User Manual

PC Cards cifX
PCI (CIFX 50)
PCI Express (CIFX 50E)
Low Profile PCI Express (CIFX 70E, CIFX 100EH)

Installation, Operation and Hardware Description

Hilscher Gesellschaft für Systemautomation mbH
www.hilscher.com
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1 Introduction

1.1 About the User Manual

This user manual provides descriptions of the installation, operation and hardware of the PC Cards cifX PCI, PCI Express and Low Profile PCI Express under Windows® 7, Windows® 8 and Windows® 10, as listed subsequently.

PC Cards cifX:
- PCI (CIFX 50),
- PCI Express (CIFX 50E),
- Low Profile PCI Express (CIFX 70E, CIFX 100EH-RE\CUBE*)

*only Real-Time Ethernet

for the Real-Time Ethernet systems:  
- CC-Link IE Field
- CC-Link IE Field Basic
- EtherCAT
- EtherNet/IP
- Open-Modbus/TCP
- POWERLINK
- PROFINET IO
- Sercos
- VARAN

for the fieldbus systems:  
- PROFIBUS DP
- PROFIBUS MPI
- CANopen
- DeviceNet
- AS-Interface
- CC-Link

For information about the Installation of the Software refer to the User Manual „Software Installation for PC Cards cifX“ [DOC120207UMXXEN]. For information about the Wiring of the Protocol Interface refer to the „Wiring Instructions“ [DOC120208UMXXEN].

The devices described in this manual are listed in the sections
- PC Cards PCI CIFX 50-XX (page 11),
- PC Cards PCI (2 Channels) CIFX 50-2XX, CIFX 50-2XX\XX (page 11) and
- PC Cards PCI Express CIFX 50E-XX, CIFX 70E-XX, CIFX 100EH-RE\CUBE (page 12). The devices are described in detail in the chapters Installation, Commissioning (page 73), Diagnosis with LEDs (page 95), Device Connections and Switches (page 125) and Technical Data (page 137).

You can download the latest edition of a manual from the website www.hilscher.com under Support > Downloads > Manuals or under Products directly with the information about your product.
1.2 List of Revisions

<table>
<thead>
<tr>
<th>Index</th>
<th>Date</th>
<th>Chapter</th>
<th>Revisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>21-09-30</td>
<td>All, 2.9.3, 2.10.3, 7.9, 9.1, 9.4</td>
<td>Manual structure updated, Windows® 10 added. Section Important Changes updated. Section Firmware updated. Section EtherNet/IP Adapter (Slave) updated. Section Technical Data PC Cards cifX: UKCA added. Section Technical Data of the Communication Protocols updated (EtherCAT Master V3, POWERLINK Controlled Node/Slave V2 as well as PROFINET IO-Controller V2 removed, PROFINET IO-Device V3.4 respectively V3.13 removed respectively updated to V4)</td>
</tr>
<tr>
<td>55</td>
<td>22-03-21</td>
<td>All</td>
<td>Language revision of safety instructions.</td>
</tr>
</tbody>
</table>

Table 1: List of Revisions

1.3 Obligation to read and understand the Manual

Important!

- To avoid personal injury and to avoid property damage to your system or to your PC card, you must read and understand all instructions in the manual and all accompanying texts to your PC card, before installing and operating your PC card.
- First read the Safety Instructions in the safety chapter.
- Obey to all Safety Messages in the manual.
- Keep the product DVD as ZIP file providing the product manuals.
2 Descriptions of the PC Cards

2.1 Description

The PC Cards cifX are communication interfaces of the cifX product family of Hilscher on the basis of the communication controller netX 100 for the Real-Time Ethernet or fieldbus communication. Depending on the loaded firmware, the protocol specific PC Card cifX proceeds the communication of the corresponding Real-Time Ethernet or fieldbus system.

The used Real-Time Ethernet systems are:

- CC-Link IE Field Basic Slave
- CC-Link IE Field Slave
- EtherCAT Master
- EtherCAT Slave
- EtherNet/IP Scanner (Master)
- EtherNet/IP Adapter (Slave)
- Open-Modbus/TCP
- POWERLINK-Controlled-Node/Slave
- PROFINET IO-Controller (Master)
- PROFINET IO-Device (Slave)
- Sercos Master
- Sercos Slave
- VARAN Client (Slave)

The PC Card cifX handles the complete data exchange between the connected Ethernet or fieldbus devices and the PC. The data exchange is proceeded via dual-port memory.
2.2 PC Cards PCI CIFX 50-XX

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI Cards PCI with integrated Ethernet or fieldbus interface</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-RE</td>
<td>Real-Time Ethernet Master or Slave.</td>
</tr>
<tr>
<td>CIFX 50-DP</td>
<td>PROFIBUS DP Master or Slave and PROFIBUS MPI Device</td>
</tr>
<tr>
<td>CIFX 50-CO</td>
<td>CANopen Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-DN</td>
<td>DeviceNet Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-CC</td>
<td>CC-Link Slave</td>
</tr>
</tbody>
</table>

Table 2: PC Cards PCI CIFX 50-XX

2.3 PC Cards PCI (2 Channels) CIFX 50-2XX, CIFX 50-2XX\XX

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI Cards PCI with two integrated fieldbus interfaces (2 Channels)</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP</td>
<td>2 x PROFIBUS DP Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-2DP\CO</td>
<td>Channel X1: PROFIBUS DP Master or Slave, channel X2: CANopen Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-2DP\DN</td>
<td>Channel X1: PROFIBUS DP Master or Slave, channel X2: DeviceNet Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-2CO</td>
<td>2 x CANopen Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-2CO\DN</td>
<td>Channel X1: CANopen Master or Slave, channel X2: DeviceNet Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-2DN</td>
<td>2 x DeviceNet Master or Slave</td>
</tr>
<tr>
<td>CIFX 50-2ASM</td>
<td>2 x AS-Interface Master</td>
</tr>
<tr>
<td>CIFX 50E-2ASM</td>
<td>2 x AS-Interface Master</td>
</tr>
</tbody>
</table>

Table 3: PC Cards PCI (2 Channels) CIFX 50-2XX, CIFX 50-2XX\XX
### 2.4 PC Cards PCI Express CIFX 50E-XX, CIFX 70E-XX, CIFX 100EH-RE\CUBE

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Real-Time Ethernet</strong></td>
<td></td>
</tr>
</tbody>
</table>
| CIFX 50E-RE or CIFX 50E-RE\ET | Real-Time Ethernet Master or Slave  
*Note:* The card CIFX 50E-RE\ET can be used in an enlarged temperature range from -20°C to +70 °C. |
| CIFX 70E-RE, CIFX 70E-RE\MR | Low Profile PCI Express Real-Time-Ethernet Master or Slave  
(Low Profile PCIe with RTE) |
| CIFX 100EH-RE\CUBE | Real-Time Ethernet Master or Slave, (low-profile card) exclusively for the installing in KEBA KeControl industry PC series CP 3XX (Cube). |
| **CC-Link IE Field Slave** | |
| CIFX 50E-CCIES | CC-Link IE Field Slave |
| CIFX 70E-CCIES | Low Profile PCI Express CC-Link IE Field Slave (Low Profile PCIe) |
| **PROFIBUS** | |
| CIFX 50E-DP | PROFIBUS DP Master or Slave and PROFIBUS MPI Device |
| CIFX 70E-DP, CIFX 70E-DP\MR | Low Profile PCI Express PROFIBUS DP Master or Slave  
(Low Profile PCIe with PROFIBUS) |
| **CANopen** | |
| CIFX 50E-CO | CANopen Master or Slave |
| CIFX 70E-CO, CIFX 70E-CO\MR | Low Profile PCI Express CANopen Master or Slave  
(Low Profile PCIe with CANopen) |
| **DeviceNet** | |
| CIFX 50E-DN | DeviceNet Master or Slave |
| CIFX 70E-DN, CIFX 70E-DN\MR | Low Profile PCI Express DeviceNet Master or Slave  
(Low Profile PCIe with DeviceNet) |
| **CC-Link** | |
| CIFX 50E-CC | CC-Link Slave |

*Note:* The PC cards CIFX 70E-RE\MR, CIFX 70E-DP\MR, CIFX 70E-CO\MR and CIFX 70E-DN\MR additionally are equipped with an MRAM (128Kbyte = 64K Words). For further information refer to section *PC Cards cifX with additional MRAM* on page 13.

### 2.5 PC Cards PCI Express (2 Channels) CIFX 50E-2XX, CIFX 50E-2XX\XX

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>Description</th>
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<tr>
<td><strong>PROFIBUS</strong></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DP</td>
<td>2 x PROFIBUS DP Master or Slave</td>
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<tr>
<td>CIFX 50E-2DP\CO</td>
<td>Channel X1: PROFIBUS DP Master or Slave, channel X2: CANopen Master or Slave</td>
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<tr>
<td>CIFX 50E-2DP\DN</td>
<td>Channel X1: PROFIBUS DP-Master or Slave, channel X2: DeviceNet Master or Slave</td>
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<tr>
<td><strong>CANopen</strong></td>
<td></td>
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<tr>
<td>CIFX 50E-2CO</td>
<td>2 x CANopen-Master or Slave</td>
</tr>
<tr>
<td>CIFX 50E-2CO\DN</td>
<td>Channel X1: CANopen Master or Slave, channel X2: DeviceNet Master or Slave</td>
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<tr>
<td><strong>DeviceNet</strong></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DN</td>
<td>2 x DeviceNet Master or Slave</td>
</tr>
</tbody>
</table>

*Table 5: PC Cards PCI Express (2 Channels) CIFX 50E-2XX, CIFX 50E-2XXXXX*
2.6 The Function „Slot Number (Card ID)“

Device revisions equipped with a Rotary Switch Slot Number (Card ID) are listed separately in section Hardware: PC Cards cifX on page 17 in Table 7.

The Slot Number (Card ID) must be set at the PC card cifX using the Rotary Switch Slot Number (Card ID). The Slot Number (Card ID) will serve to distinguish PC cards cifX from each other clearly, especially if several PC cards cifX are installed into the very same PC. The application program requests the Slot Number (Card ID) from the PC card cifX via the cifX Device Driver.

For further information refer to section Rotary Switch for Slot Number (Card ID) on page 131.

2.7 The Function „DMA Mode“

Device revisions which provide DMA Mode are listed separately in section Hardware: PC Cards cifX on page 17 in Table 7.

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

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

For further information refer to the user manual Software Installation for the PC Cards cifX in section Activating DMA Mode in the cifX Device Driver Setup.

2.8 PC Cards cifX with additional MRAM

The PC cards CIFX 70E-XX\MR (CIFX 70E-RE\MR, CIFX 70E-DP\MR, CIFX 70E-CO\MR and CIFX 70E-DNMR) are identical to the PC cards CIFX 70E-XX and work with the same firmware. However, the PC cards CIFX 70E-XX\MR have an additional memory module for storing remanent data, MRAM with 128Kbyte (= 64K words). Using the cifX Device Driver (from Version 1.1.1.0) access from the application program to this memory is possible and it can be used as a remanent memory for the host system.
2.9 Contents of the Product DVD

Note! In order to download the product DVD, you need Internet access.

On the Communication Solutions DVD you will find these installation instructions about the software installation and the necessary configuration software, the documentation, the drivers and software for your PC Card cifX, and additional auxiliary tools. You can download this product DVD as a ZIP file from the website http://www.hilscher.com (under Products, directly with the information on your product).

2.9.1 Installation Guide, Documentation Overview

The installation guide Software Installation and Documentation Overview on the Communication Solutions DVD are in the directory Documentation\0. Installation and Overview. The installation guide includes:

- An overview on the Content of the Communication Solutions DVD (in the section What is on the Communication Solutions DVD?)
- Overviews listing the available Documentations for PC cards cifX (in chapter PC Cards cifX, Software and Documentation).

2.9.2 What's New

All current version information for hardware and software described in this manual are provided in the folder \Documentation\What's New - Communication Solutions DVD RL XX EN.pdf on the Communication Solutions DVD.
2.9.3 Important Changes

2.9.3.1 EtherNet/IP Adapter Firmware Version V3.6

New firmware version 3.6 for EtherNet/IP-Adapter

The EtherNet/IP-Adapter firmware has been revised and is now available as V3.6.

Use the EtherNet/IP-Adapter firmware V3.6 for a new installation when creating or developing your application program for the first time.

If you want to change from firmware version 3.3 to version 3.5, please refer to the Migration Guide under https://kb.hilscher.com/x/NqhTC.

2.9.3.2 PROFINET IO-Device Firmware Version V4.5

New firmware version 4.5 for PROFINET IO-Device

The PROFINET IO-Device firmware has been revised and is now available as V4.5.

Use the PROFINET IO-Device firmware V4.5 for a new installation when creating or developing your application program for the first time.

If you want to change from an older firmware version to the latest version in an existing system, please refer to the Migration Guide, which is available under https://kb.hilscher.com/x/lRyRBg.
2.9.4 Device Description Files PC Cards cifX

The Communication Solutions DVD EDS directory includes the device description files for the PC Cards cifX. The device description file is required to configure the used Master device. The systems Open Modbus/TCP, AS-Interface, PROFIBUS MPI and VARAN do not use device description files.

<table>
<thead>
<tr>
<th>PC Cards cifX</th>
<th>System</th>
<th>File Name of the Device Description File</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-RE, CIFX 50E-RE,</td>
<td>CC-Link IE Field Basic Slave</td>
<td>0x0352_CIFX RE CCIEBS_1_en.cspp</td>
</tr>
<tr>
<td>CIFX 70E-RE, CIFX 70E-RE/ET,</td>
<td>EtherCAT Slave</td>
<td>Hilscher CIFX RE ECS V4.6.X.xml</td>
</tr>
<tr>
<td>CIFX 70E-RE/ET, CIFX 100E-RE/</td>
<td>EtherCAT Master</td>
<td>Hilscher Master Redundancy Port.xml</td>
</tr>
<tr>
<td>RE/CUBE</td>
<td>EtherNet/IP Adapter (Slave)</td>
<td>HILSCHER CIFX-RE EIS V1.1.EDS</td>
</tr>
<tr>
<td></td>
<td>EtherNet/IP Scanner (Master)</td>
<td>HILSCHER CIFX-RE EIM V1.0.eds</td>
</tr>
<tr>
<td></td>
<td>Note!</td>
<td>The description files for the EtherNet/IP Master device is needed, when an additional EtherNet/IP Master device shall communicate to a Hilscher EtherNet/IP Master device via EtherNet/IP.</td>
</tr>
<tr>
<td></td>
<td>Note!</td>
<td>If you use a Sercos Master which is using SDDML files for configuration, and one of the defaults for vendor code, device ID, input data size or output data size was changed, then you have to export a new updated SDDML file from SYCON.net and import this SDDML file into the configuration software for the Sercos Master.</td>
</tr>
<tr>
<td>CIFX 50E-CCIES,</td>
<td>CC-Link IE Field Slave</td>
<td>0x0352_CIFX.cspp</td>
</tr>
<tr>
<td>CIFX 70E-CCIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50-DP, CIFX 50-2DP,</td>
<td>PROFIBUS DP Slave</td>
<td>HIL_0B69.GSD</td>
</tr>
<tr>
<td>CIFX 50E-DP, CIFX 50E-2DP,</td>
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<td>CIFX 70E-DP/IMR</td>
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</tr>
<tr>
<td>CIFX 50-2DP/CO,</td>
<td>PROFIBUS DP Slave</td>
<td>HIL_0B69.GSD</td>
</tr>
<tr>
<td>CIFX 50E-2DP/CO</td>
<td>CANopen-Slave</td>
<td>CIFX CO COS.edds</td>
</tr>
<tr>
<td>CIFX 50-2DP/DN,</td>
<td>PROFIBUS DP-Slave</td>
<td>HIL_0B69.GSD</td>
</tr>
<tr>
<td>CIFX 50E-2DP/DN</td>
<td>DeviceNet-Slave</td>
<td>CIFX_DN_DNS.EDS</td>
</tr>
<tr>
<td>CIFX 50-2CO/CO,</td>
<td>CANopen Slave</td>
<td>CIFX CO COS.edds</td>
</tr>
<tr>
<td>CIFX 50E-2CO/CO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 70E-2CO, CIFX 70E-CO/MR</td>
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<td></td>
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<tr>
<td>CIFX 50-2CO/DN,</td>
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<td>CIFX CO COS.edds</td>
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<td>CIFX 50E-2CO/ODN</td>
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<td>CIFX 50-DN, CIFX 50E-DN,</td>
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<td>CIFX_DN_DNS.EDS</td>
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<td>CIFX 50E-DN, CIFX 50E-2DN,</td>
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</tr>
<tr>
<td>CIFX 50-CC, CIFX 50E-CC</td>
<td>CC-Link Slave</td>
<td>0x0352_CIFX-CCS_2.11_en.cspp, 0x0352_CIFX-CCS_2.11_en.cspproj</td>
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</tbody>
</table>

Table 6: Device Description Files for PC Cards cifX
### 2.10 Revision or version status of hardware and software

**Note on Software Update:** The hardware revisions and the versions for the firmware, the driver or the configuration software listed in this section functionally belong together. For existing hardware installation the firmware, the driver and the configuration software must be updated according to the details listed in this section.

For the software upgrade system overview refer to section *Update for Firmware, Driver and Software* on page 90.

### 2.10.1 Hardware: PC Cards cifX

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>Part No.</th>
<th>Hardware Revision</th>
<th>USB from HW Rev.</th>
<th>&quot;Rotary Switch Slot Number (Card ID)&quot; from HW Rev.</th>
<th>&quot;DMA Mode&quot; from HW Rev.</th>
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<td>-</td>
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<td>CIFX 70E-RE</td>
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<td>CIFX 100EH-RE/CUBE</td>
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| Table 7: Reference on Hardware PC Cards cifX |
2.10.2 Driver and Software

<table>
<thead>
<tr>
<th>Driver and Software</th>
<th>Version</th>
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<tbody>
<tr>
<td>SYCON.net</td>
<td>SYCONnet.netX setup.exe 1.0500</td>
</tr>
<tr>
<td>netX Configuration Tool-Setup</td>
<td>netXConfigurationUtility_Setup.exe 1.0900</td>
</tr>
<tr>
<td>cifX Device Driver</td>
<td>cifX Device Driver Setup.exe 1.5</td>
</tr>
<tr>
<td>Toolkit</td>
<td>1.6</td>
</tr>
<tr>
<td>cifX TCP/IP Server for SYCON.net</td>
<td>cifX TCP Server.exe V2.3</td>
</tr>
<tr>
<td>US Driver</td>
<td>USB Driver of Windows® 5.1.2600.x</td>
</tr>
</tbody>
</table>

Table 8: Reference on Driver and Software

2.10.3 Firmware

The downloadable cifX firmware runs on PC Cards cifX PCI, PCI Express and Low Profile PCI Express (unless otherwise stated). The firmware automatically detects whether it is running on a PC Cards cifX PCI, PCI Express or Low Profile PCI Express.

PC Cards and PCI Express with one Channel:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CANopen Master</td>
<td>CIFXCOM.NXF</td>
<td>2.14</td>
<td>from 2.5.2.0</td>
</tr>
<tr>
<td>CANopen Slave</td>
<td>CIFXCOS.NXF</td>
<td>3.8</td>
<td>from 2.4.4.0</td>
</tr>
<tr>
<td>CC-Link Slave</td>
<td>CIFXCCS.NXF</td>
<td>2.13</td>
<td></td>
</tr>
<tr>
<td>CC-Link IE Field Basic Slave</td>
<td>C020Y000.NXF</td>
<td>1.1</td>
<td>-</td>
</tr>
<tr>
<td>CC-Link IE Field Slave***</td>
<td>C020X000.NXF</td>
<td>1.2</td>
<td>-</td>
</tr>
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<td>DeviceNet Master</td>
<td>C0206000.NXF</td>
<td>2.4</td>
<td>from 2.2.7.0</td>
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<td>DeviceNet Slave</td>
<td>CIFXDNS.NXF</td>
<td>2.7</td>
<td>from 2.2.7.0</td>
</tr>
<tr>
<td>EtherCAT Master</td>
<td>CIFXECM.NXF</td>
<td>4.5 (V4)</td>
<td>from 2.4.4.0</td>
</tr>
<tr>
<td>EtherCAT Slave</td>
<td>CIFXEC5S.NXF</td>
<td>4.8 (V4)</td>
<td>from 2.5.13.0</td>
</tr>
<tr>
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<td>from 2.2.4.1</td>
</tr>
<tr>
<td>EtherNet/IP-Adapter</td>
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<td>3.6 (V3)</td>
<td>from 2.3.4.1</td>
</tr>
<tr>
<td>Open-Modbus/TCP</td>
<td>CIFXOMB.NXF</td>
<td>2.7</td>
<td>from 2.3.2.1</td>
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<td>2.8</td>
<td>from 2.3.22.0</td>
</tr>
<tr>
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<td>from 2.3.30.0</td>
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<tr>
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<td>from 2.4.1.2</td>
</tr>
<tr>
<td>PROFINET IO-Controller</td>
<td>C010C000.NXF</td>
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<td>4.5 (V4)</td>
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<td>from 2.0.14.0</td>
</tr>
<tr>
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<td>3.5</td>
<td>from 3.0.13.0</td>
</tr>
<tr>
<td>VARAN-Client</td>
<td>CIFXVRS.NXF</td>
<td>1.1</td>
<td>from 1.0.3.0</td>
</tr>
</tbody>
</table>

Table 9: Reference on Firmware (for 1 Channel Systems)

**Note:** *Unless otherwise indicated, in this manual data to the firmware version correspond to the stack version.

**Important!** Use the PC cards CIFX 50E-CCIES or CIFX 70E-CCIES only together with the CC-Link IE Field Slave firmware and do not use this firmware for any other cards.
PC Cards PCI and PCI Express with two Channels:

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
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<td>AS-Interface Master</td>
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</tbody>
</table>

Table 10: Reference on Firmware (for 2 Channel Systems)

2.11 Device Label with Matrix Code

You can identify your device by means of the device label.

Note: The position of the device label on your device can be seen from the device drawing.

The device label consists of a matrix code and the information contained therein in plain text.

The 2 D code (Data Matrix Code) contains the following information:

1. Part number: 1234.567
2. Hardware revision: 1
3. Serial number: 20000 (for mini matrix 20001)

The device label with matrix code can be designed as mini-sticker.

![Figure 1: Example 2D Label (mini sticker on the right)](image)
3 Device Drawings

3.1 PC Cards cifX PCI and PCI Express

3.1.1 CIFX 50-RE, CIFX 50E-RE, CIFX 50E-RE\ET

Note: *Device supports Auto Crossover Function.
For the **SYNC** pin assignment of the SYNC Connector refer to section *Pin Assignment SYNC Connector, X51 (CIFX 50 50E 70E)* on page 133. Device drawings of earlier device revisions without rotary switch slot number (card ID) are included in the user manual for PC cards cifX Real-Time Ethernet up to manual rev. 32.

The figure below shows the front plate of the PC cards CIFX 50-RE, CIFX 50E-RE or CIFX 50E-RE\ET:

![Front Plate for CIFX 50-RE, CIFX 50E-RE or CIFX 50E-RE\ET](image)

1. **Rotary Switch Slot Number (Card ID)**
   The figure shows the rotary switch in position 1. Refer also to section *Rotary Switch for Slot Number (Card ID)*, page 131.

2. **System LED** (yellow/green)

3. **Communication Status LED 0** (red/green)

4. **Communication Status LED 1** (red/green), (*Designation and meaning depends by protocol*)
   Refer also to chapter *Diagnosis with LEDs*, page 95.

5. **Ethernet Interface Channel 0**

6. **Ethernet Interface Channel 1**
   Refer also to section *Ethernet Interface*, page 125.

*From hardware revision 3 (for CIFX 50-RE), 4 (for CIFX 50E-RE) or 1 (for CIFX 50E-RE\ET) on, the **Rotary Switch Slot Number (Card ID)** is provided.*
3.1.2 CIFX 50E-CCIES

Ethernet RJ45-Buchse / Ethernet RJ45 Socket

Kanal 0 / Channel 0 (CH 0)

Kanal 1 / Channel 1 (CH 1)

Drehschalter Slot-Nummer (Karten-ID) / Rotary Switch Slot Number (Card ID)

System LED
SYS (gelb/grün) / (yellow/green)
Kommunikationsstatus-LEDs / Communication Status LEDs
RUN, RD, SD (grün/green)
D-LINK, USER1, USER2 (gelb/yellow)
ERR (rot/Red)

PCI Express Bus (36-polig / 36 pin)

Durchschalter / Switch (U1, U2, SYS)

Figure 5: CIFX 50E-CCIES* (Hardware revision 1)

Note: *Device supports Auto Crossover Function.

For details about the Rotary Switch Slot Number (Card ID) refer to section Rotary Switch for Slot Number (Card ID), page 131.

For the SYNC pin assignment of the SYNC Connector refer to section Pin Assignment SYNC Connector, X51 (CIFX 50 50E 70E) on page 133.
The figure below shows the front plate of the PC card CIFX 50E-CCIES:

1. **System LED SYS (yellow/green)**
   - Communication Status LEDs
   - RUN, RD, SD (green)
   - D-LINK, USER1, USER2 (yellow)
   - ERR (red)

2. **Ethernet Interface Channel 0**

3. **Ethernet Interface Channel 1**
   - Refer also to section *Ethernet Interface*, page 125.

*Figure 6: Front Plate for CIFX 50E-CCIES*
3.1.3 **CIFX 50-DP, CIFX 50E-DP**

*Device drawings of earlier device revisions without rotary switch slot number (card ID) or with two COM LEDs are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.*
The figure below shows the front plate of the PC cards CIFX 50-DP or CIFX 50E-DP:

1. **Rotary Switch Slot Number (Card ID)**
   - The figure shows the rotary switch in position 1. Refer also to chapter *Rotary Switch for Slot Number (Card ID)*, page 131.

2. **System LED** (yellow/green)

3. **Communication Status LED COM** (red/green)
   - Refer also to chapter, *Diagnosis with LEDs*, page 95.

4. **PROFIBUS Interface**;
   - Refer also to chapter, *PROFIBUS Interface* page 128.

*From hardware revision 5 (for CIFX 50-DP or CIFX 50E-DP) on, the **Rotary Switch Slot Number (Card ID)** is provided.*
### 3.1.4 CIFX 50-2DP, CIFX 50E-2DP

A device drawing of the earlier device revision without rotary switch slot number (card ID) is included in the user manual rev. 37.

**Figure 10: CIFX 50-2DP (Hardware Revision 3)**

**Figure 11: CIFX 50E-2DP (Hardware Revision 1)**
The figure below shows the front plate of the PC cards CIFX 50-2DP, CIFX 50E-2DP:

1. System LED (yellow/green)
2. (not used)
3. Communication Status LED COM0 (red/green)
4. Communication Status LED COM1 (red/green)

Refer also to chapter Diagnosis with LEDs, page 95.

5. PROFIBUS Interface Channel X2

6. PROFIBUS Interface Channel X1

Refer also to chapter, PROFIBUS Interface page 128.

Figure 12: Front Plate CIFX 50-2DP, CIFX 50E-2DP
3.1.5 CIFX 50-2DP\CO, CIFX 50E-2DP\CO

Figure 13: CIFX 50-2DP\CO (Hardware Revision 2)

Figure 14: CIFX 50E-2DP\CO (Hardware Revision 1)
The figure below shows the front plate of the PC cards CIFX 50-2DP\CO, CIFX 50E-2DP\CO:

1. **System LED** (yellow/green)
2. **(not used)**
3. **Communication Status LED COM0** (red/green)
4. **Communication Status LED CAN1** (red/green)
   
   Refer also to chapter *Diagnosis with LEDs*, page 95.

5. **CANopen Interface Channel X2**
   
   Refer also to chapter *CANopen Interface*, page 128.

6. **PROFIBUS Interface Channel X1**
   
   Refer also to chapter *PROFIBUS Interface*, page 128.

*Figure 15: Front Plate CIFX 50-2DP\CO, CIFX 50E-2DP\CO*
3.1.6 CIFX 50-2DP\DN, CIFX 50E-2DP\DN

DeviceNet-Schnittstelle, Kanal X2
COMBICON-Stecker (5-polig)

DeviceNet Interface, Channel X2
COMBICON male Connector (5 pin)

PROFIBUS-Schnittstelle, Kanal X1
DSub-Buchse (9-polig)

PROFIBUS Interface, Channel X1
DSub female Connector (9 pin)

PCI Bus (124-polig / 124 pin)

System LED (gelb/grün) / (yellow/green)
COM 0 LED (rot/grün) für Kanal X1 / (red/green) for Channel X1
MNS 1 LED (rot/grün) für Kanal X2 / (red/green) for Channel X2

Rotary Switch Slot Number (Card ID)

Drehschalter Slot-Nummer (Karten-ID) / Rotary Switch Slot Number (Card ID)

DeviceNet-Schnittstelle, Kanal X2
COMBICON-Stecker (5-polig)

DeviceNet Interface, Channel X2
COMBICON male Connector (5 pin)

PROFIBUS-Schnittstelle, Kanal X1
DSub-Buchse (9-polig)

PROFIBUS Interface, Channel X1
DSub female Connector (9 pin)

PCI Express Bus
(36-polig / 36 pin)

System LED (gelb/grün) / (yellow/green)
COM 0 LED (rot/grün) für Kanal X1 / (red/green) for Channel X1
MNS 1 LED (rot/grün) für Kanal X2 / (red/green) for Channel X2

Rotary Switch Slot Number (Card ID)

Drehschalter Slot-Nummer (Karten-ID) / Rotary Switch Slot Number (Card ID)

Figure 16: CIFX 50-2DP\DN (Hardware Revision 1)

Figure 17: CIFX 50E-2DP\DN (Hardware Revision 1)
The figure below shows the front plate of the PC cards CIFX 50-2DP\DN, CIFX 50E-2DP\DN:

1. **System LED** (yellow/green)
2. **(not used)**
3. **Communication Status LED COM0** (red/green)
4. **Communication Status LED MNS1** (red/green)
   - Refer also to chapter *Diagnosis with LEDs*, page 95.

5. **DeviceNet Interface Channel X2**;
   - Refer also to chapter *DeviceNet Interface*, page 129.

6. **PROFIBUS Interface Channel X1**
   - Refer also to chapter, *PROFIBUS Interface* page 128.

*Figure 18: Front Plate CIFX 50-2DP\DN, CIFX 50E-2DP\DN*
3.1.7 CIFX 50-CO, CIFX 50E-CO

Device drawings of earlier device revisions without rotary switch slot number (card ID) or with two COM LEDs are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.
The figure below shows the front plate of the PC cards CIFX 50-CO or CIFX 50E-CO:

- **Rotary Switch Slot Number (Card ID)**
  The figure shows the rotary switch in position 1. Refer also to chapter *Rotary Switch for Slot Number (Card ID)*, page 131.

- **System LED** (yellow/green)

- **Communication Status LED CAN** (red/green)
  Refer also to chapter *Diagnosis with LEDs*, page 95.

- **CANopen Interface**
  Refer also to chapter *CANopen Interface*, page 128.

*From hardware revision 5 (for CIFX 50-CO or CIFX 50E-CO) on, the **Rotary Switch Slot Number (Card ID)** is provided.*
### 3.1.8 CIFX 50-2CO, CIFX 50E-2CO

**Figure 22: CIFX 50-2CO (Hardware Revision 2)**

**Figure 23: CIFX 50E-2CO (Hardware Revision 1)**
The figure below shows the front plate of the PC cards CIFX 50-2CO, CIFX 50E-2CO:

1. **System LED** (yellow/green)
2. **(not used)**
3. **Communication Status LED CAN0** (red/green)
4. **Communication Status LED CAN1** (red/green)

Refer also to chapter *Diagnosis with LEDs*, page 95.

5. **CANopen Interface Channel X2**

6. **CANopen Interface Channel X1**

Refer also to chapter *CANopen Interface*, page 128.

*Figure 24: Front Plate CIFX 50-2CO, CIFX 50E-2CO*
3.1.9 CIFX 50-2CO\DN, CIFX 50E-2 CO\DN

DeviceNet-Schnittstelle, Kanal X2
COMBICON-Stecker (5-polig)

DeviceNet Interface, Channel X2
COMBICON male Connector (5 pin)

CANopen-Schnittstelle, Kanal X1
DSub-Stecker (9-polig)

CANopen Interface, Channel X1
DSub male Connector (9 pin)

PCI Bus (124-polig / 124 pin)

System LED (gelb/grün) / (yellow/green)
CAN 0 LED (rot/grün) für Kanal X1 / (red/green) for Channel X1
MNS 1 LED (rot/grün) für Kanal X2 / (red/green) for Channel X2

Drehschalter Slot-Nummer (Karten-ID) /
Rotary Switch Slot Number (Card ID)

Figure 25: CIFX 50-2 CO\DN (Hardware Revision 1)

Figure 26: CIFX 50E-2 CO\DN (Hardware Revision 1)
The figure below shows the front plate of the PC cards CIFX 50-2CO\DN, CIFX 50E-2 CO\DN:

- **1** System LED (yellow/green)
- **2** (not used)
- **3** Communication Status LED CAN0 (red/green)
- **4** Communication Status LED MNS1 (red/green)
  
  Refer also to chapter *Diagnosis with LEDs*, page 95.

- **5** DeviceNet Interface Channel X2

  Refer also to chapter *DeviceNet Interface*, page 129.

- **6** CANopen Interface Channel X1

  Refer also to chapter *CANopen Interface*, page 128.

*Figure 27: Front Plate CIFX 50-2CO\DN, CIFX 50E-2 CO\DN*
### 3.1.10 CIFX 50-DN, CIFX 50E-DN

**Device Drawings of earlier device revisions without rotary switch slot number (card ID) are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.**

**Figure 28: CIFX 50-DN (hardware revision 5)**

**Figure 29: CIFX 50E-DN (from hardware revision 4)**
The figure below shows the front plate of the PC cards CIFX 50-DN or CIFX 50E-DN:

1. **Rotary Switch Slot Number (Card ID)**
   - The figure shows the rotary switch in position 1. Refer also to chapter *Rotary Switch for Slot Number (Card ID)*, page 131.

2. **System LED** (yellow/green)

3. **Communication Status LED MNS** (red/green)
   - Refer also to chapter *Diagnosis with LEDs*, page 95.

4. **DeviceNet Interface**; refer also to chapter *DeviceNet Interface*, page 129.

---

**Note:** The front plate cutout for the CombiCon male Connector is at the PCB side 0.5 mm outside of the standard front plate cutout.

---

*From hardware revision 5 (for CIFX 50-DN or CIFX 50E-DN on, the **Rotary Switch Slot Number (Card ID)** is provided.*
3.1.11 CIFX 50-2DN, CIFX 50E-2DN

DeviceNet-Schnittstelle, Kanal X2
COMBICON-Stecker (5-polig)

DeviceNet Interface, Channel X2
COMBICON male Connector
(5 pin)

DeviceNet-Schnittstelle, Kanal X1
COMBICON-Stecker (5-polig)

DeviceNet Interface, Channel X1
COMBICON male Connector
(5 pin)

PCI Bus (24-polig / 124 pin)

System LED (gelb/grün) / (yellow/green)
MNS 0 LED (rot/grün) für Kanal X1 / (red/green) for Channel X1
MNS 1 LED (rot/grün) für Kanal X2 / (red/green) for Channel X2
Drehschalter Slot-Nummer (Karten-ID) / Rotary Switch Slot Number (Card ID)

Figure 31: CIFX 50-2DN (Hardware Revision 2)

DeviceNet-Schnittstelle, Kanal X2
COMBICON-Stecker (5-polig)

DeviceNet Interface, Channel X2
COMBICON male Connector
(5 pin)

DeviceNet-Schnittstelle, Kanal X1
COMBICON-Stecker (5-polig)

DeviceNet Interface, Channel X1
COMBICON male Connector
(5 pin)

PCI Express Bus
(36-polig / 36 pin)

System LED (gelb/grün) / (yellow/green)
MNS 0 LED (rot/grün) für Kanal X1 / (red/green) for Channel X1
MNS 1 LED (rot/grün) für Kanal X2 / (red/green) for Channel X2
Drehschalter Slot-Nummer (Karten-ID) / Rotary Switch Slot Number (Card ID)

Figure 32: CIFX 50E-2DN (Hardware Revision 1)
The figure below shows the front plate of the PC cards CIFX 50-2DN, CIFX 50E-2DN:

1. **System LED** (yellow/green)
2. **(not used)**
3. **Communication Status LED MNS0** (red/green)
4. **Communication Status LED MNS1** (red/green)

Refer also to chapter *Diagnosis with LEDs*, page 95.

