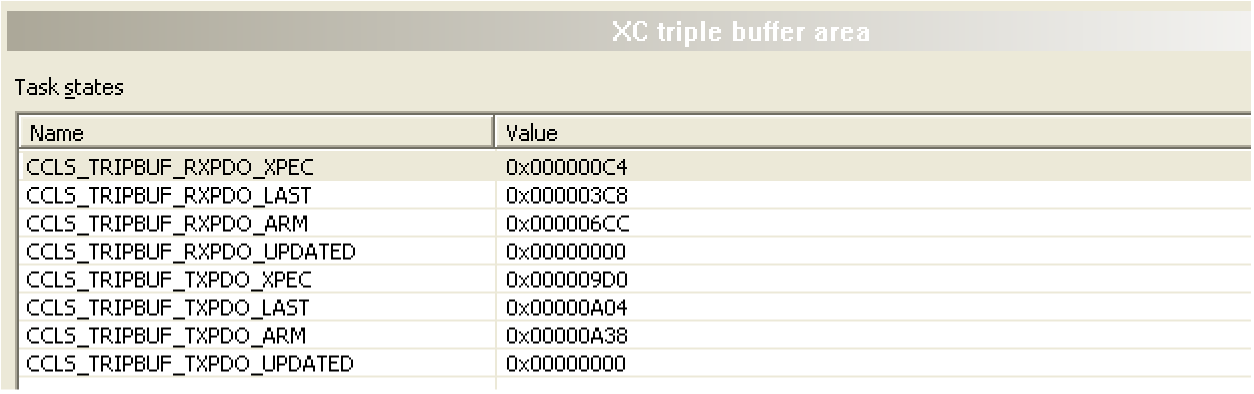
10.7.1.8 XC triple buffer area


XC triple buffer area

Task states

Name	Value
CCLS_TRIPBUF_RXPDO_XPEC	0x000000C4
CCLS_TRIPBUF_RXPDO_LAST	0x000003C8
CCLS_TRIPBUF_RXPDO_ARM	0x000006CC
CCLS_TRIPBUF_RXPDO_UPDATED	0x00000000
CCLS_TRIPBUF_TXPDO_XPEC	0x000009D0
CCLS_TRIPBUF_TXPDO_LAST	0x00000A04
CCLS_TRIPBUF_TXPDO_ARM	0x00000A38
CCLS_TRIPBUF_TXPDO_UPDATED	0x00000000

Figure 109: Extended Diagnosis > CCLINK_SLAVE > XC triple buffer area

ID	Value	Description
CCLS_TRIPBUF_RXPDO_XPEC	0x00000000	TRIPBUF_RXPDO_XPEC
CCLS_TRIPBUF_RXPDO_LAST	0x00000000	TRIPBUF_RXPDO_LAST
CCLS_TRIPBUF_RXPDO_ARM	0x00000000	TRIPBUF_RXPDO_ARM
CCLS_TRIPBUF_RXPDO_UPDATED	0x00000000	TRIPBUF_RXPDO_UPDATED
CCLS_TRIPBUF_TXPDO_XPEC	0x00000000	TRIPBUF_TXPDO_XPEC
CCLS_TRIPBUF_TXPDO_LAST	0x00000000	TRIPBUF_TXPDO_LAST
CCLS_TRIPBUF_TXPDO_ARM	0x00000000	TRIPBUF_TXPDO_ARM
CCLS_TRIPBUF_TXPDO_UPDATED	0x00000000	TRIPBUF_TXPDO_UPDATED

Table 108: Extended Diagnosis > CCLINK_SLAVE > XC triple buffer area

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10.7.1.9 XC reserved area

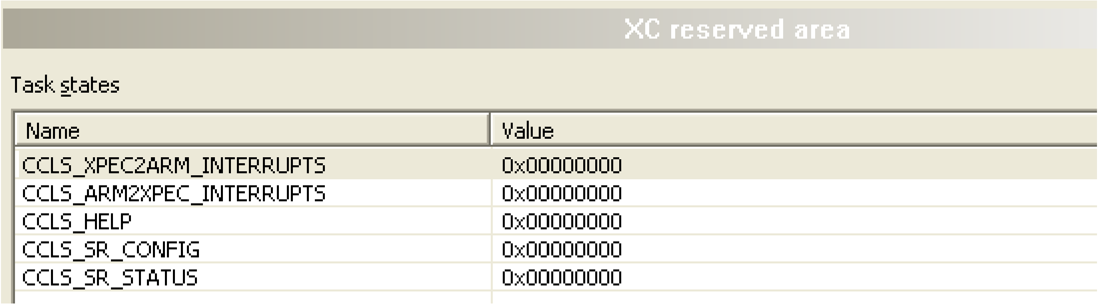

Figure 110: Extended Diagnosis > CCLINK_SLAVE > XC reserved area

ID	Value	Description
CCLS_XPEC2ARM_INTERRUPTS	0x00000000	XPEC2ARM_INTERRUPTS
CCLS_ARM2XPEC_INTERRUPTS	0x00000000	ARM2XPEC_INTERRUPTS
CCLS_HELP	0x00000000	HELP
CCLS_SR_CONFIG	0x00000000	SR_CONFIG
CCLS_SR_STATUS	0x00000000	SR_STATUS

Table 109: Extended Diagnosis > CCLINK_SLAVE > XC reserved area

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10.7.2 CCLINK_APS

10.7.2.1 Slave configuration

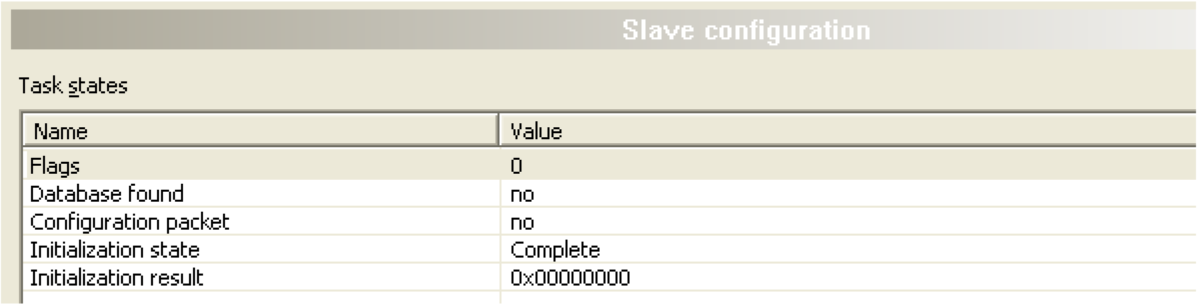

Figure 111: Extended Diagnosis > CCLINK_APS > Slave Configuration

Name	Description
Flags	to be defined
Database found	to be defined
Warmstart configuration	to be defined
Initialization state	0 = Idle; 1 = Send initialize request; 2 = Wait for initialize confirmation; 3 = Send register request; 4 = Wait for register confirmation; 5 = Send get buffer request; 6 = Wait for get buffer confirmation; 7 = Send bus parameter request; 8 = Wait for bus parameter confirmation; 9 = Complete; 10 = Failed
Initialization result	to be defined

Table 110: Extended Diagnosis > CCLINK_APS > Slave Configuration

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10.7.2.2 Commands

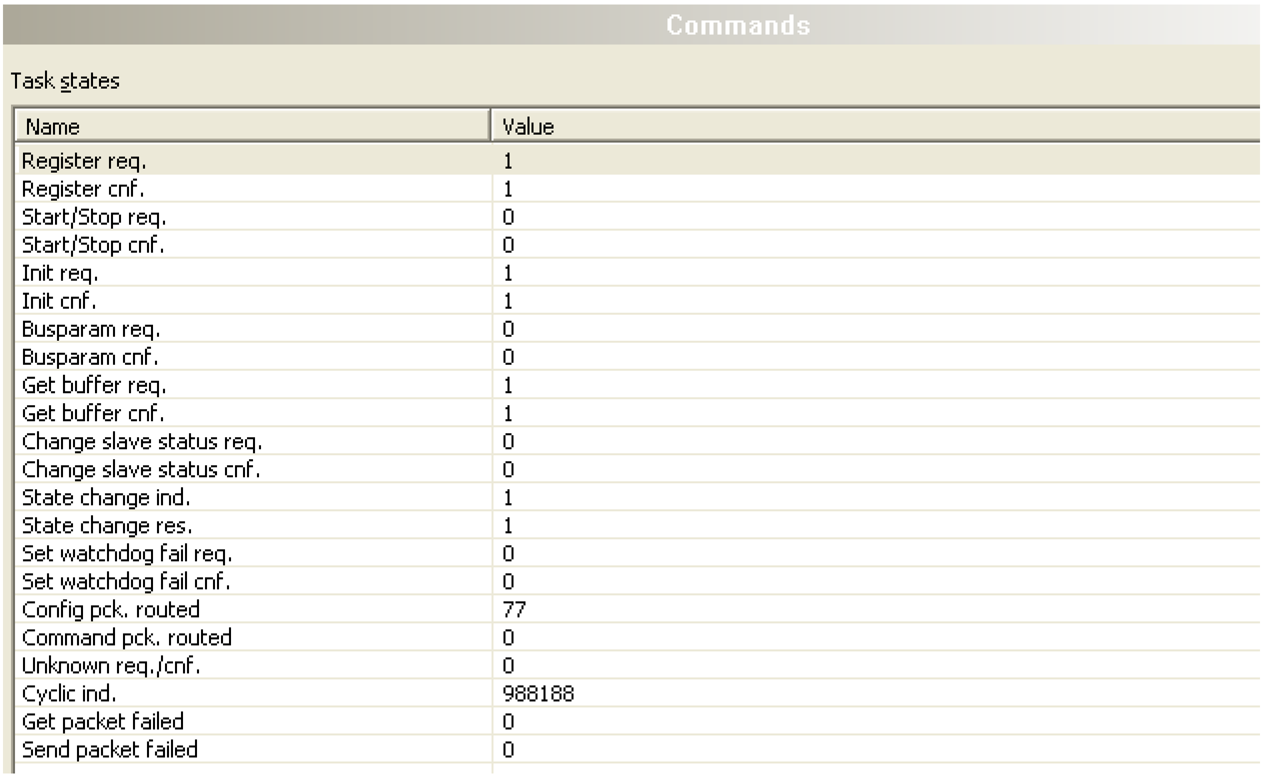

Figure 112: Extended Diagnosis > CCLINK_APS > Commands

Name	Description
[*Service*]	Diagnosis counter of the encapsulation layer. Indicates the services processed. (The services of the single packets are described in the API manual.)
Get packet failed	Number of errors during requesting a packet
Send packet failed	Number of errors during sending a packet

Table 111: Extended Diagnosis > CCLINK_APS > Commands

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10.7.2.3 DPM data exchange

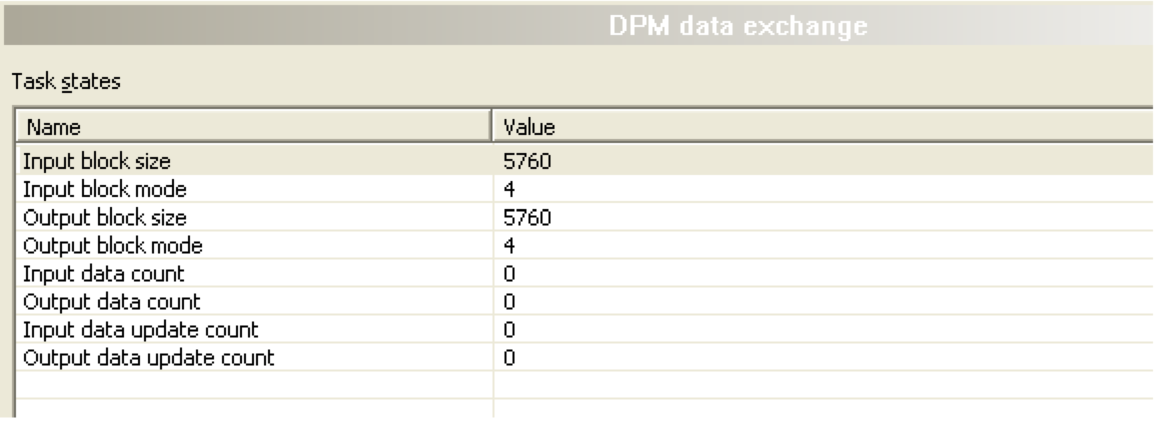

Figure 113: Extended Diagnosis > CCLINK_APS > DPM data exchange

Name	Description
Input block size	to be defined
Input block mode	to be defined
Output block size	to be defined
Output block mode	to be defined
Input data count	to be defined
Output data count	to be defined
Input data update count	to be defined
Output data update count	to be defined