5. **DeviceNet Interface Channel X2**

6. **DeviceNet Interface Channel X1**

Refer also to chapter *DeviceNet Interface*, page 129.

*Figure 33: Front Plate CIFX 50-2DN, CIFX 50E-2DN*
3.1.12 CIFX 50-2ASM, CIFX 50E-2ASM

Device drawings of earlier device revisions without rotary switch slot number (card ID) are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.
The figure below shows the front plate of the PC card CIFX 50-2ASM:

- **1 Rotary Switch Slot Number (Card ID)**
  - The figure shows the rotary switch in position 1; refer also to chapter *Rotary Switch for Slot Number (Card ID)*, page 131.
- **2 System LED** (yellow/green)
- **3 COM1 LED** (red/green)
- **4 COM2 LED** (red/green)
  - Refer also to chapter *Diagnosis with LEDs*, page 95.
- **5 AS-Interface Interface Channel X1**
- **6 AS-Interface Interface Channel X2**
  - Refer also to chapter *AS-Interface Interface*, page 129.

*From hardware revision 2 on, the Rotary Switch Slot Number (Card ID) is provided.*
3.1.13 CIFX 50-CC, CIFX 50E-CC

Device drawings of earlier device revisions without rotary switch slot number (card ID) are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.

Note: *The front plate cutout for the screw terminal connector is at the PCB side 0.5 mm outside of the standard front plate cutout.
The figure below shows the front plate of the PC cards CIFX 50-CC or CIFX 50E-CC:

![Diagram of the front plate of the PC cards CIFX 50-CC or CIFX 50E-CC]

- **1. Rotary Switch Slot Number (Card ID)**
  The figure shows the rotary switch in position 1; refer also to chapter *Rotary Switch for Slot Number (Card ID)*, page 131.

- **2. System LED** (yellow/green)

- **3. Communication Status LED L RUN** (red/green)

- **4. Communication Status LED L ERR** (red/green)
  Refer also to chapter *Diagnosis with LEDs*, page 95.

- **5. CC-Link Interface**
  Refer also to chapter *CC-Link Interface*, page 130.

*From hardware revision 2 (for CIFX 50-CC) on or 3 (for CIFX 50E-CC), the Rotary Switch Slot Number (Card ID) is provided.

### 3.1.14 Meaning of the Front Panel Inscriptions for 2 Channel Devices

<table>
<thead>
<tr>
<th>PC card cifX</th>
<th>Channel X1</th>
<th>Channel X2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-2DP, CIFX 50E-2DP</td>
<td>COM0</td>
<td>COM1</td>
</tr>
<tr>
<td>CIFX 50-2DP/CO, CIFX 50E-2DP/CO</td>
<td>COM0</td>
<td>CAN1</td>
</tr>
<tr>
<td>CIFX 50-2DP/DN, CIFX 50E-2DP/DN</td>
<td>COM0</td>
<td>MNS1</td>
</tr>
<tr>
<td>CIFX 50-2CO, CIFX 50E-2CO</td>
<td>CAN0</td>
<td>CAN1</td>
</tr>
<tr>
<td>CIFX 50-2CO/DN, CIFX 50E-2CO/DN</td>
<td>CAN0</td>
<td>MNS1</td>
</tr>
<tr>
<td>CIFX 50-2DN, CIFX 50E-2DN</td>
<td>MNS0</td>
<td>MNS1</td>
</tr>
<tr>
<td>CIFX 50-2ASM, CIFX 50E-2ASM</td>
<td>COM1</td>
<td>COM2</td>
</tr>
</tbody>
</table>

*Note: Within the configuration software SYCON.net the communication channels are named with ‘Ch0’, ‘Ch1’ . . . .

X1 and X2 indicate the bus interfaces: X1 stands for fieldbus 1 (channel X1), X2 stands for fieldbus 2 (channel X2).
3.2 PC Cards cifX Low Profile PCI Express

3.2.1 CIFX 70E-RE, CIFX 70E-RE\MR

Figure 40: CIFX 70E-RE* (Hardware revision 1)

Figure 41: CIFX 70E-RE\MR* (Hardware revision 1)

Note: *Device supports Auto Crossover Function.
About **Rotary Switch for Slot Number (Card ID)** refer to section *Rotary Switch for Slot Number (Card ID)*, on page 131.

For the **SYNC** pin assignment of the SYNC Connector refer to section *Pin Assignment SYNC Connector, X51 (CIFX 50 50E 70E)* on page 133.

The figure below shows the front plate of the PC card CIFX 70E-RE or CIFX 70E-RE\MR:

![Figure 42: Front Plate for CIFX 70E-RE, CIFX 70E-RE\MR](image)

- (not used)
- **Communication Status LEDs COM1***
- **Communication Status LEDs COM0***
- **System LED** (yellow/green)

(*red/green, Designation and meaning depends by protocol). Refer also to chapter *Diagnosis with LEDs*, page 95.

- **Ethernet Interface Channel 0**
- **Ethernet Interface Channel 1**

Refer also to section *Ethernet Interface*, page 125.
3.2.2 CIFX 70E-CCIES

System LED
SYS (gelb/grün) / (yellow/green)
Kommunikationsstatus-LEDs / Communication Status LEDs
RUN, RD, SD (grün/green)
D-LINK, USER1, USER2 (gelb/yellow)
ERR (rot/rot)

Ethernet RJ45-Buchse / Ethernet RJ45 Socket
Kanal 0 / Channel 0 (CH 0)
Kanal 1 / Channel 1 (CH 1)

Drehwender Slot-Nummer (Karten-ID) / Rotary Switch Slot Number (Card ID)

SYNC-Anschluss / SYNC Connector
(X51, 3-polig / 3 pin)

PCI Express Bus
(36-polig / 36 pin)

Figure 43: CIFX 70E-CCIES* (Hardware revision 1)

Note: *Device supports Auto Crossover Function.

For details about the Rotary Switch Slot Number (Card ID) refer to section Rotary Switch for Slot Number (Card ID), page 131.

For the SYNC pin assignment of the SYNC Connector refer to section Pin Assignment SYNC Connector, X51 (CIFX 50 50E 70E) on page 133.
The figure below shows the front plate of the PC card CIFX 70E-CCIES:

![Diagram of CIFX 70E-CCIES front plate]

1. **LEDs**: System LED SYS (yellow/green), Communication Status LEDs RUN, RD, SD (green) D-LINK, USER1, USER2 (yellow) ERR (red)

2. **Ethernet Interface Channel 0**

3. **Ethernet Interface Channel 1**
   Refer also to section *Ethernet Interface*, page 125.

*Figure 44: Front Plate for CIFX 70E-CCIES*
3.2.3 CIFX 100EH-RE\CUBE

The figure below shows the front plate of the PC card CIFX 100EH-RE\CUBE:

- **Pin 1**: TX+
- **Pin 2**: TX-
- **Pin 3**: RX+
- **Pin 4**: Term 1
- **Pin 5**: Term 1
- **Pin 6**: RX-
- **Pin 7**: Term 2
- **Pin 8**: Term 2

**LED**
- grün / green
- gelb / yellow

**Kanal 0** / Channel 0 (CH 0)
**Kanal 1** / Channel 1 (CH 1)

**Drehschalter Slot-Nummer (Karten-ID)** / Rotary Switch Slot Number (Card ID)

**Ethernet RJ45-Buchse** / Ethernet RJ45 Socket

**Communications Status LED 1 and 0 (red/green)** / System LED (gelb/grün) / System LED (yellow/green)

**Kommunikationsstatus-LED 1 und 0 (rot/grün)**

**SYNC-Anschluss** / SYNC Connector (J1, 3-polig / 3 pin)

**Ethernet Interface Channel 0**

**Ethernet Interface Channel 1**
Refer also to section **Ethernet Interface**, page 125.

**Note:** *Device supports Auto Crossover Function.

**About Rotary Switch for Slot Number (Card ID)** refer to section **Rotary Switch for Slot Number (Card ID)**, on page 131.

For the pin assignment of the **PCI Express** bus X2(X1) see section **Pin Assignment for PCI Express Bus CIFX 100EH-RE\CUBE** on page 136.

For the **SYNC** pin assignment of the **SYNC Connector** refer to section **Pin Assignment SYNC Connector, J1 (CIFX 100EH)** on page 133.
3.2.4 CIFX 70E-DP, CIFX 70E-DP\MR

Figure 47: CIFX 70E-DP (Hardware revision 1)

Figure 48: CIFX 70E-DP\MR (Hardware revision 1)

About Rotary Switch for Slot Number (Card ID) refer to section Rotary Switch for Slot Number (Card ID), on page 131.
The figure below shows the front plate of the PC card CIFX 70E-DP or CIFX 70E-DP\MR:

1. (not used)
2. (not used)
3. Communication Status LED COM (red/green)
4. System LED (yellow/green)

Refer also to chapter Diagnosis with LEDs, page 95.

5. PROFIBUS Interface

Refer also to chapter PROFIBUS Interface page 128.

Figure 49: Front Plate CIFX 70E-DP, CIFX 70E-DP\MR
3.2.5 CIFX 70E-CO, CIFX 70E-CO\MR

![Diagram of CIFX 70E-CO (Hardware revision 1)](image1)

---

**Figure 50: CIFX 70E-CO (Hardware revision 1)**

---

**About Rotary Switch for Slot Number (Card ID)** refer to section Rotary Switch for Slot Number (Card ID), on page 131.
The figure below shows the front plate of the PC card CIFX 70E-CO or CIFX 70E-CO\MR:

1. (not used)
2. (not used)
3. **Communication Status LED** CAN (red/green)
4. **System LED** (yellow/green)
   
   Refer also to chapter *Diagnosis with LEDs*, page 95.

5. **CANopen Interface**

   Refer also to chapter *CANopen Interface*, page 128.

*Figure 52: Front Plate CIFX 70E-CO, CIFX 70E-CO\MR*
### 3.2.6 CIFX 70E-DN, CIFX 70E-DN\MR

#### Figure 53: CIFX 70E-DN (Hardware revision 1)

- **Drehschalter** (Rotary Switch)
- **Modulnetzwerkstatus-LED (rot/grün)** (Module Network Status LED (red/green))
- **System-LED (gelb/grün)** (System LED (yellow/green))
- **PCI-Express-Bus** (PCI Express Bus (X2/(X1), 64-polig / 64 pin))

#### Figure 54: CIFX 70E-DN\MR (Hardware revision 1)

- **Drehschalter** (Rotary Switch)
- **Modulnetzwerkstatus-LED (rot/grün)** (Module Network Status LED (red/green))
- **System-LED (gelb/grün)** (System LED (yellow/green))
- **PCI-Express-Bus** (PCI Express Bus (X2/(X1), 64-polig / 64 pin))

---

**About Rotary Switch for Slot Number (Card ID)** refer to section *Rotary Switch for Slot Number (Card ID)*, on page 131.
The figure below shows the front plate of the PC card CIFX 70E-DN or CIFX 70E-DN\MR:

1   2   3   4   5
MNS
SYS

- (not used)
- (not used)
- **Communication Status LED MNS** (red/green)
- **System LED** (yellow/green)

Refer also to chapter *Diagnosis with LEDs*, page 95.

- **DeviceNet Interface**

Refer also to chapter *DeviceNet Interface*, page 129.

![Figure 55: Front Plate CIFX 70E-DN, CIFX 70E-DN\MR](image)
## 4 Safety

### 4.1 General Note

The documentation in the form of a user manual, an operating instruction manual or other manual types, as well as the accompanying texts have been created for the use of the products by educated personnel. When using the products, all Safety Messages, Integrated Safety Messages, Property Damage Messages and all valid legal regulations must be obeyed. Technical knowledge is presumed. The user has to assure that all legal regulations are obeyed.

### 4.2 Intended Use

The PC Cards cifX described in this user manual are PC cards for the Real-Time Ethernet or fieldbus communication. Depending from the loaded firmware, the Real-Time Ethernet or fieldbus systems listed in the following table can be realized using the respective PC Card cifX.

<table>
<thead>
<tr>
<th>PC Cards cifX</th>
<th>Real-Time Ethernet System</th>
<th>PC Cards cifX</th>
<th>Fieldbus System</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-RE,</td>
<td>CC-Link IE Field Basic Slave</td>
<td>CIFX 50-DP</td>
<td>PROFIBUS DP Master,</td>
</tr>
<tr>
<td>CIFX 50E-RE,</td>
<td>EtherCAT Master,</td>
<td>CIFX 50E-DP,</td>
<td>PROFIBUS DP Slave,</td>
</tr>
<tr>
<td>CIFX 70E-RE,</td>
<td>EtherCAT Slave</td>
<td>CIFX 70E-DP,</td>
<td>PROFIBUS MPI Device</td>
</tr>
<tr>
<td>CIFX 70E-RE</td>
<td>MR, CIFX 100EH-RE/CUBE</td>
<td>CIFX 70E-DP/MR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EtherNet/IP Scanner (Master),</td>
<td>CIFX 50-2DP,</td>
<td>PROFIBUS DP Master,</td>
</tr>
<tr>
<td></td>
<td>EtherNet/IP Adapter (Slave)</td>
<td>CIFX 50-E-2DP</td>
<td>PROFIBUS DP Slave</td>
</tr>
<tr>
<td></td>
<td>Open-Modbus/TCP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>POWERLINK-Controlled-Node/Slave</td>
<td>CIFX 50-2DP/</td>
<td>PROFIBUS DP Master,</td>
</tr>
<tr>
<td></td>
<td>PROFINET IO-Controller (Master),</td>
<td>CO, CIFX 50-E-2DP</td>
<td>PROFIBUS DP Slave,</td>
</tr>
<tr>
<td></td>
<td>PROFINET IO-Device (Slave)</td>
<td>CIFX 50-2DP/DN</td>
<td>CANopen Master,</td>
</tr>
<tr>
<td></td>
<td>Sercos Master,</td>
<td></td>
<td>CANopen Slave</td>
</tr>
<tr>
<td></td>
<td>Sercos Slave</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VARAN-Client (Slave)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-CCIES,</td>
<td>CC-Link IE Field Slave</td>
<td>CIFX 50-CO</td>
<td>CANopen Master,</td>
</tr>
<tr>
<td>CIFX 70E-CCIES</td>
<td></td>
<td>CIFX 50E-CO,</td>
<td>CANopen Slave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50E-2CO,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 70E-CO,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 70E-CO/MR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50-2CO/</td>
<td>CANopen Master,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DN, CIFX 50E-2CO/DN</td>
<td>CANopen Slave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50-CO/</td>
<td>DeviceNet Master,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DN</td>
<td>DeviceNet Slave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50-DN</td>
<td>DeviceNet Master,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50-2DN</td>
<td>DeviceNet Slave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50E-DN</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50E-2DN</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 70E-DN</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 70E-DN/MR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50-2ASM</td>
<td>AS-Interface Master</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50E-2ASM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50-CC</td>
<td>CC-Link Slave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX 50E-CC</td>
<td></td>
</tr>
</tbody>
</table>

*Table 12: PC Cards cifX and the Real-Time Ethernet or Fieldbus Systems realized thereby*
4.3 Personnel Qualification

The PC Card cifX 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.

4.4 Safety Instructions

To ensure your own personal safety and to avoid personal injury, you necessarily must read, understand, and comply with the safety instructions and safety messages in this manual before you install and operate your PC card cifX.

For cases if both, personal injury as well as property damage (damage of equipment or device) may occur together, you find the safety instructions in this section.

4.4.1 Hazardous Voltage, electric Shock

Danger to life or risk of injury by electric shock may occur if you open the housing of your PC (or connection device) to install your PC card.

- **Hazardous voltages** are present in the PC (or connection device) for mounting. Strictly obey to all safety rules provided by the PC’s manufacturer in the documentation!
- First disconnect the power plug of the PC (or connection device), before you open the housing.
- Make sure that the power supply is off at the PC (or connection device).
- Only then open the housing and install or remove the PC card.

Reference Safety [S2]
4.4.2 Communication Stop during Firmware Update or Configuration Download

If you want to perform either a firmware update (as a download) or a configuration download, both via the corresponding Master DTM in SYCON.net, be aware of the following:

- Together with the firmware download, an automated reset to the device is performed that will interrupt all network communication and all established connections will drop.
- If you download the configuration during bus operation, the communication between master and slaves is stopped.

Possible faulty System Operation

- An unpredictable and unexpected behavior of machines and plant components may cause personal injury and property damage.
  - Stop the application program, before starting the firmware update or before downloading the configuration.
  - Make sure that your equipment operates under conditions that prevent personal injury or property damage. All network devices should be placed in a fail-safe mode, before starting the firmware update or before downloading a configuration.

Loss of Device Parameters, Overwriting of Firmware

- Both the firmware download and the configuration download erase the configuration data base. The firmware download overwrites the existing firmware in the network device.
  - To complete the firmware update and to make the device operable again, re-load the configuration after the firmware update has been finished.

For devices with Ethernet technology

- Device parameters that have been saved volatile, e. g. as the temporarily set IP address parameters, are getting lost during the reset.
  - In order to prevent loss of configuration data, make sure that your project configuration data are saved non-volatile, before you initiate a firmware update or download the configuration.

4.4.3 Mismatching System Configuration

Mismatching system configuration loaded into the device could result in faulty data mapping in the application program and thus unexpected equipment operation may cause personal injury or damage of equipment.

- In the device use only a configuration suitable for the system.
4.5 Property Damage

To avoid system damage and device damage to the PC card cifX, you necessarily must read, understand, and comply with the safety instructions and safety messages in this manual before you install and operate the PC card cifX.

4.5.1 Exceeding permissible Supply Voltage

To avoid device damage due to high supply voltage to your PC Card cifX, you must observe the following instructions. These instructions apply to all PC Cards cifX described in this manual.

The PC Card cifX may only be operated with the specified supply voltage. Make sure that the limits of the permissible range for the supply voltage are not exceeded. A supply voltage above the upper limit can cause severe damage to the PC Card cifX! A supply voltage below the lower limit can cause malfunction in the PC Card cifX. The permissible range for the supply voltage is defined by the tolerances specified in this manual.

For the PC cards listed hereafter adhere specifically: The PC Card cifX

- CIFX 50-RE
- CIFX 50-DP, CIFX 50-2DP, CIFX 50-2DP\CO, CIFX 50-2DP\DN, CIFX 50-CO, CIFX 50-2CO, CIFX 50-2CO\DN, CIFX 50-DN, CIFX 50-2DN, CIFX 50-2ASM, CIFX 50-CC
- CIFX 50E-RE, CIFX 50E-RE\ET
- CIFX 50E-CCIES,
- CIFX 50E-DP, CIFX 50E-2DP, CIFX 50E-2DP\CO, CIFX 50E-2DP\DN, CIFX 50E-CO, CIFX 50E-2CO, CIFX 50E-2CO\DN, CIFX 50E-DN, CIFX 50E-2DN, CIFX 50E-2ASM, CIFX 50E-CC
- CIFX 70E-RE, CIFX 70E-RE\MR, CIFX 100EH-RE\CUBE
- CIFX 70E-CCIES
- CIFX 70E-DP, CIFX 70E-DP\MR
- CIFX 70E-CO, CIFX 70E-CO\MR
- CIFX 70E-DN, CIFX 70E-DNMR

may not be powered by a 5V supply voltage! The PC Card cifX may only be powered by a 3.3 V dc ±5 % supply voltage.

The data on the mandatory supply voltage for the PC Cards cifX described in this manual you find in section Power Supply and Host Interface on page 65. There the required and permitted supply voltage is provided by device type inclusively the permitted tolerance range.
4.5.2  Exceeding permissible Signaling Voltage

To avoid device damage due to high signal voltage to your PC Card cifX, you must observe the following instructions. These instructions apply to all PC Cards cifX described in this manual.

- All I/O signal pins at the PC Card cifX tolerate only the specified signaling voltage!
- Operating of your PC Card cifX with a signaling voltage other than the specified signaling voltage may lead to severe damage to the PC Card cifX!

The data on the mandatory signaling voltage for the PC Cards cifX described in this manual you find in the section Power Supply and Host Interface on page 65. There the required and permitted signaling voltage is provided by device type.

4.5.3  Electrostatic sensitive Devices

This equipment is sensitive to electrostatic discharge, which cause internal damage and affect normal operation. Therefore adhere to the necessary safety precautions for components that are vulnerable with electrostatic discharge if you install or replace your device. Follow the guidelines listed hereafter 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 the PC Card cifX.
- 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 [S3]
4.5.4 Power Disconnect while downloading Firmware or Configuration

If during the process of downloading a firmware or configuration
- the power supply to a PC with the software application is interrupted,
- or the power supply to the PC card cifX is interrupted,
- or a reset to the PC card cifX is performed,
this may lead to the following consequences:

**Loss of Device Parameters, Firmware Corruption**
- The firmware download or the configuration download will be interrupted and remains incomplete.
- The firmware or the configuration database will be corrupted and device parameters will be lost.
- Device damage may occur as the PC card cifX cannot be rebooted.

Whether these consequences occur depends on when the power disconnect occurs during the download.
➢ During configuration download process, do not interrupt the power supply to the PC, or to the PC card cifX and do not perform a reset!

Otherwise you might be forced to return your PC card cifX for repair.

**Power Drop during Write and Delete Accesses in the File System**

The FAT file system in the netX firmware is subject to certain limitations in its operation. Write and delete accesses in the file system (firmware update, configuration download etc.) can destroy the FAT (File Allocation Table) if the accesses cannot be completed if the power drops. Without a proper FAT, a firmware may not be found and cannot be started.

Make sure that the power supply to the device is not interrupted during write and delete accesses in the file system (firmware update, configuration download, etc.).

4.5.5 Exceeding the maximum Number of allowed Write/Delete Accesses

This device uses a serial Flash chip for storing remanent data, such as firmware, configuration, etc. This chip allows a maximum of 100 000 write/delete accesses which is sufficient for a standard device operation. Writing/deleting the chip excessively (e.g. in order to change configuration or name of station) will exceed the maximum number of allowed write/delete accesses and, thus, result in damage to the device. If, e.g., the configuration is changed every hour, the maximum number will be reached after 11.5 years. If, e.g., it is changed every minute, the maximum number will already be reached after approx. 69 days.

Avoid exceeding the maximum number of allowed write/delete accesses by excessive writing.
4.5.6 Invalid Firmware

Loading invalid firmware files could render your device unusable.

- Only download firmware files to your PC Card cifX that are valid for this device.

Otherwise you may be forced to return your device for repair.

4.5.7 Information and Data Security

Take all usual measures for information and data security, in particular for PC Cards cifX with Ethernet technology. Hilscher explicitly points out that a device with access to a public network (Internet) must be installed behind a firewall or only be accessible via a secure connection such as an encrypted VPN connection. Otherwise the integrity of the device, its data, the application or system section is not safeguarded.

Hilscher can assume no warranty and no liability for damages due to neglected security measures or incorrect installation.
5 Requirements

5.1 System Requirements

5.1.1 Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe

PC with slot (3.3 V) for PC cards cifX PCI, PCI Express and Low Profile PCI Express:

<table>
<thead>
<tr>
<th>PC Cards cifX</th>
<th>PCI Bus [Pins]</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-RE</td>
<td>CIFX 50-DN</td>
<td>124</td>
</tr>
<tr>
<td>CIFX 50-DP</td>
<td>CIFX 50-2DN</td>
<td>PCI slot (3.3 V)</td>
</tr>
<tr>
<td>CIFX 50-2DP</td>
<td>CIFX 50-2ASM</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP/CO</td>
<td>CIFX 50-CC</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP/DN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50-CO</td>
<td>CIFX 50-2CO</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2CO/IDN</td>
<td>CIFX 50-CC/IDN</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-RE</td>
<td>CIFX 70E-RE</td>
<td>36</td>
</tr>
<tr>
<td>CIFX 50E-RE/ET</td>
<td>CIFX 70E-RE/ET</td>
<td>PCI Express x1 slot (3.3 V), x1¹ = One Lane [bus spec 3]</td>
</tr>
<tr>
<td>CIFX 50E-CCIES</td>
<td>CIFX 70E-CCIES</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-DP</td>
<td>CIFX 70E-DP</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DP</td>
<td>CIFX 70E-2DP/MR</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DP/CO</td>
<td>CIFX 70E-CO</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DP/DN</td>
<td>CIFX 70E-CO/MR</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-CO</td>
<td>CIFX 70E-DN</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2CO</td>
<td>CIFX 70E-DN/MR</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2CO/IDN</td>
<td>CIFX 70E-DN/IDN</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-DN</td>
<td>CIFX 50E-DN/IDN</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DN</td>
<td>CIFX 50E-2ASM</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-CC</td>
<td>CIFX 50E-CC/IDN</td>
<td></td>
</tr>
<tr>
<td>CIFX 100EH-RE\CUBE</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PCI Express x4 slot (3.3 V), x4¹ = Four Lane</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>In the PCI Express x4 slot only lane 0 is used. For further details refer to section Pin Assignment for PCI Express Bus CIFX 100EH-RE\CUBE on page 136.</td>
</tr>
</tbody>
</table>

Table 13: Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe

¹ The terms "x1" or "x4" refer to the convention of the PCI Express specifications [bus spec 3] to the number of lanes in the slot.
### 5.1.2 Power Supply and Host Interface

For the power supply and the host interface used for the PC cards cifX PCI, PCIe and Low Profile PCIe you must observe the following requirements:

<table>
<thead>
<tr>
<th>PC Cards cifX</th>
<th>Supply Voltage</th>
<th>Signaling Voltage Host Interface</th>
<th>Host Interface (PCI slot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-RE</td>
<td>CIFX 50-DN</td>
<td>+3.3 V dc ±5 %/ Max. 1 A</td>
<td>PCI</td>
</tr>
<tr>
<td>CIFX 50-DP</td>
<td>CIFX 50-2DN</td>
<td>5 V or 3.3 V</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP</td>
<td>CIFX 50-CC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP/CO</td>
<td>CIFX 50-2ASM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2CO</td>
<td>CIFX 50-CO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2CO/DN</td>
<td>CIFX 50-CC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50-DN</td>
<td>CIFX 50-RE</td>
<td></td>
<td>PCI</td>
</tr>
<tr>
<td>CIFX 50-2DN</td>
<td>CIFX 50E-RE/ET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DP/CO</td>
<td>CIFX 70E-REMR</td>
<td>+3.3 V dc ±5 %/ Max. 1 A</td>
<td>PCIe-compatible</td>
</tr>
<tr>
<td>CIFX 50E-2DP/CO</td>
<td>CIFX 70E-CCIES</td>
<td></td>
<td>PCI Express</td>
</tr>
<tr>
<td>CIFX 50E-2DP/CO</td>
<td>CIFX 70E-DP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2DP/CO</td>
<td>CIFX 70E-DPMR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2CO/CO</td>
<td>CIFX 70E-COMR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2CO/CO</td>
<td>CIFX 70E-DNMR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-DN</td>
<td>CIFX 50E-CC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-2ASM</td>
<td>CIFX 100EH-RE/CUBE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 14: Requirements Power Supply and Host Interface for PC Cards cifX PCI, PCIe Low Profile PCIe

The data in the Table 14 above have the following meaning:

**Supply Voltage**
The required and permissible supply voltage at the PC card cifX PCI, PCIe and Low Profile PCIe.

**Note:** To ensure that the compatibility between different systems is guaranteed, providing a maximum of 1 A (for +3.3 VDC ±5 %) is recommended.

The typical current consumption depends on the type of the PC card cifX. For detailed values on the typical current consumption see section **Technical Data PC Cards cifX** on page 137.

**Signaling Voltage Host Interface**
The required or tolerated signaling voltage at the I/O signal pins at the PCI bus of the PC cards cifX PCI or at the PCI express bus of the PC cards cifX PCIe and Low Profile PCIe.

**Host Interface (PCI slot)** Type of the host interface
5.1.3 **Warnings on Supply and Signaling Voltage**

When commissioning the PC card cifX, please observe the following listed warning notes for the supply and signal voltage.

**Exceeding permissible Supply Voltage**
Operating the PC card cifX with a supply voltage above of the specified range leads to device damage.
- Use only the permissible supply voltage to operate the PC card cifX.

**Exceeding permissible Signaling Voltage**
All I/O signal pins at the PC card cifX tolerate only the specified signaling voltage! Operating the PC card cifX with a signaling voltage other than the specified signaling voltage may lead to severe damage to the PC card cifX!
- For the operation of the PC card cifX use only the specified signaling voltage.

5.1.4 **Warnings on Supply and Signaling Voltage (USA)**

When commissioning the PC card cifX, please observe the following listed warning notes for the supply and signal voltage.

**NOTICE**
**Exceeding permissible Supply Voltage**
Operating the PC card cifX with a supply voltage above of the specified range leads to device damage.
- Use only the permissible supply voltage to operate the PC card cifX.

**NOTICE**
**Exceeding permissible Signaling Voltage**
All I/O signal pins at the PC card cifX tolerate only the specified signaling voltage! Operating the PC card cifX with a signaling voltage other than the specified signaling voltage may lead to severe damage to the PC card cifX!
- For the operation of the PC card cifX use only the specified signaling voltage.

5.1.5 **Operating Temperature Range for UL Certificate**

The UL certificate for the PC cards cifX is valid for the range 0°C to +55°C (for CIFX 100EH-RE 0°C to +65°C).

Regardless of this the PC cards cifX are designed for the operating temperatures (-20°C to +55°C or -20°C to +70°C) as specified in section *Technical Data PC Cards cifX* on page 137.
5.2 Requirements for Operation of the PC Card cifX

Operating the PC cards cifX properly, the following described requirements must be fulfilled.

<table>
<thead>
<tr>
<th>Protocols</th>
<th>Software</th>
<th>Communication</th>
<th>Enviro. Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC-Link IE Field Slave, EtherCAT Slave, EtherCAT Master, EtherNet/IP Adapter (Slave), EtherNet/IP Scanner (Master), Open-Modbus/TCP, POWERLINK-Controlled-Node/Slave, PROFINET IO Device (Slave), PROFINET IO Controller (Master), Sercos Slave, Sercos Master, VARAN Client (Slave), PROFIBUS DP Slave, PROFIBUS DP Master, PROFIBUS MPI Device CANopen Slave, CANopen Master, DeviceNet Slave, DeviceNet Master, AS-Interface Master, CC-Link Slave</td>
<td>1. Driver for the Host Interface Host Interfaces: PCI and PCI Express • The device driver <strong>cifX Device Driver</strong> must be installed (from V1.0). If you install the device into a PC, in general Windows® will be available as operating system. In this case the cifX Device Driver must be installed to communicate to the device and to exchange data via the dual-port memory. <strong>Important!</strong> Upgrade older versions of the cifX Device Driver necessarily on the current version indicated in section <strong>Driver and Software</strong> on page 18. OR • If Windows® is not available as operating system, an own driver must be developed using the cifX Driver Toolkit and this driver must be installed. • For the operating systems Linux, Windows® CE, VxWorks, QNX and IntervalZero RTX™ you can buy Device Driver at the company Hilscher Gesellschaft für Systemautomation mbH <a href="http://www.hilscher.com/">http://www.hilscher.com/</a>. 2. The configuration software <strong>SYCON.net</strong> or alternatively the simple Slave configuration tool <strong>netX Configuration Tool</strong> must be installed or another application program by which the PC card cifX (Slave) can be parameterized.</td>
<td>3. Using the configuration software <strong>SYCON.net</strong> or for the Slave alternatively the Slave configuration tool <strong>netX Configuration Tool</strong>, the user must select and download the firmware to the PC card cifX. 4. <strong>Important!</strong> Use the PC cards CIFX 50E-CCIES or CIFX 70E-CCIES only together with the CC-Link IE Field Slave firmware and do not use this firmware for any other cards.</td>
<td>Due to a plug element from ERNI the lower limit of the operating temperature for all PC cards cifX Real-Time Ethernet is 0 °C. This applies to all hardware revisions of the PC card cifX Real-Time Ethernet, unless otherwise stated.</td>
</tr>
<tr>
<td></td>
<td>How to use the Software On how to use the software for the configuration, the firmware download and for the diagnosis, note the following notice: <strong>Important!</strong> The USB interface, the serial interface as well as the cifX Device Driver may only be used exclusively by one software, that is - the <strong>SYCON.net</strong> configuration software (with integrated ODMV3) or - the <strong>netX Configuration Tool</strong> or - the cifX Test Application or - the cifX Driver Setup Utility or - the application program. Never use the listed software simultaneously, otherwise this will result in communication problems with the device. If the SYCON.net configuration software was used on the PC, then stop the ODMV3 service before you use one of the other software listed above. Therefore, select <strong>Service &gt; Stop</strong> from the context menu of the ODMV3 system tray icon.</td>
<td>5. The PC card cifX must be parameterized using one of the following options: • Configuration Software <strong>SYCON.net</strong> • alternatively Slave configuration tool <strong>netX Configuration Tool</strong> (only Slave, not for newer systems) • Application program (programming required)</td>
<td><strong>Important!</strong> If you install a PC card cifX PCI Express, you <strong>always</strong> must disable the Microsoft Windows &quot;Link State Power Management&quot;. Otherwise, it cannot be excluded that your PC freezes during the PC card cifX PCI Express is in operation.</td>
</tr>
</tbody>
</table>
5.2.1 Requirements „Slot Number (Card ID)“

For the application program is able to identify a PC card cifX via its Slot Number (Card ID) explicitly and to distinguish it from other PC cards cifX in the PC, for device revisions equipped with a Rotary Switch for Slot Number (Card ID) the required versions of the firmware, the driver, the bootloader and the SYCON.net setup must be used:

**PC Cards with one Channel:**

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>From Hardware Revision</th>
<th>Firmware File</th>
<th>Protocol</th>
<th>From Firmware Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-RE,</td>
<td>3</td>
<td>C020Y000.NXF</td>
<td>CC-Link IE Field-Basic-Slave</td>
<td>1.1</td>
</tr>
<tr>
<td>CIFX 50E-RE,</td>
<td>1</td>
<td>CIFXECM.NXF</td>
<td>EtherCAT-Master</td>
<td>4.3 (V4)</td>
</tr>
<tr>
<td>CIFX 50E-RE/</td>
<td>4</td>
<td>CIFXECM.NXF</td>
<td>EtherCAT-Master</td>
<td>2.4.3 x</td>
</tr>
<tr>
<td>CIFX 70E-RE,</td>
<td>1</td>
<td>CIFXECS.NXF</td>
<td>EtherCAT-Slave</td>
<td>4.5 (V4)</td>
</tr>
<tr>
<td>CIFX 70E-RE/</td>
<td>1</td>
<td>CIFXECS.NXF</td>
<td>EtherCAT Slave</td>
<td>2.5.5</td>
</tr>
<tr>
<td>CIFX 100EH-RE/CUBE</td>
<td>1</td>
<td>CIFXEM.NXF</td>
<td>EtherNet/IP Scanner</td>
<td>2.2.1</td>
</tr>
<tr>
<td>CIFX 50-ECCIES, CIFX 70E-CCIES</td>
<td>1</td>
<td>CIFXEIS.NXF</td>
<td>EtherNet/IP Adapter</td>
<td>2.3.29</td>
</tr>
<tr>
<td>CIFX 50E-OP,</td>
<td>5</td>
<td>CIFXOMB.NXF</td>
<td>Open-Modbus/TCP</td>
<td>2.3.3</td>
</tr>
<tr>
<td>CIFX 50E-OP,</td>
<td>5</td>
<td>CIFXPML.NXF</td>
<td>POWERLINK Controlled Node</td>
<td>2.1.19</td>
</tr>
<tr>
<td>CIFX 70E-OP,</td>
<td>1</td>
<td>C010C000.NXF</td>
<td>PROFINET IO-Controller</td>
<td>3.2 (V3)</td>
</tr>
<tr>
<td>CIFX 70E-DP/M</td>
<td>1</td>
<td>CIFXPNM.NXF</td>
<td>PROFINET IO Controller</td>
<td>2.3</td>
</tr>
<tr>
<td>CIFX 50-DN,</td>
<td>5</td>
<td>CIFXPNS.NXF</td>
<td>PROFINET IO Device</td>
<td>3.3.6 (V3)</td>
</tr>
<tr>
<td>CIFX 50-DN,</td>
<td>4</td>
<td>CIFXS3M.NXF</td>
<td>Sercos Master</td>
<td>2.0.9</td>
</tr>
<tr>
<td>CIFX 50C-DN,</td>
<td>4</td>
<td>CIFXS3S.NXF</td>
<td>Sercos Slave</td>
<td>3.0.8</td>
</tr>
<tr>
<td>CIFX 70C-DN/M</td>
<td>1</td>
<td>CIFXVRS.NXF</td>
<td>VARAN Client</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50-CC,</td>
<td>2</td>
<td>CIFXVRS.NXF</td>
<td>VARAN Client</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50E-CC</td>
<td>2</td>
<td>CIFXVRS.NXF</td>
<td>VARAN Client</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Table 16: Firmware Versions for the Function Slot Number (Card ID), (for 1 Channel Systems)
PC Cards PCI and PCI Express with two Channels:

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>From Hardware Revision</th>
<th>Firmware File</th>
<th>Protocol</th>
<th>From Firmware Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-2DP, CIFX 50E-2DP</td>
<td>1</td>
<td>CIFX2DPM.NXF</td>
<td>PROFIBUS DP Master, 2 Channels</td>
<td>1.0 (new version counting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CIFX2DPS.NXF</td>
<td>PROFIBUS DP Slave, 2 Channels</td>
<td>1.0 (new version counting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0201020.NXF</td>
<td>PROFIBUS DP-Master, 1 Channel + PROFIBUS DP Slave, 1 Channel</td>
<td>1.1</td>
</tr>
<tr>
<td>CIFX 50-2DP/CO, CIFX 50E-2DP/CO</td>
<td>1</td>
<td>C0201040.NXF</td>
<td>PROFIBUS DP Master, 1 Channel + CANopen Master, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0202050.NXF</td>
<td>PROFIBUS DP Slave, 1 Channel + CANopen Slave, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50-2DP/DN, CIFX 50E-2DP/DN</td>
<td>1</td>
<td>C0201060.NXF</td>
<td>PROFIBUS DP Master, 1 Channel + DeviceNet Master, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0202070.NXF</td>
<td>PROFIBUS DP Slave, 1 Channel + DeviceNetSlave, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50-2CO, CIFX 50E-2CO</td>
<td>1</td>
<td>C0204040.NXF</td>
<td>CANopen Master, 2 Channels</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0205050.NXF</td>
<td>CANopen Slave, 2 Channels</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0204050.NXF</td>
<td>CANopen Master, 1 Channel + CANopen Slave, 1 Channel</td>
<td>1.1</td>
</tr>
<tr>
<td>CIFX 50-2CO/DN, CIFX 50E-2CO/DN</td>
<td>1</td>
<td>C0204060.NXF</td>
<td>CANopen Master, 1 Channel + DeviceNet Master, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0205070.NXF</td>
<td>CANopen Slave, 1 Channel + DeviceNet Slave, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50-2DN, CIFX 50E-2DN</td>
<td>1</td>
<td>C0206060.NXF</td>
<td>DeviceNet Master, 2 Channels</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0207070.NXF</td>
<td>DeviceNet Slave, 2 Channels</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0206070.NXF</td>
<td>DeviceNet-Master, 1 Channel + DeviceNet-Slave, 1 Channel</td>
<td>1.2</td>
</tr>
<tr>
<td>CIFX 50-2ASM, CIFX 50E-2ASM</td>
<td>2</td>
<td>CIFX2ASM.NXF</td>
<td>AS-Interface Master, 2 Channels</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 17: Firmware Versions for the Function Slot Number (Card ID) (for 2 Channel Systems)

<table>
<thead>
<tr>
<th>Driver and Software</th>
<th>Version or higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>cifX Device Driver</td>
<td>cifX Device Driver Setup.exe 0.95x</td>
</tr>
<tr>
<td>SYCON.net</td>
<td>SYCONnet netX setup.exe 1.201</td>
</tr>
</tbody>
</table>

Table 18: Versions Driver, Bootloader and SYCON.net for Function Slot Number (Card ID)

- The **cifX Device Driver** versions **0.950** and higher identify PC cards cifX alternatively via its **Slot Number (Card ID)** if this is supported by the hardware.
- The **cifX Device Driver** up to version **0.94x** identifies PC cards cifX via its device and serial number. For the device exchange service respectively a manual intervention is required.
5.2.2 Requirements „DMA Mode“

For device revisions providing the DMA Mode the required versions of the firmware, the driver and the SYCON.net setup must be used:

**PC Cards with one Channel:**

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>From Hardware Revision</th>
<th>Firmware File</th>
<th>Protocol</th>
<th>From Firmware Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFY 50-RE,</td>
<td>1</td>
<td>C020Y000.NXF</td>
<td>CC-Link IE Field-Basic-Slave</td>
<td>1.1</td>
</tr>
<tr>
<td>CIFX 50E-RE,</td>
<td>1</td>
<td>CIFXECM.NXF</td>
<td>EtherCAT-Master</td>
<td>4.3 (V4)</td>
</tr>
<tr>
<td>CIFX 70E-RE,</td>
<td>1</td>
<td>CIFXECM.NXF</td>
<td>EtherCAT-Master</td>
<td>2.4.6 (V2)</td>
</tr>
<tr>
<td>CIFX 70E-REMR,</td>
<td>1</td>
<td>CIFXEC5S.NXF</td>
<td>EtherCAT-Slave</td>
<td>4.5 (V4)</td>
</tr>
<tr>
<td>CIFX 100EH-</td>
<td>1</td>
<td>CIFXEC5S.NXF</td>
<td>EtherCAT-Slave</td>
<td>2.5.5 (V2)</td>
</tr>
<tr>
<td>RE:CUBE</td>
<td></td>
<td>CIFXEM.NXF</td>
<td>EtherNet/IP Scanner</td>
<td>2.2</td>
</tr>
<tr>
<td>CIFY 50E-CCIES, CIFX 70E-CCIES</td>
<td>1</td>
<td>C020X000.NXF</td>
<td>CC-Link IE Field Slave</td>
<td>1.1</td>
</tr>
<tr>
<td>CIFY 50-DP,</td>
<td>1</td>
<td>CIFXDM.NXF</td>
<td>PROFIBUS DP Master</td>
<td>2.3</td>
</tr>
<tr>
<td>CIFY 50E-DP,</td>
<td>4</td>
<td>CIFXDMPS.NXF</td>
<td>PROFIBUS DP Slave</td>
<td>2.3</td>
</tr>
<tr>
<td>CIFY 70E-DP,</td>
<td>1</td>
<td>CIFXMPI.NXF</td>
<td>PROFIBUS MPI Device</td>
<td>not supported</td>
</tr>
<tr>
<td>CIFX 70E-DPMR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIFY 50-CO,</td>
<td>1</td>
<td>CIFXCOM.NXF</td>
<td>CANopen Master</td>
<td>2.3</td>
</tr>
<tr>
<td>CIFY 50E-CO,</td>
<td>4</td>
<td>CIFXCO5S.NXF</td>
<td>CANopen Slave</td>
<td>2.3</td>
</tr>
<tr>
<td>CIFY 70E-CO,</td>
<td>1</td>
<td>CIFXCCS.NXF</td>
<td>CC-Link Slave</td>
<td>2.4</td>
</tr>
<tr>
<td>CIFY 70E-COMR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 19: Firmware Versions for the DMA Mode (for 1 Channel Systems)*
### PC Cards PCI and PCI Express with two Channels:

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>From Hardware Revision</th>
<th>Firmware File</th>
<th>Protocol</th>
<th>From Firmware Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-2DP, CIFX 50E-2DP</td>
<td>1</td>
<td>CIFX2DPM.NXF</td>
<td>PROFIBUS DP Master, 2 Channels</td>
<td>1.0 (new version counting)</td>
</tr>
<tr>
<td>CIFX 50-2DP/CO, CIFX 50E-2DP/CO</td>
<td>1</td>
<td>CIFX2DPS.NXF</td>
<td>PROFIBUS DP Slave, 2 Channels</td>
<td>1.0 (new version counting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0201020.NXF</td>
<td>PROFIBUS DP-Master, 1 Channel + PROFIBUS DP Slave, 1 Channel</td>
<td>1.1</td>
</tr>
<tr>
<td>CIFX 50-2DP/DN, CIFX 50E-2DP/DN</td>
<td>1</td>
<td>C0201040.NXF</td>
<td>PROFIBUS DP Master, 1 Channel + CANopen Master, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0202050.NXF</td>
<td>PROFIBUS DP Slave, 1 Channel + CANopen Slave, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50-2CO, CIFX 50E-2CO</td>
<td>1</td>
<td>C0204040.NXF</td>
<td>CANopen Master, 2 Channels</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0205050.NXF</td>
<td>CANopen Slave, 2 Channels</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0204050.NXF</td>
<td>CANopen Master, 1 Channel + CANopen Slave, 1 Channel</td>
<td>1.1</td>
</tr>
<tr>
<td>CIFX 50-2CO/DN, CIFX 50E-2CO/DN</td>
<td>1</td>
<td>C0204060.NXF</td>
<td>CANopen Master, 1 Channel + DeviceNet Master, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C0205070.NXF</td>
<td>CANopen Slave, 1 Channel + DeviceNet Slave, 1 Channel</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50-2DN, CIFX 50E-2DN</td>
<td>1</td>
<td>C0206060.NXF</td>
<td>DeviceNet Master, 2 Channels</td>
<td>1.0</td>
</tr>
<tr>
<td>CIFX 50-2ASM, CIFX 50E-2ASM</td>
<td>2, 4</td>
<td>CIFX2ASM.NXF</td>
<td>AS-Interface Master, 2 Channels</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Table 20: Firmware Versions for the DMA Mode (for 2 Channel Systems)

<table>
<thead>
<tr>
<th>Driver and Software</th>
<th>Version or higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>cifX Device Driver</td>
<td>cifX Device Driver Setup.exe</td>
</tr>
<tr>
<td>SYCON.net</td>
<td>SYCON.net netX setup.exe</td>
</tr>
</tbody>
</table>

Table 21: Versions Driver and SYCON.net for the DMA Mode
5.3 Prerequisites for Certification

5.3.1 PROFINET IO Certification for IRT and SYNC0 Signal

5.3.1.1 Providing SYNC0 Signal at SYNC Connector of the PC Card cifX

Note: A PROFINET IO certification for PROFINET IRT requires (mandatory) that your PC card cifX offers the synchronization signal (SYNC0), in order to allow e. g. connecting an oscilloscope. Therefore the SYNC connector of your PC card cifX must be accessible.

Information about where the SYNC connector is placed on your PC card cifX, you can find in the chapter Device Drawings on page 20.

5.3.1.2 Using the SYNC0 Signal at the Host System

Only valid for PC Card CIFX 100EH-RE\CUBE:

If you forward the SYNC0 signal of your PC card cifX 100 EH-RE\CUBE to the PCI Express bus X2, you must adhere to the following design specification:

Note: A PROFINET IO certification for PROFINET IRT requires (mandatory) that the host system offers a connector for the synchronization signal (SYNC0), in order to allow e. g. connecting an oscilloscope.

For this purpose you must use the SYNC0 signal and mass of the PCI Express bus X2 of the PC card cifX 100EH-RE\CUBE at the host system and provide it at the host system via a well accessible 2-pin connector.

The PC card CIFX 100 EH-RE\CUBE provides the SYNC0 signal SYNC0. If at the SYNC connector (J1) the jumper is set on Pin1-Pin2, the SYNC0 signal is provided at pin B24 of the PCI Express bus X2. For further details on the pin assignment of the SYNC connector and on how to set the jumpers, refer to section Pin Assignment SYNC Connector, J1 (CIFX 100EH) on page 133. For the pin assignment of the PCI Express bus X2, refer to section Pin Assignment for PCI Express Bus CIFX 100EH-RE\CUBE on page 136.

The SYNC0 signal has LVTTL level (3.3 V). A maximum load of 6 mA must not be exceeded.

You should keep the cable length for the sync signals below 50 mm and take into account EMC aspects.
6 Installation, Commissioning and Uninstalling

To install / uninstall the PC Cards cifX PCI
- CIFX 50-RE,
- CIFX 50-DP, CIFX 50-CO,
- CIFX 50-DN, CIFX 50-CC,
- CIFX 50E-RE, CIFX 50E-RE\ET,
- CIFX 50E-RE, CIFX 50E-RE\ET,
- CIFX 50E-CCIE,
- CIFX 50E-DP, CIFX 50E-CO,
- CIFX 50E-DN, CIFX 50E-CC

and Low Profile PCI Express
- CIFX 70E-RE, CIFX 70E-RE\MR,
- CIFX 70E-CCIE,
- CIFX 100EH-RE\CUBE

the PC Cards cifX PCI Express
- CIFX 50-2DP,
- CIFX 50-2DP\CO, CIFX 50-2DP\DN,
- CIFX 50-2CO, CIFX 50-2CO\DN,
- CIFX 50-2DN,
- CIFX 50-2ASM,
- CIFX 50E-2ASM

handle as described in the sections hereafter. The device drawing of your PC card cifX gives information on the manual control elements of your device.

For the installation, uninstalling and replacement of the PC card cifX adhere to the necessary safety precautions given in the safety chapter.
6.1 Overview on Installation and Configuration

The following table describes the steps for the software and hardware installation and for the configuration of a PC card cifX (Master and Slave) Real-Time Ethernet and fieldbus as it is typical for many cases. The Slave device can be configured using the corresponding Slave DTM in the configuration software SYCON.net. Alternatively, you can also use the simple Slave configuration tool netX Configuration Tool. The Master device can be configured using the corresponding Master DTM in the configuration software SYCON.net.

<table>
<thead>
<tr>
<th>#</th>
<th>Step</th>
<th>Description</th>
<th>For detailed information see manual / section</th>
<th>Page</th>
</tr>
</thead>
</table>
| 1 | Installing Driver and Software | - Download the Communication Solutions DVD as ZIP file to the local hard disk of your PC.  
- Unzip the ZIP file.  
- Double-click the *.exe file in the root directory of the DVD to open the autostart menu.  
- Follow to the instructions of the installation wizard, to install the driver. | Refer to User Manual Software Installation for the PC cards cifX | |
| 1.1 | Installing cifX Device Driver | For PC Cards cifX Master or Slave:  
Run the SYCON.net-Setup and follow to the instructions of the installation wizard. | | |
| 1.2 | Installing SYCON.net | Fix Front Plate Sticker | 61 |
| 1.3 | Installing netX Configuration Tool Not usable for CC-Link IE Field cards | For PC Cards cifX Slave:  
Start the netX Configuration Tool setup program to install the netX Configuration Tool. | | |
| 2 | Preparing Hardware Installation | Observe the necessary precautions for electrostatically sensitive components. | Electrostatic sensitive Devices | 61 |
| 2.1 | Safety precautions | For CIFX 50-RE, CIFX 50E-RE, CIFX 70E-RE, CIFX 70E-RE\MR and CIFX 100EH-RE\CUBE | Fix Front Plate Sticker | 79 |
| 2.2 | Glue sticker on the front plate. | Value 0 or a value from 1 to 9 | Rotary Switch for Slot Number (Card ID) | 131 |
| 3 | Hardware Installation | Installing cifX. Take required safety precautions. | Installation, Commissioning | 73 |
| 3.1 | Safety precautions | Take the safety precautions to avoid the risk of injury from electric shock. | Hazardous Voltage, electric Shock | 58 |
| 3.2 | Open cabinet | Now open the cabinet of the PC or of the connection device. | Installing PC Card cifX PCI, PCIe, Low Profile PCIe | 82 |
| 3.3 | Installing cifX | Plug in and mount the PC card cifX. | | |
| 3.4 | Close cabinet | Close the cabinet of the PC or connection device. | | |
| 3.5 | Plug the connecting cable to the Master or Slave | Note for all PC Cards cifX Real-Time Ethernet:  
Note! The RJ45 socket is only for use in LAN, not for telecommunication circuits. | Ethernet Interface | 125 |
<table>
<thead>
<tr>
<th>#</th>
<th>Step</th>
<th>Description</th>
<th>For detailed information see manual / section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Connect the PC to the power / switch on.</td>
<td>Plug in the connecting cable from the PC card cifX to the PC card Master or Slave.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Hardware Settings</td>
<td>Hardware Settings in the Driver Setup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Set Slot Number (Card ID)</td>
<td>Set in the cifX Device Driver Setup the Slot Number (Card ID) which has been set at the PC card cifX (hardware).</td>
<td>Refer to User Manual Software Installation for the PC Cards cifX</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>DMA Mode in the cifX Device Driver Setup</td>
<td>Activate the DMA Mode in the cifX Device Driver Setup.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PC Settings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>for PC Cards cifX PCI Express</td>
<td>Important! If you install a PC card cifX PCI Express, you always must disable the Microsoft Windows &quot;Link State Power Management&quot;. Otherwise, it cannot be excluded that your PC freezes during the PC card cifX PCI Express is in operation.</td>
<td>Refer to User Manual Software Installation for the PC Cards cifX</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Notice on how to use the Software</td>
<td>Use only one Software.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1</td>
<td>For the configuration, the firmware download and for the diagnosis, note:</td>
<td>Important! To avoid communication problems with the device, use the USB interface, the serial interface as well as the cifX Device Driver exclusively with one software that is SYCON.net or netX Configuration Tool. Note for PC Cards CIFX 50E-CCIES and CIFX 70E-CCIES: Important! For PC cards CIFX 50E-CCIES or CIFX 70E-CCIES only use CC-Link IE Field Slave firmware. Use CC-Link IE Field Slave firmware only with PC cards CIFX 50E-CCIES or CIFX 70E-CCIES.</td>
<td>Requirements for Operation of the PC Card cifX</td>
<td>67</td>
</tr>
<tr>
<td>7</td>
<td>Configuring Slave using SYCON.net</td>
<td>Download Firmware and Configuration Use the corresponding Slave DTM in the configuration software SYCON.net.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1</td>
<td>Firmware Download</td>
<td>- Start configuration software SYCON.net, - Create new project /Open existing project, - Insert Slave into configuration, - Select driver and assign device. - Select and download the firmware.</td>
<td>See corresponding user manual</td>
<td>88</td>
</tr>
</tbody>
</table>
## Installation, Commissioning and Uninstalling

### Firmware Slave:
- CC-Link IE Field Basic Slave, CC-Link IE Field Slave*, EtherCAT Slave, EtherNet/IP Adapter, Open-Modbus/TCP, POWERLINK-Controlled-Node/Slave, PROFINET IO Device, Sercos Slave, VARAN Client.

**Important!** Use the CC-Link IE Field Slave firmware only together with the PC cards CIFX 50E-CCIES or CIFX 70E-CCIES and do not use any other firmware for these cards.

<table>
<thead>
<tr>
<th>#</th>
<th>Step</th>
<th>Description</th>
<th>For detailed information see manual / section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2</td>
<td>Configuration cifX (Slave)</td>
<td>- Configure the PC card cifX (Slave).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.3</td>
<td>Download Configuration</td>
<td>- Download the configuration to the PC card cifX (Slave)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>OR Configuring Slave using netX Configuration Tool</td>
<td>Download Firmware and Configuration (not valid for CC-Link IE Field Slave)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1</td>
<td>Downloading Firmware and Configuration (Slave)</td>
<td>If SYCON.net was already used on the PC, stop the ODMV3 service. Therefore, select Service &gt; Stop from the context menu of the ODMV3 system tray icon.</td>
<td>Requirements for Operation of the PC Card cifX</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The ODMV3 system tray icon changes to ODMV3 Service stopped.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| | | In the netX Configuration Tool:  
- select the Firmware protocol, 
- Set the PC card cifX (Slave) parameters. 
- Select Apply.  
The selected firmware and the configuration are downloaded to the replacement card cifX. The configuration is saved to the hard disk of the PC. | See Operating Instruction Manual netX Configuration Tool for cifX, comX and netJACK | |
| 9 | Configuring Master using SYCON.net | Download Firmware and Configuration  
Use the corresponding Master DTM in the configuration software SYCON.net. | | |
| 9.1 | Firmware Download | - Start configuration software SYCON.net,  
- Create new project/Open existing project,  
- Insert Master into configuration,  
- Select driver and assign device,  
- Select and download the firmware. | See corresponding user manual  
Device Names in SYCON.net | 88 |
<p>| | Firmware Master: | EtherCAT Master, EtherNet/IP Scanner, PROFINET IO Controller, PROFIBUS DP Master, CANopen Master, DeviceNet Master, AS-Interface Master | | |
| 9.2 | Configuration cifX (Master) | - Configure the PC card cifX (Master). | Notes for the Configuration of the Master Device | 86 |
| 9.3 | Download Configuration | - Download the configuration to the PC card cifX (Master). | | |</p>
<table>
<thead>
<tr>
<th>#</th>
<th>Step</th>
<th>Description</th>
<th>For detailed information see manual / section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Slave Diagnosis by SYCON.net (Slave and Master)</td>
<td>Diagnosis, I/O Data Use the corresponding Slave or Master DTM in the configuration software SYCON.net.</td>
<td>- See corresponding user manual</td>
<td></td>
</tr>
<tr>
<td>10.1</td>
<td>Diagnostic</td>
<td>- Rightclick on the device symbol.</td>
<td>- Select context menu entry <strong>Diagnosis</strong>, - then select <strong>Diagnosis &gt; General</strong> or <strong>Firmware Diagnosis</strong>, - or select <strong>Diagnosis &gt; Extended Diagnosis</strong>.</td>
<td></td>
</tr>
<tr>
<td>10.2</td>
<td>I/O Monitor</td>
<td>- Rightclick on device symbol.</td>
<td>- Select context menu entry <strong>Diagnosis</strong>, - then <strong>Tools &gt; I/O Monitor</strong>. - Check the input or output data.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>OR Slave Diagnosis by netX Configuration Tool (only Slave)</td>
<td>Diagnosis</td>
<td>- See Operating Instruction Manual netX Configuration Tool for cifX, comX and netJACK</td>
<td></td>
</tr>
<tr>
<td>11.1</td>
<td>Configuration Steps cifX (Slave)</td>
<td>If SYCON.net was already used on the PC, stop the ODMV3 service. Therefore, select <strong>Service &gt; Stop</strong> from the context menu of the ODMV3 system tray icon. In the netX Configuration Tool: - In the navigation area click on <strong>Diagnostic</strong>, - click in the <strong>Diagnostic</strong> pane to <strong>Start</strong>, to start the communication to the Master device and to run the diagnosis. - click on <strong>Extended</strong>, to run the extended diagnosis.</td>
<td>- See Operating Instruction Manual netX Configuration Tool for cifX, comX and netJACK</td>
<td></td>
</tr>
</tbody>
</table>

Table 22: Steps for the Software and Hardware Installation, the Configuration and for the Diagnosis of a PC Card cifX (Master and Slave)
6.2 Warnings on Installation and Uninstallation

Observe the following warnings when installing, uninstalling and replacing the PC card cifX:

**WARNING**

**Hazardous voltage!**

**Danger to life, risk of injury by electric shock**

**Hazardous voltages** are present in the PC (or connection device).

- Strictly obey to all safety rules provided by the PC’s manufacturer in the documentation!
- First disconnect the power plug of the PC (or connection device), before you open the housing.
- Make sure that the power supply is off at the PC (or connection device).
- Only then open the housing and install or remove the PC card.

**NOTICE**

**Electrostatic sensitive Devices**

- Adhere to the necessary safety precautions for components that are vulnerable with electrostatic discharge.
- To prevent damage to the PC and the PC card cifX, make sure, that the PC card cifX is grounded via the endplate and the PC and make sure, that you are discharged when you install/uninstall the PC card cifX.

6.3 Warnings on Installation and Uninstallation (USA)

Observe the following warnings when installing, uninstalling and replacing the PC card cifX:

**WARNING**

**Hazardous voltage!**

**Danger to life, risk of injury by electric shock**

**Hazardous voltages** are present in the PC (or connection device).

- Strictly obey to all safety rules provided by the PC’s manufacturer in the documentation!
- First disconnect the power plug of the PC (or connection device), before you open the housing.
- Make sure that the power supply is off at the PC (or connection device).
- Only then open the housing and install or remove the PC card.

**NOTICE**

**Electrostatic sensitive Devices**

- Adhere to the necessary safety precautions for components that are vulnerable with electrostatic discharge.
- To prevent damage to the PC and the PC card cifX, make sure, that the PC card cifX is grounded via the endplate and the PC and make sure, that you are discharged when you install/uninstall the PC card cifX.
6.4 Fix Front Plate Sticker

6.4.1 Front Plate Sticker CIFX 50-RE, CIFX 50E-RE, CIFX 50E-RE\ET

**Note:** Your PC card cifX set contains a set of front plate stickers (9 different stickers). Depending from the loaded firmware the label on each sticker indicates for the respective system the following **LED names**:
- of the **system and communication status LEDs** *(above)*
- of the **RJ45 Ethernet female connector LEDs** *(below)*.

Further information to this question you find also in chapter *Diagnosis with LEDs* beginning from page 95.

**NOTICE**

Electrostatic sensitive Devices

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

- Use the sticker according to the device and firmware and glue it on the front of the PC card CIFX 50-RE, CIFX 50E-RE or CIFX 50E-RE\ET.

**Figure 56: Front Plate Stickers for CIFX 50-RE, CIFX 50E-RE or CIFX 50E-RE\ET**

**Table 23: LED Labeling depending of the loaded Firmware**

<table>
<thead>
<tr>
<th>LED</th>
<th>EtherCAT Master</th>
<th>EtherCAT Slave</th>
<th>EtherNet/IP</th>
<th>Open Modbus/TCP</th>
<th>POWERLINK</th>
<th>PROFINET IO</th>
<th>Sercos Master</th>
<th>Sercos Slave</th>
<th>VARAN</th>
<th>CC-Link IE Field Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
</tr>
<tr>
<td>COM 0</td>
<td>RUN</td>
<td>RUN</td>
<td>MS</td>
<td>RUN</td>
<td>BS</td>
<td>SF</td>
<td>STA</td>
<td>S</td>
<td>RUN</td>
<td>RUN</td>
</tr>
<tr>
<td>COM 1</td>
<td>ERR</td>
<td>ERR</td>
<td>NS</td>
<td>ERR</td>
<td>BE</td>
<td>BF</td>
<td>ERR</td>
<td>-</td>
<td>ERR</td>
<td>ERR</td>
</tr>
<tr>
<td>RJ45 Ch0</td>
<td>green LINK</td>
<td>L/A IN</td>
<td>LINK</td>
<td>L/A</td>
<td>L/A</td>
<td>L/A</td>
<td>LINK IN</td>
<td>L/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RJ45 Ch1</td>
<td>green LINK</td>
<td>L/A OUT</td>
<td>LINK</td>
<td>L/A</td>
<td>L/A</td>
<td>L/A</td>
<td>LINK OUT</td>
<td>L/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.4.2 Front Plate Sticker CIFX 70E-RE, CIFX 70E-RE\MR, CIFX 100EH-RE\CUBE

**Note:** Your PC card CIFX 70E-RE, CIFX 70E-RE\MR or CIFX 100EH-RE\CUBE set contains a set of front plate stickers (9 different stickers, each 2 parts). Depending from the loaded firmware the label on each sticker indicates for the respective system the following **LED names:**

1. of the **system and communication status LEDs** *(partial sticker above)*
2. of the **RJ45 Ethernet female connector LEDs** *(partial sticker below)*. 

Further information to this question you find also in chapter **Diagnosis with LEDs** beginning from page 95.

---

**NOTICE**

**Electrostatic sensitive Devices**

➢ To prevent damage to the PC and the PC card cifX, make sure, that the PC card cifX is grounded via the endplate and the PC and make sure, that you are discharged when you install/uninstall the PC card cifX.

➢ Use the two part sticker according to the device and firmware and glue it on the front of the PC card CIFX 70E-RE, CIFX 70E-RE\MR or CIFX 100EH-RE\CUBE.

---

### Table 24: Fix Front Plate Sticker at the CIFX 70E-RE, CIFX 70E-RE\MR or CIFX 100EH-RE\CUBE

<table>
<thead>
<tr>
<th>Front CIFX 100EH-RE\CUBE</th>
<th>Front CIFX 70E-RE, CIFX 70E-RE\MR</th>
<th>How to</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram 1" /></td>
<td><img src="image2.png" alt="Diagram 2" /></td>
<td>1. Glue the &quot;partial sticker above&quot; with the system specific <strong>names of the system and communication status LEDs</strong> above ⬆️ of the LEDs COM1, COM0 and SYS on the front plate.</td>
</tr>
<tr>
<td><img src="image1.png" alt="Diagram 1" /></td>
<td><img src="image2.png" alt="Diagram 2" /></td>
<td>2. Glue the &quot;partial sticker below &quot; with the system specific <strong>names of the RJ45 Ethernet female connector LEDs</strong> below ⬇️ of the RJ45 on the front plate.</td>
</tr>
</tbody>
</table>
Figure 57: Front Plate Stickers for CIFX 70E-RE, CIFX 70E-RE/MR

<table>
<thead>
<tr>
<th>LED</th>
<th>EtherCAT</th>
<th>EtherCAT</th>
<th>EtherCAT</th>
<th>Open</th>
<th>Modbus/TCP</th>
<th>PROFINET IO</th>
<th>Sercos Master</th>
<th>Sercos Slave</th>
<th>VARAN</th>
<th>CC-Link IE Field Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS (yellow/green)</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
</tr>
<tr>
<td>COM 0 (red/ green)</td>
<td>RUN</td>
<td>RUN</td>
<td>MS</td>
<td>RUN</td>
<td>BS</td>
<td>SF</td>
<td>STA</td>
<td>S</td>
<td>RUN</td>
<td>RUN</td>
</tr>
<tr>
<td>COM 1 (red/ green)</td>
<td>ERR</td>
<td>ERR</td>
<td>NS</td>
<td>ERR</td>
<td>BE</td>
<td>BF</td>
<td>ERR</td>
<td>-</td>
<td>ERR</td>
<td>ERR</td>
</tr>
<tr>
<td>RJ45 CH0 green</td>
<td>LINK</td>
<td>L/A</td>
<td>LINK</td>
<td>L/A</td>
<td>L/A</td>
<td>L/A</td>
<td>LINK OUT</td>
<td>L/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RJ45 CH0 yellow</td>
<td>ACT</td>
<td>-</td>
<td>ACT</td>
<td>-</td>
<td>RX/TX</td>
<td>-</td>
<td>ACT in</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RJ45 CH1 green</td>
<td>LINK</td>
<td>L/A OUT</td>
<td>LINK</td>
<td>L/A</td>
<td>L/A</td>
<td>L/A</td>
<td>LINK OUT</td>
<td>L/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RJ45 CH1 yellow</td>
<td>ACT</td>
<td>-</td>
<td>ACT</td>
<td>-</td>
<td>RX/TX</td>
<td>-</td>
<td>ACT OUT</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 25: LED Labeling depending of the loaded Firmware, CIFX 70E-RE, CIFX 70E-RE/MR

Figure 58: Front Plate Stickers for CIFX 100EH-RE|CUBE
6.5 Installing PC Card cifX PCI, PCIe, Low Profile PCIe

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

**NOTICE**

Electrostatic sensitive Devices

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

2. Fix front plate sticker (only for CIFX 50-RE, CIFX 50E-RE, CIFX 50E-RE\ET, CIFX 70E-RE, CIFX 70E-RE\MR or CIFX 100EH-RE\CUBE).

- Use the sticker according to the device and firmware and glue it on the front of the PC card cifX (see section Fix Front Plate Sticker on page 79).

3. Set Slot Number (Card ID).

- For devices with Rotary Switch Slot Number (Card ID) set the Slot Number (Card ID): (Value 0 or a value from 1 to 9), (see section Rotary Switch for Slot Number (Card ID) on page 131).

4. Take safety precautions.

**WARNING**

Hazardous voltage! Danger to life, risk of injury by electric shock

- Disconnect the power plug of the PC (or connection device).
- Make sure that the power supply is off at the PC (or connection device).

**NOTICE**

Device Damage!

- The PC card CIFX 100EH-RE\CUBE may not be installed in standard PCs. The pin assignment of the PCI Express bus does not meet the standard [bus spec 3]. By consequence malfunction can occur at the PCI express bus.
- Install the PC card CIFX 100EH-RE\CUBE exclusively in KEBA KeControl industry PCs series CP 3XX (Cube).

5. Open cabinet.

- Open the cabinet of the PC or of the connection device.

6. Install PC card cifX.

- Plug the PC card cifX PCI into a free PCI slot.
- Plug the PC card cifX PCI Express or Low Profile PCI Express into a free PCI express slot.
- Fix the PC card cifX using the hole intended.
After this:

7. Close cabinet.
   - Close the cabinet of the PC or connection device.

8. Plug the connecting cable to the Master or Slave.
   - Note for the PC cards cifX Real-Time Ethernet:

    Note: The RJ45 socket is only for use in LAN, not for telecommunication circuits. For further information refer to section Ethernet Interface on page 125.

    - Plug the connecting cable from the PC card cifX to the PC card Master or Slave.

9. Connect the PC or the connection device to the power supply and switch it on.
   - Connect the PC or the connection device to the power supply.
   - Switch on the PC or the connection device.
6.6 Warnings on Firmware or Configuration Download

When downloading the firmware as well as the configuration into the PC card cifX, observe the warnings listed below.

---

**Communication Stop caused by Firmware or Configuration Download**

Initiating a firmware or configuration download process during bus operation will stop the communication and a subsequent plant stop may cause unpredictable and unexpected behavior of machines and plant components, possibly resulting in personal injury and damage to your equipment.

The firmware download overwrites the existing firmware. The communication stop may cause loss of device parameters and possible device damage may occur.

- Stop the application program, before you start the firmware or configuration download.
- Make sure that all network devices are placed in a fail-safe condition.

---

**Power Disconnect while downloading Firmware or Configuration**

If the power supply to the PC or device is interrupted while the firmware or configuration is being downloaded, the download will be aborted, the firmware may be corrupted, the device parameters may be lost, and the device may be damaged.

- During firmware or configuration download process do not interrupt the power supply to the PC, or to the device and do not perform a reset to the device!

---

**Not suitable configuration or invalid firmware**

---

**Mismatching System Configuration**

Mismatching system configuration loaded into the device could result in faulty data mapping in the application program and thus unexpected equipment operation may cause personal injury or damage of equipment.

- In the device use only a configuration suitable for the system.

---

**Invalid Firmware**

Loading invalid firmware files could render your device unusable.

- Only proceed with a firmware version valid for your device.
6.7 Warnings on Firmware or Configuration Download (USA)

When downloading the firmware as well as the configuration into the PC card cifX, observe the warnings listed below.

**WARNING**

Communication Stop caused by Firmware or Configuration Download
Initiating a firmware or configuration download process during bus operation will stop the communication and a subsequent plant stop may cause unpredictable and unexpected behavior of machines and plant components, possibly resulting in personal injury and damage to your equipment.

The firmware download overwrites the existing firmware. The communication stop may cause loss of device parameters and possible device damage may occur.

- Stop the application program, before you start the firmware or configuration download.
- Make sure that all network devices are placed in a fail-safe condition.