Table 112: Extended Diagnosis > CCLINK_APS > DPM data exchange

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10.8 CANopen Slave

10.8.1 CANOPEN_SLAVE

10.8.1.1 Common Diagnostic

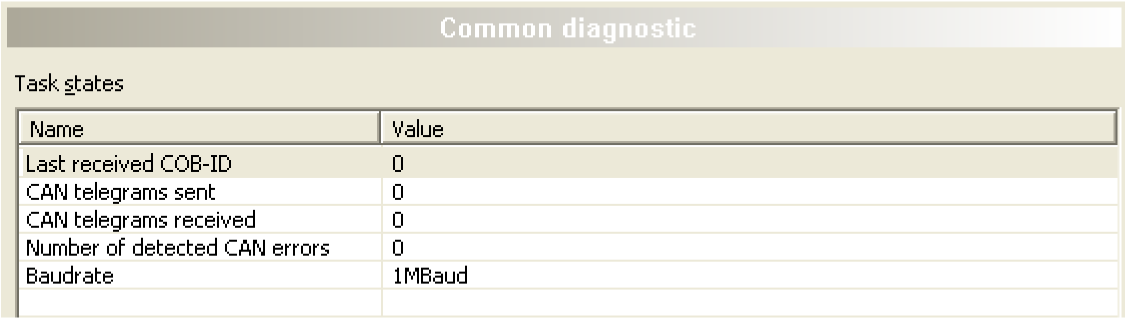

Figure 114: Extended Diagnosis > CANOPEN_SLAVE > Common Diagnostic

<table>
<tr><th>Name</th><th colspan="2">Description</th></tr>
<tr><td>Last received COB-ID</td><td colspan="2">Last received CAN-Message Header-ID</td></tr>
<tr><td>CAN telegrams sent</td><td colspan="2">Number of sent CAN-Messages</td></tr>
<tr><td>CAN telegrams received</td><td colspan="2">Number of received CAN-Messages</td></tr>
<tr><td>Number of detected CAN errors</td><td colspan="2">Number of detected CAN errors</td></tr>
<tr><td rowspan="2">Bauderate</td><td colspan="2">Baud rate of CANopen connection
Available Baud Rate:</td></tr>
<tr><td>1 MBaud
800 KBaud
500 KBaud
250 KBaud
125 KBaud</td><td>100 KBaud
50 KBaud
20 KBaud
10 KBaud</td></tr>
</table>

Table 113: Extended Diagnosis > CANOPEN_SLAVE > Common Diagnostic

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10.8.1.2 Commands

Commands

Task states

Name	Value
Register req.	1
Register cnf.	1
Start/Stop req.	19
Start/Stop cnf.	19
Busparam req.	0
Busparam cnf.	0
Get buffer req.	1
Get buffer cnf.	1
State change ind.	1
State change res.	1
Set watchdog fail req.	0
Set watchdog fail cnf.	0
Data exch. req.	0
Data exch. cnf.	0
Send emergency req.	0
Send emergency cnf.	0
NMT command req.	0
NMT command cnf.	0
CAN_DL stop req.	0
CAN_DL stop cnf. pos.	0
CAN_DL stop cnf. neg.	0
CAN_DL register req.	0
CAN_DL register cnf. pos.	0
CAN_DL register cnf. neg.	0
CAN_DL set param req.	0
CAN_DL set param cnf. pos.	0
CAN_DL set param cnf. neg.	0
CAN_DL start req.	0
CAN_DL start cnf. pos.	0
CAN_DL start cnf. neg.	0
CAN_DL event ind.	0
CAN_DL event res.	0
CAN_DL register cnf. pos.	0
CAN_DL send data cnf. pos.	0
CAN_DL send data cnf. neg.	0
CAN_DL enable id req.	0
CAN_DL enable id cnf. pos.	0
CAN_DL enable id cnf. neg.	0
CAN_DL event ack. req.	0
CAN_DL event ack. cnf. pos.	0
CAN_DL event ack. cnf. neg.	0
CAN_DL recv data ind.	0
CAN_DL recv data res.	0
Unknown req./cnf.	0
Cyclic ind.	5504497
Get packet failed	0
Send packet failed	0

Figure 115: Extended Diagnosis > CANOPEN_SLAVE > Commands

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Name	Description
[*Service*]	Diagnosis counter of the encapsulation layer. Indicates the services processed. (The services of the single packets are described in the API manual.)
Get packet failed	Number of errors during requesting a packet
Send packet failed	Number of errors during sending a packet

Table 114: Extended Diagnosis > CANOPEN_SLAVE > Commands

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10.8.2 CANOPEN_APS

10.8.2.1 Slave configuration

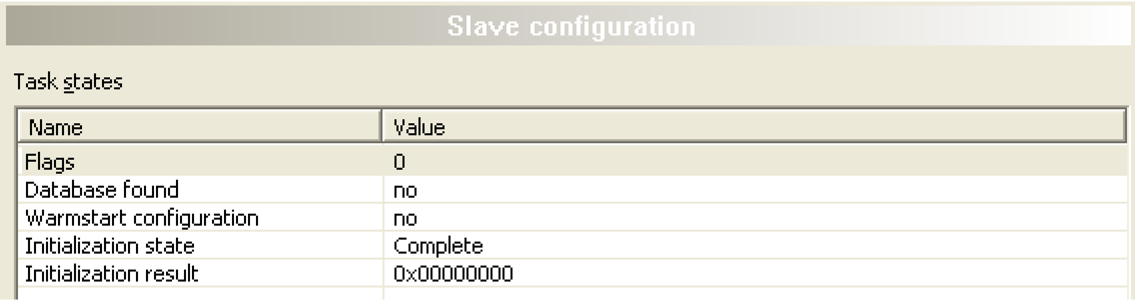

Figure 116: Extended Diagnosis > CANOPEN_APS > Slave Configuration

Name	Description
Flags	Bit0 set: Configuration data base found not set: No configuration data base found Bit1 set: Configuration by packets not set: No packets for configuration
Database found	Yes: Configuration data base found No: No configuration data base found
Warmstart configuration	Yes: Configuration by packets No: No packets for configuration
Initialization state	0 = Idle; 1 = Send initialize request; 2 = Wait for initialize confirmation; 3 = Send register request; 4 = Wait for register confirmation; 5 = Send get buffer request; 6 = Wait for get buffer confirmation; 7 = Send bus parameter request; 8 = Wait for bus parameter confirmation; 9 = Complete; 10 = Failed
Initialization result	Error code of the initialisation, 0 = no error

Table 115: Extended Diagnosis > CANOPEN_APS > Slave Configuration

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10.8.2.2 Commands

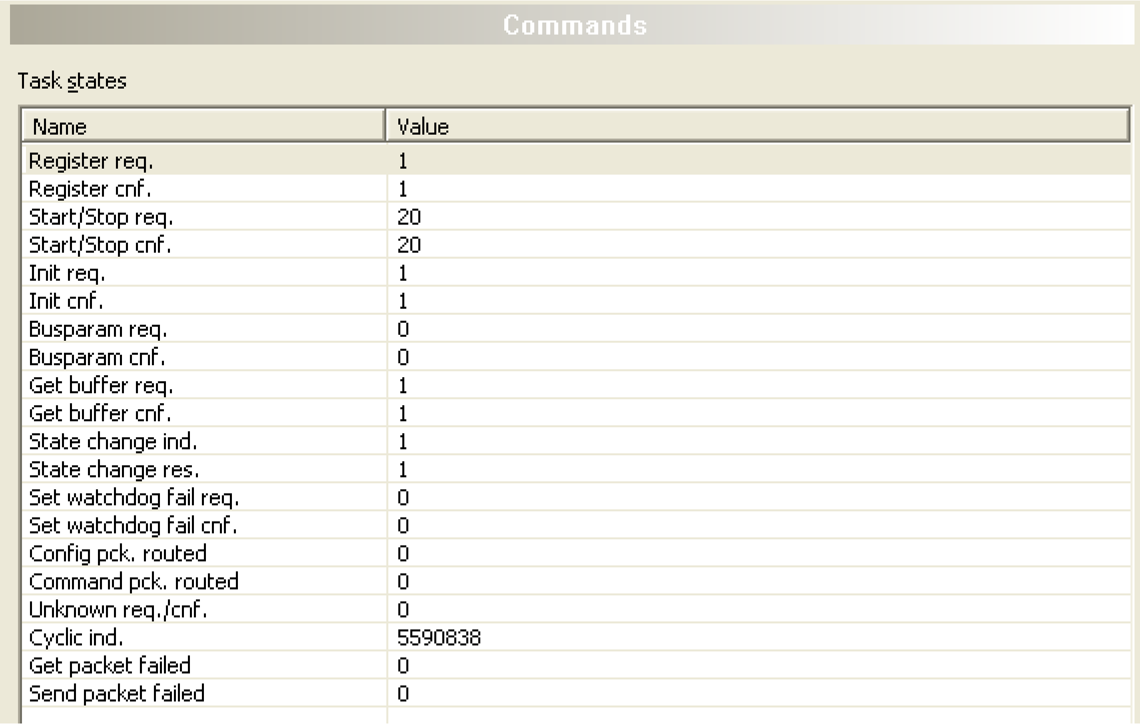

Figure 117: Extended Diagnosis > CANOPEN_APS > Commands

Name	Description
[*Service*]	Diagnosis counter of the encapsulation layer. Indicates the services processed. (The services of the single packets are described in the API manual.)
Get packet failed	Number of errors during requesting a packet
Send packet failed	Number of errors during sending a packet

Table 116: Extended Diagnosis > CANOPEN_APS > Commands

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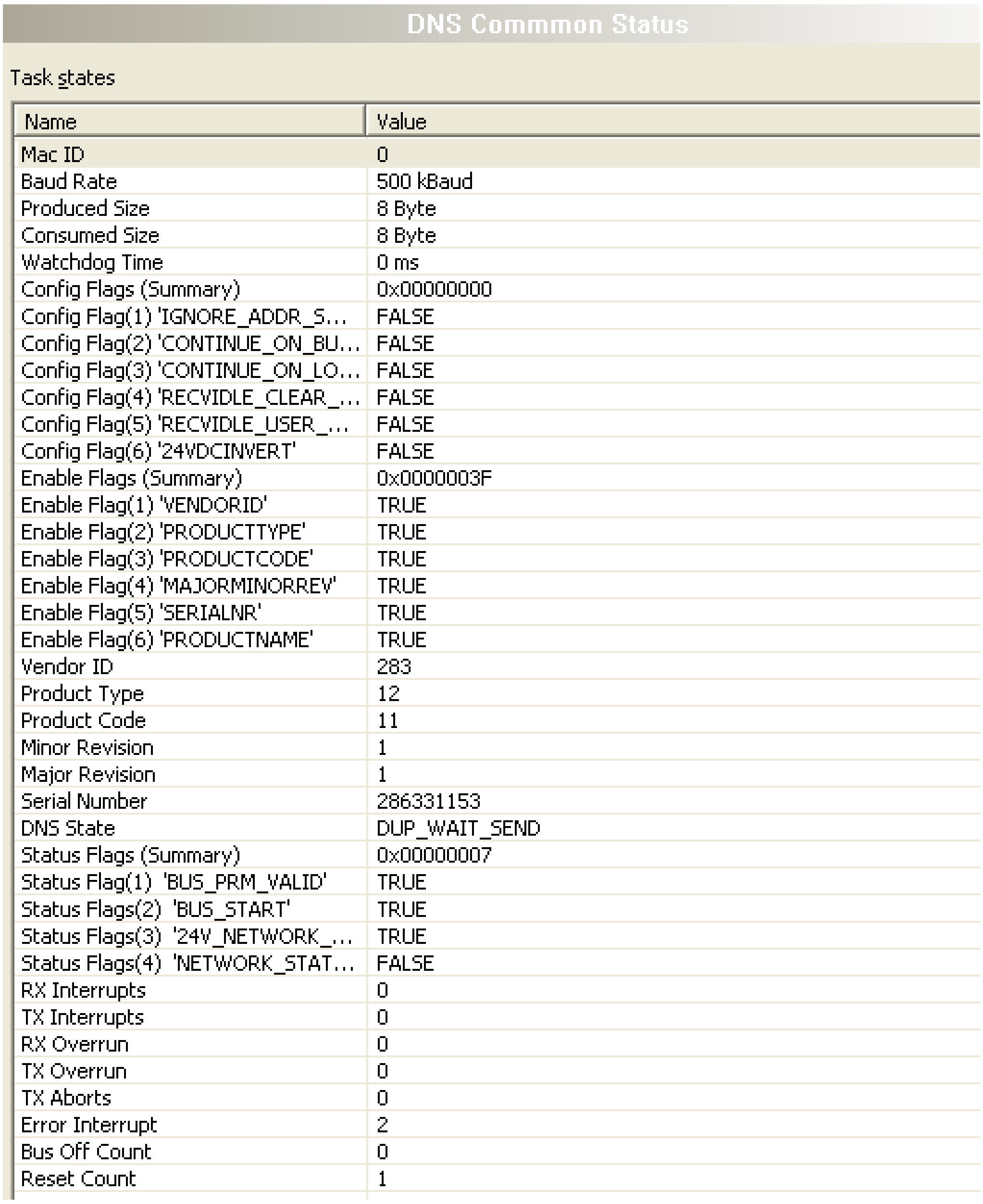
10.9 DeviceNet-Slave