**NOTICE**

Power Disconnect while downloading Firmware or Configuration
If the power supply to the PC or device is interrupted while the firmware or configuration is being downloaded, the download will be aborted, the firmware may be corrupted, the device parameters may be lost, and the device may be damaged.

- During firmware or configuration download process do not interrupt the power supply to the PC, or to the device and do not perform a reset to the device!

Not suitable configuration or invalid firmware

**WARNING**

Mismatching System Configuration
Mismatching system configuration loaded into the device could result in faulty data mapping in the application program and thus unexpected equipment operation may cause personal injury or damage of equipment.

- In the device use only a configuration suitable for the system.

**NOTICE**

Invalid Firmware
Loading invalid firmware files could render your device unusable.

- Only proceed with a firmware version valid for your device.
# 6.8 Notes for the Configuration of the Master Device

To configure the Master, a device description file is required. Note the following notes for the configuration of the Master Device:

<table>
<thead>
<tr>
<th>System</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC-Link IE Field</td>
<td>To configure the Master, a CSPP 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, Input and output data, vendor code, model type, occupied stations.</td>
</tr>
<tr>
<td>Basic Slave</td>
<td></td>
</tr>
<tr>
<td>CC-Link IE Field</td>
<td>To configure the Master, a CSPP 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, Input and output data, vendor code, model code.</td>
</tr>
<tr>
<td>Slave</td>
<td></td>
</tr>
<tr>
<td>EtherCAT Slave</td>
<td>To configure the Master, an XML 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: Vendor ID, Product Code, Serial Number, Revision Number, Output and Input Data Bytes.</td>
</tr>
<tr>
<td>EtherCAT</td>
<td>If the XML file Hilscher CIFX RE ECS V2.2.X.xml is use/updated, the firmware with the version 2.2.x must be use/updated. The loadable firmware supports for the number of cyclic input data and for cyclic output data in total up to 400 bytes. If more than 200 bytes for input data or for output data should be exchanged via EtherCAT, then a customer specific XML file is necessary. Additionally the following formular applies: ((\text{number of input bytes} + 3)/4 + (\text{number of output bytes} + 3)/4) must be less or equal to 100.</td>
</tr>
<tr>
<td>EtherNet/IP Adapter</td>
<td>To configure the Scanner/Master, an EDS file (device description file) is required. The settings in the used Scanner/Master must comply with the settings in the Adapter/Slave to establish communication. Important parameters are: Input, Output Data Bytes, Vendor ID, Product Type, Product Code, Major Rev, Minor Rev, IP Address and Netmask.</td>
</tr>
<tr>
<td>POWERLINK-Controlled-Node/Slave</td>
<td>To configure the Managing Node/Master, an XDD file (device description file) is required. The settings in the used Managing Node/Master must comply with the settings in the Controlled Node/Slave, to establish communication. Important parameters are: Vendor ID, Product Code, Serial Number, Revision Number, Node ID, Output and Input length.</td>
</tr>
<tr>
<td>PROFINET IO Device</td>
<td>To configure the Controller, a GSDML file (device description file) is required. The settings in the used Controller must comply with the settings in the Device to establish communication. Important parameters are: Station Name, Vendor ID, Device ID, Input and Output Data Bytes. Under Name of Station, the name must be typed which was also used in the configuration file of the master of this device. If no name chosen freely is used in the configuration file, then the name from the GSDML file is used.</td>
</tr>
<tr>
<td>Sercos Slave</td>
<td>The Sercos Master uses the Sercos address to communicate with the slave. Some Masters will verify Device ID, Vendor Code, Input Data Size and Output Data Size and will do further communication to the Slave only if all these values match. Therefor the Master reads these parameters from the Slave and compares them with the configuration stored in the Master. The parameters Device ID, Vendor Code, Input Data Size and Output Data Size are part of the SDDML device description file. If for the configuration of the Sercos Master SDDML files are used and a default value of one of these parameters was changed, then a SDDML file must be created in the configuration software via Export SDDML and then used in the configuration of the Sercos Master.</td>
</tr>
<tr>
<td>PROFIBUS DP Slave</td>
<td>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).</td>
</tr>
<tr>
<td>CANopen Slave</td>
<td>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.</td>
</tr>
<tr>
<td>DeviceNet Slave</td>
<td>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.</td>
</tr>
</tbody>
</table>
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 26: Notes for the Configuration of the Master Device

Further information to the device description files you find under section on Device Description Files PC Cards cifX page 16.
### 6.9 Device Names in SYCON.net

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

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

<table>
<thead>
<tr>
<th>PC Cards cifX</th>
<th>Protocol</th>
<th>DTM Specific Group</th>
<th>Device Name in SYCON.net</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-RE, CIFX 50E-RE, CIFX 50E-RE ET, CIFX 70E-RE, CIFX 70E-RE MR, CIFX 100EH-RE/CUBE</td>
<td>CC-Link IE Field Basic Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/CCIBS</td>
</tr>
<tr>
<td>EthCAT Master</td>
<td>Master</td>
<td></td>
<td>CIFX RE/ECM</td>
</tr>
<tr>
<td>EthCAT Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/EC</td>
<td></td>
</tr>
<tr>
<td>EtherNet/IP Scanner (Master)</td>
<td>Master</td>
<td></td>
<td>CIFX RE/EIM</td>
</tr>
<tr>
<td>EtherNet/IP Adapter (Slave)</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/EIS</td>
<td></td>
</tr>
<tr>
<td>Open-Modbus/TCP</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/OMB</td>
<td></td>
</tr>
<tr>
<td>POWERLINK-Controlled-Node/Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/PLS</td>
<td></td>
</tr>
<tr>
<td>PROFINET IO-Controller</td>
<td>Master</td>
<td></td>
<td>CIFX RE/PNM</td>
</tr>
<tr>
<td>PROFINET IO-Device</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/PNS</td>
<td></td>
</tr>
<tr>
<td>Sercos Master</td>
<td>Master</td>
<td></td>
<td>CIFX RE/S3M</td>
</tr>
<tr>
<td>Sercos Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/SSS</td>
<td></td>
</tr>
<tr>
<td>VARAN Client (Slave)</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/VRS</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-ECCIES, CIFX 70-ECCIES</td>
<td>CC-Link IE Field Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX RE/CCIES</td>
</tr>
<tr>
<td>CIFX 50-DP, CIFX 50E-DP, CIFX 70-DP, CIFX 70E-DP/IMR</td>
<td>PROFIBUS DP Master</td>
<td>Master</td>
<td>CIFX DP/DPM</td>
</tr>
<tr>
<td>PROFIBUS DP Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX DP/DPS</td>
<td></td>
</tr>
<tr>
<td>PROFIBUS MPI Device</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX DP/MPI</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP, CIFX 50E-2DP</td>
<td>PROFIBUS DP Master</td>
<td>Master</td>
<td>CIFX DP/DPM</td>
</tr>
<tr>
<td>PROFIBUS DP Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX DP/DPS</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP/CO, CIFX 50E-2DP/CO</td>
<td>PROFIBUS DP Master, CANopen Master</td>
<td>Master</td>
<td>CIFX DP/DPM, for PROFIBUS DP channel one CIFX DP/DPM</td>
</tr>
<tr>
<td>PROFIBUS DP Slave, CANopen Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX CO/COM, for CANopen channel one CIFX CO/COM</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP/DM, CIFX 50E-2DP/DM</td>
<td>PROFIBUS DP Master, DeviceNet Master</td>
<td>Master</td>
<td>CIFX DP/DPM, for DeviceNet channel one CIFX DP/DPM</td>
</tr>
<tr>
<td>CIFX 50-2DP/CO, CIFX 50E-2DP/CO</td>
<td>PROFIBUS DP Master, CANopen Master</td>
<td>Master</td>
<td>CIFX CO/COM, for CANopen channel one CIFX CO/COM</td>
</tr>
<tr>
<td>PROFIBUS DP Slave, CANopen Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX CO/COM, for CANopen channel one CIFX CO/COM</td>
<td></td>
</tr>
<tr>
<td>CIFX 50-2DP/DM, CIFX 50E-2DP/DM</td>
<td>PROFIBUS DP Master, DeviceNet Master</td>
<td>Master</td>
<td>CIFX DP/DPM, for DeviceNet channel one CIFX DP/DPM</td>
</tr>
<tr>
<td>CIFX 50-2DP/CO, CIFX 50E-2DP/CO</td>
<td>PROFIBUS DP Master, CANopen Master</td>
<td>Master</td>
<td>CIFX CO/COM, for CANopen channel one CIFX CO/COM</td>
</tr>
<tr>
<td>PROFIBUS DP Slave, CANopen Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX CO/COM, for CANopen channel one CIFX CO/COM</td>
<td></td>
</tr>
<tr>
<td>PC Cards cifX</td>
<td>Protocol</td>
<td>DTM Specific Group</td>
<td>Device Name in SYCON.net</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
<td>--------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td>PROFIBUS DP Slave, DeviceNet Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>1*CIFX DP/DPS, for PROFIBUS DP channel one CIFX DN/DNS</td>
</tr>
<tr>
<td></td>
<td>CANopen Master</td>
<td>Master</td>
<td>CIFX CO/COM</td>
</tr>
<tr>
<td>CIFX 50-CO, CIFX 50E-CO, CIFX 70E-CO, CIFX 70E-COMR</td>
<td>CANopen Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX CO/COS</td>
</tr>
<tr>
<td>CIFX 50-2CO, CIFX 50E-2CO</td>
<td>CANopen Master</td>
<td>Master</td>
<td>2* CIFX CO/COM for each CANopen channel one CIFX CO/COM</td>
</tr>
<tr>
<td></td>
<td>CANopen Master, CANopen Slave</td>
<td>Master, Gateway/Stand-Alone Slave</td>
<td>1*CIFX CO/COM, for 1 CANopen channel one CIFX CO/COM</td>
</tr>
<tr>
<td></td>
<td>CANopen Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>1*CIFX CO/COS, for 1 CANopen channel one CIFX CO/COS</td>
</tr>
<tr>
<td>CIFX 50-CO/DN, CIFX 50E-2CO/DN</td>
<td>CANopen Master, DeviceNet Master</td>
<td>Master</td>
<td>1*CIFX CO/COM, for CANopen channel one CIFX CO/COM</td>
</tr>
<tr>
<td></td>
<td>CANopen Slave, DeviceNet Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>1*CIFX DN/DNM, for DeviceNet channel one CIFX DN/DNM</td>
</tr>
<tr>
<td>CIFX 50-DN, CIFX 50E-DN, CIFX 70E-DN, CIFX 70E-DN/MR</td>
<td>DeviceNet Master</td>
<td>Master</td>
<td>CIFX DN/DNM</td>
</tr>
<tr>
<td></td>
<td>DeviceNet Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX DN/DNS</td>
</tr>
<tr>
<td>CIFX 50-2DN, CIFX 50E-2DN</td>
<td>DeviceNet Master</td>
<td>Master</td>
<td>2* CIFX DN/DNM for each DeviceNet channel one CIFX DN/DNM</td>
</tr>
<tr>
<td></td>
<td>DeviceNet Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>2* CIFX DN/DNS for each DeviceNet channel one CIFX DN/DNS</td>
</tr>
<tr>
<td>CIFX 50-2ASM, CIFX 50E-2ASM</td>
<td>AS-Interface Master</td>
<td>Master</td>
<td>CIFX AS/ASM for each AS-Interface channel one CIFX AS/ASM</td>
</tr>
<tr>
<td>CIFX 50-CC, CIFX 50E-CC</td>
<td>CC-Link Slave</td>
<td>Gateway/Stand-Alone Slave</td>
<td>CIFX CC/CCS</td>
</tr>
</tbody>
</table>

Table 27: Device Names in SYCON.net by Communication Protocol
6.10 Update for Firmware, Driver and Software

**Note:** As a pre-requisite for the software update the project files, the configuration files and firmware files are to be saved.

At existing hardware installation the firmware, the driver and the configuration software must be updated according to the versions given in section Revision or version status of hardware and software on page 17. The following graphic gives an overview:

---

**System Overview on „Which Software Elements must be actualized?“**

1. **Step 1** Actualize cifX Device Driver.
2. **Step 2** Actualize Firmware.
3. **Step 3** Actualize Configuration Software.
4. **Step 4** If necessary, import new Device Description Files to SYCON.net.

---

**Figure 59: System Overview cifX to update Firmware, Driver and Software**

Note the specific details for devices with **Rotary Switch Slot Number (Card ID)** in the section *The Function „Slot Number (Card ID)”* on page 13 or **DMA Mode** in section *The Function „DMA Mode”* on page 13.
6.11 Instructions for Problem Solving

In case of any error, follow the instructions for problem solving given here:

**General**
- Check the PC card cifX operating requirements according to the requirements given in section **Requirements for Operation** on page 67.

**SYS and COM Status LEDs** Troubleshooting of the system is done by examining the LEDs behaviour. The PC cards cifX have depending by card type two or three bicolor status LEDs, which inform the user about the communication state of the device.

- The **SYS** LED shows the common system status of the device. It can be yellow or green ON or it can blink green/yellow.
- The **COM** LEDs display the status of the Real-Time Ethernet or fieldbus communication. Depending by protocol and state, the LEDs can be ON or flash cyclic or acyclic in green or red (or orange).

If the LED SYS lights statically green and the LED COM (or COM0) lights statically green (or possibly is “off”), the PC card cifX is in operational state, the Master is in data exchange with the connected Slaves and the communication is running without fault. The meaning of the LEDs is described in chapter **Diagnosis with LEDs** beginning from page 95.

**LINK-LED** (for PC cards cifX Real-Time Ethernet)
- Check using the LINK LED’s status whether a connection to the Ethernet is established. Therefore use the description on the LINK LED in the chapter **Diagnosis with LEDs** beginning from page 95.

**Cable**
- Check that the pin assignment of the cable is correct. I. e., the cable by which you connect the PC card cifX to the PC card Master or Slave.

**Firmware CC-Link IE Field Slave**
- Use the PC cards CIFX 50E-CCIES or CIFX 70E-CCIES only together with the CC-Link IE Field Slave firmware and do not use this firmware for any other cards.

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

**Diagnosis**

Via **Online > Diagnosis** (for SYCON.net) or **netX Configuration Tool > Diagnostics** (for netX Configuration Tool) the diagnostic information of the device is shown. The shown diagnostic information depends on the used protocol.

Further information about the device diagnosis and its functions you find in the operating instruction manual of the corresponding Real-Time Ethernet or fieldbus system.
6.12 Note on Exchange Service (Replacement Case)

For the exchange service (replacement case) of a PC card cifX (Master and Slave) obey to the following note.

**Important!** For the replacement card cifX *with* Rotary Switch Slot Number (Card ID) set the same Slot Number (Card ID) as at the previous PC card cifX (see section *Rotary Switch for Slot Number (Card ID)* on page 131).

For PC cards cifX *without* Rotary Switch Slot Number (Card ID) in terms of a device exchange service (replacement case) you must manually download the same firmware and configuration into the replacement card cifX, as into the preceding cifX.
6.13 Uninstalling the PC Card cifX PCI, PCIe, Low Profile PCIe

1. Take safety precautions.

**WARNING**

Hazardous voltage!
Danger to life, risk of injury by electric shock

- Disconnect the power plug of the PC (or connection device).
- Make sure that the power supply is off at the PC (or connection device).

**NOTICE**

Electrostatic sensitive Devices

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

2. Remove the connecting cable to the Master or Slave.

- Remove the connecting cable between the PC card cifX to be replaced and the PC card Master or Slave.

3. Open cabinet.

- Open the cabinet of the PC or of the connection device.

4. Uninstall PC card cifX.

- Loosen the PC card cifX.
- Remove the PC card cifX from the PCI slot or from the PCI express slot.

After this:

5. Close cabinet.

- Close the cabinet of the PC or connection device.
6.14 Disposal recycling of waste electronic equipment

Waste electronic equipment must be disposed of properly after the end of use.

Waste electronic equipment

This product must not be disposed of with household waste.
Dispose of this product in accordance with local regulations in your country.

When disposing of the product, observe the following:

- Observe national and local regulations for the disposal of waste electronic equipment and packaging.
- Delete personal data stored in the waste electronic device.
- Dispose of this product in an environmentally friendly manner at a local collection point for waste electronic equipment.
- Dispose of packaging in such a way that a high level of recycling is possible.

Alternatively, you can return our products to us for disposal. The prerequisite is that no additional foreign substances are contained. Before returning, please contact us via the Return Merchandise Authorization (RMA) form on www.hilscher.com.

In Europe, the directive 2012/19/EU waste electrical and electronic equipment applies. Different policies and laws may apply nationally.
7 Diagnosis with LEDs

The LEDs will be used to indicate status information of the PC card cifX. Each LED has a specific function during Run, configuration download and error indications. The descriptions hereafter show the reaction of each LED for the PC card cifX during these states.

7.1 Overview LEDs Real-Time Ethernet Systems

Note: The meaning of the communication status LEDs and of the Ethernet LEDs at the device is defined by the loaded firmware of the protocol.

<table>
<thead>
<tr>
<th>LED in the Device Drawing</th>
<th>EtherCAT Master</th>
<th>EtherCAT Slave</th>
<th>EtherNet/IP</th>
<th>Open-Modbus/TCP</th>
<th>POWERLINK</th>
<th>PROFINET IO</th>
<th>Sercos Master</th>
<th>Sercos Slave</th>
<th>VARAN</th>
<th>Co-Link IE Field Bus</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS (System Status)</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
<td>SYS</td>
</tr>
<tr>
<td>(yellow/green)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LED Name</th>
<th>Meaning</th>
<th>SYS</th>
<th>ACT</th>
<th>RX/TX</th>
<th>L/A IN</th>
<th>L/A OUT</th>
<th>L/A</th>
<th>L/A</th>
<th>LINK IN</th>
<th>L/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUN</td>
<td>(green)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>ERR</td>
<td>(red)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethernet Ch 0</th>
<th>LED Name</th>
<th>Meaning</th>
<th>SYS</th>
<th>ACT</th>
<th>RX/TX</th>
<th>L/A IN</th>
<th>L/A OUT</th>
<th>L/A</th>
<th>L/A</th>
<th>LINK IN</th>
<th>L/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>(green)</td>
<td>LINK</td>
<td>Link</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(yellow)</td>
<td>ACT</td>
<td>Activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethernet Ch 1</td>
<td>LED Name</td>
<td>Meaning</td>
<td>SYS</td>
<td>ACT</td>
<td>RX/TX</td>
<td>L/A IN</td>
<td>L/A OUT</td>
<td>L/A</td>
<td>L/A</td>
<td>LINK IN</td>
<td>L/A</td>
</tr>
<tr>
<td>---------------</td>
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<td>--------------------------</td>
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<td>-----</td>
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<td>--------</td>
<td>-----</td>
</tr>
<tr>
<td>(green)</td>
<td>LINK</td>
<td>Link</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(yellow)</td>
<td>ACT</td>
<td>Activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 28: Overview LEDs Real-Time Ethernet Systems

<table>
<thead>
<tr>
<th>LED Name</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINK, L</td>
<td>Link</td>
</tr>
<tr>
<td>ACT, A</td>
<td>Activity</td>
</tr>
<tr>
<td>L/A</td>
<td>Link/Activity</td>
</tr>
<tr>
<td>L/A IN</td>
<td>Link/Activity Input</td>
</tr>
<tr>
<td>L/A OUT</td>
<td>Link/Activity Output</td>
</tr>
<tr>
<td>LINK IN</td>
<td>Link Input</td>
</tr>
<tr>
<td>LINK OUT</td>
<td>Link Output</td>
</tr>
<tr>
<td>ACT IN</td>
<td>Activity Input</td>
</tr>
<tr>
<td>ACT OUT</td>
<td>Activity Output</td>
</tr>
<tr>
<td>RX/TX</td>
<td>Receive/Transmit</td>
</tr>
</tbody>
</table>

Table 29: LED Names
**7.2 Overview LEDs Fieldbus Systems**

<table>
<thead>
<tr>
<th>LED</th>
<th>PROFIBUS DP (1 Duo LED)</th>
<th>PROFIBUS MPI (1 Duo LED)</th>
<th>CANopen (1 Duo LED)</th>
<th>DeviceNet (1 Duo LED)</th>
<th>CC-Link (Slave) (2 LEDs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Status</td>
<td>SY$\downarrow$</td>
<td>SY$\downarrow$</td>
<td>SY$\downarrow$</td>
<td>SY$\uparrow$</td>
<td>SY$\uparrow$</td>
</tr>
<tr>
<td>Communication Status</td>
<td>COM ($\uparrow$/$\downarrow$)</td>
<td>COM ($\uparrow$/$\downarrow$)</td>
<td>CAN ($\uparrow$/$\downarrow$)</td>
<td>MNS ($\uparrow$/$\downarrow$)</td>
<td>L RUN ($\uparrow$)</td>
</tr>
<tr>
<td></td>
<td>(red/green)</td>
<td>(green)</td>
<td>(red/green)</td>
<td>(red/green)</td>
<td>(green)</td>
</tr>
</tbody>
</table>

*Table 30: Overview LEDs by Fieldbus System for 1 Channel Devices*

<table>
<thead>
<tr>
<th>LED</th>
<th>PROFIBUS DP (1 Duo LED/ channel)</th>
<th>CANopen (1 Duo LED/ channel)</th>
<th>DeviceNet (1 Duo LED/ channel)</th>
<th>AS-Interface (Master) (1 Duo LED/ channel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Status</td>
<td>SY$\downarrow$</td>
<td>SY$\downarrow$</td>
<td>SY$\downarrow$</td>
<td>SY$\uparrow$</td>
</tr>
<tr>
<td>Communication Status</td>
<td>COM$\downarrow$</td>
<td>CAN$\downarrow$</td>
<td>MNS$\downarrow$</td>
<td>COM$\downarrow$</td>
</tr>
<tr>
<td>Channel X1 (SYCONnet: Ch0)</td>
<td>COM0</td>
<td>CAN0</td>
<td>MNS0</td>
<td>COM1</td>
</tr>
<tr>
<td>Channel X2 (SYCONnet: Ch1)</td>
<td>COM1</td>
<td>CAN1</td>
<td>MNS1</td>
<td>COM2</td>
</tr>
</tbody>
</table>

*Table 31: Overview LEDs by Fieldbus System for 2 Channel Devices*

<table>
<thead>
<tr>
<th>LED</th>
<th>Name</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Status</td>
<td>SYS</td>
<td>System Status</td>
</tr>
<tr>
<td>Communication Status</td>
<td>COM</td>
<td>Communication Status</td>
</tr>
<tr>
<td></td>
<td>CAN</td>
<td>CANopen Status</td>
</tr>
<tr>
<td></td>
<td>MNS</td>
<td>Module Network Status</td>
</tr>
<tr>
<td></td>
<td>L RUN / L ERR</td>
<td>Status Run / Status Error</td>
</tr>
</tbody>
</table>

*Table 32: LED Names*

---

**Note:** The PC cards CIFX 50E-CCIES and CIFX 70E-CCIES are based on their own hardware and are equipped with several LEDs that are different from those of the PC cards cifX RE variants. The descriptions of the CC-Link IE Field slave LEDs are given in the *CC-Link IE Field Slave* section on page 99.

* Descriptions for 2-Communication Status LEDs of PROFIBUS DP Master and Slave devices as well as of CANopen Master and Slave devices of earlier device revisions are included in the user manual for PC cards cifX fieldbus up to manual revision 23.
7.3 System LED

The System Status LED SYS can assume the states described below.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYS</td>
<td>Duo LED yellow/green</td>
<td>(green) On</td>
<td>Operating System running</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(green/yellow) Blinking, cyclic</td>
<td>Second stage bootloader is waiting for firmware.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(yellow) On</td>
<td>Bootloader netX (= romloader) is waiting for second stage bootloader.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(off) Off</td>
<td>Power supply for the device is missing or hardware defect.</td>
</tr>
</tbody>
</table>

Table 33: System Status LED States
7.4 CC-Link IE Field Basic Slave

For the CC-Link IE Field Basic Slave protocol, the communication LEDs RUN and ERR as well as the Ethernet LED L/A can assume the states described below.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN (Run) General name: COM0</td>
<td>Duo LED red/green</td>
<td>(green) On</td>
<td>Station in operation and cyclic transmission in progress.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(green) Blinking (2.5 Hz)</td>
<td>Station in operation and cyclic transmission stopped.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(green) Flickering (10 Hz)</td>
<td>Station not configured.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(off) Off</td>
<td>Station is disconnected.</td>
</tr>
<tr>
<td>ERR (Error) General name: COM1</td>
<td>(red) On</td>
<td>Communication error.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(red) Triple Flash</td>
<td>DPM watchdog has expired.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(off) Off</td>
<td>Station is disconnected.</td>
<td></td>
</tr>
<tr>
<td>L/A Ch0 &amp; Ch1</td>
<td>LED green</td>
<td>(green) On</td>
<td>Link: The station is linked to the Ethernet, but does not send/receive Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(green) Flickering (load dependent)</td>
<td>Activity: The station is linked to the Ethernet and sends/receives Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(off) Off</td>
<td>The station has no link to the Ethernet.</td>
</tr>
<tr>
<td>Ch0 &amp; Ch1</td>
<td>LED yellow</td>
<td>(off) Off</td>
<td>This LED is not used.</td>
</tr>
</tbody>
</table>

Table 34: LED states for the CC-Link IE Field Basic Slave

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple Flash</td>
<td>The indicator shows a sequence of three 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).</td>
</tr>
<tr>
<td>Blinking (2.5 Hz)</td>
<td>The indicator turns on and off with a frequency of 2.5 Hz: “on” for 200 ms, followed by “off” for 200 ms.</td>
</tr>
<tr>
<td>Flickering (10 Hz)</td>
<td>The indicator turns on and off with a frequency of 10 Hz: “on” for 50 ms, followed by “off” for 50 ms.</td>
</tr>
<tr>
<td>Flickering (load dependent)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

Table 35: LED state definitions for the CC-Link IE Field Basic Slave protocol
7.5 CC-Link IE Field Slave

For the CC-Link IE Field Slave protocol, the communication LEDs **RUN**, **RD**, **SD**, **D-LINK**, **ERR**, **USER1** and **USER2** as well as the Ethernet-LEDs **LINK0** or **L-ERR0** and **LINK1** or **L-ERR1** can assume the states described below. This description is valid from CC-Link IE Field Slave stack version V1.1.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN</td>
<td><strong>LED green</strong>: Indicates the operation status.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>On</td>
<td>Operating normally (depending from the netX firmware “BusOn” status)</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>A watchdog timer error or a hardware failure has occurred.</td>
</tr>
<tr>
<td>RD</td>
<td><strong>LED green</strong>: Displays the reception status of the data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>On</td>
<td>Receiving data.</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Data not received.</td>
</tr>
<tr>
<td>SD</td>
<td><strong>LED green</strong>: Displays the sending status of the data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>On</td>
<td>Sending data.</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Data not sent.</td>
</tr>
<tr>
<td>D-LINK</td>
<td><strong>LED yellow</strong>: Indicates the status of the data link.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(yellow)</td>
<td>On</td>
<td>Data link in operation (cyclic transmission in progress)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blink</td>
<td>Data link in operation (cyclic transmission stopped)</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Data link not performed (disconnected)</td>
</tr>
<tr>
<td>ERR</td>
<td><strong>LED red</strong>: Indicates the CP520 error status.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>On</td>
<td>Error in own station</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Normal operation</td>
</tr>
<tr>
<td>USER1</td>
<td><strong>LED yellow</strong>: Indicates an user-defined status 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(yellow)</td>
<td>On</td>
<td>Currently not used</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Currently not used</td>
</tr>
<tr>
<td>USER2</td>
<td><strong>LED yellow</strong>: Indicates an user-defined status 2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(yellow)</td>
<td>On</td>
<td>Currently not used</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Currently not used</td>
</tr>
<tr>
<td>LINK0,</td>
<td><strong>LED green</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LINK1, Ch0 &amp; Ch1</td>
<td>(green)</td>
<td>On</td>
<td>Link up</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Link down</td>
</tr>
<tr>
<td>L-ERR0,</td>
<td><strong>LED yellow</strong>: Abnormal data received or loopback in progress</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-ERR1, Ch0 &amp; Ch1</td>
<td>(yellow)</td>
<td>On</td>
<td>Abnormal data received or loopback in progress</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Normal data received or loopback not performed</td>
</tr>
</tbody>
</table>

Table 36: LED states for the CC-Link IE Field Slave protocol

<table>
<thead>
<tr>
<th>Name</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN</td>
<td>Run</td>
</tr>
<tr>
<td>RD</td>
<td>Reception status of the data</td>
</tr>
<tr>
<td>SD</td>
<td>Sending status of the data</td>
</tr>
<tr>
<td>D-LINK</td>
<td>Data link</td>
</tr>
<tr>
<td>ERR</td>
<td>Error</td>
</tr>
<tr>
<td>USER</td>
<td>User-defined status</td>
</tr>
<tr>
<td>LINK</td>
<td>Link status</td>
</tr>
<tr>
<td>L-ERR</td>
<td>Error status of the received data, the line and the loopback</td>
</tr>
</tbody>
</table>

Table 37: LED Names CC-Link IE Field Slave protocol
7.6 EtherCAT Master

For the EtherCAT Master protocol, the communication LEDs **RUN** and **ERR** as well as the Ethernet LEDs **LINK** and **ACT** can assume the states described below. This description is valid from stack version V4.0.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General name: COM 0</td>
<td>Duo LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>☾ (off)</td>
<td>Off</td>
<td>INIT: The device is in state INIT.</td>
</tr>
<tr>
<td></td>
<td>☾ (green)</td>
<td>Blinking (2,5 Hz)</td>
<td>PRE-OPERATIONAL: The device is in PRE-OPERATIONAL state.</td>
</tr>
<tr>
<td></td>
<td>☾ (green)</td>
<td>Flickering (10 Hz)</td>
<td>The device is not configured.</td>
</tr>
<tr>
<td></td>
<td>☾ (green)</td>
<td>Single flash</td>
<td>SAFE-OPERATIONAL: The device is in SAFE-OPERATIONAL state.</td>
</tr>
<tr>
<td></td>
<td>☾ (green)</td>
<td>On</td>
<td>OPERATIONAL: The device is in OPERATIONAL state.</td>
</tr>
<tr>
<td>ERR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General name: COM 1</td>
<td>Duo-LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>☾ (off)</td>
<td>Off</td>
<td>Master has no errors.</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Single flash</td>
<td>Bus Sync error threshold</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Double flash</td>
<td>Internal Stop of the bus cycle</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Triple Flash</td>
<td>DPM watchdog has expired.</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Quadruple Flash</td>
<td>No Master license present in the device.</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Blinking (2,5 Hz)</td>
<td>Error in the configuration database.</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Single Flickering</td>
<td>Channel Init was executed at the Master. Remarks: Transient error so can happen to be not visible at all.</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Double Flickering</td>
<td>Slave is missing. Unconfigured Slave No matching mandatory slave list No bus connected</td>
</tr>
<tr>
<td></td>
<td>☾ (red)</td>
<td>Flickering (10 Hz)</td>
<td>Boot-up was stopped due to an error.</td>
</tr>
<tr>
<td>LINK</td>
<td>Ch0</td>
<td>LED green</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☾ (green)</td>
<td>On</td>
<td>Link: The device is linked to the Ethernet, but does not send/receive Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td>☾ (green)</td>
<td>Flickering (load dependent)</td>
<td>Activity: The device is linked to the Ethernet and sends/receives Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td>☾ (off)</td>
<td>Off</td>
<td>The device has no link to the Ethernet.</td>
</tr>
<tr>
<td>ACT</td>
<td>Ch0</td>
<td>LED yellow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☾ (off)</td>
<td>Off</td>
<td>This LED is not used.</td>
</tr>
</tbody>
</table>

Table 38: LED states for the EtherCAT Master protocol

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single flash</td>
<td>The indicator shows one short flash (200 ms) followed by a long “off” phase (1,000 ms).</td>
</tr>
<tr>
<td>Double flash</td>
<td>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).</td>
</tr>
<tr>
<td>Triple Flash</td>
<td>The indicator shows a sequence of three 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).</td>
</tr>
</tbody>
</table>
### LED State Definitions

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadruple Flash</td>
<td>The indicator shows a sequence of four 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).</td>
</tr>
<tr>
<td>Blinking (2.5 Hz)</td>
<td>The indicator turns on and off with a frequency of 2.5 Hz: “on” for 200 ms, followed by “off” for 200 ms.</td>
</tr>
<tr>
<td>Single Flickering</td>
<td>The indicator is switched on and off once: ‘on’ for 50 ms, followed by ‘off’ for 500 ms.</td>
</tr>
<tr>
<td>Double Flickering (10 Hz)</td>
<td>The indicator is switched on and off and on once: ‘on’ / ‘off’ / ‘on’ each for approximately 50 ms, followed by ‘off’ for 500 ms.</td>
</tr>
<tr>
<td>Flickering (load dependant)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

*Table 39: LED state definitions for the EtherCAT Master protocol*
7.7 EtherCAT Slave

For the EtherCAT Slave protocol, the communication LEDs **RUN** and **ERR** as well as the Ethernet-LED **L/A IN** or **L/A OUT** can assume the states described below. This description is valid from stack version V2.5 (V2).