10.9.1 DNS_FAL

10.9.1.1 DNS Common Status


DNS Commmon Status

Task states

Name	Value
Mac ID	0
Baud Rate	500 kBaud
Produced Size	8 Byte
Consumed Size	8 Byte
Watchdog Time	0 ms
Config Flags (Summary)	0x00000000
Config Flag(1) 'IGNORE_ADDR_S...	FALSE
Config Flag(2) 'CONTINUE_ON_BU...	FALSE
Config Flag(3) 'CONTINUE_ON_LO...	FALSE
Config Flag(4) 'RECVIDLE_CLEAR_...	FALSE
Config Flag(5) 'RECVIDLE_USER_...	FALSE
Config Flag(6) '24VDCINVERT'	FALSE
Enable Flags (Summary)	0x0000003F
Enable Flag(1) 'VENDORID'	TRUE
Enable Flag(2) 'PRODUCTTYPE'	TRUE
Enable Flag(3) 'PRODUCTCODE'	TRUE
Enable Flag(4) 'MAJORMINORREV'	TRUE
Enable Flag(5) 'SERIALNR'	TRUE
Enable Flag(6) 'PRODUCTNAME'	TRUE
Vendor ID	283
Product Type	12
Product Code	11
Minor Revision	1
Major Revision	1
Serial Number	286331153
DNS State	DUP_WAIT_SEND
Status Flags (Summary)	0x00000007
Status Flag(1) 'BUS_PRM_VALID'	TRUE
Status Flags(2) 'BUS_START'	TRUE
Status Flags(3) '24V_NETWORK_...	TRUE
Status Flags(4) 'NETWORK_STAT...	FALSE
RX Interrupts	0
TX Interrupts	0
RX Overrun	0
TX Overrun	0
TX Aborts	0
Error Interrupt	2
Bus Off Count	0
Reset Count	1

Figure 118: Extended Diagnosis > DNS_FAL > DNS Common Status

Name	Description
[*Status*]	Common DNS Diagnosis status. Indicates the current status of the single tasks. (For further information refer to the API manual.)

Table 117: Extended Diagnosis > DNS_FAL > DNS Common Status

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10.9.1.2 AP Commands Counter

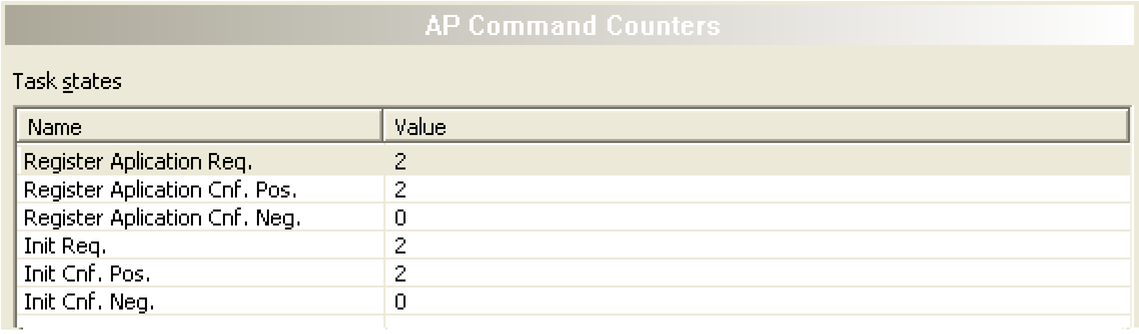

Figure 119: Extended Diagnosis > DNS_FAL > AP Commands Counter

Name	**Description**
[*Service*]	Diagnosis counter of the FAL layer. Indicates the services processed. (The services of the single packets are described in the API manual.)

Table 118: Extended Diagnosis > DNS_FAL > AP Commands Counter

10.9.1.3 CAN Command Counter

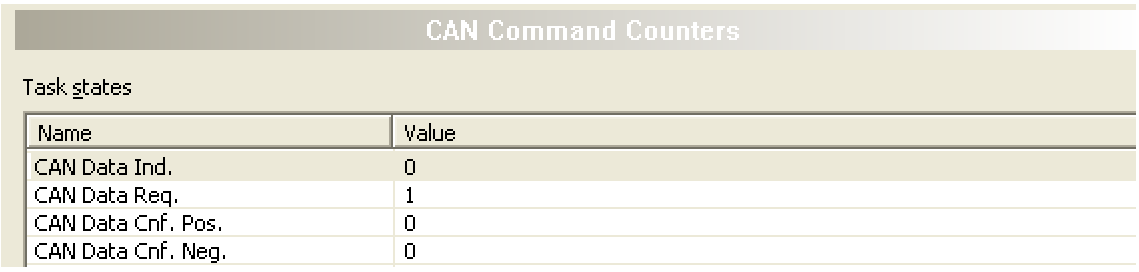

Figure 120: Extended Diagnosis > DNS_FAL > CAN Command Counter

Name	**Description**
[*Service*]	Diagnosis counter of the FAL layer. Indicates the services processed. (The services of the single packets are described in the API manual.)

Table 119: Extended Diagnosis > DNS_FAL > CAN Command Counter

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10.9.1.4 Timer Counter

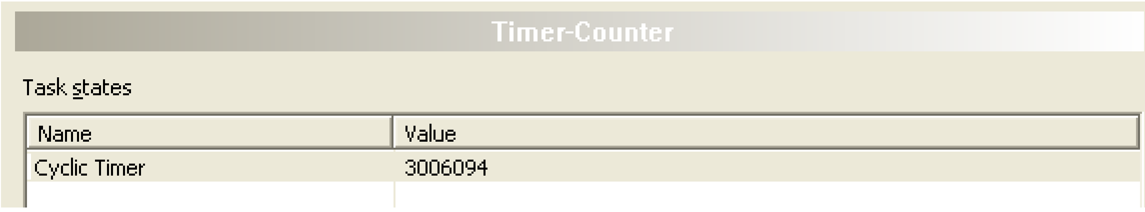

Figure 121: Extended Diagnosis > DNS_FAL > Timer Counter

Name	Description
[*Service*]	Diagnosis counter of the FAL layer. Indicates the services processed. (The services of the single packets are described in the API manual.)

Table 120: Extended Diagnosis > DNS_FAL > Timer Counter

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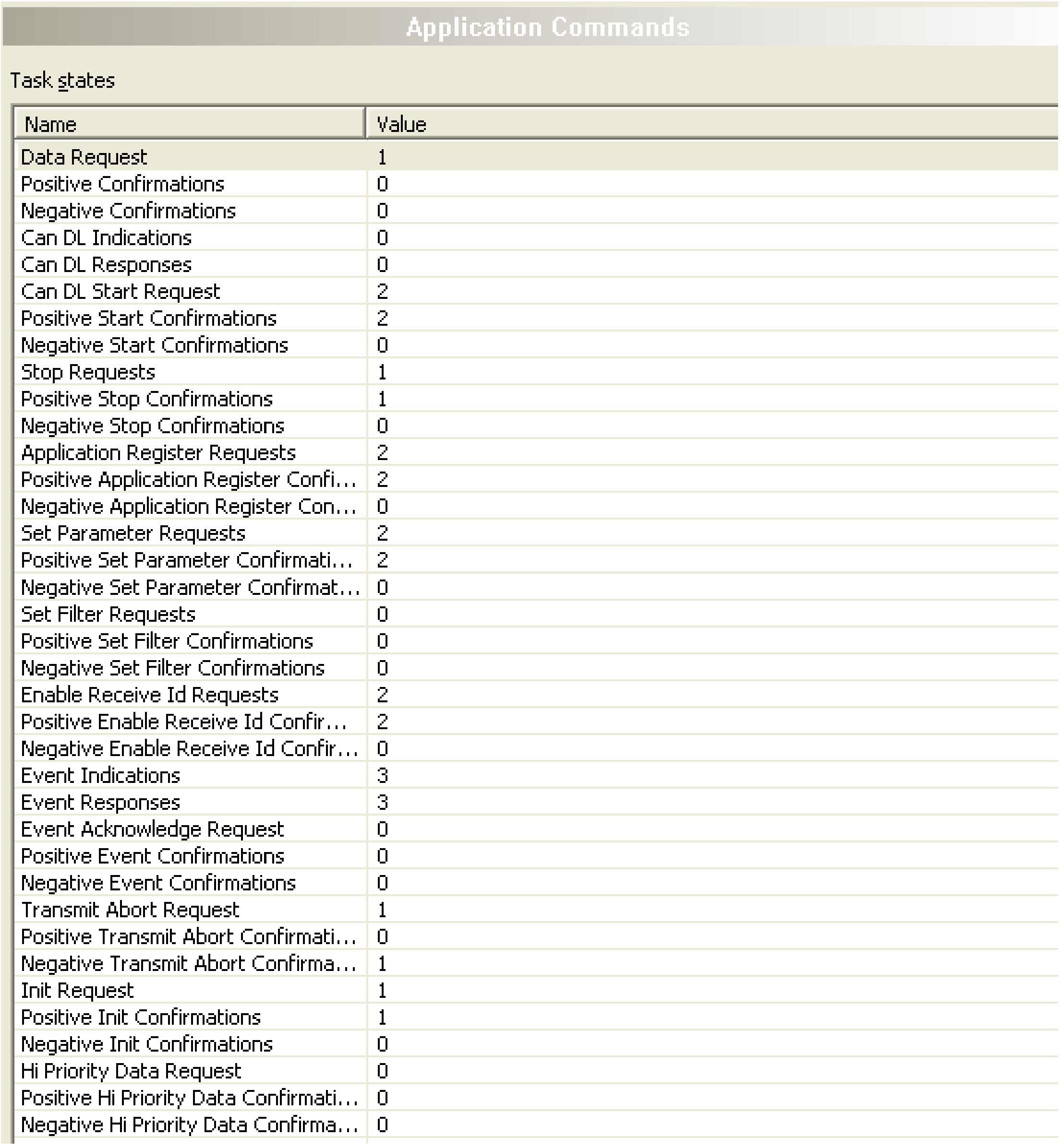
10.9.2 CAN_DL

10.9.2.1 AP Commands Counter


Application Commands

Task states

Name	Value
Data Request	1
Positive Confirmations	0
Negative Confirmations	0
Can DL Indications	0
Can DL Responses	0
Can DL Start Request	2
Positive Start Confirmations	2
Negative Start Confirmations	0
Stop Requests	1
Positive Stop Confirmations	1
Negative Stop Confirmations	0
Application Register Requests	2
Positive Application Register Confi...	2
Negative Application Register Con...	0
Set Parameter Requests	2
Positive Set Parameter Confirmati...	2
Negative Set Parameter Confirmat...	0
Set Filter Requests	0
Positive Set Filter Confirmations	0
Negative Set Filter Confirmations	0
Enable Receive Id Requests	2
Positive Enable Receive Id Confir...	2
Negative Enable Receive Id Confir...	0
Event Indications	3
Event Responses	3
Event Acknowledge Request	0
Positive Event Confirmations	0
Negative Event Confirmations	0
Transmit Abort Request	1
Positive Transmit Abort Confirmati...	0
Negative Transmit Abort Confirma...	1
Init Request	1
Positive Init Confirmations	1
Negative Init Confirmations	0
Hi Priority Data Request	0
Positive Hi Priority Data Confirmati...	0
Negative Hi Priority Data Confirma...	0

Figure 122: Extended Diagnosis > CAN_DL > AP Commands Counter

Name	Description
[*Service*]	Diagnosis counter of the CAN layer. Indicates the services processed. (The services of the single packets are described in the API manual.)