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RUN</strong></td>
<td>Duo LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General name: COM 0&lt;br&gt;<strong>RUN</strong>&lt;br&gt;</td>
<td>(off)</td>
<td>Off</td>
<td>INIT: The device is in state INIT.</td>
</tr>
<tr>
<td></td>
<td>(green) Blinking (2,5 Hz)&lt;br&gt;<strong>PRE-OPERATIONAL</strong>: The device is in PRE-OPERATIONAL state.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green) Single flash&lt;br&gt;<strong>SAFE-OPERATIONAL</strong>: The device is in SAFE-OPERATIONAL state.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green) On&lt;br&gt;<strong>OPERATIONAL</strong>: The device is in OPERATIONAL state.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ERR</strong></td>
<td>Duo-LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General name: COM 1&lt;br&gt;<strong>ERR</strong>&lt;br&gt;</td>
<td>(off)</td>
<td>Off</td>
<td><strong>No error</strong>: The EtherCAT communication of the device is in working condition.</td>
</tr>
<tr>
<td></td>
<td>(red) Blinking (2,5 Hz)&lt;br&gt;<strong>Invalid configuration</strong>: General Configuration Error&lt;br&gt;Possible reason: State change commanded by master is impossible due to register or object settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(red) Single Flash&lt;br&gt;<strong>Local error</strong>: Slave device application has changed the EtherCAT state autonomously.&lt;br&gt;Possible reason 1: A host watchdog timeout has occurred.&lt;br&gt;Possible reason 2: Synchronization Error, device enters Safe-Operational automatically.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(red) Double Flash&lt;br&gt;<strong>Application watchdog timeout</strong>: An application watchdog timeout has occurred.&lt;br&gt;Possible reason: Sync Manager Watchdog timeout.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>L/A IN or L/A OUT</strong>&lt;br&gt;<strong>LED green</strong>&lt;br&gt;</td>
<td>(green)</td>
<td>On</td>
<td><strong>Link</strong>: The device is linked to the Ethernet, but does not send/receive Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td>(green) Flickering (load dependant)&lt;br&gt;<strong>Activity</strong>: The device is linked to the Ethernet and sends/receives Ethernet frames.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>The device has no link to the Ethernet.</td>
</tr>
<tr>
<td><strong>LED yellow</strong>&lt;br&gt;</td>
<td>(off)</td>
<td>Off</td>
<td>This LED is not used.</td>
</tr>
</tbody>
</table>

*Table 40: LED states for the EtherCAT Slave protocol*

<table>
<thead>
<tr>
<th>LED State</th>
<th>Beschreibung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking (2,5 Hz)</td>
<td>The indicator turns on and off with a frequency of 2,5 Hz: &quot;on&quot; for 200 ms, followed by &quot;off&quot; for 200 ms.</td>
</tr>
<tr>
<td>Single flash</td>
<td>The indicator shows one short flash (200 ms) followed by a long &quot;off&quot; phase (1,000 ms).</td>
</tr>
<tr>
<td>Double flash</td>
<td>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).</td>
</tr>
<tr>
<td>Flickering (load dependant)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

*Table 41: LED state definitions for the EtherCAT Slave protocol*
## 7.8 EtherNet/IP Scanner (Master)

For the EtherNet/IP Scanner protocol, the communication LEDs **MS** and **NS** as well as the Ethernet LEDs **LINK** and **ACT** can assume the states described below. This description is valid from stack version V2.6.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MS</strong>&lt;br&gt;(Module status)&lt;br&gt;General name: COM 0</td>
<td><strong>Duo-LED red/green</strong>&lt;br&gt;&lt;br&gt;<strong>On</strong>&lt;br&gt;(green)</td>
<td><strong>Device operational:</strong> The device is operating correctly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Flashing (1 Hz)</strong>&lt;br&gt;(green)</td>
<td><strong>Standby:</strong> The device has not been configured.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Flashing (green/red/green)</strong>&lt;br&gt;</td>
<td><strong>Self-test:</strong> The device is performing its power-up testing. The module status indicator test sequence occurs before the network status indicator test sequence, according to the following sequence:&lt;br&gt;• Network status LED off.&lt;br&gt;• Module status LED turns green for approximately 250 ms, turns red for approximately 250 ms, and again turns green (and holds that state until the power-up test has completed).&lt;br&gt;• Network status LED turns green for approximately 250 ms, turns red for approximately 250 ms, and then turns off (and holds that state until the power-up test has completed).</td>
<td></td>
</tr>
<tr>
<td><strong>NS</strong>&lt;br&gt;(Network-status)&lt;br&gt;General name: COM 1</td>
<td><strong>Duo-LED red/green</strong>&lt;br&gt;&lt;br&gt;<strong>On</strong>&lt;br&gt;(green)</td>
<td><strong>Connected:</strong> An IP address is configured, at least one CIP connection (any transport class) is established, and an Exclusive Owner connection has not timed out.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Flashing (1 Hz)</strong>&lt;br&gt;(green)</td>
<td><strong>No connections:</strong> An IP address is configured, but no CIP connections are established, and an Exclusive Owner connection has not timed out.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Flashing (green/red/off)</strong>&lt;br&gt;</td>
<td><strong>Self-test:</strong> The device is performing its power-up testing. Refer to description for module status LED self-test.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Blinking (1 Hz)</strong>&lt;br&gt;(red)</td>
<td><strong>Connection timeout:</strong> An IP address is configured, and an Exclusive Owner connection for which this device is the target has timed out. The network status indicator returns to steady green only when all timed out Exclusive Owner connections are reestablished.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>On</strong>&lt;br&gt;(red)</td>
<td><strong>Duplicate IP:</strong> The device has detected that its IP address is already in use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Off</strong>&lt;br&gt;(Off)</td>
<td><strong>Not powered, no IP address:</strong> The device does not have an IP address (or is powered off).</td>
<td></td>
</tr>
</tbody>
</table>
### Table 42: LED states for the EtherNet/IP Scanner protocol

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINK Ch0 &amp; Ch1</td>
<td>LED green</td>
<td>(green) On</td>
<td>The device is linked to the Ethernet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Off) Off</td>
<td>The device has no link to the Ethernet.</td>
</tr>
<tr>
<td>ACT Ch0 &amp; Ch1</td>
<td>LED yellow</td>
<td>Flickering (load dependent)</td>
<td>The device sends/receives Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Off) Off</td>
<td>The device does not send/receive Ethernet frames.</td>
</tr>
</tbody>
</table>

### Table 43: LED state definitions for the EtherNet/IP Scanner protocol

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking (1 Hz)</td>
<td>The indicator turns on and off with a frequency of 1 Hz: “on” for 500 ms, followed by “off” for 500 ms.</td>
</tr>
<tr>
<td>Flickering (load dependent)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>
### 7.9 EtherNet/IP Adapter (Slave)

For the EtherNet/IP Adapter protocol, the communication LEDs **MS** and **NS** as well as the Ethernet LEDs **LINK** and **ACT** can assume the states described below. This description is valid from stack version V3.4 (V3).

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MS</strong> (Module status) General name: COM 0</td>
<td>Duo-LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="green" alt="LED" /></td>
<td>On</td>
<td><strong>Device operational</strong>: The device is operating correctly.</td>
<td></td>
</tr>
<tr>
<td><img src="green" alt="LED" /></td>
<td>Flashing (1 Hz)</td>
<td><strong>Standby</strong>: The device has not been configured.</td>
<td></td>
</tr>
</tbody>
</table>
| ![LED](green/red/green) | Flashing fast green/red/green | **Self-test**: The device performs a self-test after power-on. The following sequence is displayed during the self-test:  
  - MS-LED off.  
  - MS-LED turns green for approximately 250 ms, turns red for approximately 250 ms, and again turns green (and holds that state until the power-up test has completed).  
  - MS-LED turns green for approximately 250 ms, turns red for approximately 250 ms, and then turns off (and holds that state until the power-up test has completed). | |
| ![LED](red/green/off) | Flashing sequence red/green/off | **Flashing sequence**: The flashing sequence is used to visually identify the device. The scanner can start the flashing sequence in Identity object 1 of the device. The MS LED and NS LED perform the flashing sequence simultaneously. | |
| ![LED](red) | Flashing (1 Hz) | **Major recoverable fault**: The device has detected a major recoverable fault. E.g., an incorrect or inconsistent configuration can be considered a major recoverable fault. | |
| ![LED](red) | On | **Major unrecoverable fault**: The device has detected a major unrecoverable fault. | |
| ![LED](off) | Off | **No power**: The device is powered off. | |
| **NS** (Network-status) General name: COM 1 | Duo-LED red/green | | |
| ![LED](green) | On | **Connected**: An IP address is configured, at least one CIP connection (any transport class) is established, and an Exclusive Owner connection has not timed out. | |
| ![LED](green) | Flashing (1 Hz) | **No connections**: An IP address is configured, but no CIP connections are established, and an Exclusive Owner connection has not timed out. | |
| ![LED](green/red/green) | Flashing fast green/red/green | **Self-test**: The device performs a self-test after power-on. Refer to the description of the MS LED in the self-test status. | |
| ![LED](red/green/off) | Flashing sequence red/green/off | **Flashing sequence**: The flashing sequence is used to visually identify the device. The scanner can start the flashing sequence in Identity object 1 of the device. The MS LED and NS LED perform the flashing sequence simultaneously. | |
| ![LED](red) | Flashing (1 Hz) | **Connection timeout**: An IP address is configured, and an Exclusive Owner connection for which this device is the target has timed out. The NS LED returns to steady green only when all timed out Exclusive Owner connections are reestablished. | |
| ![LED](red) | On | **Duplicate IP**: The device has detected that its IP address is already in use. | |
| ![LED](off) | Off | **Not powered, no IP address**: The device does not have an IP address (or is powered off). | |
### Table 44: LED states for the EtherNet/IP Adapter protocol

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINK Ch0 &amp; Ch1</td>
<td>LED grün</td>
<td>(green) On</td>
<td>The device is linked to the Ethernet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(off) Off</td>
<td>The device has no link to the Ethernet.</td>
</tr>
<tr>
<td>ACT Ch0 &amp; Ch1</td>
<td>LED gelb</td>
<td>(yellow) Flickering (load de-pendant)</td>
<td>The device sends/receives Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(aus) Off</td>
<td>The device does not send/receive Ethernet frames.</td>
</tr>
</tbody>
</table>

### Table 45: LED state definitions for the EtherNet/IP Adapter protocol

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (1 Hz)</td>
<td>The LED turns on and off with a frequency of 1 Hz: “On” for 500 ms, followed by “Off” for 500 ms.</td>
</tr>
<tr>
<td>Flashing fast green/red/green</td>
<td>The MS LED or NS LED turns on green &quot;On&quot; for 250 ms, then red &quot;On&quot; for 250 ms, then green &quot;On&quot; (until the test is completed).</td>
</tr>
<tr>
<td>Flashing sequence red/green/off</td>
<td>The MS LED and NS LED each turn red &quot;On&quot; for 500 ms, then green &quot;On&quot; for 500 ms, then &quot;Off&quot; for 500 ms. This flashing sequence is repeated at least 6 times.</td>
</tr>
<tr>
<td>Flickering (load dependent)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>
7.10 Open Modbus/TCP

For the OpenModbusTCP protocol, the communication LEDs **RUN** and **ERR** as well as the Ethernet LEDs **LINK** and **ACT** can assume the states described below. This description is valid from stack version V2.5.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RUN</strong></td>
<td>Duo-LED red/green</td>
<td><strong>On</strong></td>
<td><strong>Connected</strong>: OMB task has communication. At least one TCP connection is established.</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td></td>
<td><strong>Flashing</strong> (1 Hz) <strong>Ready, not yet configured</strong>: OMB task is ready and not yet configured.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Flashing</strong> (5 Hz) <strong>Waiting for Communication</strong>: OMB task is configured.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Off</strong></td>
<td></td>
<td><strong>Not Ready</strong>: OMB task is not ready.</td>
</tr>
<tr>
<td><strong>ERR</strong></td>
<td>Duo-LED red/green</td>
<td><strong>Off</strong></td>
<td><strong>No communication error</strong></td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td></td>
<td><strong>Flashing</strong> (2 Hz, 25% on) <strong>System error</strong></td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td><strong>On</strong></td>
<td><strong>Communication error active</strong></td>
</tr>
<tr>
<td><strong>LINK</strong></td>
<td>LED green</td>
<td><strong>On</strong></td>
<td>The device is linked to the Ethernet.</td>
</tr>
<tr>
<td>Ch0 &amp; Ch1</td>
<td>(green)</td>
<td></td>
<td><strong>Off</strong> The device has no link to the Ethernet.</td>
</tr>
<tr>
<td><strong>ACT</strong></td>
<td>LED yellow</td>
<td><strong>Flickering (load dependent)</strong></td>
<td>The device sends/receives Ethernet frames.</td>
</tr>
<tr>
<td>Ch0 &amp; Ch1</td>
<td>(yellow)</td>
<td></td>
<td><strong>Off</strong> The device does not send/receive Ethernet frames.</td>
</tr>
</tbody>
</table>

**Table 46: LED states for the OpenModbusTCP protocol**

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (1 Hz)</td>
<td>The indicator turns on and off with a frequency of 1 Hz: &quot;on&quot; for 500 ms, followed by &quot;off&quot; for 500 ms.</td>
</tr>
<tr>
<td>Flashing (2 Hz, 25% on)</td>
<td>The indicator turns on and off with a frequency of 2 Hz: &quot;on&quot; for 125 ms, followed by &quot;off&quot; for 375 ms.</td>
</tr>
<tr>
<td>Flashing (5 Hz)</td>
<td>The indicator turns on and off with a frequency of 5 Hz: &quot;on&quot; for 100 ms, followed by &quot;off&quot; for 100 ms.</td>
</tr>
<tr>
<td>Flickering (load dependent)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

**Table 47: LED state definitions for the OpenModbusTCP protocol**
### 7.11 POWERLINK Controlled Node/Slave

For the POWERLINK Controlled Node protocol, the communication LEDs **BS** (Bus Status) and **BE** (Bus Error) as well as the Ethernet LED **L/A** can assume the states described below. This description is valid from stack version V2.1 respectively from stack version V3.0.

#### LED states for the POWERLINK Controlled Node protocol

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS (Bus Status)</td>
<td><strong>Duo LED red/green</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General name: COM 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>On</td>
<td>Slave is in 'Operational' state</td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>Triple Flash</td>
<td>Slave is in 'ReadyToOperate' state</td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>Double flash</td>
<td>Slave is in 'Pre-Operational 2' state</td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>Single flash</td>
<td>Slave is in 'Pre-Operational 1' state</td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>Flickering (10 Hz)</td>
<td>Slave is in 'Basic Ethernet' state</td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>Blinking (2,5 Hz)</td>
<td>Slave is in 'Stopped' state</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(off)</strong></td>
<td>Off</td>
<td>Slave initializing</td>
</tr>
<tr>
<td>BE (Bus Error)</td>
<td><strong>Duo LED red/green</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General name: COM 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(off)</strong></td>
<td>Off</td>
<td>Slave has no error</td>
<td></td>
</tr>
<tr>
<td><strong>(red)</strong></td>
<td>On</td>
<td>Slave has detected an error</td>
<td></td>
</tr>
<tr>
<td>L/A Ch0 &amp; Ch1</td>
<td><strong>LED green</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>On</td>
<td><strong>Link:</strong> The device is linked to the Ethernet, but does not send/receive Ethernet frames.</td>
<td></td>
</tr>
<tr>
<td><strong>(green)</strong></td>
<td>Flickering (load dependant)</td>
<td><strong>Activity:</strong> The device is linked to the Ethernet and sends/receives Ethernet frames.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(off)</strong></td>
<td>Off</td>
<td>The device has no link to the Ethernet.</td>
</tr>
<tr>
<td>Ch0 &amp; Ch1</td>
<td><strong>LED yellow</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(off)</strong></td>
<td>Off</td>
<td>This LED is not used.</td>
</tr>
</tbody>
</table>

#### LED state definitions for the POWERLINK Controlled Node protocol

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple Flash</td>
<td>The indicator shows a sequence of three 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).</td>
</tr>
<tr>
<td>Double flash</td>
<td>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).</td>
</tr>
<tr>
<td>Single flash</td>
<td>The indicator shows one short flash (200 ms) followed by a long &quot;off&quot; phase (1,000 ms).</td>
</tr>
<tr>
<td>Flickering (10 Hz)</td>
<td>The indicator turns on and off with a frequency of 10 Hz: &quot;on&quot; for 50 ms, followed by off for 50 ms. The red LED and the green LED are switched on alternately.</td>
</tr>
<tr>
<td>Blinking (2,5 Hz)</td>
<td>The indicator turns on and off phase with a frequency of 2.5 Hz: on for 200 ms, followed by off for 200 ms. The red LED and the green LED are switched on alternately.</td>
</tr>
<tr>
<td>Flickering (load dependant)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>
## 7.12 PROFINET IO Controller

For the PROFINET IO Controller protocol, the system status LED **SYS**, the communication LEDs **SF** (system failure) and **BF** (bus failure), as well as the Ethernet LEDs **LINK** and **RX/TX** can assume the states described below. This description is valid from stack version V3.0.

<table>
<thead>
<tr>
<th>SYS</th>
<th>SF</th>
<th>BF</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Status</td>
<td>System Failure</td>
<td>Bus Failure</td>
<td>LED name</td>
</tr>
<tr>
<td>yellow/green</td>
<td>COM 0</td>
<td>COM 1</td>
<td>General LED name</td>
</tr>
<tr>
<td></td>
<td>red/green</td>
<td>red/green</td>
<td>Colours of the Duo LEDs SYS, SF or BF</td>
</tr>
</tbody>
</table>

### Firmware and Configuration

- **Off**: Power supply for the device is missing or hardware defect.
- **On, yellow**: No second stage bootloader found in Flash memory.
- **Flashing, green/yellow, cyclic**: No firmware file found in Flash file system.
- **On, green** and **On, red**: PROFINET IO Controller is not configured.
- **On, green** and **On, red**: No Ethernet port has a link. E.g., no cable connected to any of the Ethernet ports.
- **On, green** and **Flashing, red, 2 Hz**: PROFINET IO Controller is not online (Bus is switched to Off).

### PROFINET communication

- **On, green** and **Off** or **On, red** and **Flashing, red, 1 Hz**: Not all configured devices are in data exchange.
- **On, green** and **On, red** and **-**: One IO Device connected to the PROFINET IO Controller reports a problem.
- **On, green** and **Off** and **Off**: All devices are in data exchange and no problem has been reported by any device.

### PROFINET IO Controller operation

- **On, green** and **Flashing, red, 1 Hz, 3 s** and **Off**: A PROFINET DCP Set Signal has been received.
- **On, green** and **Flashing, red, 2 Hz** and **Flashing, red, 2 Hz**: The PROFINET IO Controller has detected an address conflict. Another device in the network is using the same Name of Station or IP address as the PROFINET IO Controller.
- **On, green** and **On, red**: No valid Master license

*Table 50: PROFINET IO Controller, SYS, COM0 and COM1 LEDs states*
### Table 51: PROFINET IO Controller, Ethernet LEDs states

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINK</td>
<td>LED green</td>
<td>(green) On</td>
<td>The device is linked to the Ethernet.</td>
</tr>
<tr>
<td>Ch0 &amp; Ch1</td>
<td>(off) Off</td>
<td>The device has no link to the Ethernet.</td>
<td></td>
</tr>
<tr>
<td>RX/TX</td>
<td>LED yellow</td>
<td>(gelb) Flickering</td>
<td>The device sends/receives Ethernet frames.</td>
</tr>
<tr>
<td>Ch0 &amp; Ch1</td>
<td>(off) Off</td>
<td>The device does not send/receive Ethernet frames.</td>
<td></td>
</tr>
</tbody>
</table>

### Table 52: PROFINET IO Controller, LEDs states definitions

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (1 Hz, 3 s)</td>
<td>The indicator turns on and off for 3 seconds with a frequency of 1 Hz: &quot;on&quot; for 500 ms, followed by &quot;off&quot; for 500 ms.</td>
</tr>
<tr>
<td>Flashing (1 Hz)</td>
<td>The indicator turns on and off with a frequency of 1 Hz: &quot;on&quot; for 500 ms, followed by &quot;off&quot; for 500 ms.</td>
</tr>
<tr>
<td>Flashing (2 Hz)</td>
<td>The indicator turns on and off with a frequency of 2 Hz: &quot;on&quot; for 250 ms, followed by &quot;off&quot; for 250 ms.</td>
</tr>
<tr>
<td>Flickering (load dependant)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>
7.13 PROFINET IO-Device

For the PROFINET IO-Device protocol, the communication LEDs **SF** (System Failure) and **BF** (Bus Failure) as well as the Ethernet LEDs **LINK** and **RX/TX** can assume the states described below. This description is valid from stack version V3.x (V3).

### LED States

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SF</strong> (System Failure)</td>
<td>Duo LED red/green</td>
<td>(off) Off</td>
<td>No error</td>
</tr>
<tr>
<td>General name: COM 0</td>
<td></td>
<td>(red) Flashing (1 Hz, 3 s)</td>
<td>DCP signal service is initiated via the bus.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(red) On</td>
<td>Watchdog timeout; channel, generic or extended diagnosis present; system error</td>
</tr>
<tr>
<td><strong>BF</strong> (Bus Failure)</td>
<td>Duo LED red/green</td>
<td>(off) Off</td>
<td>No error</td>
</tr>
<tr>
<td>General name: COM 1</td>
<td></td>
<td>(red) Flashing (2 Hz)</td>
<td>No data exchange</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(red) On</td>
<td>No configuration; or low speed physical link; or no physical link</td>
</tr>
<tr>
<td><strong>LINK</strong> Ch0 &amp; Ch1</td>
<td>LED green</td>
<td>(green) On</td>
<td>The device is linked to the Ethernet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(off) Off</td>
<td>The device has no link to the Ethernet.</td>
</tr>
<tr>
<td><strong>RX/TX</strong> Ch0 &amp; Ch1</td>
<td>LED yellow</td>
<td>(gelb) Flickering (load dependant)</td>
<td>The device sends/receives Ethernet frames.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(off) Off</td>
<td>The device does not send/receive Ethernet frames.</td>
</tr>
</tbody>
</table>

Table 53: LED states for the PROFINET IO-Device protocol

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (1 Hz, 3 s)</td>
<td>The indicator turns on and off for 3 seconds with a frequency of 1 Hz: “on” for 500 ms, followed by “off” for 500 ms.</td>
</tr>
<tr>
<td>Flashing (2 Hz)</td>
<td>The indicator turns on and off with a frequency of 2 Hz: “on” for 250 ms, followed by “off” for 250 ms.</td>
</tr>
<tr>
<td>Flickering (load dependant)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

Table 54: LED state definitions for the PROFINET IO-Device protocol
### 7.14 Sercos Master

For the Sercos Master protocol, the communication LEDs **STA** and **ERR** as well as the Ethernet LED **L/A** can assume the states described below. This description is valid from stack version V2.1.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STA</strong>&lt;br&gt;General name: COM 0</td>
<td>Duo LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>On</td>
<td>CP4: Communication phase 4</td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>Triple Flash</td>
<td>CP3: Communication phase 3</td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>Double flash</td>
<td>CP2: Communication phase 2</td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>Single flash</td>
<td>CP1: Communication phase 1</td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>Blinking (2.5 Hz)</td>
<td>CP0: Communication phase 0</td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>Flickering (10 Hz)</td>
<td>Master is not configured and is in NRT. After a status change this isn't indicated again</td>
<td></td>
</tr>
<tr>
<td>⬤ (off)</td>
<td>Off</td>
<td>NRT: Non Real-Time Mode</td>
<td></td>
</tr>
<tr>
<td><strong>ERR</strong>&lt;br&gt;General name: COM 1</td>
<td>Duo LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Single flash</td>
<td>Bus Sync error threshold</td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Double flash</td>
<td>Internal Stop of the bus cycle</td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Triple Flash</td>
<td>DPM watchdog has expired.</td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Quadruple Flash</td>
<td>No Master license present in the device.</td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Blinking (2,5 Hz)</td>
<td>Error in the configuration database.</td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Single Flickering</td>
<td>Channel Init was executed at the Master.</td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Double Flickering</td>
<td>Slave is missing.</td>
<td></td>
</tr>
<tr>
<td>⬤ (red)</td>
<td>Flickering (10 Hz)</td>
<td>Boot-up was stopped due to an error.</td>
<td></td>
</tr>
<tr>
<td>⬤ (off)</td>
<td>Off</td>
<td>No error</td>
<td></td>
</tr>
<tr>
<td><strong>L/A</strong>&lt;br&gt;Ch0 &amp; Ch1</td>
<td>LED green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>On</td>
<td>Link: The device is linked to the Ethernet, but does not send/receive Ethernet frames.</td>
<td></td>
</tr>
<tr>
<td>⬤ (green)</td>
<td>Flickering (load dependant)</td>
<td>Activity: The device is linked to the Ethernet and sends/receives Ethernet frames.</td>
<td></td>
</tr>
<tr>
<td>⬤ (off)</td>
<td>Off</td>
<td>The device has no link to the Ethernet.</td>
<td></td>
</tr>
<tr>
<td>Ch0 &amp; Ch1</td>
<td>LED yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>⬤ (off)</td>
<td>Off</td>
<td>This LED is not used.</td>
<td></td>
</tr>
</tbody>
</table>

*Table 55: LED states for the Sercos Master protocol*
<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single flash</td>
<td>The indicator shows one short flash (200 ms) followed by a long “off” phase (1,000 ms).</td>
</tr>
<tr>
<td>Double flash</td>
<td>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).</td>
</tr>
<tr>
<td>Triple Flash</td>
<td>The indicator shows a sequence of three 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).</td>
</tr>
<tr>
<td>Quadruple Flash</td>
<td>The indicator shows a sequence of four 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).</td>
</tr>
<tr>
<td>Blinking (2.5 Hz)</td>
<td>The indicator turns on and off with a frequency of 2.5 Hz: “on” for 200 ms, followed by “off” for 200 ms.</td>
</tr>
<tr>
<td>Single Flickering</td>
<td>The indicator is switched on and off once: ‘on’ for 50 ms, followed by ‘off’ for 500 ms.</td>
</tr>
<tr>
<td>Double Flickering</td>
<td>The indicator is switched on and off and on once: ‘on’ / ‘off’ / ‘on’ each for approximately 50 ms, followed by ‘off’ for 500 ms.</td>
</tr>
<tr>
<td>Flickering</td>
<td>The indicator turns on and off with a frequency of 10 Hz: ‘on’ for 50 ms, followed by ‘off’ for 50 ms.</td>
</tr>
<tr>
<td>(10 Hz)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: ‘on’ for approximately 50 ms, followed by ‘off’ for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

*Table 56: LED state definitions for the Sercos Master protocol*
### 7.15 Sercos Slave

For the Sercos Slave protocol, the communication LED S as well as the Ethernet LED L/A can assume the states described below. This description is valid from stack version V3.2.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Duo LED red/green** (orange = red/green simultaneously)**</td>
<td>On</td>
<td>CP4: Communication phase 4: Normal operation, no error</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Blinking (2 Hz)</td>
<td>Loopback: The network state has changed from „fast-forward“ to „loopback“.</td>
</tr>
<tr>
<td></td>
<td>(green/orange)</td>
<td>Flashing (3 x green/3s)</td>
<td>CP3: Communication phase 3</td>
</tr>
<tr>
<td></td>
<td>(green/orange)</td>
<td>(2 x green/3s)</td>
<td>CP2: Communication phase 2</td>
</tr>
<tr>
<td></td>
<td>(green/orange)</td>
<td>(1 x green/3s)</td>
<td>CP1: Communication phase 1</td>
</tr>
<tr>
<td></td>
<td>(orange)</td>
<td>Blinking (2 Hz)</td>
<td>HP0: Hot-plug mode</td>
</tr>
<tr>
<td></td>
<td>(green/orange)</td>
<td>(1 x orange/3s)</td>
<td>HP1: Hot-plug mode</td>
</tr>
<tr>
<td></td>
<td>(orange/orange)</td>
<td>(2 x orange/3s)</td>
<td>HP2: Hot-plug mode</td>
</tr>
<tr>
<td></td>
<td>(orange)</td>
<td>Flashing (2 Hz)</td>
<td>Identification: Invoked by (C-DEV.Bit15 in the Device Control) Or SIP Identification Request</td>
</tr>
<tr>
<td></td>
<td>(green/red)</td>
<td>Flashing (2 Hz, min. 2s)</td>
<td>MST losses ≥ (S-0-1003/2): The communication warning (S-DEV.Bit 15) is present in the Device Status.</td>
</tr>
<tr>
<td></td>
<td>(red/orange)</td>
<td>Flashing (2 Hz)</td>
<td>Application error (C1D): See GDP &amp; FSP Status codes class error.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Flashing (2 Hz)</td>
<td>Watchdog error: Application is not running</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Communication Error (C1D): Error detected according to Sercos third generation Class 1 Diagnosis, see SCP Status codes class error.</td>
</tr>
<tr>
<td></td>
<td>Duo LED red/green** (orange = red/green simultaneously)**</td>
<td>Off</td>
<td>NRT-Mode: (Non Real-Time Mode) No Sercos Communication</td>
</tr>
</tbody>
</table>

General name: COM 1

**Duo LED red/green**

- **(off)**: Off
  - This LED is not used.

**L/A**

**Ch0 & Ch1**

**LED green**

- **(green)**: On
  - **Link**: The device is linked to the Ethernet, but does not send/receive Ethernet frames.
- **(green)**: Flickering (load dependant)
  - **Activity**: The device is linked to the Ethernet and sends/receives Ethernet frames.

**Ch0 & Ch1**

**LED yellow**

- **(off)**: Off
  - This LED is not used.

Table 57: LED state definitions for the Sercos Slave protocol
<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (2 Hz)</td>
<td>The indicator turns on and off with a frequency of 2 Hz:</td>
</tr>
<tr>
<td></td>
<td><em>one color:</em> On for appr. 250 ms, followed by off for appr. 250 ms.</td>
</tr>
<tr>
<td></td>
<td><em>two colors:</em> First color for appr. 250 ms, followed by the second color for appr. 250 ms.</td>
</tr>
<tr>
<td>Flashing (1 x green/3s)</td>
<td>Flashing green for 250 ms, then orange on for 2 second and 750 ms.</td>
</tr>
<tr>
<td>(2 x green/3s)</td>
<td>Flashing green / orange / green, each for 250 ms, then orange on for 2 seconds and 250 ms.</td>
</tr>
<tr>
<td>(3 x green/3s)</td>
<td>Flashing green / orange / green / orange / green, each for 250 ms, then orange on for 1 second and 750 ms.</td>
</tr>
<tr>
<td>(1 x orange/3s)</td>
<td>Flashing orange for 250 ms, then green on for 2 second an 750 ms.</td>
</tr>
<tr>
<td>(2 x orange/3s)</td>
<td>Flashing orange / green / orange, each for 250 ms, then green on for 2 seconds and 250 ms.</td>
</tr>
<tr>
<td>Flickering (load dependant)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: <em>on</em> for approximately 50 ms, followed by <em>off</em> for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

Table 58: LED state definitions for the Sercos Slave protocol
### 7.16 VARAN Client (Slave)

For the VARAN Client protocol, the communication LEDs **RUN** and **ERR** as well as the Ethernet LEDs **LINK IN** and **LINK OUT** or **ACT IN** and **ACT OUT** can assume the states described below. This description is valid from stack version V1.0.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RUN</strong></td>
<td>Duo-LED red/green</td>
<td>On</td>
<td>Configured and communication is active.</td>
</tr>
<tr>
<td>General name</td>
<td></td>
<td>Blinking (5 Hz)</td>
<td>Configured and communication is inactive.</td>
</tr>
<tr>
<td>COM 0</td>
<td>(green)</td>
<td>Off</td>
<td>Not configured.</td>
</tr>
<tr>
<td><strong>ERR</strong></td>
<td>Duo-LED red/green</td>
<td>Off</td>
<td>Configured.</td>
</tr>
<tr>
<td>General name</td>
<td></td>
<td>Blinking (5 Hz)</td>
<td>Not configured.</td>
</tr>
<tr>
<td>COM 1</td>
<td>(red)</td>
<td>On</td>
<td>Communication error occurred.</td>
</tr>
<tr>
<td><strong>LINK IN</strong></td>
<td>LED green</td>
<td>On</td>
<td>The device is linked to the Ethernet.</td>
</tr>
<tr>
<td>Ch0 &amp;</td>
<td></td>
<td>Off</td>
<td>The device has no link to the Ethernet.</td>
</tr>
<tr>
<td><strong>LINK OUT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ch1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ACT IN</strong></td>
<td>LED yellow</td>
<td>Flickering</td>
<td>The device sends/receives Ethernet frames.</td>
</tr>
<tr>
<td>Ch0 &amp;</td>
<td>(yellow)</td>
<td>(load dependant)</td>
<td></td>
</tr>
<tr>
<td><strong>ACT OUT</strong></td>
<td></td>
<td>Off</td>
<td>The device does not send/receive Ethernet frames.</td>
</tr>
<tr>
<td>Ch1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 59: LED-Zustände für das VARAN-Client-Protokoll**

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking</td>
<td>The indicator turns on and off with a frequency of 5 Hz: “on” for 100 ms, followed by “off” for 100 ms.</td>
</tr>
<tr>
<td>Flickering (load dependant)</td>
<td>The indicator turns on and off with a frequency of approximately 10 Hz to indicate high Ethernet activity: on for approximately 50 ms, followed by off for 50 ms. The indicator turns on and off in irregular intervals to indicate low Ethernet activity.</td>
</tr>
</tbody>
</table>

**Table 60: Definitionen der LED-Zustände für das VARAN-Client-Protokoll**
7.17 PROFIBUS DP Master

For the PROFIBUS DP Master protocol, the communication status LED COM can assume the states described below. This description is valid from stack version V2.6.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>Duo LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>On</td>
<td>Communication to all Slaves is established.</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Flashing (5 Hz)</td>
<td>PROFIBUS is configured, but bus communication is not yet released from the application.</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Flashing acyclic</td>
<td>No configuration or faulty configuration</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Flashing (5 Hz)</td>
<td>Communication to at least one Slave is disconnected.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>On</td>
<td>Communication to all Slaves is disconnected or another serious error has occurred. Redundant Mode: The active Master was not found.</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Device is not switched on or network power is missing.</td>
</tr>
</tbody>
</table>

Table 61: LED states for the PROFIBUS DP Master protocol

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (5 Hz)</td>
<td>The indicator turns on and off with a frequency of 5 Hz: &quot;on&quot; for 100 ms, followed by &quot;off&quot; for 100 ms.</td>
</tr>
<tr>
<td>Flashing acyclic</td>
<td>The indicator turns on and off in irregular intervals.</td>
</tr>
</tbody>
</table>

Table 62: LED state definitions for the PROFIBUS DP Master protocol

**Note:** For 2-Channel Devices per channel works 1 communication LED.

* Descriptions for 2-Communication Status LEDs of earlier device revisions are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.
7.18 PROFIBUS DP Slave

For the PROFIBUS DP Slave protocol, the communication status LED COM can assume the states described below. This description is valid from stack version V2.7.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>Duo LED red/green</td>
<td>(green) On</td>
<td>RUN, cyclic communication</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Flashing, cyclic (2 Hz)</td>
<td>Master is in CLEAR state.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Flashing, acyclic (1 Hz)</td>
<td>Device is not configured.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Flashing, cyclic (2 Hz)</td>
<td>STOP, no communication, connection error</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>On</td>
<td>Wrong configuration at PROFIBUS DP Slave.</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Device is not switched on or power is missing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>During firmware download process.</td>
</tr>
</tbody>
</table>

Table 63: LED states for the PROFIBUS DP Slave protocol

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing, acyclic (1 Hz)</td>
<td>The indicator turns on and off in irregular intervals, with a frequency of 1 Hz: “on” for 750 ms, followed by “off” for 250 ms.</td>
</tr>
<tr>
<td>Flashing, cyclic (2 Hz)</td>
<td>The indicator turns on and off with a frequency of 2 Hz: “on” for 250 ms, followed by “off” for 250 ms.</td>
</tr>
</tbody>
</table>

Table 64: LED state definitions for the PROFIBUS DP Slave protocol

**Note:** For 2-Channel Devices per channel works 1 communication LED.

* Descriptions for 2-Communication Status LEDs of earlier device revisions are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.
7.19  PROFIBUS MPI Device

For the PROFIBUS MPI protocol, the communication status LED COM can assume the states described below. This description is valid from stack version V2.4.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>Duo LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green) On</td>
<td>Status: The device currently holds the PROFIBUS token and is able to transfer telegrams of data.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green) Blinking (5 Hz)</td>
<td>Status: The device is configured to be a part of the PROFIBUS ring, but it must share the PROFIBUS token with other PROFIBUS-Master devices present on the PROFIBUS ring.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green) Blinking (0.5 Hz)</td>
<td>Status: Automatic baudrate detection is running</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(off) Off</td>
<td>Status: The device has not been integrated into the PROFIBUS ring, i.e. it has not been configured correctly or has a wrong configuration or has not received the PROFIBUS token.</td>
<td></td>
</tr>
</tbody>
</table>

Table 65: LED states for the PROFIBUS MPI protocol

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking (5 Hz)</td>
<td>The indicator turns on and off with a frequency of appr. 5 Hz: &quot;on&quot; for aprr. 100 ms, followed by &quot;off&quot; for aprr. 100 ms.</td>
</tr>
<tr>
<td>Blinking (0.5 Hz)</td>
<td>The indicator turns on and off with a frequency of appr. 0.5 Hz: &quot;on&quot; for aprr. 1000 ms, followed by &quot;off&quot; for aprr. 1000 ms.</td>
</tr>
</tbody>
</table>

Table 66: LED state definitions for the PROFIBUS MPI protocol
7.20 CANopen Master

For the CANopen Master protocol, the communication status LED CAN can assume the states described below. This description is valid from stack version V2.11.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAN</td>
<td>Duo-LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>On</td>
<td>OPERATIONAL: The device is in the OPERATIONAL state.</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Blinking (2,5 Hz)</td>
<td>PREOPERATIONAL: The device is in the PREOPERATIONAL state.</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Single flash</td>
<td>STOPPED: The device is in STOPPED state.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Single flash</td>
<td>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).</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Double flash</td>
<td>Error Control Event: A guard event (NMT Slave or NMT Master) or a heartbeat event (Heartbeat consumer) has occurred.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>On</td>
<td>Bus Off: The CAN controller is in bus OFF state.</td>
</tr>
<tr>
<td></td>
<td>(aus)</td>
<td>Off</td>
<td>RESET: The device is executing a reset or the device has no configuration.</td>
</tr>
</tbody>
</table>

Table 67: LED states for the CANopen Master protocol

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blinking (2,5 Hz)</td>
<td>The indicator turns on and off with a frequency of 2,5 Hz: “on” for 200 ms, followed by “off” for 200 ms.</td>
</tr>
<tr>
<td>Single flash</td>
<td>The indicator shows one short flash (200 ms) followed by a long “off” phase (1,000 ms).</td>
</tr>
<tr>
<td>Double flash</td>
<td>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).</td>
</tr>
</tbody>
</table>

Table 68: LED state definitions for the CANopen Master protocol

* Descriptions for 2-Communication Status LEDs of earlier device revisions are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.
7.21 CANopen Slave

For the CANopen Slave protocol, the communication status LED CAN can assume the states described below. This description is valid from stack version V3.4.

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flickering (10 Hz)</td>
<td>The indicator turns on and off with a frequency of 10 Hz: “on” for 50 ms, followed by “off” for 50 ms.</td>
</tr>
<tr>
<td>Blinking (2.5 Hz)</td>
<td>The indicator turns on and off with a frequency of 2.5 Hz: “on” for 200 ms, followed by “off” for 200 ms.</td>
</tr>
<tr>
<td>Single Flash</td>
<td>The indicator shows one short flash (200 ms) followed by a long “off” phase (1,000 ms).</td>
</tr>
<tr>
<td>Double Flash</td>
<td>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).</td>
</tr>
</tbody>
</table>

* Descriptions for 2-Communication Status LEDs of earlier device revisions are included in the user manual for PC cards cifX fieldbus up to manual rev. 23.
### 7.22 DeviceNet Master

For the DeviceNet Master protocol, the communication status LED MNS can assume the states described below. This description is valid from stack version V2.3.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNS</td>
<td>Duo LED red/green</td>
<td>(green) On</td>
<td>Device operational AND on-line, connected. Device is online and has established all connections with all Slaves.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(green) Flashing (1 Hz)</td>
<td>Device operational AND on-line. Device is online and has established no connection in the established state. - Configuration missing, incomplete or incorrect.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(green/red/off) Flashing (2 Hz) Green/Red/Off</td>
<td>Self test after power on.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Flashing (1 Hz)</td>
<td>Minor fault and/or connection time-out. Device is online and has established one or more connections in the established state. It has data exchange with at least one of the configured Slaves. Minor or recoverable fault: No data exchange with one of the configured Slaves. One or more Slaves are not connected. Connection timeout. Minor or recoverable fault: No data exchange with one of the configured Slaves. One or more Slaves are not connected. Connection timeout. No network power present.</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>On</td>
<td>Critical fault or critical link failure. Critical connection failure; device has detected a network error: duplicate MAC-ID or severe error in CAN network (CAN-bus off).</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>Device is not powered. - The device may not be powered. Device is not on-line and/or no network power. - The device has not yet completed the Dup_MAC_ID test. - The device is powered, but the network power is missing.</td>
</tr>
</tbody>
</table>

Table 71: LED states for the DeviceNet Master protocol

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (1 Hz)</td>
<td>The indicator turns on and off with a frequency of appr. 1 Hz: on for appr. 500 ms, followed by off for appr. 500 ms.</td>
</tr>
<tr>
<td>Flashing (2 Hz) green/red/off</td>
<td>The indicator turns on green on for 250 ms, then red on for 250 ms, then off.</td>
</tr>
</tbody>
</table>

Table 72: LED state definitions for the DeviceNet Master protocol
7.23 DeviceNet Slave

For the DeviceNet Slave protocol, the communication status LED **MNS** can assume the states described below. This description is valid from stack version V2.3.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
</table>
| MNS | Duo LED red/green | (green) On          | **Device operational AND on-line**
|     |        |                     | Device is online and has established all connections with all Slaves.                           |
|     |        | (green) Flashing (1 Hz) | **Device operational AND on-line**
|     |        |                     | Device is online and has established no connection in the established state.                    |
|     |        |                     | - Configuration missing, incomplete or incorrect.                                               |
|     |        | (green/red/off) Flashing (2Hz) | **Self test after power on**
|     |        |                     | **Green/Red/Off**
|     | (red) | Flashing (1 Hz)     | **Minor fault and/or connection time-out**
|     |       |                     | Device has no connection to the Master.                                                        |
|     |       |                     | Minor or recoverable fault: No data exchange with the Master. Connection timeout.               |
|     |       |                     | No network power present.                                                                      |
|     | (red) | On                  | **Critical fault or critical link failure**
|     |       |                     | Critical connection failure; device has detected a network error: duplicate MAC-ID or severe error in CAN network (CAN-bus off). |
|     | (off) | Off                 | **Device is not powered**
|     |       |                     | - The device may not be powered.                                                               |
|     |       |                     | **Device is not on-line and/or no network power**
|     |       |                     | - The device has not yet completed the Dup_MAC_ID test.                                        |
|     |       |                     | - The device is powered, but the network power is missing.                                     |

**Table 73: LED states for the DeviceNet Slave protocol**

<table>
<thead>
<tr>
<th>LED state</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashing (1 Hz)</td>
<td>The indicator turns on and off with a frequency of appr. 1 Hz: on for appr. 500 ms, followed by off for appr. 500 ms.</td>
</tr>
<tr>
<td>Flashing (2 Hz)</td>
<td>The indicator turns on green on for 250 ms, then red on for 250 ms, then off.</td>
</tr>
</tbody>
</table>

**Table 74: LED state definitions for the DeviceNet Slave protocol**
7.24 AS Interface Master

For the AS-Interface Master protocol, the communication status LED COM can assume the states described below. This description is valid from stack version V2.3.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM</td>
<td>Duo LED red/green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>On</td>
<td>No configuration error, data exchange active</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Flashing</td>
<td>Configuration error, data exchange active</td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>Flickering</td>
<td>The communication is stopped.</td>
</tr>
<tr>
<td></td>
<td>(red/green)</td>
<td>Flashing</td>
<td>„Configuration mode“ active</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>Flashing</td>
<td>AS-Interface power fail</td>
</tr>
<tr>
<td></td>
<td>(red)</td>
<td>On</td>
<td>Heavy system error or hardware failure</td>
</tr>
<tr>
<td></td>
<td>(off)</td>
<td>Off</td>
<td>No configuration found for this channel</td>
</tr>
</tbody>
</table>

Table 75: LEDs states for the AS-Interface Master protocol

<table>
<thead>
<tr>
<th>LED State</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>The indicator is constantly on.</td>
</tr>
<tr>
<td>Off</td>
<td>The indicator is constantly off.</td>
</tr>
<tr>
<td>Flashing</td>
<td>The indicator turns on and off cyclically in slowly changing phases.</td>
</tr>
<tr>
<td>Flickering</td>
<td>The indicator turns on and off cyclically in rapidly changing phases.</td>
</tr>
</tbody>
</table>

Table 76: LED state definitions for the AS-Interface Master protocol

7.25 CC-Link Slave

For the CC-Link Slave protocol, the communication status LEDs L-RUN and L-ERR can assume the states described below. This description is valid from stack version V2.9.

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>L RUN</td>
<td>LED green</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(green)</td>
<td>On</td>
<td>After participating in the network, the device receives both refresh and polling signals or just the refresh signal normally.</td>
</tr>
</tbody>
</table>
|      | (off)   | Off        | 1. Before participating in the network  
|       |         |            | 2. Unable to detect carrier              |
|       |         |            | 3. Timeout                                 |
|       |         |            | 4. Resetting hardware                     |
| L ERR | LED 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) |
|      | (off)   | Off        | 1. Normal communication                    |
|       |         |            | 2. Resetting hardware                      |

Table 77: LED states for the CC-Link Slave protocol
8 Device Connections and Switches

8.1 Ethernet Interface

For the Ethernet interface use RJ45 plugs and twisted pair cable of category 5 (CAT5) or higher, which consists of 4 twisted cores and has a maximum transmission rate of 100 MBit/s (CAT5).

8.1.1 Ethernet Pin Assignment at the RJ45 Socket

100 BASE-TX and 10 BASE-T

For the PC cards CIFX 50-RE, CIFX 50E-RE, CIFX 50E-RE\ET, CIFX 70E-RE, CIFX 70E-RE\MR, CIFX 100EH-RE\CUBE:

Note: The device supports the Auto Crossover function. Due to this fact RX and TX can be switched. The following figure shows the RJ45 standard pin assignment.

![Ethernet Pin Assignment at the RJ45 Socket for cifX](image)

Figure 60: Ethernet Pin Assignment at the RJ45 Socket for cifX

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TX+</td>
<td>Transmit Data +</td>
</tr>
<tr>
<td>2</td>
<td>TX–</td>
<td>Transmit Data –</td>
</tr>
<tr>
<td>3</td>
<td>RX+</td>
<td>Receive Data +</td>
</tr>
<tr>
<td>4</td>
<td>Term 1</td>
<td>Connected to each other and terminated to PE through RC circuit*</td>
</tr>
<tr>
<td>5</td>
<td>Term 1</td>
<td>Connected to each other and terminated to PE through RC circuit*</td>
</tr>
<tr>
<td>6</td>
<td>RX–</td>
<td>Receive Data –</td>
</tr>
<tr>
<td>7</td>
<td>Term 2</td>
<td>Connected to each other and terminated to PE through RC circuit*</td>
</tr>
<tr>
<td>8</td>
<td>Term 2</td>
<td>* Bob Smith Termination</td>
</tr>
</tbody>
</table>

Table 78: Ethernet Pin Assignment at the RJ45 Socket for cifX

Note: The RJ45 socket is only for use in LAN, not for telecommunication circuits.
1000BASE-T

For the PC cards CIFX 50E-CCIES, CIFX 70E-CCIES:

Figure 61: Ethernet Pin Assignment at the RJ45 Socket (1000 MBit/s)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>D1+</td>
<td>Transmit/receive data positive channel 1</td>
</tr>
<tr>
<td>2</td>
<td>D1−</td>
<td>Transmit/receive data negative channel 1</td>
</tr>
<tr>
<td>3</td>
<td>D2+</td>
<td>Transmit/receive data positive channel 2</td>
</tr>
<tr>
<td>4</td>
<td>D3+</td>
<td>Transmit/receive data positive channel 3</td>
</tr>
<tr>
<td>5</td>
<td>D3−</td>
<td>Transmit/receive data negative channel 3</td>
</tr>
<tr>
<td>6</td>
<td>D2−</td>
<td>Transmit/receive data negative channel 2</td>
</tr>
<tr>
<td>7</td>
<td>D4+</td>
<td>Transmit/receive data positive channel 4</td>
</tr>
<tr>
<td>8</td>
<td>D4−</td>
<td>Transmit/receive data negative channel 4</td>
</tr>
</tbody>
</table>

Use of Bob Smith Termination

Table 79: Ethernet Pin Assignment at the RJ45 Socket (1000 MBit/s)
8.1.2 Ethernet Connection Data

<table>
<thead>
<tr>
<th>Medium</th>
<th>100 BASE-T</th>
<th>1000 BASE-T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 x 2 Twisted-Pair copper cable, Cat5 (100 MBit/s)</td>
<td>Copper cable*, Cat6, Cat6A, Cat7, Cat7A, (1 Gbit/s)</td>
</tr>
<tr>
<td>Length of cable</td>
<td>Max. 100 m</td>
<td>Max. 100 m</td>
</tr>
<tr>
<td>Transmission rate</td>
<td>10 MBit/s/100 MBit/s</td>
<td>1 Gbit/s</td>
</tr>
</tbody>
</table>

Table 80: Ethernet Connection Data

8.1.3 Use of Hubs and Switches

For the corresponding communication systems, the use of hubs and/or switches is either forbidden or allowed. The following table shows the acceptable use of hubs and switches by each communication system:

<table>
<thead>
<tr>
<th>Communication System</th>
<th>Hub</th>
<th>Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>EtherCAT</td>
<td>forbidden</td>
<td>only allowed between EtherCAT Master and first EtherCAT Slave (100 MBit/s, Full Duplex)</td>
</tr>
<tr>
<td>EtherNet/IP</td>
<td>allowed</td>
<td>allowed (10 MBit/s/100 MBit/s, Full or Half Duplex, Auto-Negotiation)</td>
</tr>
<tr>
<td>Open Modbus/TCP</td>
<td>allowed</td>
<td>allowed (10 MBit/s/100 MBit/s, Full or Half Duplex, Auto-Negotiation)</td>
</tr>
<tr>
<td>POWELINK</td>
<td>allowed</td>
<td>forbidden</td>
</tr>
<tr>
<td>PROFINET IO</td>
<td>forbidden</td>
<td>Only allowed if the switch supports ‘Priority Tagging’ and LLDP (100 MBit/s, Full Duplex)</td>
</tr>
<tr>
<td>Sercos</td>
<td>forbidden</td>
<td>forbidden</td>
</tr>
<tr>
<td>VARAN*</td>
<td>forbidden</td>
<td>forbidden</td>
</tr>
</tbody>
</table>

Table 81: Use of Hubs and Switches

*Instead of hubs and switches VARAN uses splitter. [3]
8.2 PROFIBUS Interface

Isolated RS-485 interface:

![Figure 62: PROFIBUS Interface (DSub female connector, 9 pin), X400](image)

<table>
<thead>
<tr>
<th>Connection with</th>
<th>Signal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSub female</td>
<td>Rx/Tx-P</td>
<td>Receive/Send Data-P respectively connection B plug</td>
</tr>
<tr>
<td>3</td>
<td>DGND</td>
<td>Reference potential</td>
</tr>
<tr>
<td>6</td>
<td>VP</td>
<td>Positive supply voltage</td>
</tr>
<tr>
<td>8</td>
<td>Rx/Tx-N</td>
<td>Receive/Send Data-N respectively connection A plug</td>
</tr>
</tbody>
</table>

Table 82: PROFIBUS Interface, X400

8.3 CANopen Interface

Isolated ISO 11898 interface:

![Figure 63: CANopen Interface (DSub male connector, 9 pin), X400](image)

<table>
<thead>
<tr>
<th>Connection with</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSub male</td>
<td>CAN_L</td>
<td>CAN_Low Bus Line</td>
</tr>
<tr>
<td>2</td>
<td>CAN_GND</td>
<td>CAN Ground</td>
</tr>
<tr>
<td>3</td>
<td>CAN_H</td>
<td>CAN High Bus Line</td>
</tr>
<tr>
<td>1, 4, 5, 6, 8, 9</td>
<td>Do not connect!</td>
<td></td>
</tr>
</tbody>
</table>

Table 83: CANopen Interface, X400
8.4 DeviceNet Interface

Isolated ISO 11898 interface:

![DeviceNet Interface Diagram](image)

Figure 64: DeviceNet Interface (CombiCon male Connector, 5 pin), X360

<table>
<thead>
<tr>
<th>Connection with CombiCon male connector</th>
<th>Signal</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V-</td>
<td>Black</td>
<td>Reference potential DeviceNet supply voltage</td>
</tr>
<tr>
<td>2</td>
<td>CAN_L</td>
<td>Blue</td>
<td>CAN Low-Signal</td>
</tr>
<tr>
<td>3</td>
<td>Drain</td>
<td></td>
<td>Shield</td>
</tr>
<tr>
<td>4</td>
<td>CAN_H</td>
<td>White</td>
<td>CAN High-Signal</td>
</tr>
<tr>
<td>5</td>
<td>V+</td>
<td>Red</td>
<td>+24 V DeviceNet supply voltage</td>
</tr>
</tbody>
</table>

Table 84: DeviceNet Interface, X360

8.5 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 to IEC 364-4-41.

![AS-Interface Diagram](image)

Figure 65: AS-Interface Interface (CombiCon male Connector, 2 pin)

<table>
<thead>
<tr>
<th>Connection with CombiCon male connector</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AS-i +</td>
<td>AS-Interface positive voltage</td>
</tr>
<tr>
<td>2</td>
<td>AS-i -</td>
<td>AS-Interface negative voltage</td>
</tr>
</tbody>
</table>

Table 85: AS-Interface Interface
8.6 CC-Link Interface

Isolated RS-485 interface:

![Figure 66: CC-Link Interface (CombiCon male Connector, 5 pin)]

<table>
<thead>
<tr>
<th>Connection with Screw terminal Connector</th>
<th>Signal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DA</td>
<td>Data A</td>
</tr>
<tr>
<td>2</td>
<td>DB</td>
<td>Data B</td>
</tr>
<tr>
<td>3</td>
<td>DG</td>
<td>Data Ground</td>
</tr>
<tr>
<td>4</td>
<td>SLD</td>
<td>Shield</td>
</tr>
<tr>
<td>5</td>
<td>FG</td>
<td>Field Ground</td>
</tr>
</tbody>
</table>

*Table 86: CC-Link Interface*
8.7 Rotary Switch for Slot Number (Card ID)

Device revisions equipped with a Rotary Switch Slot Number (Card ID) are listed separately in section Hardware: PC Cards cifX in Table 7 on page 17.

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

The figure below describes possible switch positions of the Rotary Switch Slot Number (Card ID).

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>The value 0 means:</td>
</tr>
<tr>
<td></td>
<td>• no Slot Number (Card ID), i.e. the Slot Number (Card ID) is not used,</td>
</tr>
<tr>
<td></td>
<td>• for downwards compatibility purposes,</td>
</tr>
<tr>
<td></td>
<td>• characterizes PC cards cifX not equipped with a Rotary Switch Slot Number (Card ID);</td>
</tr>
<tr>
<td></td>
<td>i.e. these PC cards cifX are identified via its device number and serial number.</td>
</tr>
<tr>
<td>1 ... 9</td>
<td>corresponds to the Slot Number (Card ID) 1 ... 9</td>
</tr>
</tbody>
</table>

Table 87: Rotary Switch for Slot Number (Card ID), S1

8.7.1 Set Slot Number (Card ID)

If the Slot Number (Card ID) shall not be used:

➢ set the value 0.

Or

If the Slot Number (Card ID) shall be used:

➢ Set a value from 1 to 9.

For further information about the Slot Number (Card ID) refer to section The Function „Slot Number (Card ID)“ (page 13) or to the user manual Software Installation for the PC Cards cifX, sections Slot Number (Card ID) in the cifX Device Driver Setup and Slot Number (Card ID) in the Configuration Software.

8.7.2 Note for Device Exchange Service (Replacement Case):

Important: For PC cards cifX with Rotary Switch Slot Number (Card ID) in terms of a device exchange service (replacement case) you must set at the replacement card cifX the same Slot Number (Card ID) as at the preceding cifX. Then the same firmware and configuration is loaded into the replacement card cifX, as into the preceding cifX.
### 8.7.3 Rotary Switch Slot Number PC Cards cifX Low Profile

The *Table 88* below shows the **Rotary Switch Slot Number (Card ID)** of the PC cards cifX Low Profile PCI Express in switch position 0 and 1.

<table>
<thead>
<tr>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary Switch Slot Number (Card ID) <strong>Switch Position 0</strong></td>
<td></td>
</tr>
<tr>
<td>Rotary Switch Slot Number (Card ID) <strong>Switch Position 1</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Table 88: Rotary Switch Slot Number (Card ID) PC Cards cifX Low Profile PCI Express*
8.8  SYNC Connector (Pin-Assignment, Hardware/Firmware)

8.8.1  Pin Assignment SYNC Connector, X51 (CIFX 50 50E 70E)

Only for:
CIFX 50-RE (from hardware Rev. 3 on), CIFX 50E-RE, CIFX 50E-RE\ET, CIFX 70E-RE

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>IO_SYNC0</td>
</tr>
<tr>
<td>3</td>
<td>IO_SYNC1</td>
</tr>
</tbody>
</table>

Table 89: Pin Assignment for SYNC Connector, X51

8.8.2  Pin Assignment SYNC Connector, J1 (CIFX 100EH)

Only for: CIFX 100EH-RE\CUBE.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IO_SYNC0</td>
</tr>
<tr>
<td>2</td>
<td>Jumper set: SYNC signal is transferred to the PCI Express Bus Pin B24*</td>
</tr>
<tr>
<td></td>
<td>Jumper not set: static high 3.3 V (with pull-up)</td>
</tr>
<tr>
<td>3</td>
<td>IO_SYNC1</td>
</tr>
</tbody>
</table>

Table 90: Pin Assignment for SYNC Connector, J1

Note! *
- If the jumper is set on Pin1-Pin2, then the IO_SYNC0 signal will be transferred to the PCI Express Bus X2 (pin B24).
- Or
  - If the jumper is set on Pin2-Pin3, then the IO_SYNC1 signal will be transferred to the PCI Express Bus X2 (pin B24).
- Or
  - If the no jumper is set, then the signal at the PCI Express Bus X2 pin B24 will be static High 3.3 V (with pull-up).

Compare section Pin Assignment for PCI Express Bus CIFX 100EH-RE\CUBE on page 136.
8.8.3 Items on Hardware

<table>
<thead>
<tr>
<th>Item</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNC Signal</td>
<td>3.3 V (LVTTL), maximum load 6 mA</td>
</tr>
<tr>
<td>Connector</td>
<td>SYNC connector, X51 (for the PC cards cifX, as indicated under section Pin Assignment SYNC Connector, X51 (CIFX 50 50E 70E) on page 133.) Male Connector with jumper, 3 pin, pitch spacing 2.54 mm</td>
</tr>
<tr>
<td>Max. Cable Length</td>
<td>Recommendation: Max. 50 mm</td>
</tr>
</tbody>
</table>

**Table 91: SYNC Connector: SYNC Signal, Connector, Max. Cable Length**

8.8.4 Items on Firmware

The firmware determines the input signal or output signal. The following table shows the meaning of the SYNC signals for each protocol.

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Signal IO_SYNC0 Input/Output</th>
<th>Signal IO_SYNC1 Input/Output</th>
<th>From Firmware Version</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EtherCAT Slave</td>
<td>SYNC 0 Output</td>
<td>SYNC 1 Output</td>
<td>-</td>
<td>Configurable</td>
</tr>
<tr>
<td>Sercos Master</td>
<td>External trigger to start bus cycle Input Rising edge</td>
<td>-</td>
<td>2.0.8.0</td>
<td>-</td>
</tr>
<tr>
<td>Sercos Slave</td>
<td>CON_CLK Output</td>
<td>DIV_CLK Output</td>
<td>3.0.10.0</td>
<td>Configurable</td>
</tr>
</tbody>
</table>

**Table 92: Meaning of the SYNC Signals for each Protocol**
8.9 Pin Assignment at the PCI Bus

8.9.1 Overview

For the PC cards cifX PCI, PCI Express and Low Profile PCI Express the table below gives an overview about the pin assignment at the PCI bus.

<table>
<thead>
<tr>
<th>PC Card cifX</th>
<th>Hardware Revision</th>
<th>PCI Bus Type</th>
<th>Pin Assignment at the PCI Bus [Pins]</th>
<th>Pin Assignment at the PCI Bus compare section, page</th>
<th>PCI Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 50-RE</td>
<td>6</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-RE</td>
<td>6</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-CO</td>
<td>6</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-DN</td>
<td>6</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-CC</td>
<td>2</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-2DP</td>
<td>3</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-2DP/CO</td>
<td>2</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-2DP/DN</td>
<td>1</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-2CO</td>
<td>2</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-2CO/DN</td>
<td>1</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-2DN</td>
<td>2</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50-2ASM</td>
<td>2</td>
<td>PCI</td>
<td>124</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-RE</td>
<td>6</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-RE\ET</td>
<td>2</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-CCIE</td>
<td>1</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-DP</td>
<td>6</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-CO</td>
<td>5</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-2CO/DN</td>
<td>1</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-2DP/CO</td>
<td>1</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-2DP/DN</td>
<td>1</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-2CO</td>
<td>1</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-2CO/DN</td>
<td>1</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-2DN</td>
<td>1</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-2ASM</td>
<td>5</td>
<td>PCI Express</td>
<td>36</td>
<td>yes</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-RE</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-RE\MR</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 50E-CCIE</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-DP</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-DP\MR</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-2CO\MR</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-2CO\MR</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-DN</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 70E-DN\MR</td>
<td>1</td>
<td>PCI</td>
<td>1</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 100EH-RE\CUBE</td>
<td>4</td>
<td>PCI Express</td>
<td>64</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
<tr>
<td>CIFX 100EH-RE\CUBE</td>
<td>4</td>
<td>PCI Express</td>
<td>64</td>
<td>no</td>
<td>[bus spec 1]</td>
</tr>
</tbody>
</table>

Table 93: Pin Assignment at the PCI Bus
## 8.9.2 Pin Assignment for PCI Express Bus CIFX 100EH-RE\CUBE

Only for: CIFX 100EH-RE\CUBE (x1 = One Lane)\(^2\)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Name</th>
<th>Description</th>
<th>Pin</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>n. u. (not used)</td>
<td></td>
<td>A1</td>
<td>PRSNT1#</td>
<td>Hot-Plug presence detect</td>
</tr>
<tr>
<td>B2</td>
<td>n. u. (not used)</td>
<td></td>
<td>A2</td>
<td>n. u. (not used)</td>
<td></td>
</tr>
<tr>
<td>B3</td>
<td>n. u. (not used)</td>
<td></td>
<td>A3</td>
<td>n. u. (not used)</td>
<td></td>
</tr>
<tr>
<td>B4</td>
<td>GND</td>
<td>Ground</td>
<td>A4</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>B5</td>
<td>n. u. (not used)</td>
<td></td>
<td>A5</td>
<td>JTAG-TCK</td>
<td>JTAG Test Clock</td>
</tr>
<tr>
<td>B6</td>
<td>n. u. (not used)</td>
<td></td>
<td>A6</td>
<td>JTAG-TDI</td>
<td>JTAG Test Data Input</td>
</tr>
<tr>
<td>B7</td>
<td>GND</td>
<td>Ground</td>
<td>A7</td>
<td>JTAG-TDO</td>
<td>JTAG Test Data Output</td>
</tr>
<tr>
<td>B8</td>
<td>3V3</td>
<td>3.3V Power</td>
<td>A8</td>
<td>JTAG-TMS</td>
<td>JTAG Test Mode Select Input</td>
</tr>
<tr>
<td>B9</td>
<td>JTAG-TRST#</td>
<td>JTAG Test Reset</td>
<td>A9</td>
<td>3V3</td>
<td>3.3V Power</td>
</tr>
<tr>
<td>B10</td>
<td>n. v. (not used)</td>
<td></td>
<td>A10</td>
<td>3V3</td>
<td>3.3V Power</td>
</tr>
<tr>
<td>B11</td>
<td>n. u. (not used)</td>
<td></td>
<td>A11</td>
<td>PERST#</td>
<td>PCIe Reset</td>
</tr>
</tbody>
</table>

**Key**

- B12 n. u. (not used)  
- B13 GND            Ground  
- B14 PCIe\_TP  Transmitter Lane, differential pair  
- B15 PCIe\_TN  
- B16 GND            Ground  
- B17 PRSNT2#  Hot-Plug presence detect  
- B18 GND            Ground  
- B19 n. u. (not used)  
- B20 n. u. (not used)  
- B21 n. u. (not used)  
- B22 n. u. (not used)  
- B23 GND            Ground  
- B24 IO\_SYNC0 / IO\_SYNC1 / 3.3V\(^3\) Real-Time Ethernet SYNC\(^4\)  
- B25 GND            Ground  
- B26 SPI\_CS#  ID Chip Select  
- B27 SPI\_MOSI  ID Slave In  
- B28 SPI\_MISO  ID Slave Out  
- B29 SPI\_CLK  ID Clock  
- B30 GND            Ground  
- B31 n. u. (not used)  
- B32 n. u. (not used)  

**Table 94:** Pin Assignment for PCI Express-Bus CIFX 100EH-RE\CUBE

\(^2\)Pinning A19 to A32 / B19 to B32 not standard conform [bus spec 3, page 73-74].

\(^3\)If at the SYNC connector J1 the jumper is set, the IO\_SYNC signal is transferred to the PCI Express Bus X2 pin B24 (jumper on pin1-pin2(J1): IO\_SYNC0, pin2-pin3(J1): IO\_SYNC1). If no jumper is set, the signal is 3.3V static High (with Pull-up). Refer to section Pin Assignment SYNC Connector, J1 (CIFX 100EH), on page 111.

\(^4\)in 3V3 logic.
9 Technical Data

9.1 Technical Data PC Cards cifX

Note: All technical data are temporarily and can be altered without notice.

9.1.1 CIFX 50-RE

<table>
<thead>
<tr>
<th>CIFX 50-RE</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Name</td>
<td>CIFX 50-RE</td>
<td></td>
</tr>
<tr>
<td>Part No.</td>
<td>1250.100</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI Real-Time Ethernet Master or Slave</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI and Ethernet interface</td>
<td></td>
</tr>
<tr>
<td>Communication Type</td>
<td>netX 500 processor</td>
<td></td>
</tr>
<tr>
<td>Integrated Memory RAM</td>
<td>8 MB SDRAM</td>
<td></td>
</tr>
<tr>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
<td></td>
</tr>
<tr>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
<td></td>
</tr>
<tr>
<td>System Interface Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
<td></td>
</tr>
<tr>
<td>Transmission Rate</td>
<td>33 MHz</td>
<td></td>
</tr>
<tr>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
<td></td>
</tr>
<tr>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
<td></td>
</tr>
<tr>
<td>Ethernet Communication Supported Real-Time Ethernet communication systems (determined by the loaded firmware)</td>
<td>CC-Link IE Field Basic Slave, EtherCAT Master, EtherCAT Slave, EtherNet/IP Scanner (Master), EtherNet/IP Adapter (Slave), Open Modbus/TCP, POWERLINK Controlled Node/Slave, PROFINET IO-Controller (Master), PROFINET IO-Device (Slave), Sercos Master, Sercos Slave, VARAN Client (Slave)</td>
<td></td>
</tr>
<tr>
<td>Ethernet Frame Types</td>
<td>Ethernet II</td>
<td></td>
</tr>
<tr>
<td>Ethernet Interface Transmission rate</td>
<td>100 MBit/s, 10 MBit/s (depending on loaded firmware)</td>
<td></td>
</tr>
<tr>
<td>Interface Type</td>
<td>100 BASE-TX, 10 BASE-T (depending on loaded firmware), refer to section Ethernet Interface, page 125.</td>
<td></td>
</tr>
<tr>
<td>Galvanic Isolation</td>
<td>isolated</td>
<td></td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
<td></td>
</tr>
<tr>
<td>Half duplex/Full duplex</td>
<td>depending on loaded firmware, supported (at 100 MBit/s)</td>
<td></td>
</tr>
<tr>
<td>Auto-Negotiation</td>
<td>depending on loaded firmware</td>
<td></td>
</tr>
<tr>
<td>Auto-Crossover</td>
<td>depending on loaded firmware</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>2* RJ45 Socket</td>
<td></td>
</tr>
</tbody>
</table>
## Technical Data CIFX 50-RE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Display</strong></td>
<td><strong>SYS</strong> System Status LED</td>
</tr>
<tr>
<td><strong>The meaning of the following LEDs depends on the loaded firmware:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>COM 0</strong></td>
<td>LED Communication Status 0 (duo LED)</td>
</tr>
<tr>
<td><strong>COM 1</strong></td>
<td>LED Communication Status 1 (duo LED)</td>
</tr>
<tr>
<td><strong>LED yellow</strong></td>
<td>at RJ45Ch0 and RJ45Ch1, for Ethernet Link status, Ethernet Activity status and additional status</td>
</tr>
<tr>
<td><strong>LED green</strong></td>
<td>Refer to chapter <em>Diagnosis with LEDs</em>, page 95.</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td><strong>Supply Voltage</strong></td>
</tr>
<tr>
<td></td>
<td>+3.3 V dc ±5 %, refer to section <em>Power Supply and Host Interface</em>, page 65.</td>
</tr>
<tr>
<td></td>
<td><strong>Current consumption at 3.3 V</strong></td>
</tr>
<tr>
<td></td>
<td>650 mA (maximum)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td><strong>Via PCI Bus</strong></td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td><strong>Rotary Switch Slot Number</strong> (Card ID)</td>
</tr>
<tr>
<td></td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td><strong>Operating temperature range</strong></td>
</tr>
<tr>
<td></td>
<td>CIFX 50-RE (to Rev. 5)       CIFX 50-RE (Rev. 6)</td>
</tr>
<tr>
<td></td>
<td>0 °C ... +55 °C             0 °C ... +70 °C</td>
</tr>
<tr>
<td><strong>Air flow during measurement</strong></td>
<td>0,5m/s</td>
</tr>
<tr>
<td><strong>Storage temperature range</strong></td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td><strong>Dimensions (L x W x H)</strong></td>
</tr>
<tr>
<td></td>
<td>120,0 x 86 x 18,5 mm (from hardware revision 3)</td>
</tr>
<tr>
<td><strong>Mounting/Installation</strong></td>
<td><strong>PCI slot (3.3 V)</strong>, refer to section <em>Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe</em>, page 64.</td>
</tr>
<tr>
<td><strong>RoHS</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td><strong>CE Sign</strong></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><strong>UKCA Sign</strong></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Emission</strong></td>
<td><strong>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</strong></td>
</tr>
<tr>
<td><strong>Immunity</strong></td>
<td><strong>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</strong></td>
</tr>
<tr>
<td><strong>UL Certification</strong></td>
<td><strong>The device CIFX 50-RE is certified according to UL 508.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>UL-File-Nr. E221530</strong></td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td><strong>Configuration Software Master and Slave</strong></td>
</tr>
<tr>
<td></td>
<td><strong>SYCON.net</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Configuration Software Slave</strong></td>
</tr>
<tr>
<td></td>
<td><strong>netX Configuration Tool</strong></td>
</tr>
</tbody>
</table>

Table 95: Technical Data CIFX 50-RE
### 9.1.2 CIFX 50E-RE, CIFX 50E-RE\ET

<table>
<thead>
<tr>
<th>CIFX 50E-RE, CIFX 50E-RE\ET</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part</strong></td>
<td>Name</td>
<td>CIFX 50E-RE</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1251.100</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td></td>
<td>PC Card cifX PCI Express Real-Time Ethernet Master or Slave</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td></td>
<td>Communication interface with PCI Express and Ethernet interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td>Type</td>
<td>netX 500 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA* (Direct Memory Access); *beginning from Hardware Revision 4</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td><strong>Ethernet Communication</strong></td>
<td>Supported Real-Time Ethernet communication systems (determined by the loaded firmware)</td>
<td>CC-Link IE Field Basic Slave, EtherCAT Master, EtherCAT Slave, EtherNet/IP Scanner (Master), EtherNet/IP Adapter (Slave), Open Modbus/TCP, POWERLINK Controlled Node/Slave, PROFINET IO-Controller (Master), PROFINET IO-Device (Slave), Sercos Master, Sercos Slave, VARAN Client (Slave)</td>
</tr>
<tr>
<td><strong>Ethernet Interface</strong></td>
<td>Transmission rate</td>
<td>100 MBit/s, 10 MBit/s (depending on loaded firmware)</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>100 BASE-TX, 10 BASE-T (depending on loaded firmware), refer to section Ethernet Interface, page 125.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Half duplex/Full duplex</td>
<td>depending on loaded firmware, supported (at 100 MBit/s)</td>
</tr>
<tr>
<td></td>
<td>Auto-Negotiation</td>
<td>depending on loaded firmware</td>
</tr>
<tr>
<td></td>
<td>Auto-Crossover</td>
<td>depending on loaded firmware</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td></td>
<td>2* RJ45 Socket</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LED Display</td>
<td>Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td><strong>LED green</strong></td>
<td>SYS</td>
<td>System Status LED</td>
</tr>
<tr>
<td><strong>LED yellow</strong></td>
<td>COM 0</td>
<td>LED Communication Status 0 (duo LED)</td>
</tr>
<tr>
<td></td>
<td>COM 1</td>
<td>LED Communication Status 1 (duo LED) at RJ45Ch0 and RJ45Ch1, for Ethernet Link status, Ethernet Activity status and additional status</td>
</tr>
</tbody>
</table>
### Technical Data CIFX 50E-RE, CIFX 50E-RE\ET