Table 121: Extended Diagnosis > CAN_DL > AP Commands Counter

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10.9.2.2 CAN Driver Status

CAN Driver Status

Task states

Name	Value
Can Status	0x00000006
Bus Off	false
Error Warning	true
Error Passive	true
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
Reserved	false
24 Volt Network Error	false
Transmit Frame Succeded	0
Transmit Error Summary	704132
Receive Frame Succeded	0
Receive Error Summary	0
Transmit Error Counter	128
Receive Error Counter	0
Arbitration Lost	0
Inications Dropped due to Fifo full	0
Confirmations Dropped due to Fifo…	0
Receive Standardframes filtered	0
Receive extended frames filtered	0
Receive Standardframes passed	0
Receive extended frames passed	0

Figure 123: Extended Diagnosis > CAN_DL > CAN Driver Status

Name	Description
CAN Status Bus Off Error Warning ErrorPassive	Diagnosis status of CAN specific error levels. Indicates the respective status of the CAN bus. (For further information refer to the API manual.)
Reserved	Diagnosis status
24 Volt Netzwork-Error	Diagnosis status of DeviceNet specific error levels. (For further information refer to the API manual.)
[*Service*]	Diagnosis counter of CAN errors. Indicates the services processed. (The services of the single packets are described in the API manual.)

Table 122: Extended Diagnosis > CAN_DL > CAN Driver Status

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10.10 IO Monitor

The **IO Monitor** serves for test and diagnosis purposes. It provides to view data of the process data image and to change output data easily. The display is always in a Byte manner.

Note: Only change and write output data, if you know that no plant disturbances are caused by this. All output data written by the IO Monitor are transmitted at the bus and have effect on subordinate drives, IO etc.

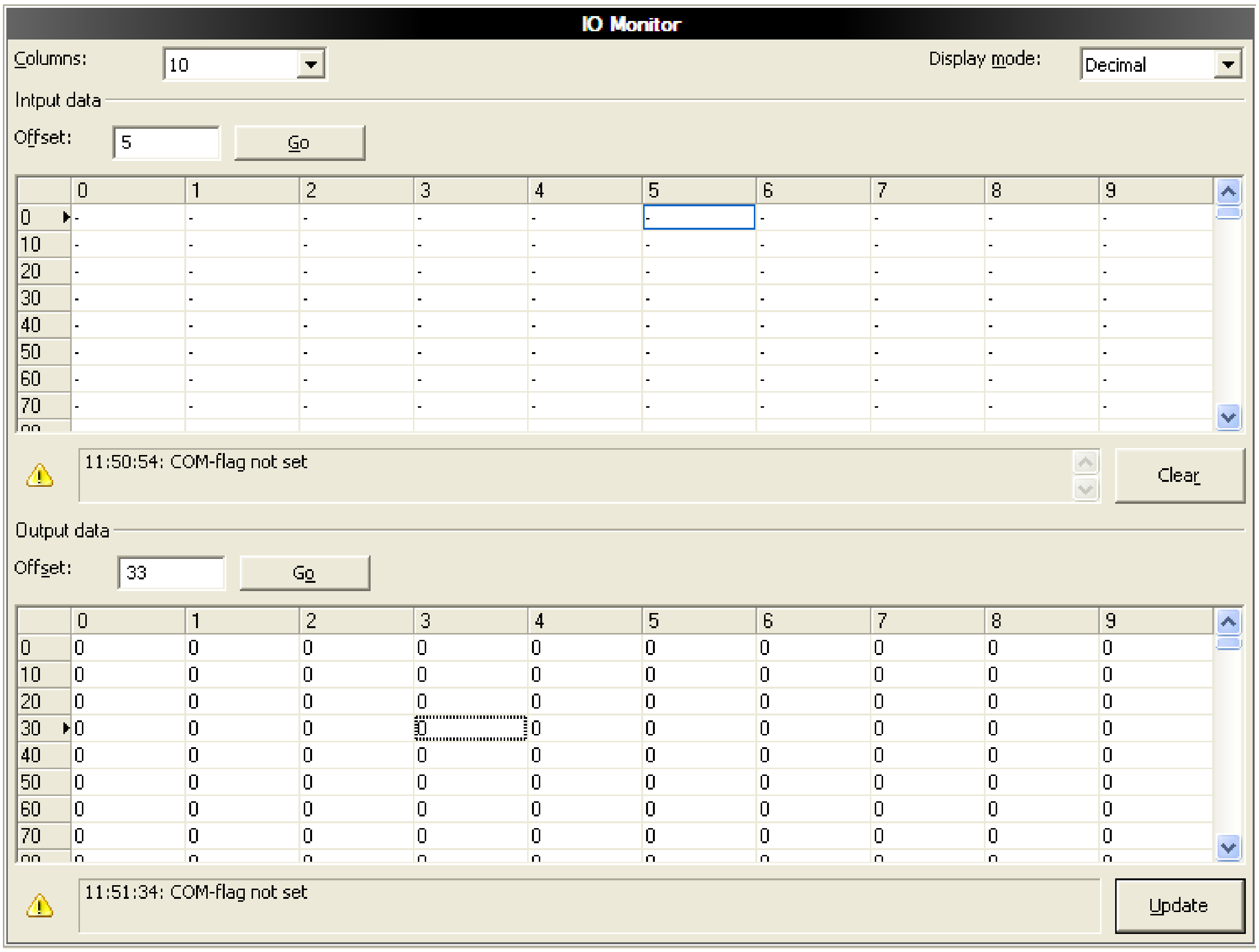

Figure 124: IO Monitor

Columns switches the number of columns.

Display Mode switches the representation of the input and output data between decimal and hexadecimal.

Offset / **Go** moves the indication of the data to the entered offset value.

Clear clears displayed error messages.

➢ Enter the output value and select the button **Update**.

➪ Always the data of the process image are displayed, also when these Bytes have not been reserved by the configuration.

11 Troubleshooting

In case of any error, please follow the hints given here in order to solve the problem:

General

- Check, if the requirements for cifX card operation are served.

Note: Upgrade older versions of the **cifX Device Driver** necessarily on the version **V0.95X**.

Further information on this, refer to page *46*, in the section titled *Requirements for Operation*.

Cable

- Check that the pinning of the used cable is correct.

Configuration

- Check the configuration in the Master and the Slave device. The configuration has to match.

Diagnostic using the netX Configuration Tool

With the menu **netX Configuration Tool > Diagnostics**, the diagnostic information of the device is shown. The shown diagnostic information depends on the used protocol or fieldbus.

Diagnostic using the Configuration Software SYCON.net

With the menu **Online > Diagnosis**, the diagnostic information of the device is shown. The shown diagnostic information depends on the used protocol.

Note: More information about the device diagnosis and its functions you find in the operating manual of the corresponding fieldbus system. Therefore refer to section *Documentations cifX Cards* on page 23.

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12 LEDs

12.1 Overview LEDs

LED	LED Naming by Fieldbus System							
	PROFIBUS DP (1 Duo LED)	**PROFIBUS DP** (2 LEDs)	**CANopen** (1 Duo LED)	**CANopen** (2 LEDs)	**DeviceNet** (1 Duo LED)	**AS-Interface (Master)** (1 Duo LED/CH)	**CompoNet (Slave)** (2 Duo LEDs)	**CC-Link (Slave)** (2 LEDs)
System Status (yellow/green)	**SYS**	**SYS**	**SYS**	**SYS**	**SYS**	**SYS**	**SYS**	**SYS**
Communication Status **COM 0** (red/green)	**COM** (Communi-cation Status)	**STA** (Status)	**CAN** (CANopen Status)	**RUN** (Run)	**MNS** (Module Network Status)	**CH1** (Chan-nel 1)	**MS** (Module Status)	**L RUN/** (L Run)
Communication Status **COM 1** (red/green)	*(not used)*	**ERR** (Error)	(not *used)*	**ERR** (Error)	(not *used)*	**CH2** (Chan-nel 2)	**NS** (Network Status)	**L ERR** (L Error)

Table 123: Overview LEDs by Fieldbus System

12.2 PROFIBUS-DP and CANopen: 1 or 2 LEDs

The subsequent table lists cifX cards with 1 or 2 communication status LEDs. The current hardware revision of the devices is equipped with 1 communication status LED and the prior with 2 communication status LEDs.

Device	1 LED from Hardware Revision (current)	2 LEDs to Hardware Revision (prior)
CIFX 50-DP	4	3
CIFX 50E-DP	3	2
CIFX 50-CO	4	3
CIFX 50E-CO	2	1

Table 124: Hardware Revision with 1 or 2 Communication Status LEDs

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12.3 System LED

The subsequent table describes the meaning of the system LED.

LED	Color	State	Meaning
SYS	**Duo LED yellow/green**		
	(green)	On	Operating System running
	(yellow)	static	Bootloader is waiting for software
	-	Off	Power supply for the device is missing or hardware defect.

Table 125: System LED

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12.4 LEDs PROFIBUS-DP Master

12.4.1 1 Communication LED (current Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the PROFIBUS DP Master protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 1 Communication LED (current Hardware Revision)			
COM	**Duo LED red/green**		
	(green)	Flashing acyclic	No configuration or stack error
	(green)	Flashing cyclic	Profibus is configured, but bus communication is not yet released from the application
	(green)	On	Communication to all Slaves is established
	(red)	Flashing cyclic	Communication to at least one Slave is disconnected
	(red)	On	Communication to one/all Slaves is disconnected

Table 126: LEDs PROFIBUS DP Master – 1 Communication LED (current Hardware Revision)

12.4.2 2 Communication LEDs (prior Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the PROFIBUS DP Master protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 2 Communication LEDs (prior Hardware Revision)			
STA	**LED green**		
	(green)	Flashing acyclic	No configuration or stack error
	(green)	Flashing cyclic	Profibus is configured, but bus communication is not yet released from the application
	(green)	On	Communication to all Slaves is established
ERR	**LED red**		
	(red)	Flashing cyclic	Communication to at least one Slave is disconnected
	(red)	Static on	Communication to one/all Slaves is disconnected

Table 127: LEDs PROFIBUS DP Master – 2 Communication LEDs (prior Hardware Revision)

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12.5 LEDs PROFIBUS-DP Slave

12.5.1 1 Communication LED (current Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the PROFIBUS DP Slave protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 1 Communication LED (current Hardware Revision)			
COM	**Duo LED red/green**		
	(green)	On	RUN, cyclic communication
	(red)	Flashing cyclic	STOP, no communication, connection error
	(red)	Flashing acyclic	not configured

*Table 128: LEDs PROFIBUS DP Slave – **1 Communication LED** (current Hardware Revision)*

12.5.2 2 Communication LEDs (prior Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the PROFIBUS DP Slave protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 2 Communication LEDs (prior Hardware Revision)			
STA	**LED red**		
	(green)	On	RUN, cyclic communication
ERR	**LED red**		
	(red)	Flashing cyclic	STOP, no communication, connection error
	(red)	Flashing acyclic	not configured

Table 129: LEDs PROFIBUS DP Slave – 2 Communication LEDs (prior Hardware Revision)

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12.6 LEDs CANopen Master

12.6.1 1 Communication LED (current Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the CANopen Master protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 1 Communication LED (current Hardware Revision)			
CAN	**Duo LED red/green**		
	-	Off	The device is executing a reset
	(green)	Single flash	**STOPPED**: The Device is in STOPPED state
	(green)	Blinking	**PREOPERATIONAL**: The Device is in the PREOPERATIONAL state
	(green)	On	**OPERATIONAL**: The Device is in the OPERATIONAL state
	(red)	Single flash	**Warning Limit reached**: At least one of the error counters of the CAN controller has reached or exceeded the warning level (too many error frames).
	(red)	Double flash	**Error Control Event**: A guard event (NMT Slave or NMT-master) or a heartbeat event (Heartbeat consumer) has occurred.
	(red)	On	**Bus Off**: The CAN controller is bus off

Table 130: LEDs CANopen Master – 1 Communication LED (current Hardware Revision)

LED State Definition for CANopen Master for the CAN LED

Indicator state	Definition
On	The indicator is constantly on.
Off	The indicator is constantly off.
Blinking	The indicator turns on and off with a frequency of 2,5 Hz: on for 200 ms, followed by off for 200 ms.
Single Flash	The indicator shows one short flash (200 ms) followed by a long off phase (1,000 ms).
Double Flash	The indicator shows a sequence of two short flashes (each 200 ms), separated by a short off phase (200 ms). The sequence is finished by a long off phase (1,000 ms).

Table 131: LED State Definition for CANopen Master for the CAN LED

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12.6.2 2 Communication LEDs (prior Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the CANopen Master protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 2 Communication LEDs (prior Hardware Revision)			
RUN	**LED green**		
	-	Off	The device is executing a reset
	(green)	Single flash	**STOPPED:** The Device is in STOPPED state
	(green)	Blinking	**PREOPERATIONAL:** The Device is in the PREOPERATIONAL state
	(green)	On	**OPERATIONAL:** The Device is in the OPERATIONAL state
ERR	**LED red**		
	-	Off	**No Error:** The Device is in working condition
	(red)	Single flash	**Warning Limit reached:** At least one of the error counters of the CAN controller has reached or exceeded the warning level (too many error frames).
	(red)	Double flash	**Error Control Event:** A guard event (NMT Slave or NMT-master) or a heartbeat event (Heartbeat consumer) has occurred.
	(red)	On	**Bus Off:** The CAN controller is bus off

Table 132: LEDs CANopen Master – 2 Communication LEDs (prior Hardware Revision)

<u>LED State Definition for CANopen Master for the CAN or RUN/ERR LEDs</u>

Indicator state	Definition
On	The indicator is constantly on.
Off	The indicator is constantly off.
Blinking	The indicator turns on and off with a frequency of 2,5 Hz: on for 200 ms, followed by off for 200 ms.
Single Flash	The indicator shows one short flash (200 ms) followed by a long off phase (1,000 ms).
Double Flash	The indicator shows a sequence of two short flashes (each 200 ms), separated by a short off phase (200 ms). The sequence is finished by a long off phase (1,000 ms).

Table 133: LED State Definition for CANopen Master for the CAN or RUN/ERR LEDs

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12.7 LEDs CANopen Slave

12.7.1 1 Communication LED (current Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the CANopen Slave protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 1 Communication LED (current Hardware Revision)			
CAN	**Duo LED red/green**		
	-	Off	The device is executing a reset
	(green)	Single flash	**STOPPED:** The Device is in STOPPED state
	(green)	Blinking	**PREOPERATIONAL**: The Device is in the PREOPERATIONAL state
	(green)	On	**OPERATIONAL**: The Device is in the OPERATIONAL state
	-	Off	**No Error**: The Device is in working condition
	(red)	Single flash	**Warning Limit reached**: At least one of the error counters of the CAN controller has reached or exceeded the warning level (too many error frames).
	(red)	Double flash	**Error Control Event**: A guard event (NMT Slave or NMT-master) or a heartbeat event (Heartbeat consumer) has occurred.
	(red)	On	**Bus Off**: The CAN controller is bus off

Table 134: LEDs CANopen Slave – 1 Communication LED (current Hardware Revision)

LED State Definition for CANopen Slave for the CAN LED

Indicator state	Definition
On	The indicator is constantly on.
Off	The indicator is constantly off.
Blinking	The indicator turns on and off with a frequency of 2,5 Hz: on for 200 ms, followed by off for 200 ms.
Single Flash	The indicator shows one short flash (200 ms) followed by a long off phase (1,000 ms).
Double Flash	The indicator shows a sequence of two short flashes (each 200 ms), separated by a short off phase (200 ms). The sequence is finished by a long off phase (1,000 ms).

Table 135: LED State Definition for CANopen Slave for the CAN LED

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12.7.2 2 Communication LEDs (prior Hardware Revision)

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the CANopen Slave protocol is loaded to the device.

LED	Color	State	Meaning
cifX Card with 2 Communication LEDs (prior Hardware Revision)			
RUN	**LED green**		
	-	Off	The device is executing a reset
	(green)	Single flash	**STOPPED:** The Device is in STOPPED state
	(green)	Blinking	**PREOPERATIONAL:** The Device is in the PREOPERATIONAL state
	(green)	On	**OPERATIONAL:** The Device is in the OPERATIONAL state
ERR	**LED red**		
	-	Off	**No Error:** The Device is in working condition
	(red)	Single flash	**Warning Limit reached:** At least one of the error counters of the CAN controller has reached or exceeded the warning level (too many error frames).
	(red)	Double flash	**Error Control Event:** A guard event (NMT Slave or NMT-master) or a heartbeat event (Heartbeat consumer) has occurred.
	(red)	On	**Bus Off:** The CAN controller is bus off

Table 136: LEDs CANopen Slave – 2 Communication LEDs (prior Hardware Revision)

<u>LED State Definition for CANopen Slave for the CAN or RUN/ERR LEDs</u>

Indicator state	Definition
On	The indicator is constantly on.
Off	The indicator is constantly off.
Blinking	The indicator turns on and off with a frequency of 2,5 Hz: on for 200 ms, followed by off for 200 ms.
Single Flash	The indicator shows one short flash (200 ms) followed by a long off phase (1,000 ms).
Double Flash	The indicator shows a sequence of two short flashes (each 200 ms), separated by a short off phase (200 ms). The sequence is finished by a long off phase (1,000 ms).

Table 137: LED State Definition for CANopen Slave for the CAN or RUN/ERR LEDs

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12.8 LEDs DeviceNet Master

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the DeviceNet Master protocol is loaded to the device.

LED	Color	State	Meaning
MNS	**Duo LED red/green**		
	(green)	On	Device is online and has one or more connections in the established state
	(green)	Flashing	Device is online and has no connection in the established state
	(red)	On	Critical connection failure; device has detected a network error: duplicate MAC-ID or sever error in CAN network (CAN-bus off)
	(red)	Flashing	Connection timeout
	(red/green)	Flashing	Communication faulted
	-	Off	After start of the device and during duplicate MAC-ID check

Table 138: LEDs DeviceNet Master

12.9 LEDs DeviceNet Slave

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the DeviceNet Slave protocol is loaded to the device.

LED	Color	State	Meaning
MNS	**Duo LED red/green**		
	(green)	On	Device is online and has one or more connections in the established state
	(green)	Flashing	Device is online and has no connection in the established state
	(red)	On	Critical connection failure; device has detected a network error: duplicate MAC-ID or sever error in CAN network (CAN-bus off)
	(red)	Flashing	Connection timeout
	(red/green)	Flashing	Communication faulted
	-	Off	After start of the device and during duplicate MAC-ID check

Table 139: LEDs DeviceNet Slave

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12.10 LEDs AS Interface Master

The subsequent table describes the meaning of the LED for the cifX card fieldbus when the firmware of the AS Interface Master protocol is loaded to the device.

LED	Color	State	Meaning
CH1	**Duo LED red/green**		
	(green)	On	No configuration error, data exchange active
	(green)	Flashing	Configuration error, data exchange active
	(green)	Flashing fast	The Communication is stopped.
	(red/green)	Flashing	Project mode active
	(red)	Flashing	AS-Interface power fail
	(red)	On	Heavy System error or hardware failure
	-	Off	No configuration found for this channel
CH2	**Duo LED red/green**		
	(green)	On	No configuration error, data exchange active
	(green)	Flashing	Configuration error, data exchange active
	(green)	Flashing fast	The Communication is stopped.
	(red/green)	Flashing	Project mode active
	(red)	Flashing	AS-Interface power fail
	(red)	On	Heavy System error or hardware failure
	-	Off	No configuration found for this channel

Table 140: LEDs AS Interface Master

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12.11 LEDs CompoNet Slave

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the CompoNet Slave protocol is loaded to the device.

LED	Color	State	Meaning
MS	**Duo LED red/green**		
	-	Off	**No Power**: If no power is supplied to the device, the MS LED shall be steady off.
	(green)	On	**Operational**: If the device is operating in a normal condition, the MS LED shall be steady green.
	(green)	Flashing	**Standby** (Device needs commissioning): If the device needs commissioning due to configuration is missing, incomplete or incorrect, the MS LED shall be flashing green.
	(red)	Flashing	**Minor Fault**: If the device has detected a recoverable minor fault, the MS LED shall be flashing red. NOTE: An incorrect or inconsistent configuration would be considered a minor fault.
	(red)	On	**Unrecoverable Fault**: If the device has detected a non-recoverable major fault, the MS LED shall be steady red. It may be necessary to replace the Slave device.
	(red/green)	Flashing	**Device Self Test**: While the device is performing its self test, the MS LED shall be flashing green/red.
NS	**Duo LED red/green**		
	-	Off	**No power / Speed Detection**: If no power is supplied to the device or the network data rate is checked, the NS LED shall be steady off.
	(red/green)	Flashing	**Device Self Testing**: While the device is performing its self test, the NS LED shall be flashing green/red.
	(green)	Flashing	**Non-participated / Participated**: If the data rate is known and the Slave is waiting for the STW (status write operation) signal and the Allocate signal, the NS LED shall be flashing green.
	(green)	On	**Participated**: If the Slave has been allocated by the Master and an I/O connection is established, the NS LED shall be steady green.
	(red)	Flashing	**Non-participated / Speed Detection**: If an I/O connection timeout or an network timeout is detected, the NS LED shall be flashing red.
	(red)	On	**Communication fault**: If a “Duplication MAC ID” failure has been deteced, the NS LED shall be steady red.

Table 141: LEDs CompoNet Slave

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12.12 LEDs CC-Link Slave

The subsequent table describes the meaning of the LEDs for the cifX card fieldbus when the firmware of the CC-Link Slave protocol is loaded to the device.

LED	Color	State	Meaning
L RUN	**LED green**		
	-	Off	1. Before participating in the network 2. Unable to detect carrier 3. Timeout 4. Resetting hardware
	(green)	Blinking	-
	(green)	On	Receive both refresh and polling signals or just the refresh signal normally, after participating in the network.
L ERR	**LED red**		
	-	Off	1. Normal communication 2. Resetting hardware
	(red)	Blinking	The switch setting has been changed from the setting at the reset cancellation (blinks for 0.4 sec.).
	(red)	On	1. CRC error 2. Address parameter error (0, 65 or greater is set including the number of occupied stations) 3. Baud rate switch setting error during cancellation of reset (5 or greater)

Table 142: LEDs CC-Link Slave

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13 Technical Data

13.1 Technical Data cifX Cards Fieldbus

Note: All technical data are temporarily and can be altered without notice.