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power supply</strong></td>
<td></td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td></td>
</tr>
<tr>
<td>Rotary Switch Slot Number</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Slot Number (Card ID)</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td></td>
</tr>
<tr>
<td>Operating temperature range*</td>
<td>CIFX 50E-RE: 0 °C ... +55 °C  CIFX 50E-RE\ET: 0 °C ... +70 °C</td>
</tr>
<tr>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 86 x 18,5 mm (from hardware revision 4)</td>
</tr>
<tr>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td></td>
</tr>
<tr>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td><strong>UL Certification</strong></td>
<td>The device CIFX 50E-RE is certified according to UL 508.</td>
</tr>
<tr>
<td></td>
<td>UL-File-Nr. E221530</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td></td>
</tr>
<tr>
<td>Configuration</td>
<td>SYCON.net</td>
</tr>
<tr>
<td>Configuration Software Master and Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

*Table 96: Technical Data CIFX 50E-RE, CIFX 50E-RE\ET*
## 9.1.3 CIFX 50E-CCIES, CIFX 70E-CCIES

<table>
<thead>
<tr>
<th>CIFX 50E-CCIES, CIFX 70E-CCIES</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50E-CCIES, CIFX 70E-CCIES</td>
</tr>
<tr>
<td>Part No.</td>
<td>1251.700</td>
<td>1259.700</td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI Express CC-Link IE Field Slave</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and Ethernet interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controllers</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td></td>
<td>CP520 (CC-Link IE Communication Controller)</td>
<td></td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>SDRAM 64MBIT</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB or 32 MBIT serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>Ethernet Communication</td>
<td>Supported Real-Time Ethernet communication system</td>
<td>CC-Link IE Field Slave</td>
</tr>
<tr>
<td></td>
<td>Ethernet Frame Types</td>
<td>Ethernet II</td>
</tr>
<tr>
<td>Ethernet Interface</td>
<td>Transmission rate</td>
<td>1 Gbit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>1000 BASE-T, refer to section Ethernet Interface, p. 125.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (getestet für 1 Minute)</td>
</tr>
<tr>
<td></td>
<td>Auto-Negotiation</td>
<td>Constantly on</td>
</tr>
<tr>
<td></td>
<td>Auto-Crossover</td>
<td>Constantly on</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>2* RJ45 Socket</td>
</tr>
<tr>
<td></td>
<td>Channel 0 and 1</td>
<td>Always 2 channels can be used.</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>For Details refer to section CC-Link IE Field Slave, page 99.</td>
</tr>
<tr>
<td></td>
<td>SYS</td>
<td>System Status LED</td>
</tr>
<tr>
<td></td>
<td>RUN</td>
<td>Run</td>
</tr>
<tr>
<td></td>
<td>RD</td>
<td>Reception status o the data</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>Sending status o the data</td>
</tr>
<tr>
<td></td>
<td>D-LINK</td>
<td>Data link</td>
</tr>
<tr>
<td></td>
<td>ERR</td>
<td>Error</td>
</tr>
<tr>
<td></td>
<td>USER</td>
<td>User-defined status</td>
</tr>
<tr>
<td></td>
<td>At RJ45Ch0 and RJ45Ch1:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LINK</td>
<td>Link status (for Ethernet)</td>
</tr>
<tr>
<td></td>
<td>L-ERR</td>
<td>Error status of the received data, the line and the loopback (for Ethernet)</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>880 mA (typical)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1200 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
</tbody>
</table>
### CIFX 50E-CCIES, CIFX 70E-CCIES

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td></td>
</tr>
<tr>
<td>Operating temperature range*</td>
<td>CIFX 50E-CCIES CIFX 70E-CCIES</td>
</tr>
<tr>
<td>-25 °C ... +70 °C</td>
<td>-25 °C ... +70 °C</td>
</tr>
<tr>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 69,0 x 18,5 mm (length incl. front plate)</td>
</tr>
<tr>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td></td>
</tr>
<tr>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>Refer to CE declaration of conformity / UK Declaration of Conformity</td>
</tr>
<tr>
<td>Immunity</td>
<td>Refer to CE declaration of conformity / UK Declaration of Conformity</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td></td>
</tr>
<tr>
<td>Configuration Software</td>
<td>SYCON.net</td>
</tr>
</tbody>
</table>

*Table 97: Technical Data CIFX 50E-CCIES, CIFX 70E-CCIES*
# 9.1.4 CIFX 50-DP

<table>
<thead>
<tr>
<th>CIFX 50-DP</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50-DP</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1250.410</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI PROFIBUS DP Master or Slave and PROFIBUS MPI Device</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI and PROFIBUS interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>PROFIBUS Communication</td>
<td>Supported communication standard/ protocol (determined by the loaded firmware)</td>
<td>PROFIBUS DP Master, PROFIBUS DP Slave, PROFIBUS MPI Device</td>
</tr>
<tr>
<td>PROFIBUS Interface</td>
<td>Transmission rate</td>
<td>9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 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</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>RS 485, according EN 50170, refer to section PROFIBUS Interface page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub female Connector, 9 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COM LED Communication Status (duo LED)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The meaning of the COM LED depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>700 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>-20 °C ... +70 °C (acc. to UL: 0 °C ... +55 °C)</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 86 x 18,5 mm (from hardware revision 5)</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td></td>
<td>RoHS</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### CIFX 50-DP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance with EMC</td>
<td></td>
</tr>
<tr>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td></td>
</tr>
<tr>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
<td></td>
</tr>
<tr>
<td>Immunity</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)</td>
<td></td>
</tr>
<tr>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
<td></td>
</tr>
<tr>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
<td></td>
</tr>
<tr>
<td>UL Certification</td>
<td>The device CIFX 50-DP is certified according to UL 508. UL-File-Nr. E221530</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software</td>
</tr>
<tr>
<td>Master and Slave</td>
<td>SYCON.net</td>
</tr>
<tr>
<td>Configuration Software Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

**Table 98: Technical Data CIFX 50-DP**

### 9.1.5 CIFX 50E-DP

<table>
<thead>
<tr>
<th>CIFX 50E-DP</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50E-DP</td>
</tr>
<tr>
<td>Part No.</td>
<td>1251.410</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI Express PROFIBUS DP Master or Slave and PROFIBUS MPI Device</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and PROFIBUS interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA* (Direct Memory Access); *beginning from Hardware Revision 5</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>PROFIBUS Communication</td>
<td>Supported communication standard/ protocol (determined by the loaded firmware)</td>
<td>PROFIBUS DP Master, PROFIBUS DP Slave, PROFIBUS MPI Device</td>
</tr>
<tr>
<td>PROFIBUS Interface</td>
<td>Transmission rate</td>
<td>9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 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</td>
</tr>
<tr>
<td>Interface Type</td>
<td>RS 485, refer to section PROFIBUS Interface page 128.</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Galvanic Isolation</td>
<td>isolated</td>
<td></td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>DSub female Connector, 9 pin</td>
<td></td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td><strong>SYS</strong> System Status LED</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>COM</strong> LED Communication Status (duo LED)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The meaning of the COM LED depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td><strong>Supply Voltage</strong></td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td><strong>Current consumption at 3.3 V</strong></td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td><strong>Connector</strong></td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td><strong>Rotary Switch Slot Number</strong> (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td><strong>Operating temperature range</strong></td>
<td>-20 °C ... +70 °C (acc. to UL: 0 °C ... +55 °C)</td>
</tr>
<tr>
<td></td>
<td><strong>Air flow during measurement</strong></td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td><strong>Storage temperature range</strong></td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td><strong>Humidity</strong></td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td><strong>Environment</strong></td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td><strong>Dimensions (L x W x H)</strong></td>
<td>120,0 x 86 x 18,5 mm (from hardware revision 5)</td>
</tr>
<tr>
<td></td>
<td><strong>Mounting/Installation</strong></td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td></td>
<td><strong>RoHS</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td><strong>CE Sign</strong></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><strong>UKCA Sign</strong></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><strong>Emission</strong></td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td></td>
<td><strong>Immunity</strong></td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td><strong>UL Certification</strong></td>
<td><strong>The device CIFX 50E-DP is certified according to UL 508.</strong></td>
<td>UL-File-Nr. E221530</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td><strong>Configuration Software Master and Slave</strong></td>
<td>SYCON.net</td>
</tr>
<tr>
<td></td>
<td><strong>Configuration Software Slave</strong></td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

*Operating temperature range includes air flow 0.5 m/s.*

Table 99: Technical Data CIFX 50E-DP
### 9.1.6 CIFX 50-CO

<table>
<thead>
<tr>
<th>CIFX 50-CO</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50-CO</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1250.500</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI CANopen Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI and CANopen interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>CANopen Communication</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td>CANopen Interface</td>
<td>Transmission rate</td>
<td>10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub male Connector, 9 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAN CANopen Status (duo LED)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The meaning of the CAN LED depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>650 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>-20 °C ... +70 °C (acc. to UL: 0 °C ... +55 °C)</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 86 x 18,5 mm (from hardware revision 5)</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td></td>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### 9.1.7 CIFX 50E-CO

<table>
<thead>
<tr>
<th>CIFX 50E-CO</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50E-CO</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1251.500</td>
</tr>
<tr>
<td>Description</td>
<td>Description</td>
<td>PC Card cifX PCI ExpressCANopen Master or Slave</td>
</tr>
<tr>
<td>Function</td>
<td>Communication Interface with PCI Express and CANopen interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td>Size of the Dual-Port Memory</td>
<td>Size</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA* (Direct Memory Access); *beginning from Hardware Revision 4</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>CANopen Communication</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td>CANopen Interface</td>
<td>Transmission rate</td>
<td>10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub male Connector, 9 pin</td>
</tr>
<tr>
<td>Parameter</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td><strong>Display</strong></td>
<td><strong>Parameter</strong></td>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>LED Display</td>
<td><strong>Display</strong></td>
<td><strong>SYS</strong></td>
</tr>
<tr>
<td><strong>CAN</strong></td>
<td><strong>CANopen Status (duo LED)</strong></td>
<td></td>
</tr>
<tr>
<td>The meaning of the CAN LED depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td><strong>Supply Voltage</strong></td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
<td></td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>Via PCI Express Bus</td>
<td></td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td><strong>Rotary Switch Slot Number</strong> (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td><strong>Operating temperature range</strong> (-20 °C ... +70 °C (acc. to UL: 0 °C ... +55 °C))</td>
<td></td>
</tr>
<tr>
<td><em>Air flow during measurement</em></td>
<td>0,5m/s</td>
<td></td>
</tr>
<tr>
<td><strong>Storage temperature range</strong></td>
<td>-40 °C ... +85 °C</td>
<td></td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>10 … 95% relative humidity, no condensation permitted</td>
<td></td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
<td></td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td><strong>Dimensions (L x W x H)</strong></td>
<td>120,0 x 86 x 18,5 mm (from hardware revision 4)</td>
</tr>
<tr>
<td><strong>Mounting/Installation</strong></td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
<td></td>
</tr>
<tr>
<td><strong>RoHS</strong></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td><strong>CE Sign</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>UKCA Sign</strong></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Emission</strong></td>
<td><strong>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Immunity</strong></td>
<td><strong>EN 61000-4-2 / BS EN 61000-4-2</strong> (Electrostatic discharge test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2</strong> (Radiated, radio-frequency, electromagnetic field test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1</strong> (Burst Electrical fast transients/burst test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-4-8 / BS EN 61000-4-8</strong> (power frequency magnetic field test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1</strong> (for industrial environments)</td>
<td></td>
</tr>
<tr>
<td><strong>UL Certification</strong></td>
<td>The device CIFX 50E-CO is certified according to UL 508. UL-File-Nr. E221530</td>
<td></td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td><strong>Configuration Software Master and Slave</strong></td>
<td>SYCON.net</td>
</tr>
<tr>
<td><strong>Configuration Software Slave</strong></td>
<td><strong>netX Configuration Tool</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 101: Technical Data CIFX 50E-CO
## 9.1.8 CIFX 50-DN

<table>
<thead>
<tr>
<th>CIFX 50-DN</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part</strong></td>
<td>Name</td>
<td>CIFX 50-DN</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1250.510</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI DeviceNet Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI and DeviceNet interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td><strong>DeviceNet Communication</strong></td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>DeviceNet Master, DeviceNet Slave</td>
</tr>
<tr>
<td><strong>DeviceNet Interface</strong></td>
<td>Transmission rate</td>
<td>125 kBit/s, 250 kBit/s, 500 kBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898 according to DeviceNet specification, refer to section DeviceNet Interface, page 129.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LED Display</td>
<td>SYS System Status LED MNS Module Network Status (duo LED)</td>
</tr>
<tr>
<td></td>
<td>The meaning of the MNS LED depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>650 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td>Operating temperature range*</td>
<td>-20 °C ... +70 °C (acc. to UL: 0 °C ... +55 °C)</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 86 x 18,5 mm (from hardware revision 5)</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
</tbody>
</table>
## Technical Data CIFX 50-DN

### Parameter | Value
---|---
**Emission** | EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)
**Immunity** | EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)  
EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)  
EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)  
EN 61000-4-5 / BS EN 61000-4-5 (Surge test)  
EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)  
EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)  
EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)
**UL Certification** | The device CIFX 50-DN is certified according to UL 508. UL-File-Nr. E221530
**Configuration** | Configuration Software Master and Slave SYCON.net  
Configuration Software Slave netX Configuration Tool

### 9.1.9 CIFX 50E-DN

### CIFX 50E-DN

### Parameter | Value
---|---
**Part** | Name CIFX 50E-DN  
Part No. 1251.510
**Description** | PC Card cifX PCI ExpressDeviceNet Master or Slave
**Function** | Communication interface with PCI Express and DeviceNet interface
**Communication Controller** | Type netX 100 processor
**Integrated Memory** | RAM 8 MB SDRAM  
FLASH 4 MB serial Flash EPROM
**Size of the Dual-Port Memory** | 64 KByte
**System Interface** | Bus Type PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.
**Transmission Rate** | 2 GBit/s
**Data Access** | DPM or DMA* (Direct Memory Access)  
*beginning from Hardware Revision 4
**Width for the data access to the Dual-Port Memory (DPM)** | 32-Bit
**DeviceNet Communication** | Supported communication standard/ protocol (determined by the loaded firmware) DeviceNet Master, DeviceNet Slave
**DeviceNet Interface** | Transmission rate 125 kBit/s, 250 kBit/s, 500 kBit/s  
Interface Type ISO-11898 according to DeviceNet specification, refer to section DeviceNet Interface, page 129.
**Galvanic Isolation** | optically isolated
**Isolation Voltage** | 1000 VDC (tested for 1 minute)
**Connector** | CombiCon male Connector, 5 pin
<table>
<thead>
<tr>
<th>CIFX 50E-DN</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MNS</td>
</tr>
</tbody>
</table>

The meaning of the MNS LED depends on the loaded firmware. Refer to chapter *Diagnosis with LEDs*, page 95.

<table>
<thead>
<tr>
<th>Power supply</th>
<th>Supply Voltage</th>
<th>+3.3 V dc ±5 %, refer to section <em>Power Supply and Host Interface</em>, page 65.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>Via PCI Express Bus</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operation</th>
<th>Rotary Switch Slot Number (Card ID)</th>
<th>To set the Slot Number (Card ID)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Environmental Conditions</th>
<th>Operating temperature range*</th>
<th>-20 °C ... +70 °C (acc. to UL: 0 °C ... +55 °C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Air flow during measurement</td>
<td>0.5 m/s</td>
<td></td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>For UL compliant usage: The device must be used in a pollution degree 2 environment.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Device</th>
<th>Dimensions (L x W x H)</th>
<th>120.0 x 86 x 18.5 mm (from hardware revision 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section <em>Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe</em>, page 64.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compliance with EMC</th>
<th>CE Sign</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
<td></td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UL Certification</th>
<th>The device CIFX 50E-DN is certified according to UL 508. UL-File-Nr. E221530</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Configuration Software Master and Slave</th>
<th>SYCON.net</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Configuration Software Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

*Table 103: Technical Data CIFX 50E-DN*
### 9.1.10 CIFX 50-CC

<table>
<thead>
<tr>
<th>CIFX 50-CC</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50-CC</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1250.740</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI CC-Link Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI and CC-Link interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>CC-Link Communication</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>CC-Link Slave</td>
</tr>
<tr>
<td>CC-Link Interface</td>
<td>Transmission rate</td>
<td>156 kBit/s, 625 kBit/s, 2500 kBit/s, 5 MBit/s, 10 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>RS-485, refer to section CC-Link Interface, page 130.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L RUN LED L Run (Duo LED)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L ERR LED L Error (Duo LED)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>650 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>-20 °C ... +55 °C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>120 x 85,4 x 18,5 mm (from hardware revision 2)</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td></td>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### Technical Data CIFX 50-CC

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emission</strong></td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td><strong>Immunity</strong></td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test) EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test) EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test) EN 61000-4-5 / BS EN 61000-4-5 (Surge test) EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields) EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test) EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td><strong>UL Certification</strong></td>
<td>The device CIFX 50-CC is certified according to UL 508. UL-File-Nr. E221530</td>
</tr>
</tbody>
</table>

### Configuration

| Configuration | Software SYCON.net or netX Configuration Tool |

### 9.1.11 CIFX 50E-CC

<table>
<thead>
<tr>
<th>CIFX 50E-CC</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part</strong></td>
<td>Name</td>
<td>CIFX 50E-CC</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1251.740</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI ExpressCC-Link Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI Express and CC-Link interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA* (Direct Memory Access); *beginning from Hardware Revision 3</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td><strong>CC-Link Communication</strong></td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>CC-Link Slave</td>
</tr>
<tr>
<td><strong>CC-Link Interface</strong></td>
<td>Transmission rate</td>
<td>156 kBit/s, 625 kBit/s, 2500 kBit/s, 5 MBit/s, 10 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>RS-485, refer to section CC-Link Interface, page 130.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LED Display</td>
<td>SYS System Status LED L RUN LED L Run (Duo LED)</td>
</tr>
<tr>
<td>Parameter</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>CIFX 50E-CC</td>
<td><strong>Parameter</strong></td>
<td><strong>Value</strong></td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>0 °C ... +60 °C (acc. to UL: 0 °C ... +55 °C)</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
<td></td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>120 x 89,9 x 18,5 mm (from hardware revision 3)</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td></td>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td>UL Certification</td>
<td>The device CIFX 50E-CC is certified according to UL 508.</td>
<td>UL-File-Nr. E221530</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software</td>
<td>SYCON.net or netX Configuration Tool</td>
</tr>
</tbody>
</table>

*Table 105: Technical Data CIFX 50E-CC*
## 9.1.12 CIFX 50-2DP

<table>
<thead>
<tr>
<th>CIFX 50-2DP</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part</strong></td>
<td>Name</td>
<td>CIFX 50-2DP</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1252.410</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI 2 channel PROFIBUS DP Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI and 2 x PROFIBUS interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td><strong>PROFIBUS Communication</strong></td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>PROFIBUS DP Master, PROFIBUS DP Slave</td>
</tr>
<tr>
<td><strong>PROFIBUS Interface</strong></td>
<td>Transmission rate</td>
<td>9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 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</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>2 * RS 485, refer to section PROFIBUS Interface p. 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub female Connector, 9 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COM 0 LED Communication Status 0 (duo LED) for channel X1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COM 1 LED Communication Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td></td>
<td>The meaning of the LEDs COM0 and COM1 depends on the loaded firmware. Refer to ch. Diagnosis with LEDs, p. 95.</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>700 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td>Operating temperature range*</td>
<td>-20 °C ... +70 °C (acc. to UL: 0 °C ... +55 °C)</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td>Dimensions (L x W x H)</td>
<td>120 x 94,5 x 18,5 mm</td>
</tr>
</tbody>
</table>
### CIFX 50-2DP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### Compliance with EMC

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1</td>
</tr>
</tbody>
</table>

#### UL Certification

- The device CIFX 50-2DP is certified according to UL 508.
  - UL-File-Nr. E221530

#### Configuration

- Configuration Software Master: SYCON.net

### 9.1.13 CIFX 50E-2DP

**CIFX 50E-2DP**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>CIFX 50E-2DP</td>
</tr>
<tr>
<td>Part No.</td>
<td>1253.410</td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI Express 2 channel PROFIBUS DP Master or Slave</td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and 2 x PROFIBUS interface</td>
</tr>
<tr>
<td>Communication</td>
<td>Type netX 100 processor</td>
</tr>
<tr>
<td>Controller</td>
<td></td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM 8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH 4 MB serial Flash EPROM</td>
</tr>
<tr>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td>Width for the data access to the Dual-Port Memory</td>
<td>32-Bit</td>
</tr>
<tr>
<td>PROFIBUS Communication</td>
<td>Supported communication standard/ protocol (determined by the loaded firmware)</td>
</tr>
<tr>
<td></td>
<td>PROFIBUS DP Master, PROFIBUS DP Slave</td>
</tr>
<tr>
<td>PROFIBUS Interface</td>
<td>Transmission rate 9.6 kBit/s, 19.2 kBit/s, 31.25 kBit/s, 45.45 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</td>
</tr>
<tr>
<td>CIFX 50E-2DP</td>
<td>Parameter</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
</tr>
</tbody>
</table>
| Display     | LED Display | SY
|             |             | System Status LED |
|             |             | COM 0
|             |             | LED Communication Status 0 (duo LED) for channel X1 |
|             |             | COM 1
|             |             | LED Communication Status 1 (duo LED) for channel X2 |
|             |             | The meaning of the LEDs COM0 and COM1 depends on the loaded firmware. Refer to ch. Diagnosis with LEDs, p. 95. |
| Power supply | Supply Voltage | +3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65. |
|             | Current consumption at 3.3 V | 840 mA (maximum) |
|             | Connector | Via PCI Express Bus |
| Operation   | Rotary Switch Slot Number (Card ID) | To set the Slot Number (Card ID) |
| Environmental Conditions | Operating temperature range* | -20 °C ... +70 °C |
|             | Air flow during measurement | 0,5m/s |
|             | Storage temperature range | -40 °C ... +85 °C |
|             | Humidity | 10 … 95% relative humidity, no condensation permitted |
|             | Environment | For UL compliant usage: The device must be used in a pollution degree 2 environment. |
| Device      | Dimensions (L x W x H) | 120,0 x 95 x 21,5 mm |
|             | Mounting/Installation | PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64. |
|             | RoHS | Yes |
| Compliance with EMC | CE Sign | Yes |
|             | UKCA Sign | Yes |
|             | Emission | EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement) |
|             | Immunity | EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test) |
|             |             | EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test) |
|             |             | EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test) |
|             |             | EN 61000-4-5 / BS EN 61000-4-5 (Surge test) |
|             |             | EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields) |
|             |             | EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test) |
|             |             | EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments) |
| Configuration | Configuration Software Master and Slave | SYCON.net |
|             | Configuration Software Slave | netX Configuration Tool |

*Table 107: Technical Data CIFX 50E-2DP*
### 9.1.14 CIFX 50-2DP\CO

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part</strong></td>
<td><strong>Name</strong> CIFX 50-2DP\CO</td>
</tr>
<tr>
<td>Part No.</td>
<td>1252.470</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>PC Card cifX PCI 2 channel - Channel X0: PROFIBUS DP Master or Slave, Channel X1: CANopen Master or Slave</td>
</tr>
<tr>
<td><strong>Function</strong></td>
<td>Communication interface with PCI, 1 x PROFIBUS and 1 x CANopen interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td><strong>Type</strong> netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td><strong>RAM</strong> 8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td><strong>FLASH</strong> 4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td><strong>Size of the Dual-Port Memory</strong> 64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td><strong>Bus Type</strong> PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td><strong>Transmission Rate</strong> 33 MHz</td>
</tr>
<tr>
<td></td>
<td><strong>Data Access</strong> DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td><strong>Width for the data access to the Dual-Port Memory (DPM)</strong> 32-Bit</td>
</tr>
<tr>
<td><strong>PROFIBUS Communication</strong></td>
<td><strong>Supported communication standard/ protocol (determined by the loaded firmware)</strong> PROFIBUS DP Master, PROFIBUS DP Slave</td>
</tr>
<tr>
<td><strong>PROFIBUS Interface</strong></td>
<td><strong>Transmission rate</strong> 9.6 kBit/s, 19.2 kBit/s, 31.25 kBit/s, 45.45 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</td>
</tr>
<tr>
<td></td>
<td><strong>Interface Type</strong> 2 * RS 485, refer to section PROFIBUS Interface p. 128.</td>
</tr>
<tr>
<td></td>
<td><strong>Galvanic Isolation</strong> isolated</td>
</tr>
<tr>
<td></td>
<td><strong>Isolation Voltage</strong> 1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td><strong>Connector</strong> DSub female Connector, 9 pin</td>
</tr>
<tr>
<td><strong>CANopen Communication</strong></td>
<td><strong>Supported communication standard/ protocol (determined by the loaded firmware)</strong> CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td><strong>CANopen Interface</strong></td>
<td><strong>Transmission rate</strong> 10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td><strong>Interface Type</strong> ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td></td>
<td><strong>Galvanic Isolation</strong> optically isolated</td>
</tr>
<tr>
<td></td>
<td><strong>Isolation Voltage</strong> 1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td><strong>Connector</strong> DSub male Connector, 9 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td><strong>LED Display</strong> SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td><strong>COM 0</strong> LED Communication Status 0 (duo LED) for channel X1</td>
</tr>
<tr>
<td></td>
<td><strong>CAN 1</strong> CANopen Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td></td>
<td>The meaning of the LEDs COM0 and CAN1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td><strong>Supply Voltage</strong> +3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td><strong>Current consumption at 3.3 V</strong> 700 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td><strong>Connector</strong> Via PCI Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td><strong>Rotary Switch Slot Number (Card ID)</strong> To set the Slot Number (Card ID)</td>
</tr>
</tbody>
</table>
Table 108: Technical Data CIFX 50-2DP\CO

### Environmental Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature range*</td>
<td>-20 °C ... +70°C</td>
</tr>
<tr>
<td>*Air flow during measurement</td>
<td>0.5m/s</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
</tbody>
</table>

### Device

Dimensions (L x W x H) 120 x 94.5 x 18.5 mm

Mounting/Installation PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.

RoHS Yes

### Compliance with EMC

CE Sign Yes

UKCA Sign Yes

Emission EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)

Immunity EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)
EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)
EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)
EN 61000-4-5 / BS EN 61000-4-5 (Surge test)
EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)
EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)
EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)

### Configuration

Configuration Software Master SYCON.net

---

### 9.1.15 CIFX 50E-2DP\CO

<table>
<thead>
<tr>
<th>CIFX 50E-2DP\CO</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50E-2DP\CO</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1253.470</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI 2 channel - Channel X0: PROFIBUS DP Master or Slave, Channel X1: CANopen Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI Express, 1 x PROFIBUS and 1 x CANopen interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td>System Interface</td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>Bus Type</td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td>CIFX 50E-2DPICO</td>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>PROFIBUS</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>PROFIBUS DP Master, PROFIBUS DP Slave</td>
</tr>
<tr>
<td>Communication</td>
<td>Transmission rate</td>
<td>9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 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</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>2 * RS 485, refer to section PROFIBUS Interface p. 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub female Connector, 9 pin</td>
</tr>
<tr>
<td>CANopen</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td>Communication</td>
<td>Transmission rate</td>
<td>10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub male Connector, 9 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>System Status LED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COM 0 LED Communication Status 0 (duo LED) for channel X1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAN 1 CANopen Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The meaning of the LEDs COM0 and CAN1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>750 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>-20 °C ... +70°C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 95 x 21,5 mm</td>
</tr>
<tr>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
<td></td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
<td></td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
<td></td>
</tr>
</tbody>
</table>
### CIX 50E-2DP\ICO Parameter | Value
--- | ---
| EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 | (Radiated, radio-frequency, electromagnetic field test) EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 | (Burst Electrical fast transients/burst test) EN 61000-4-5 / BS EN 61000-4-5 (Surge test) EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields) EN 61000-4-8 / BS EN 61000-4-8 | (power frequency magnetic field test) EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 | (for industrial environments)

### Table 109: Technical Data CIX 50E-2DP\ICO

#### 9.1.16 CIX 50-2DP\DN

### CIX 50-2DP\DN Parameter | Value
--- | ---
| Part Name | CIFX 50-2DP\DN
| Part No. | 1252.480
| Description | PC Card cifX PCI 2 channel - Channel X0: PROFIBUS DP Master or Slave, Channel X1: DeviceNet Master or Slave
| Function | Communication interface with PCI, 1 x PROFIBUS and 1 x DeviceNet interface

### Communication Controller

- **Type**: netX 100 processor

### Integrated Memory

- **RAM**: 8 MB SDRAM
- **FLASH**: 4 MB serial Flash EPROM
- **Size of the Dual-Port Memory**: 64 KByte

### System Interface

- **Bus Type**: PCI, according to [bus spec 1], refer to section Overview, page 135.
- **Transmission Rate**: 33 MHz
- **Data Access**: DPM or DMA (Direct Memory Access)
- **Width for the data access to the Dual-Port Memory (DPM)**: 32-Bit

### PROFIBUS Communication

- **Supported communication standard/protocol (determined by the loaded firmware)**: PROFIBUS DP Master, PROFIBUS DP Slave

#### PROFIBUS Interface

- **Transmission rate**: 9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 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
- **Interface Type**: 2 * RS 485, refer to section PROFIBUS Interface p. 128.
- **Galvanic Isolation**: isolated
- **Isolation Voltage**: 1000 VDC (tested for 1 minute)
- **Connector**: DSub female Connector, 9 pin

### DeviceNet Communication

- **Supported communication standard/protocol (determined by the loaded firmware)**: DeviceNet Master, DeviceNet Slave

#### DeviceNet Interface

- **Transmission rate**: 125 kBit/s, 250 kBit/s, 500 kBit/s
- **Interface Type**: ISO-11898 according to DeviceNet specification, refer to section DeviceNet Interface, page 129.
- **Galvanic Isolation**: optically isolated
- **Isolation Voltage**: 1000 VDC (tested for 1 minute)
## CIFX 50-2DP\DN

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
</tr>
<tr>
<td>Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td>COM 0 LED Communication Status 0 (duo LED) for channel X1</td>
</tr>
<tr>
<td></td>
<td>MNS 1 DeviceNet-Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td>The meaning of the LEDs COM0 and MNS1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage +3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V 700 mA (maximum)</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
</tr>
<tr>
<td></td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range* -20 °C ... +70 °C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement 0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range -40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity 10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td></td>
<td>Dimensions (L x W x H) 120 x 94,5 x 18,5 mm</td>
</tr>
<tr>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Master SYCON.net</td>
</tr>
</tbody>
</table>

Table 110: Technical Data CIFX 50-2DP\DN
### 9.1.17 CIFX 50E-2DP\DN

<table>
<thead>
<tr>
<th>CIFX 50E-2DP\DN</th>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td><strong>Part</strong></td>
<td>Name</td>
<td>CIFX 50E-2DP\DN</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1253.480</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI 2 channel - Channel X0: PROFIBUS DP Master or Slave, Channel X1: DeviceNet Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI Express, 1 x PROFIBUS and 1 x DeviceNet interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
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<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td><strong>PROFIBUS Communication</strong></td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>PROFIBUS DP Master, PROFIBUS DP Slave</td>
</tr>
<tr>
<td><strong>PROFIBUS Interface</strong></td>
<td>Transmission rate</td>
<td>9.6 kBit/s, 19.2 kBit/s, 31.25 kBit/s, 45.45 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</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>2 * RS 485, refer to section PROFIBUS Interface p. 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub female Connector, 9 pin</td>
</tr>
<tr>
<td><strong>DeviceNet Communication</strong></td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>DeviceNet Master, DeviceNet Slave</td>
</tr>
<tr>
<td><strong>DeviceNet Interface</strong></td>
<td>Transmission rate</td>
<td>125 kBit/s, 250 kBit/s, 500 kBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898 according to DeviceNet specification, refer to section DeviceNet Interface, page 129.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td>Refer to chapter Diagnosis with LEDs, page 95.</td>
<td>COM 0 LED Communication Status 0 (duo LED) for channel X1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MNS 1 DeviceNet-Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The meaning of the LEDs COM0 and MNS1 depends on the loaded firmware.</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
</tbody>
</table>
### CIFX 50E-2DP\DN

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td></td>
</tr>
<tr>
<td>Operating temperature range*</td>
<td>-20 °C ... +70 °C</td>
</tr>
<tr>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 95 x 21,5 mm</td>
</tr>
<tr>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section <em>Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe</em>, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td></td>
</tr>
<tr>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test) EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test) EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test) EN 61000-4-5 / BS EN 61000-4-5 (Surge test) EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields) EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test) EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td>Configuration Software Master  SYCON.net</td>
</tr>
</tbody>
</table>

*Table 111: Technical Data CIFX 50E-2DP\DN*

### 9.1.18 CIFX 50-2CO

<table>
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<tr>
<th>CIFX 50-2CO</th>
<th>Parameter</th>
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<td><strong>Part</strong></td>
<td>Name</td>
<td>CIFX 50-2CO</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1252.500</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI 2 channel CANopen Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI and 2 x CANopen interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section <em>Overview</em>, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
</tbody>
</table>

PC Cards cifX PCI, PCIe, Low Profile PCIe | Installation, Operation and Hardware Description
DOC120204UM56EN | Revision 56 | English | 2023-04 | Released | Public © Hilscher, 2008-2023
## CIFX 50-2CO Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CANopen Communication</strong></td>
<td><strong>Supported communication standard/protocol (determined by the loaded firmware)</strong></td>
</tr>
<tr>
<td><strong>CANopen Interface</strong></td>
<td><strong>Transmission rate</strong> 10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td><strong>Interface Type</strong></td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td><strong>Galvanic Isolation</strong></td>
<td>optically isolated</td>
</tr>
<tr>
<td><strong>Isolation Voltage</strong></td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>DSub male Connector, 9 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td><strong>LED Display</strong></td>
</tr>
<tr>
<td><strong>SYS</strong></td>
<td>System Status LED</td>
</tr>
<tr>
<td><strong>CAN 0</strong></td>
<td>CANopen Status 0 (duo LED) for channel X1</td>
</tr>
<tr>
<td><strong>CAN 1</strong></td>
<td>CANopen Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td><strong>The meaning of the LEDs CAN0 and CAN1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td><strong>Supply Voltage</strong> +3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td><strong>Current consumption at 3.3 V</strong></td>
<td>700 mA (maximum)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>Via PCI Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td><strong>Rotary Switch Slot Number (Card ID)</strong></td>
</tr>
<tr>
<td><strong>To set the Slot Number (Card ID)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td><strong>Operating temperature range</strong> -20 °C ... +70 °C</td>
</tr>
<tr>
<td><strong>Air flow during measurement</strong></td>
<td>0,5m/s</td>
</tr>
<tr>
<td><strong>Storage temperature range</strong></td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td><strong>Dimensions (L x W x H)</strong> 120 x 94,5 x 18,5 mm</td>
</tr>
<tr>
<td><strong>Mounting/Installation</strong></td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td><strong>RoHS</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td><strong>CE Sign</strong></td>
</tr>
<tr>
<td><strong>Yes</strong></td>
<td></td>
</tr>
<tr>
<td><strong>UKCA Sign</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Emission</strong></td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td><strong>Immunity</strong></td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td><strong>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td><strong>Configuration Software Master</strong> SYCON.net</td>
</tr>
</tbody>
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Table 112: Technical Data CIFX 50-2CO
### 9.1.19 CIFX 50E-2CO

<table>
<thead>
<tr>
<th>CIFX 50E-2CO</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50E-2CO</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1253.500</td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI Express 2 channel CANopen Master or Slave</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and 2 x CANopen interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA* (Direct Memory Access); *beginning from Hardware Revision 4</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>CANopen Communication</td>
<td>Supported communication standard/ protocol (determined by the loaded firmware)</td>
<td>CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td>CANopen Interface</td>
<td>Transmission rate</td>
<td>10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub male Connector, 9 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAN 0 CANopen Status 0 (duo LED) for channel X1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CAN 1 CANopen Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The meaning of the LEDs CAN0 and CAN1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>750 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>-20 °C ... +70 °C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td></td>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 95 x 21,5 mm</td>
</tr>
</tbody>
</table>
Table 113: Technical Data CIFX 50E-2CO

<table>
<thead>
<tr>
<th>CIFX 50E-2CO</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td></td>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td></td>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Master and Slave</td>
<td>SYCON.net</td>
</tr>
<tr>
<td></td>
<td>Configuration Software Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

9.1.20 CIFX 50-2CO\DN

<table>
<thead>
<tr>
<th>CIFX 50-2CO\DN</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name</td>
<td>CIFX 50-2CO\DN</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1252.570</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI 2 channel - Channel X0: CANopen Master or Slave, Channel X1: DeviceNet Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI, 1 x CANopen and 1 x DeviceNet interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>CANopen Communication</td>
<td>Supported communication standard/ protocol (determined by the loaded firmware)</td>
<td>CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td>CANopen Interface</td>
<td>Transmission rate</td>
<td>10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td>CIFX 50-2CO</td>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub male Connector, 9 pin</td>
</tr>
</tbody>
</table>

**DeviceNet Communication**
- Supported communication standard/ protocol (determined by the loaded firmware): DeviceNet Master, DeviceNet Slave
- Transmission rate: 125 kBit/s, 250 kBit/s, 500 kBit/s
- Interface Type: ISO-11898 according to DeviceNet specification, refer to section DeviceNet Interface, page 129.
- Galvanic Isolation: optically isolated
- Isolation Voltage: 1000 VDC (tested for 1 minute)
- Connector: CombiCon male Connector, 5 pin

**Display**
- LED Display: CAN 0 CANopen Status 0 (duo LED) for channel X1
- CAN 1 CANopen Status 1 (duo LED) for channel X2
- The meaning of the LEDs CAN0 and MNS1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.