13.1.1 CIFX 50-DP

Item	CIFX 50-DP
System Interface	PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and fieldbus interface PROFIBUS
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master, PROFIBUS-DP Slave
Processor	netX 100
LEDs	SYS, COM* (*up to hardware revision 3 ERR, STA)
Rotary Switch Slot Number (Card ID)*	To set the Slot Number (Card ID); (*provided from hardware revision 5 on)
Configuration Software DP Master	SYCONnet
Configuration Software DP Slave	netX Configuration Tool
PROFIBUS Interface	DSub female Connector, 9 pin; Isolated RS-485 Interface
Power Supply	+3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	120 x 86 x 18,5 mm
Operating Temperature	-20 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 143: Technical Data CIFX 50-DP

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13.1.2 CIFX 50-2DP

Item	CIFX 50-2DP
System Interface	PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and 2 x fieldbus interface PROFIBUS
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master
Processor	netX 100
LEDs	SYS, ERR, STA
Configuration Software DP Master	SYCONnet
PROFIBUS Interface	2 x DSub female Connector, 9 pin; Isolated RS-485 Interface
Power Supply	+3.3 V dc ±5 %/max. 750 mA
Dimensions (L x W x D)	120 x 94,5 x 18,5 mm
Operating Temperature	-20 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 144: Technical Data CIFX 50-2DP

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13.1.3 CIFX 50-CO

Item	CIFX 50-CO
System Interface	PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and fieldbus interface CANopen
Communication	Determined by the loaded firmware
Protocols	CANopen Master, CANopen Slave
Processor	netX 100
LEDs	SYS, CAN* (*up to hardware revision 3 ERR, RUN)
Rotary Switch Slot Number (Card ID)*	To set the Slot Number (Card ID); (*provided from hardware revision 5 on)
Configuration Software CO Master	SYCONnet
Configuration Software CO Slave	netX Configuration Tool
CANopen Interface	DSub male Connector, 9 pin; Isolated ISO-11898 Interface
Power Supply	+3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	120 x 86 x 18,5 mm
Operating Temperature	-20 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 145: Technical Data CIFX 50-CO

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13.1.4 CIFX 50-DN

Item	CIFX 50-DN
System Interface	PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and fieldbus interface DeviceNet
Communication	Determined by the loaded firmware
Protocols	DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	SYS, MNS
Rotary Switch Slot Number (Card ID)*	To set the Slot Number (Card ID); (*provided from hardware revision 5 on)
Configuration Software DN Master	SYCONnet
Configuration Software DN Slave	netX Configuration Tool
DeviceNet Interface	CombiCon male Connector, 5 pin Isolated ISO-11898 Interface according to DeviceNet specification
Power Supply	+3.3 V ±5 %/max. 650 mA
Dimensions (L x W x D)	120 x 86 x 18,5 mm
Operating Temperature	-20 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 146: Technical Data CIFX 50-DN

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13.1.5 CIFX 50-2ASM

Item	CIFX 50-2ASM
System Interface	PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and 2 x fieldbus interface AS-Interface
Communication	Determined by the loaded firmware
Protocols	AS-Interface Master
Processor	netX 100
LED	SYS, CH1, CH2
Rotary Switch Slot Number (Card ID)*	To set the Slot Number (Card ID); (*provided from hardware revision 2 on)
Configuration Software AS-Interface Master	SYCONnet
AS-Interface Interface	CombiCon male Connector, 2 pin AS-Interface **Interface** according to IEC 364-4-41
Power Supply	+3.3 V dc ±5 %/max. 700 mA
Dimensions (L x W x D)	120 x 94,5 x 18,5 mm
Operating Temperature	-20 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 147: Technical Data CIFX 50-2ASM

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13.1.6 CIFX 50-CP

Item	CIFX 50-CP
System Interface	PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and fieldbus interface CompoNet
Communication	Determined by the loaded firmware
Protocols	CompoNet Slave
Processor	netX 100
LEDs	SYS, MS, NS
Configuration Software CompoNet Slave	netX Configuration Tool
CompoNet Interface	Open Jack connector, 4-pin (according to CompoNet Specification [1])
Power Supply	+3.3 V ±5/ max. 650 mA
Dimensions (L x W x D)	120 x 73,2 x 18,5 mm
Operating Temperature	-20 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 148: Technical Data CIFX 50-CP

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13.1.7 CIFX 50-CC

Item	CIFX 50-CC
System Interface	PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and fieldbus interface **CC-Link**
Communication	Determined by the loaded firmware
Protocols	**CC-Link** Slave
Processor	netX 100
LEDs	SYS, L RUN, L ERR
Configuration Software CC-Link Slave	SYCONnet
Configuration Software CC-Link Slave	netX Configuration Tool
CC-Link Interface	Screw terminal connector, 5 pin (RIACON Type 166) Isolated RS-485 Interface
Power Supply	+3.3 V dc ±5/ max. 650 mA
Dimensions (L x W x D)	120 x 73,2 x 18,5 mm
Operating Temperature	-20 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 149: Technical Data CIFX 50-CC

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13.1.8 CIFX 50E-DP

Item	CIFX 50E-DP
System Interface	PCI-Express, Single-Lane Port, 32-Bit width for the data access to the Dual-Port Memory (DPM)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI-Express and fieldbus interface PROFIBUS-DP
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master, PROFIBUS-DP Slave
Processor	netX 100
LEDs	SYS, COM* (*up to hardware revision 3 ERR, STA)
Configuration Software DP Master	SYCONnet
Configuration Software DP Slave	netX Configuration Tool
PROFIBUS Interface	DSub female Connector, 9 pin; Isolated RS-485 Interface
Power Supply	+3.3 V ±5 %/max. 800 mA
Dimensions (L x W x D)	120 x 73,2 x 18,5 mm
Operating Temperature	0 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 150: Technical Data CIFX 50E-DP

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13.1.9 CIFX 50E-CO

Item	CIFX 50E-CO
System Interface	PCI-Express, Single-Lane Port, 32-Bit width for the data access to the Dual-Port Memory (DPM)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI-Express and fieldbus interface CANopen
Communication	Determined by the loaded firmware
Protocols	CANopen Master, CANopen Slave
Processor	netX 100
LEDs	SYS, CAN* (*up to hardware revision 3 ERR, RUN)
Configuration Software CO Master	SYCONnet
Configuration Software CO Slave	netX Configuration Tool
CANopen Interface	DSub male Connector, 9 pin; Isolated ISO-11898 Interface
Power Supply	+3.3 V dc ±5 %/max. 800 mA
Dimensions (L x W x D)	120 x 73,2 x 18,5 mm
Operating Temperature	0 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 151: Technical Data CIFX 50E-CO

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13.1.10 CIFX 50E-DN

Item	CIFX 50E-DN
System Interface	PCI-Express, Single-Lane Port, 32-Bit width for the data access to the Dual-Port Memory (DPM)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI-Express and fieldbus interface DeviceNet
Communication	Determined by the loaded firmware
Protocols	DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	SYS, MNS
Configuration Software DN Master	SYCONnet
Configuration Software DN Slave	netX Configuration Tool
DeviceNet Interface	CombiCon male Connector, 5 pin Isolated ISO-11898 Interface according to DeviceNet specification
Power Supply	+3.3 V ±5 %/max. 800 mA
Dimensions (L x W x D)	120 x 73,2 x 18,5 mm
Operating Temperature	0 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 152: Technical Data CIFX 50E-DN

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13.1.11 CIFX 50E-2ASM

Item	CIFX 5E0-2ASM
System Interface	PCI-Express, Single-Lane Port, 32-Bit width for the data access to the Dual-Port Memory (DPM)
Dual-Port Memory Size	64 KByte
Function	Communication interface with 2 x PCI-Express and fieldbus interface AS-Interface
Communication	Determined by the loaded firmware
Protocols	AS-Interface Master
Processor	netX 100
LED	SYS, CH1, CH2
Configuration Software AS-Interface Master	SYCONnet
AS-Interface **Interface**	CombiCon male Connector, 2 pin AS-Interface **Interface** according to IEC 364-4-41
Power Supply	+3.3 V dc ±5 %/max. 800 mA
Dimensions (L x W x D)	120 x 94,5 x 18,5 mm
Operating Temperature	0 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 153: Technical Data CIFX 50E-2ASM

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13.1.12 CIFX 50E-CP

Item	CIFX 50E-CP
System Interface	PCI-Express, Single-Lane Port, 32-Bit width for the data access to the Dual-Port Memory (DPM)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and fieldbus interface CompoNet
Communication	Determined by the loaded firmware
Protocols	CompoNet Slave
Processor	netX 100
LEDs	SYS, MS, NS
Configuration Software CompoNet Slave	netX Configuration Tool
CompoNet Interface	Open Jack connector, 4-pin (according to CompoNet Specification [1])
Power Supply	+3.3 V dc ±5/ max. 800 mA
Dimensions (L x W x D)	120 x 73,2 x 18,5 mm
Operating Temperature	0 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 154: Technical Data CIFX 50E-CP

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13.1.13 CIFX 50E-CC

Item	CIFX 50E-CC
System Interface	PCI-Express, Single-Lane Port, 32-Bit width for the data access to the Dual-Port Memory (DPM)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI and fieldbus interface **CC-Link**
Communication	Determined by the loaded firmware
Protocols	**CC-Link** Slave
Processor	netX 100
LEDs	SYS, L RUN, L ERR
Configuration Software CC-Link Slave	SYCONnet
Configuration Software CC-Link Slave	netX Configuration Tool
CC-Link Interface	Screw terminal connector, 5 pin (RIACON Type 166) Isolated RS-485 Interface
Power Supply	+3.3 V dc ±5/ max. 800 mA
Dimensions (L x W x D)	120 x 73,2 x 18,5 mm
Operating Temperature	0 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 155: Technical Data CIFX 50E-CC

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13.1.14 CIFX 80-DP

Item	CIFX 80-DN
System Interface	Compact PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with Compact PCI and fieldbus interface PROFIBUS-DP
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master, PROFIBUS-DP Slave
Processor	netX 100
LEDs	SYS, ERR, STA
Configuration Software DP Master	SYCONnet
Configuration Software DP Slave	netX Configuration Tool
PROFIBUS Interface	DSub female Connector, 9 pin; Isolated RS-485 Interface
Power Supply	+3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	162,2 x 100 x 20 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 156: Technical Data CIFX 80-DP

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13.1.15 CIFX 80-CO

Item	CIFX 80-CO
System Interface	Compact PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with Compact PCI and fieldbus interface CANopen
Communication	Determined by the loaded firmware
Protocols	CANopen Master, CANopen Slave
Processor	netX 100
LEDs	SYS, ERR, RUN
Configuration Software CO Master	SYCONnet
Configuration Software CO Slave	netX Configuration Tool
CANopen Interface	DSub male Connector, 9 pin; Isolated ISO-11898 Interface
Power Supply	+3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	162,2 x 100 x 20 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 157: Technical Data CIFX 80-CO

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13.1.16 CIFX 80-DN

Item	CIFX 80-DN
System Interface	Compact PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with Compact PCI and fieldbus interface DeviceNet
Communication	Determined by the loaded firmware
Protocols	DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	SYS, MNS
Configuration Software DN Master	SYCONnet
Configuration Software DN Slave	netX Configuration Tool
DeviceNet Interface	CombiCon male Connector, 5 pin Isolated ISO-11898 Interface according to DeviceNet specification
Power Supply	+3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	162,2 x 100 x 20 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 158: Technical Data CIFX 80-DN

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13.1.17 CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F

Item	CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F
System Interface	Mini-PCI, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with Mini-PCI-Socket and fieldbus interface PROFIBUS-DP, CANopen, DeviceNet
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master, PROFIBUS-DP Slave, CANopen Master, CANopen Slave DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	SYS
Configuration Software DP Master, CO Master, DN Master	SYCONnet
Configuration Software DP Slave, CO Slave, DN Slave	netX Configuration Tool
Interface AIFX-DP, AIFX-CO, AIFX-DN	For CIFX 90-DP: Cable Connector Fieldbus for connecting AIFX-DP For CIFX 90-CO: Cable Connector Fieldbus for connecting AIFX-CO For CIFX 90-DN: Cable Connector Fieldbus for connecting AIFX-DN
Power Supply	+3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	60 x 45 x 9,5 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 159: Technical Data CIFX 90-DP\F, CIFX 90-CO\F, CIFX 90-DN\F

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13.1.18 CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F

Item	CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F
System Interface	Mini-PCI-Express, Single-Lane-Port, 32-Bit width for the data access to the Dual-Port Memory (DPM)
Dual-Port Memory Size	64 KByte
Function	Communication interface with Mini PCI Express and fieldbus interface PROFIBUS-DP, CANopen, DeviceNet
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master, PROFIBUS-DP Slave, CANopen Master, CANopen Slave DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	SYS
Configuration Software DP Master, CO Master, DN Master	SYCONnet
Configuration Software DP Slave, CO Slave, DN Slave	netX Configuration Tool
Interface AIFX-DP, AIFX-CO, AIFX-DN	For CIFX 90E-DP: Cable Connector Fieldbus for connecting AIFX-DP For CIFX 90E-CO: Cable Connector Fieldbus for connecting AIFX-CO For CIFX 90E-DN: Cable Connector Fieldbus for connecting AIFX-DN
Power Supply	+3.3 V dc ±5 %/max. 600 mA
Dimensions (L x W x D)	51 x 30 x 11 mm
Operating Temperature	0 °C ... +55 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 160: Technical Data CIFX 90E-DP\F, CIFX 90E-CO\F, CIFX 90E-DN\F

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13.1.19 CIFX 104C-DP, CIFX 104C-DP-R

Item	CIFX 104C-DP, CIFX 104C-DP-R
System Interface	PCI-104, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI-104 and fieldbus interface PROFIBUS
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master, PROFIBUS-DP Slave
Processor	netX 100
LEDs	SYS, ERR, STA
Configuration Software DP Master	SYCONnet
Configuration Software DP Slave	netX Configuration Tool
PROFIBUS Interface	DSub female Connector, 9 pin; Isolated RS-485 Interface
Power Supply	+5 V dc ±5 %/max. 500 mA or +3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 161: Technical Data CIFX 104C-DP, CIFX 104C-DP-R

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13.1.20 CIFX 104-DP, CIFX 104-DP-R

Item	CIFX 104-DP, CIFX 104-DP-R
System Interface	PC/104, 32-Bit Dual-Port-Memory
Dual-Port Memory Size	64 KByte
Function	Communication interface with PC/104 and fieldbus interface PROFIBUS
Communication	Determined by the loaded firmware
Protocols	PROFIBUS-DP Master, PROFIBUS-DP Slave
Processor	netX 100
LEDs	SYS, ERR, STA
Configuration Software DP Master	SYCONnet
Configuration Software DP Slave	netX Configuration Tool
PROFIBUS Interface	DSub female Connector, 9 pin; Isolated RS-485 Interface
Power Supply	+5 V ±5 %/max. 500 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 162: Technical Data CIFX 104-DP, CIFX 104-DP-R

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13.1.21 CIFX 104C-CO, CIFX 104C-CO-R

Item	CIFX 104C-CO, CIFX 104C-CO-R
System Interface	PCI-104, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI-104 and fieldbus interface CANopen
Communication	Determined by the loaded firmware
Protocols	CANopen Master, CANopen Slave
Processor	netX 100
LEDs	SYS, ERR, RUN
Configuration Software CO Master	SYCONnet
Configuration Software CO Slave	netX Configuration Tool
CANopen Interface	DSub male Connector, 9 pin; Isolated ISO-11898 Interface
Power Supply	+5 V dc ±5 %/max. 500 mA or +3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 163: Technical Data CIFX 104C-CO, CIFX 104C-CO-R

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13.1.22 CIFX 104-CO, CIFX 104-CO-R

Item	CIFX 104-CO, CIFX 104-CO-R
System Interface	PC/104, 32-Bit Dual-Port-Memory
Dual-Port Memory Size	64 KByte
Function	Communication interface with PC/104 and fieldbus interface CANopen
Communication	Determined by the loaded firmware
Protocols	CANopen Master, CANopen Slave
Processor	netX 100
LEDs	SYS, ERR, RUN
Configuration Software CO Master	SYCONnet
Configuration Software CO Slave	netX Configuration Tool
CANopen Interface	DSub male Connector, 9 pin; Isolated ISO-11898 Interface
Power Supply	+5 V ±5 %/max. 500 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 164: Technical Data CIFX 104-CO, CIFX 104-CO-R

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13.1.23 CIFX 104C-DN, CIFX 104C-DN-R

Item	CIFX 104C-DN, CIFX 104C-DN-R
System Interface	PCI-104, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI-104 and fieldbus interface DeviceNet
Communication	Determined by the loaded firmware
Protocols	DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	SYS, MNS
Configuration Software DN Master	SYCONnet
Configuration Software DN Slave	netX Configuration Tool
DeviceNet Interface	CombiCon male Connector, 5 pin Isolated ISO-11898 Interface according to DeviceNet specification
Power Supply	+5 V dc ±5 %/max. 500 mA or +3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 165: Technical Data CIFX 104C-DN, CIFX 104C-DN-R

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13.1.24 CIFX 104-DN, CIFX 104-DN-R

Item	CIFX 104-DN, CIFX 104-DN-R
System Interface	PC/104, 32-Bit Dual-Port-Memory
Dual-Port Memory Size	64 KByte
Function	Communication interface with PC/104 and fieldbus interface DeviceNet
Communication	Determined by the loaded firmware
Protocols	DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	SYS, MNS
Configuration Software DN Master	SYCONnet
Configuration Software DN Slave	netX Configuration Tool
DeviceNet Interface	CombiCon male Connector, 5 pin Isolated ISO-11898 Interface according to DeviceNet specification
Power Supply	+5 V ±5 %/max. 500 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 166: Technical Data CIFX 104-DN, CIFX 104-DN-R

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13.1.25 CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F and CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F

Item	CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F, CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F
System Interface	PCI-104, 32-Bit width for the data access to the Dual-Port Memory (DPM), or DMA (Direct Memory Access)
Dual-Port Memory Size	64 KByte
Function	Communication interface with PCI-104 and fieldbus interface For CIFX 104C-DP\F, CIFX 104C-DP-R\F: PROFIBUS-DP For CIFX 104C-CO\F, CIFX 104C-CO-R\F: CANopen For CIFX 104C-DN\F, CIFX 104C-DN-R\F: DeviceNet
Communication	Determined by the loaded firmware
Protocols	For CIFX 104C-DP\F, CIFX 104C-DP-R\F: PROFIBUS-DP Master, PROFIBUS-DP Slave For CIFX 104C-CO\F, CIFX 104C-CO-R\F: CANopen Master, CANopen Slave For CIFX 104C-DN\F, CIFX 104C-DN-R\F: DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	For CIFX 104C-DP\F, CIFX 104C-DP-R\F: SYS, ERR, STA For CIFX 104C-CO\F, CIFX 104C-CO-R\F: SYS, ERR, RUN For CIFX 104C-DN\F, CIFX 104C-DN-R\F: SYS, MNS
Configuration Software DP Master, CO Master, DN Master	SYCONnet
Configuration Software DP Slave, CO Slave, DN Slave	netX Configuration Tool
Interface AIFX-DP, AIFX-CO, AIFX-DN	For CIFX 104C-DP\F, CIFX 104C-DP-R\F: Cable Connector Fieldbus for connecting AIFX-DP For CIFX 104C-CO\F, CIFX 104C-CO-R\F: Cable Connector Fieldbus for connecting AIFX-CO For CIFX 104C-DN\F, CIFX 104C-DN-R\F: Cable Connector Fieldbus for connecting AIFX-DN
Diagnostic Interface	For: CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F Cable Connector DIAG
Power Supply	+5 V dc ±5 %/max. 500 mA or +3.3 V dc ±5 %/max. 650 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 167: Technical Data CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F and CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F

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13.1.26 CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F and CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F

Item	CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F, CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F
System Interface	PC/104, 32-Bit Dual-Port-Memory
Dual-Port Memory Size	16 KByte
Function	Communication interface with PC/104 and fieldbus interface For CIFX 104-DP\F, CIFX 104-DP-R\F: PROFIBUS-DP For CIFX 104-CO\F, CIFX 104-CO-R\F: CANopen For CIFX 104-DN\F, CIFX 104-DN-R\F: DeviceNet
Communication	Determined by the loaded firmware
Protocols	For CIFX 104-DP\F, CIFX 104-DP-R\F: PROFIBUS-DP Master, PROFIBUS-DP Slave For CIFX 104-CO\F, CIFX 104-CO-R\F: CANopen Master, CANopen Slave For CIFX 104-DN\F, CIFX 104-DN-R\F: DeviceNet Master, DeviceNet Slave
Processor	netX 100
LEDs	For CIFX 104-DP\F, CIFX 104-DP-R\F: SYS, ERR, STA For CIFX 104-CO\F, CIFX 104-CO-R\F: SYS, ERR, RUN For CIFX 104-DN\F, CIFX 104-DN-R\F: SYS, MNS
Configuration Software DP Master, CO Master, DN Master	SYCONnet
Configuration Software DP Slave, CO Slave, DN Slave	netX Configuration Tool
Interface AIFX-DP, AIFX-CO, AIFX-DN	For CIFX 104-DP\F, CIFX 104-DP-R\F: Cable Connector Fieldbus for connecting AIFX-DP For CIFX 104-CO\F, CIFX 104-CO-R\F: Cable Connector Fieldbus for connecting AIFX-CO For CIFX 104-DN\F, CIFX 104-DN-R\F: Cable Connector Fieldbus for connecting AIFX-DN
Diagnostic Interface	For: CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F Cable Connector DIAG
Power Supply	+5 V ±5 %/max. 500 mA
Dimensions (L x W x D)	97 x 91 x 24 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 168: Technical Data CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F and CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F

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13.1.27 AIFX-DP

Item	AIFX-DP
Function	Assembly interface PROFIBUS-DP
Fieldbus Interface	Cable Connector Fieldbus for connecting : CIFX 90-DP, CIFX 90E-DP, CIFX 104C-DP\F, CIFX 104C-DP-R\F, CIFX 104-DP\F, CIFX 104-DP-R\F
LEDs	ERR, STA (on the back side of the device)
PROFIBUS Interface	DSub female Connector, 9 pin; Isolated RS-485 Interface
Dimensions (L x W x D)	17 x 31 x 18,5 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 169: Technical Data AIFX-DP

13.1.28 AIFX-CO

Item	AIFX-CO
Function	Assembly interface CANopen
Fieldbus Interface	Cable Connector Fieldbus for connecting : CIFX 90-CO, CIFX 90E-CO, CIFX 104C-CO\F, CIFX 104C-CO-R\F, CIFX 104-CO\F, CIFX 104-CO-R\F
LEDs	ERR, RUN (on the back side of the device)
CANopen Interface	DSub male Connector, 9 pin; Isolated ISO-11898 Interface
Dimensions (L x W x D)	17 x 31 x 18,5 mm
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 170: Technical Data AIFX-CO

13.1.29 AIFX-DN

Item	AIFX-DN
Function	Assembly interface DeviceNet
Fieldbus Interface	Cable Connector Fieldbus for connecting : CIFX 90-DN, CIFX 90E-DN, CIFX 104C-DN\F, CIFX 104C-DN-R\F, CIFX 104-DN\F, CIFX 104-DN-R\F
LEDs	MNS (on the back side of the device)
DeviceNet Interface	CombiCon male Connector, 5 pin Isolated ISO-11898 Interface according to DeviceNet specification
Dimensions (L x W x D)	23,7 x 31 x 18,5 mm (L = 23,7, without CombiCon male Connector)
Operating Temperature	-20 °C ... +70 °C
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 171: Technical Data AIFX-DN

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13.1.30 AIFX-DIAG

Item	AIFX-DIAG
Function	Diagnostic Interface
Diagnostic Interface	For: CIFX 104C-DP\F, CIFX 104C-CO\F, CIFX 104C-DN\F, CIFX 104C-DP-R\F, CIFX 104C-CO-R\F, CIFX 104C-DN-R\F, CIFX 104-DP\F, CIFX 104-CO\F, CIFX 104-DN\F, CIFX 104-DP-R\F, CIFX 104-CO-R\F, CIFX 104-DN-R\F Cable Connector DIAG
Dimensions (L x W x D)	20,5 x 52,7 x 18,5 mm
Operating Temperature	-20 °C ... +70 °C
LEDs	SYS, COM 0/COM1 (fieldbus), ON
Environement	**The d**evice must be used in a pollution degree 2 environment.

Table 172: Technical Data AIFX-DIAG

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13.2 PCI IDs cifX Cards on the PCI Bus

On the PCI bus the cifX cards have the following PCI IDs:

PCI IDs	Value
VendorID	0x15CF
DeviceID	0x0000
Subsystem Vendor ID	0x0000
Subsystem Device ID	0x0000

Table 173: PCI IDs cifX Cards on the PCI Bus

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13.3 Protocols

13.3.1 PROFIBUS-DP Master

Parameter	Description
Maximum number of supported DPV0/DPV1 slaves	125
Maximum number of total cyclic input data	3584 bytes
Maximum number of total cyclic output data	3584 bytes
Maximum number of cyclic input data	244 bytes/slave
Maximum number of cyclic output data	244 bytes/slave
Configuration data	max. 244 bytes per slave
Parameterization data per slave	7 bytes/slave standard parameters 237 bytes/slave application specific parameters
Acyclic communication	DP V1 Class 1 Read/Write DP V1 Class 1 Alarm DP V1 Class 2 Initiate/Read/Write/Abort
Maximum number of acyclic read/write	240 bytes/slave
Baud rate	Fixed values from 9,6 kBits/s to 12 MBit/s Auto-detection mode is not supported.
Data transport layer	PROFIBUS FDL
Limitations	DP V2 services are not implemented

Table 174: Technical Data PROFIBUS-DP Master Protocol

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13.3.2 PROFIBUS-DP Slave

Parameter	Description
Maximum number of cyclic input data	244 bytes
Maximum number of cyclic output data	244 bytes
Maximum number of acyclic read/write	240 bytes
Configuration data	max. 244 bytes
Parameter data	237 bytes application specific parameters
Acyclic communication	DP V1 Class 1 Read/Write DP V1 Class 1 Alarm DP V1 Class 2 Read/Write/Data Transport
Baud rate	Fixed values ranging from 9,6 kBits/s to 12 MBit/s Auto-detection mode is supported.
Data transport layer	PROFIBUS FDL
Limitations	SSCY1S – Slave to slave communication state machine not implemented Data exchange broadcast not implemented Configuration by database not implemented I&M API is not supported I&M0 with fixed settings only

Table 175: Technical Data PROFIBUS DP Slave Protocol

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13.3.3 CANopen Master

Parameter	Description
Maximum number of cyclic input data	3584 bytes
Maximum number of cyclic output data	3584 bytes
Maximum number of supported slaves	126
Maximum number of receive PDOs	512
Maximum number of transmit PDOs	512
Exchange of process data	via PDO transfer (synchronized, remotely requested and event driven (change of date))
Acyclic communication	SDO Upload/Download, max. 200 bytes per request
Functions	Emergency message (consumer and producer) Node guarding / life guarding, heartbeat PDO mapping NMT Master SYNC protocol (producer) Simple boot-up process, reading object 1000H for identification
Baud rates	10 kBits/s to 1 Mbits/s
Data transport layer	CAN Frames
CAN Frame type	11 Bit

Table 176: Technical Data CANopen Master Protocol

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13.3.4 CANopen Slave

Parameter	Description
Maximum number of cyclic input data	512 bytes
Maximum number of cyclic output data	512 bytes
Maximum number of receive PDOs	64
Maximum number of transmit PDOs	64
Exchange of process data	via PDO transfer (synchronized, remotely requested, event driven (change of date))
Acyclic communication	SDO upload/download Emergency message (producer)
Functions	Node guarding / life guarding, heartbeat PDO mapping NMT Slave SYNC protocol (consumer)
Baud rates	10 kBits/s to 1 Mbits/s
Data transport layer	CAN Frames
CAN Frame type	11 Bit

Table 177: Technical Data CANopen Slave Protocol

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13.3.5 DeviceNet Master

Parameter	Description
Maximum number of cyclic input data	3584 bytes
Maximum number of cyclic output data	3584 bytes
Maximum number of cyclic input data	255 bytes/connection
Maximum number of cyclic output data	255 bytes/connection
Maximum number of supported slaves	63
Maximum Configuration data	1000 bytes/slave
Acyclic communication	Explicit connection Get_Attribute_Single/All Set_Attribute_Single/All
Baud rates	125 kBits/s, 250 kBit/s, 500 kBit/s Auto-detection mode is not supported.
Data transport layer	CAN frames
Connections	Bit Strobe Change of State Cyclic Poll Explicit Peer-to-Peer Messaging
Fragmentation	Explicit and I/O
UCMM	supported
Objects	Identity Object (Class Code 0x01) Message Router Object (Class Code 0x02) DeviceNet Object (Class Code 0x03) Connection Object (Class Code 0x05) Acknowledge Handler Object (Class Code 0x06)

Table 178: Technical Data DeviceNet Master Protocol

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13.3.6 DeviceNet Slave

Parameter	Description
Maximum number of cyclic input data	255 bytes
Maximum number of cyclic output data	255 bytes
Acyclic communication	Get_Attribute_Single/All max. 240 bytes per request Set_Attribute_Single/All max. 240 bytes per request
Baud rates	125 kBits/s, 250 kBit/s, 500 kBit/s Auto-detection mode is not supported.
Connections	Poll Change-of-state Cyclic Bit-strobe
Explicit messaging	supported
Fragmentation	Explicit and I/O
UCMM	not supported

Table 179: Technical Data DeviceNet Slave Protocol

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13.3.7 AS-Interface Master

Parameter	Description
Maximum number of supported slaves	Max. 62 slaves
Maximum number of total cyclic input data	Max. 248 bits using digital slaves Max. 248 bytes using analog (transparent) slaves The maximum number depends on the used slave profiles
Maximum number of total cyclic output data	Max. 248 bits using digital slaves Max. 248 bytes using analog (transparent) slaves The maximum number depends on the used slave profiles
Maximum number of cyclic input data	Max. 4 Bit digital data Max. 4 channel with up to 16 bit analog data The maximum number depends on the used slave profiles
Maximum number of cyclic output data	Max. 4 Bit digital data Max. 4 channel with up to 16 bit analog data The maximum number depends on the used slave profiles
Parameterization data	4 bit per standard slave 3 bit per extended slave
Maximum number of acyclic read/write	Max. 220 bytes for string transfer
Functions	Support of data exchange via combined transaction types 1, 2, 3, 4 and 5 (CTT 1-5) Automatic address assignment Modification of address and Extended ID1-Code of Slave supported Profile for extended Master: M4
Baud rate	166,67 kBaud
AS-Interface specification	3.0 Revision 2
Limitations	'Synchronous Data I/O Mode' not supported

Table 180: Technical Data AS-Interface Master Protocol

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13.3.8 CC Link Slave

Parameter	Description
Firmware works according to CC-Link Version 2.0:	
Station Types	Remote Device Station (up to 4 occupied stations)
Maximum input data	368 bytes
Maximum output data	368 bytes
Input data remote device station	112 bytes (RY) and 256 bytes (RWw)
Output data remote device station	112 bytes (RX) and 256 bytes (RWr)
Extension cycles	1, 2, 4, 8
Baud rates	156 kBit/s, 625 kBit/s, 2500 kBit/s, 5 MBit/s, 10 MBit/s
Limitation	Intelligent Device Station not supported
Firmware works according to CC-Link Version 1.11:	
Station Types	Remote I/O station, Remote device station' (up to 4 occupied stations)
Maximum input data	48 bytes
Maximum output data	48 bytes
Input data remote I/O station	4 bytes (RY)
Output data remote I/O station	4 bytes (RX)
Input data remote device station	4 bytes (RY) and 8 bytes (RWw) per occupied station
Output data remote device station	4 bytes (RX) and 8 bytes (RWr) per occupied station
Baud rates	156 kBit/s, 625 kBit/s, 2500 kBit/s, 5 MBit/s, 10 MBit/s

Table 181: Technical Data CC-Link-Slave Protocol

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13.3.9 CompoNet Slave

Parameter	Description
Node Types	Word IN, Word MIX, Word OUT, Bit IN, Bit MIX, Bit OUT
Maximum number of cyclic input data	2 … 256 Points (Bits) Bit = 2, 4 Points (Bits), Word = 8, 16, 32, … 256 Points (Bits)
Maximum number of cyclic output data	2 … 256 Points (Bits) Bit = 2, 4 Points (Bits), Word = 8, 16, 32, … 256 Points (Bits)
Acyclic communication	Explicit messaging A_EVENT
Max. number of user specific objects	64
Predefined standard objects	Identity Object Connection Object CompoNet Link Object
Frametypes supported	OUT, TRG, CN, IN, A_EVENT, B_EVENT, BEACON
Fragmentation of Explicit Messages	Supported
Node Address	0 … 63 for Word IN, Word MIX, Word OUT 0 … 127 for Bit IN, Bit MIX, Bit OUT
MAC ID	0 … 383 0 … 63 Word IN or Word MIX 64 … 127 Word OUT 128 … 255 Bit IN or Bit MIX 256 … 383 Bit OUT
Baud rates	93,75 kBit/s, 1,5 MBit/s, 3 MBit/s, 4 MBit/s Auto-detection mode is supported

Table 182: Technical Data CompoNet Slave Protocol

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14 Annex

14.1 References

[1] THE CIP NETWORKS LIBRARY, Volume 6, CompoNet Adaptation of CIP, Edition 1.4 November 2008

[2] PCI EXPRESS MINI CARD ELECTROMECHANICAL SPECIFICATION, REVISION 1.1

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15 Lists

15.1 List of Figures

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15.2 List of Tables

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16 Glossary

AIFX

Assembly **I**nter**F**ace based on net**X**

Baud rate

Data transmission speed of a communication channel or interface.

CIFX

Communication **I**nter**F**ace based on net**X**

cifX Card Fieldbus

PC cards for the fieldbus systems PROFIBUS-DP, CANopen, DeviceNet, AS-Interface, CompoNet or CC-Link as Communication Interface netX

- PCI (CIFX50-),
- PCI Express (CIFX 50E-),
- Compact PCI (CIFX80-),
- Mini PCI (CIFX90-),
- Mini PCI Express (CIFX 90E-),
- PCI 104 (CIFX 104C-).

CSP

electronic device data sheet, required for each CC-Link device

Device Description File

A file containing configuration information about a device being a part of a network that can be read out by masters for system configuration. Device Description Files use various formats which depend on the communication system. Often these formats are based on XML such as EDS_files or GSDML_files. Contains configuration information

DP

Decentral Periphery

DPM

Dual-Port Memory

EDS

Electronic Data Sheet

XML based device description file.

EDS file

A special kind of Device Description File used by EtherNet/IP

FB

FB stands for Fieldbus

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FDL

Fieldbus Data Link defines the PROFIBUS communication on layer 2, identical for DP and FMS

GSD

General Station Description, Device description file

GSD file

A special kind of Device Description File used by PROFIBUS (GSD = General Station Description).

netX

networX on chip, next generation of communication controllers

netX Configuration Tool

The netX Configuration Tool allows users to operate cifX or netX based devices in different networks. Its graphical user interface serves as a configuration tool for the installation, configuration and Diagnostic of the devices.

Switch

A network component connecting multiple communication partners (or even entire branches of a network) with each other. A switch is an intelligent network component which analyzes network traffic in order to decide on its own. For the connected communication partners a switch behaves transparently.

SYNC

Synchronization cycle of the master

UCMM

Unconnected Message Manager

Watchdog Timer

A watchdog timer provides an internal supervision mechanism of a communication system. It supervises that an important event happens within a given timeframe (the watchdog time which can be adjusted accordingly, for instance by a parameter in the _Warmstart message) and causes an alarm otherwise (usually this is accomplished by changing the operational state of the communication system to a more safe state).

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XML

XML means Extended Markup Language. It is a symbolic language for structuring data systematically. XML is standard maintained by the W3C (World-wide web consortium). Device Description Files often use XML-based formats for storing the device-related data appropriately.

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