**Power supply**
- Supply Voltage: +3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.
- Current consumption at 3.3 V: 700 mA (maximum)
- Connector: Via PCI Bus

**Operation**
- Rotary Switch Slot Number (Card ID): To set the Slot Number (Card ID)

**Environmental Conditions**
- Operating temperature range*: -20 °C ... +70 °C
- Air flow during measurement: 0,5m/s
- Storage temperature range: -40 °C ... +85 °C
- Humidity: 10 ... 95% relative humidity, no condensation permitted
- Environment: For UL compliant usage: The device must be used in a pollution degree 2 environment.

**Device**
- Dimensions (L x W x H): 120 x 94,5 x 18,5 mm
- Mounting/Installation: PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.
- RoHS: Yes

**Compliance with EMC**
- CE Sign: Yes
- UKCA Sign: Yes
- Emission: EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)
- Immunity: EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)
- EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)
- EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)
- EN 61000-4-5 / BS EN 61000-4-5 (Surge test)
- EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)
- EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)
- EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1
### 9.1.21 CIFX 50E-2CO\DN

<table>
<thead>
<tr>
<th>CIFX 50E-2CO\DN</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 50E-2CO\DN</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1253.570</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI 2 channel - Channel X0: CANopen Master or Slave, Channel X1: DeviceNet Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI Express, 1 x CANopen and 1 x DeviceNet interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory</td>
<td>32-Bit</td>
</tr>
<tr>
<td>CANopen Communication</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td>CANopen Interface</td>
<td>Transmission rate</td>
<td>10 kBit/s, 20 kBit/s, 50 kBit/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub male Connector, 9 pin</td>
</tr>
<tr>
<td>DeviceNet Communication</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>DeviceNet Master, DeviceNet Slave</td>
</tr>
<tr>
<td>DeviceNet Interface</td>
<td>Transmission rate</td>
<td>125 kBit/s, 250 kBit/s, 500 kBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898 according to DeviceNet specification, refer to section DeviceNet Interface, page 129.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED, CAN 0 CANopen Status 0 (duo LED) for channel X1, MNS 1 CANopen Status 1 (duo LED) for channel X2</td>
</tr>
<tr>
<td></td>
<td>The meaning of the LEDs CAN0 and MNS1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
</tbody>
</table>
### CIFX 50E-2COIDN

<table>
<thead>
<tr>
<th>CIFX 50E-2COIDN</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>780 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td></td>
<td>(Card ID)</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td>Operating temperature range*</td>
<td>-20 °C … +70 °C</td>
</tr>
<tr>
<td>Conditions</td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C … +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>120,0 x 95 x 21,5 mm</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCle and Low Profile PCle, page 64.</td>
</tr>
<tr>
<td></td>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Master</td>
<td>SYCON.net</td>
</tr>
</tbody>
</table>

**Table 115: Technical Data CIFX 50E-2COIDN**

### 9.1.22 CIFX 50-2DN

<table>
<thead>
<tr>
<th>CIFX 50-2DN</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name</td>
<td>CIFX 50-2DN</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1252.510</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI 2 channel DeviceNet Master or Slave</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI and 2 x DeviceNet interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
</tbody>
</table>
### CIFX 50-2DN

#### Parameter | Value
---|---
Transmission Rate | 33 MHz
Data Access | DPM or DMA (Direct Memory Access)
Width for the data access to the Dual-Port Memory (DPM) | 32-Bit

**DeviceNet Communication**

- Supported communication standard/protocol (determined by the loaded firmware): DeviceNet Master, DeviceNet Slave

**DeviceNet Interface**

- Transmission rate: 125 kBit/s, 250 kBit/s, 500 kBit/s
- Interface Type: ISO-11898 according to DeviceNet specification, refer to section *DeviceNet Interface*, page 129.
- Galvanic Isolation: optically isolated
- Isolation Voltage: 1000 VDC (tested for 1 minute)
- Connector: CombiCon male Connector, 5 pin

**Display**

- LED Display:
  - SYS: System Status LED
  - MNS 0: Module Network Status 0 (duo LED) for channel X1
  - MNS 1: Module Network Status 1 (duo LED) for channel X2

- The meaning of the LEDs MNS 0 and MNS 1 depends on the loaded firmware. Refer to chapter *Diagnosis with LEDs*, page 95.

**Power supply**

- Supply Voltage: +3.3 V dc ±5 %, refer to section *Power Supply and Host Interface*, page 65.
- Current consumption at 3.3 V: 700 mA (maximum)
- Connector: Via PCI Bus

**Operation**

- Rotary Switch Slot Number (Card ID): To set the Slot Number (Card ID)

**Environmental Conditions**

- Operating temperature range*: -20 °C ... +70 °C
- Air flow during measurement: 0,5m/s
- Storage temperature range: -40 °C ... +85 °C
- Humidity: 10 … 95% relative humidity, no condensation permitted
- Environment: For UL compliant usage: The device must be used in a pollution degree 2 environment.

**Device**

- Dimensions (L x W x H): 120 x 94,5 x 18,5 mm
- Mounting/Installation: PCI slot (3.3 V), refer to section *Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe*, page 64.
- RoHS: Yes

**Compliance with EMC**

- CE Sign: Yes
- UKCA Sign: Yes
- Emission: EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)
- Immunity: EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)
  - EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)
  - EN 61000-4-4 / BS EN 61000-4-4 (Electrical fast transients/burst test)
- EN 61000-4-5 / BS EN 61000-4-5 (Surge test)
  - EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)
### 9.1.23 CIFX 50E-2DN

<table>
<thead>
<tr>
<th>CIFX 50E-2DN</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Name</td>
<td>CIFX 50E-2DN</td>
<td></td>
</tr>
<tr>
<td>Part No.</td>
<td>1253.510</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI 2 channel ExpressDeviceNet Master or Slave</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and 2x DeviceNet interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controller Type</td>
<td>netX 100 processor</td>
<td></td>
</tr>
<tr>
<td>Integrated Memory RAM</td>
<td>8 MB SDRAM</td>
<td></td>
</tr>
<tr>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
<td></td>
</tr>
<tr>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
<td></td>
</tr>
<tr>
<td>System Interface Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
<td></td>
</tr>
<tr>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
<td></td>
</tr>
<tr>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
<td></td>
</tr>
<tr>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
<td></td>
</tr>
<tr>
<td>DeviceNet Communication Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>DeviceNet Master, DeviceNet Slave</td>
<td></td>
</tr>
<tr>
<td>DeviceNet Interface Transmission rate</td>
<td>125 kBit/s, 250 kBit/s, 500 kBit/s</td>
<td></td>
</tr>
<tr>
<td>Interface Type</td>
<td>ISO-11898 according to DeviceNet specification, refer to section DeviceNet Interface, page 129.</td>
<td></td>
</tr>
<tr>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
<td></td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
<td></td>
</tr>
<tr>
<td>Display LED Display</td>
<td>SYS System Status LED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MNS 0 Module Network Status 0 (duo LED) for channel X1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MNS 1 Module Network Status 1 (duo LED) for channel X2</td>
<td></td>
</tr>
<tr>
<td>The meaning of the LEDs MNS 0 and MNS 1 depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
<td></td>
</tr>
<tr>
<td>Current consumption at 3.3 V</td>
<td>880 mA (maximum)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>Via PCI Express Bus</td>
<td></td>
</tr>
<tr>
<td>Operation Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
<td></td>
</tr>
<tr>
<td>Environmental Operating temperature range*</td>
<td>-20 °C ... +70 °C</td>
<td></td>
</tr>
</tbody>
</table>
### CIFX 50E-2DN

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conditions</strong></td>
<td></td>
</tr>
<tr>
<td>*Air flow during measurement</td>
<td>0.5 m/s</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td></td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>120.0 x 95 x 21.5 mm</td>
</tr>
<tr>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td></td>
</tr>
<tr>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td></td>
</tr>
<tr>
<td>Configuration Software</td>
<td>SYCON.net</td>
</tr>
<tr>
<td>Master and Slave</td>
<td></td>
</tr>
<tr>
<td>Configuration Software Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

### 9.1.24 CIFX 50-2ASM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td><strong>Part</strong></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>CIFX 50-2ASM</td>
</tr>
<tr>
<td>Part No.</td>
<td>1252.630</td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI 2 channel AS-Interface Master</td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI and 2 x AS-Interface interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td></td>
</tr>
<tr>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td></td>
</tr>
<tr>
<td>Bus Type</td>
<td>PCI, according to [bus spec 1], refer to section Overview, page 135.</td>
</tr>
<tr>
<td>Transmission Rate</td>
<td>33 MHz</td>
</tr>
<tr>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
</tbody>
</table>
### Technical Data CIFX 50-2ASM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AS-Interface</strong></td>
<td><strong>Supported communication standard/ protocol (determined by the loaded firmware)</strong></td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>AS-Interface Master</td>
</tr>
<tr>
<td><strong>Transmission rate</strong></td>
<td>166.67 kBit/s</td>
</tr>
<tr>
<td><strong>Interface Type</strong></td>
<td>2 *, acc. to IEC 364-4-41, refer to section AS-Interface Interface, page 129.</td>
</tr>
<tr>
<td><strong>Galvanic Isolation</strong></td>
<td>optically isolated</td>
</tr>
<tr>
<td><strong>Isolation Voltage</strong></td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>CombiCon male Connector, 2 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td><strong>LED Display</strong></td>
</tr>
<tr>
<td><strong>SYS</strong></td>
<td>System Status LED</td>
</tr>
<tr>
<td><strong>COM1</strong></td>
<td>LED channel X1 (duo LED)</td>
</tr>
<tr>
<td><strong>COM2</strong></td>
<td>LED channel X2 (duo LED)</td>
</tr>
<tr>
<td><strong>Refer to chapter Diagnosis with LEDs, page 95.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td><strong>Supply Voltage</strong></td>
</tr>
<tr>
<td></td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td><strong>Current consumption at 3.3 V</strong></td>
<td>700 mA (maximum)</td>
</tr>
<tr>
<td><strong>Connector</strong></td>
<td>Via PCI Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td><strong>Rotary Switch Slot Number</strong></td>
</tr>
<tr>
<td><strong>(Card ID)</strong></td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td><strong>Operating temperature range</strong></td>
</tr>
<tr>
<td></td>
<td>-20 °C ... +55 °C</td>
</tr>
<tr>
<td><strong>Air flow during measurement</strong></td>
<td>0,5m/s</td>
</tr>
<tr>
<td><strong>Storage temperature range</strong></td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td><strong>Dimensions (L x W x H)</strong></td>
</tr>
<tr>
<td></td>
<td>120 x 94,5 x 18,5 mm</td>
</tr>
<tr>
<td><strong>Mounting/Installation</strong></td>
<td>PCI slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td><strong>RoHS</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Compliance with EMC</strong></td>
<td><strong>CE Sign</strong></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>UKCA Sign</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Emission</strong></td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td><strong>Immunity</strong></td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td><strong>UL Certification</strong></td>
<td>The device CIFX 50-2ASM is certified according to UL 508.</td>
</tr>
<tr>
<td></td>
<td>UL-File-Nr. E221530</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td>Configuration Software</td>
</tr>
<tr>
<td></td>
<td>SYCON.net</td>
</tr>
</tbody>
</table>

Table 118: Technical Data CIFX 50-2ASM
# 9.1.25 CIFX 50E-2ASM

<table>
<thead>
<tr>
<th>CIFX 50E-2ASM</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Name</td>
<td>CIFX 50E-2ASM</td>
<td></td>
</tr>
<tr>
<td>Part No.</td>
<td>1253.630</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX PCI Express2 channel AS-Interface Master</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and 2 x AS-Interface interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controller Type</td>
<td>netX 500 processor (since hardware revision 04 netX 500; before netX 100)</td>
<td></td>
</tr>
<tr>
<td>Integrated Memory RAM</td>
<td>8 MB SDRAM</td>
<td></td>
</tr>
<tr>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
<td></td>
</tr>
<tr>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
<td></td>
</tr>
<tr>
<td>System Interface Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
<td></td>
</tr>
<tr>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
<td></td>
</tr>
<tr>
<td>Data Access</td>
<td>DPM or DMA* (Direct Memory Access); *beginning from Hardware Revision 4</td>
<td></td>
</tr>
<tr>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
<td></td>
</tr>
<tr>
<td>AS-Interface Communication Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>AS-Interface Master</td>
<td></td>
</tr>
<tr>
<td>AS-Interface Interface Transmission rate</td>
<td>166,67 kBit/s</td>
<td></td>
</tr>
<tr>
<td>Interface Type</td>
<td>2 *, acc. to IEC 364-4-41, refer to section AS-Interface Interface, page 129.</td>
<td></td>
</tr>
<tr>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
<td></td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>CombiCon male Connector, 2 pin</td>
<td></td>
</tr>
<tr>
<td>Display LED Display</td>
<td>SYS System Status LED</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM1 LED channel X1 (duo LED)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM2 LED channel X2 (duo LED)</td>
<td></td>
</tr>
<tr>
<td>Power supply Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
<td></td>
</tr>
<tr>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>Via PCI Express Bus</td>
<td></td>
</tr>
<tr>
<td>Operation Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
<td></td>
</tr>
<tr>
<td>Environmental Conditions Operating temperature range*</td>
<td>0 °C ... +55 °C</td>
<td></td>
</tr>
<tr>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
<td></td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>For UL compliant usage: The device must be used in a pollution degree 2 environment.</td>
<td></td>
</tr>
<tr>
<td>Device Dimensions (L x W x H)</td>
<td>120 x 94,5 x 18,5 mm</td>
<td></td>
</tr>
<tr>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
<td></td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Compliance with EMC CE Sign</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

PC Cards cifX PCI, PCIe, Low Profile PCIe | Installation, Operation and Hardware Description
DOC120204UM56EN | Revision 56 | English | 2023-04 | Released | Public  © Hilscher, 2008-2023
### Technical Data CIFX 50E-2ASM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td>UL Certification</td>
<td>The device CIFX 50E-2ASM is certified according to UL 508.</td>
</tr>
<tr>
<td></td>
<td>UL-File-Nr. E221530</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software SYCON.net</td>
</tr>
</tbody>
</table>

#### Table 119: Technical Data CIFX 50E-2ASM

### 9.1.26 CIFX 70E-RE, CIFX 70E-RE\MR

<table>
<thead>
<tr>
<th>CIFX 70E-RE, CIFX 70E-RE\MR</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 70E-RE</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1.259.100</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX Low Profile PCI Express Real-Time-Ethernet Master or Slave (Low Profile PCIe with RTE), (and variants with additional MRAM \MR)</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI Express and Ethernet interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td></td>
<td>MRAM (only CIFX 70E-RE\MR)</td>
<td>128Kbyte (= 64K Words); Note: Using the cifX Device Driver (from Version 1.1.1.0) access to this memory is possible and it can be used as a remanent memory.</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>Ethernet Communication</td>
<td>Supported Real-Time Ethernet communication systems (determined by the loaded firmware)</td>
<td>CC-Link IE Field Basic Slave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EtherCAT Master, EtherCAT Slave</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EtherNet/IP Scanner (Master), EtherNet/IP Adapter (Slave),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Open Modbus/TCP</td>
</tr>
<tr>
<td>CIFX 70E-RE, CIFX 70E-REIMR</td>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>POWERLINK Controlled Node/Slave</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROFINET IO-Controller (Master), PROFINET IO-Device (Slave)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sercos Master, Sercos Slave</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VARAN Client (Slave)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethernet Frame Types</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethernet II</td>
<td></td>
</tr>
<tr>
<td>Ethernet Interface</td>
<td>Transmission rate</td>
<td>100 MBit/s, 10 MBit/s (depending on loaded firmware)</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>100 BASE-TX, 10 BASE-T (depending on loaded firmware), refer to section Ethernet Interface, page 125.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Half duplex/Full duplex</td>
<td>depending on loaded firmware, supported (at 100 MBit/s)</td>
</tr>
<tr>
<td></td>
<td>Auto-Negotiation</td>
<td>depending on loaded firmware</td>
</tr>
<tr>
<td></td>
<td>Auto-Crossover</td>
<td>depending on loaded firmware</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>2* RJ45 Socket</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td>The meaning of the following LEDs depends on the loaded firmware:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>COM 0</td>
<td>LED Communication Status 0 (duo LED)</td>
</tr>
<tr>
<td></td>
<td>COM 1</td>
<td>LED Communication Status 1 (duo LED)</td>
</tr>
<tr>
<td></td>
<td>LED yellow</td>
<td>at RJ45Ch0 and RJ45Ch1, for Ethernet Link status, Ethernet Activity status and additional status</td>
</tr>
<tr>
<td></td>
<td>LED green</td>
<td>Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>0 °C ... +65 °C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 … 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>119,0 x 69,0 x 18,5 mm</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI Express x4 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td></td>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td>CIFX 70E-RE, CIFX 70E-RE/MR</td>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
<td></td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Master and Slave</td>
<td>SYCON.net</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

*Table 120: Technical Data CIFX 70E-RE, CIFX 70E-RE/MR*
## 9.1.27 CIFX 100EH-RE\CUBE

<table>
<thead>
<tr>
<th>Part</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIFX 100EH-RE</td>
<td>Name</td>
<td>CIFX 100EH-RE</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>9016.090</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX PCI Express for Real-Time Ethernet Master or Slave, (low-profile card) exclusively for the installing in KEBA KeControl industry PCs series CP 3XX (Cube).</td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI Express and Ethernet interface</td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port*, refer to section Overview, page 135 and Pin Assignment for PCI Express Bus CIFX 100EH-RE\CUBE, page 136. *The PC card CIFX 100EH-RE\CUBE can be used for x4 connectors, but not a real x4 connection (mechanical deviation from the standard, it is used only 1 lane).</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>Ethernet Communication</td>
<td>Supported Real-Time Ethernet communication systems (determined by the loaded firmware)</td>
<td>EtherCAT Master, EtherCAT Slave, EtherNet/IP Scanner (Master), EtherNet/IP Adapter (Slave), Open Modbus/TCP, POWERLINK Controlled Node/Slave, PROFINET IO-Controller (Master), PROFINET IO-Device (Slave), Sercos Master, Sercos Slave, VARAN Client (Slave)</td>
</tr>
<tr>
<td>Ethernet Frame Types</td>
<td>Ethernet II</td>
<td></td>
</tr>
<tr>
<td>Ethernet Interface</td>
<td>Transmission rate</td>
<td>100 MBit/s, 10 MBit/s (depending on loaded firmware)</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>100 BASE-TX, 10 BASE-T (depending on loaded firmware), refer to section Ethernet Interface, page 125.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Half duplex/Full duplex</td>
<td>depending on loaded firmware, supported (at 100 MBit/s)</td>
</tr>
<tr>
<td></td>
<td>Auto-Negotiation</td>
<td>depending on loaded firmware</td>
</tr>
<tr>
<td></td>
<td>Auto-Crossover</td>
<td>depending on loaded firmware</td>
</tr>
<tr>
<td>Connector</td>
<td>2* RJ45 Socket</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED, The meaning of the following LEDs depends on the loaded firmware: COM 0 LED Communication Status 0 (duo LED), COM 1 LED Communication Status 1 (duo LED), LED yellow at RJ45Ch0 and RJ45Ch1,</td>
</tr>
</tbody>
</table>
## Technical Data CIFX 100EH-RE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LED green</strong></td>
<td>for Ethernet Link status, Ethernet Activity status and additional status. Refer to chapter <strong>Diagnosis with LEDs</strong>, page 95.</td>
</tr>
</tbody>
</table>

### Power supply
- **Supply Voltage**: +3.3 V dc ±5 %, refer to section **Power Supply and Host Interface**, page 65.
- **Current consumption at 3.3 V**: 800 mA (maximum)
- **Connector**: Via PCI Express Bus

### Operation
- **Rotary Switch Slot Number (Card ID)**: To set the Slot Number (Card ID)

### Environmental Conditions
- **Operating temperature range**: 0 °C ... +65 °C
- **Air flow during measurement**: 0,5 m/s
- **Storage temperature range**: -40 °C ... +85 °C
- **Humidity**: 10 … 95% relative humidity, no condensation permitted
- **Environment**: For UL compliant usage: The device must be used in a pollution degree 2 environment.

### Device
- **Dimensions (L x W x H)**: 110,0 x 69,0 x 18,5 mm
- **Mounting/Installation**: PCI Express x4 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64. x4⁵ = Four Lane; In the PCI Express x4 slot only lane 0 is used. For further details refer to section Pin Assignment for PCI Express Bus CIFX 100EH-RE\CUBE on page 136.
- **Master License**: NXLIC Master (Part No 8211.000)
- **RoHS**: Yes

### Compliance with EMC
- **CE Sign**: Yes
- **UKCA Sign**: Yes
- **Emission**: EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)
- **Immunity**: EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)
  - EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)
  - EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)
  - EN 61000-4-5 / BS EN 61000-4-5 (Surge test)
  - EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)
  - EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)
  - EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)

### UL Certification
- The device CIFX 100EH-RE\CUBE is certified according to UL 508. *UL-File-Nr. E221530*

### Configuration
- **Configuration Software Master and Slave**: SYCON.net
- **Configuration Software Slave**: netX Configuration Tool

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⁵ The term "x4" refers to the convention of the PCI Express specifications [bus spec 3] to the number of lanes in the slot.

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PC Cards cifX PCI, PCIe, Low Profile PCIe | Installation, Operation and Hardware Description
DOC120204UM56EN | Revision 56 | English | 2023-04 | Released | Public © Hilscher, 2008-2023
### 9.1.28 CIFX 70E-DP, CIFX 70E-DP\MR

<table>
<thead>
<tr>
<th>CIFX 70E-DP, CIFX 70E-DP\MR</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part</strong></td>
<td>Name</td>
<td>CIFX 70E-DP</td>
</tr>
<tr>
<td></td>
<td>Part No.</td>
<td>1259.410</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>PC Card cifX Low Profile PCI Express PROFINET IO Master or Slave and PROFINET IO Slave Device (Low Profile PCIe with PROFINET IO), (and variants with additional MRAM <em>‘MR’)</em></td>
</tr>
<tr>
<td></td>
<td>Function</td>
<td>Communication interface with PCI Express and PROFINET IO interface</td>
</tr>
<tr>
<td><strong>Communication Controller</strong></td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td><strong>Integrated Memory</strong></td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td></td>
<td>MRAM (only CIFX 70E-DP\MR)</td>
<td>128Kbyte (= 64K Words): <em>Note:</em> Using the cifX Device Driver (from Version 1.1.1.0) access to this memory is possible and it can be used as a remanent memory.</td>
</tr>
<tr>
<td><strong>System Interface</strong></td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section <em>Overview</em>, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td><strong>PROFINET IO Communication</strong></td>
<td>Supported communication standard/ protocol (determined by the loaded firmware)</td>
<td>PROFINET IO DP Master, PROFINET IO Slave, PROFINET IO Device</td>
</tr>
<tr>
<td><strong>PROFINET IO Interface</strong></td>
<td>Transmission rate</td>
<td>9,6 kBit/s, 19,2 kBit/s, 31,25 kBit/s, 45,45 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</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>RS 485, refer to section <em>PROFINET IO Interface</em>, page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub female Connector, 9 pin</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>LED Display</td>
<td>SYS System Status LED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COM LED Communication Status (duo LED)</td>
</tr>
<tr>
<td></td>
<td>The meaning of the COM LED depends on the loaded firmware. Refer to chapter <em>Diagnosis with LEDs</em>, page 95.</td>
<td></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section <em>Power Supply and Host Interface</em>, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td><strong>Environmental Conditions</strong></td>
<td>Operating temperature range*</td>
<td>0 °C ... +65 °C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td><strong>Device</strong></td>
<td>Dimensions (L x W x H)</td>
<td>119,0 x 69,0 x 18,5 mm</td>
</tr>
</tbody>
</table>
### Table 122: Technical Data CIFX 70E-DP, CIFX 70E-DPMR

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td></td>
</tr>
<tr>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Master and Slave SYCON.net</td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Slave netX Configuration Tool</td>
</tr>
</tbody>
</table>

#### 9.1.29 CIFX 70E-CO, CIFX 70E-CO\MR

<table>
<thead>
<tr>
<th>CIFX 70E-CO, CIFX 70E-CO\MR</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 70E-CO CIFX 70E-CO\MR</td>
</tr>
<tr>
<td>Part No.</td>
<td>1259.500</td>
<td>1259.503</td>
</tr>
<tr>
<td>Description</td>
<td>PC-Karte cifX Low Profile PCI Express CANopen Master or Slave (Low Profile PCIe mit CANopen), (and variants with additional MRAM ‘MR’)</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and CANopen interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
<td></td>
</tr>
<tr>
<td>MRAM (only CIFX 70E-CO\MR)</td>
<td>128Kbyte (= 64K Words);</td>
<td></td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section Overview, page 135.</td>
</tr>
<tr>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
<td></td>
</tr>
<tr>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
<td></td>
</tr>
<tr>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
<td></td>
</tr>
<tr>
<td>CIFX 70E-CO, CIFX 70E-CO/MR</td>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>CANopen Communication</td>
<td>Supported communication standard/protocol (determined by the loaded firmware)</td>
<td>CANopen Master, CANopen Slave</td>
</tr>
<tr>
<td>CANopen Interface</td>
<td>Transmission rate</td>
<td>10 kBit/s, 20 kBit/s, 50 kBIt/s, 100 kBit/s, 125 kBit/s, 250 kBit/s, 500 kBit/s, 800 kBit/s, 1 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898, refer to section CANopen Interface, page 128.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>DSub male Connector, 9 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED, CAN CANopen Status (duo LED)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The meaning of the CAN LED depends on the loaded firmware. Refer to chapter Diagnosis with LEDs, page 95.</td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V ±5 %, refer to section Power Supply and Host Interface, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>0 °C ... +65 °C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0,5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td>Device</td>
<td>Dimensions (L x W x H)</td>
<td>119,0 x 69,0 x 18,5 mm</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe, page 64.</td>
</tr>
<tr>
<td></td>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
<td></td>
</tr>
<tr>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio- frequency fields)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
<td></td>
</tr>
<tr>
<td>Configuration</td>
<td>Configuration Software Master and Slave</td>
<td>SYCON.net</td>
</tr>
<tr>
<td></td>
<td>Configuration Software Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

Table 123: Technical Data CIFX 70E-CO, CIFX 70E-CO/MR
## 9.1.30 CIFX 70E-DN, CIFX 70E-DN\*MR

<table>
<thead>
<tr>
<th>CIFX 70E-DN, CIFX 70E-DN*MR</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part</td>
<td>Name</td>
<td>CIFX 70E-DN, CIFX 70E-DN*MR</td>
</tr>
<tr>
<td>Part No.</td>
<td>1259.510</td>
<td>1259.513</td>
</tr>
<tr>
<td>Description</td>
<td>PC Card cifX Low Profile PCI Express DeviceNet Master or Slave (Low Profile PCIe with DeviceNet), (and variants with additional MRAM ‘MR’)</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td>Communication interface with PCI Express and DeviceNet interface</td>
<td></td>
</tr>
<tr>
<td>Communication Controller</td>
<td>Type</td>
<td>netX 100 processor</td>
</tr>
<tr>
<td>Integrated Memory</td>
<td>RAM</td>
<td>8 MB SDRAM</td>
</tr>
<tr>
<td></td>
<td>FLASH</td>
<td>4 MB serial Flash EPROM</td>
</tr>
<tr>
<td></td>
<td>Size of the Dual-Port Memory</td>
<td>64 KByte</td>
</tr>
<tr>
<td></td>
<td>MRAM (only CIFX 70E-DN*MR)</td>
<td>128Kbyte (≈ 64K Words); <strong>Note:</strong> Using the cifX Device Driver (from Version 1.1.1.0) access to this memory is possible and it can be used as a remanent memory.</td>
</tr>
<tr>
<td>System Interface</td>
<td>Bus Type</td>
<td>PCI Express, One Lane Port, according to [bus spec 2, Rev. 2.0] and [bus spec 3], refer to section <em>Overview</em>, page 135.</td>
</tr>
<tr>
<td></td>
<td>Transmission Rate</td>
<td>2 GBit/s</td>
</tr>
<tr>
<td></td>
<td>Data Access</td>
<td>DPM or DMA (Direct Memory Access)</td>
</tr>
<tr>
<td></td>
<td>Width for the data access to the Dual-Port Memory (DPM)</td>
<td>32-Bit</td>
</tr>
<tr>
<td>DeviceNet Communication</td>
<td>Supported communication standard/ protocol (determined by the loaded firmware)</td>
<td>DeviceNet Master, DeviceNet Slave</td>
</tr>
<tr>
<td>DeviceNet Interface</td>
<td>Transmission rate</td>
<td>125 kBit/s, 250 kBit/s, 500 kBit/s</td>
</tr>
<tr>
<td></td>
<td>Interface Type</td>
<td>ISO-11898 according to DeviceNet specification, refer to section <em>DeviceNet Interface</em>, page 129.</td>
</tr>
<tr>
<td></td>
<td>Galvanic Isolation</td>
<td>optically isolated</td>
</tr>
<tr>
<td></td>
<td>Isolation Voltage</td>
<td>1000 VDC (tested for 1 minute)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>CombiCon male Connector, 5 pin</td>
</tr>
<tr>
<td>Display</td>
<td>LED Display</td>
<td>SYS System Status LED, MNS Module Network Status (duo LED)</td>
</tr>
<tr>
<td></td>
<td>The meaning of the MNS LED depends on the loaded firmware. Refer to chapter <em>Diagnosis with LEDs</em>, page 95.</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>Supply Voltage</td>
<td>+3.3 V dc ±5 %, refer to section <em>Power Supply and Host Interface</em>, page 65.</td>
</tr>
<tr>
<td></td>
<td>Current consumption at 3.3 V</td>
<td>800 mA (maximum)</td>
</tr>
<tr>
<td></td>
<td>Connector</td>
<td>Via PCI Express Bus</td>
</tr>
<tr>
<td>Operation</td>
<td>Rotary Switch Slot Number (Card ID)</td>
<td>To set the Slot Number (Card ID)</td>
</tr>
<tr>
<td>Environmental Conditions</td>
<td>Operating temperature range*</td>
<td>0 °C ... +65 °C</td>
</tr>
<tr>
<td></td>
<td>*Air flow during measurement</td>
<td>0.5m/s</td>
</tr>
<tr>
<td></td>
<td>Storage temperature range</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td></td>
<td>Humidity</td>
<td>10 ... 95% relative humidity, no condensation permitted</td>
</tr>
<tr>
<td></td>
<td>Dimensions (L x W x H)</td>
<td>119.0 x 69.0 x 18.5 mm</td>
</tr>
<tr>
<td></td>
<td>Mounting/Installation</td>
<td>PCI Express x1 slot (3.3 V), refer to section <em>Slot for the PC Cards cifX PCI, PCIe and Low Profile PCIe</em>, page 64.</td>
</tr>
<tr>
<td>CIFX 70E-DN, CIFX 70E-DN/IR</td>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>RoHS</td>
<td>Yes</td>
</tr>
<tr>
<td>Compliance with EMC</td>
<td>CE Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>UKCA Sign</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Emission</td>
<td>EN 55011+ A1, CISPR 11, Class A / BS EN 55011+ A1, CISPR 11, Class A (Radio disturbance characteristics - Limits and methods of measurement)</td>
</tr>
<tr>
<td></td>
<td>Immunity</td>
<td>EN 61000-4-2 / BS EN 61000-4-2 (Electrostatic discharge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-3 + A1 + A2 / BS EN 61000-4-3 + A1 + A2 (Radiated, radio-frequency, electromagnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-4 + A1 / BS EN 61000-4-4 + A1 (Burst Electrical fast transients/burst test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-5 / BS EN 61000-4-5 (Surge test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-6 / BS EN 61000-4-6 (to conducted disturbances, induced by radio-frequency fields)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-4-8 / BS EN 61000-4-8 (power frequency magnetic field test)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EN 61000-6-2 + B1 / BS EN 61000-6-2 + B1 (for industrial environments)</td>
</tr>
<tr>
<td></td>
<td>Configuration Software</td>
<td>SYCON.net</td>
</tr>
<tr>
<td>Configuration Master and Slave</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Configuration Software Slave</td>
<td>netX Configuration Tool</td>
</tr>
</tbody>
</table>

Table 124: Technical Data CIFX 70E-DN, CIFX 70E-DN/IR
9.2 PCI IDs PC Cards cifX on the PCI Bus

On the PCI bus the PC Cards cifX have the following PCI IDs:

<table>
<thead>
<tr>
<th>PCI IDs</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VendorID</td>
<td>0x15CF</td>
</tr>
<tr>
<td>DeviceID</td>
<td>0x0000</td>
</tr>
<tr>
<td>Subsystem Vendor ID</td>
<td>0x0000</td>
</tr>
<tr>
<td>Subsystem Device ID</td>
<td>0x0000</td>
</tr>
</tbody>
</table>

Table 125: PCI IDs PC Cards cifX on the PCI Bus

9.3 Supported PCI-Bus Commands

From the following table you can see which PCI bus commands are supported by the Hilscher PC Cards cifX PCI, PCI Express and Low Profile PCI Express.

<table>
<thead>
<tr>
<th>C/BE3#</th>
<th>C/BE2#</th>
<th>C/BE1#</th>
<th>C/BE0#</th>
<th>Command Type</th>
<th>supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Interrupt Acknowledge</td>
<td>no</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Special Cycle</td>
<td>no</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>I/O Read</td>
<td>✓</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>I/O Write</td>
<td>✓</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Reserved</td>
<td>no</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Reserved</td>
<td>no</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Memory Read</td>
<td>✓</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Memory Write</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Reserved</td>
<td>no</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Reserved</td>
<td>no</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>Configuration Read</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>Configuration Write</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>Memory Read Multiple</td>
<td>no</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Dual Address Cycle</td>
<td>no</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Memory Read Line</td>
<td>no</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Memory Write and Invalidate</td>
<td>no</td>
</tr>
</tbody>
</table>

Table 126: Supported / not supported PCI Bus Commands

\(C/BE = \) Bus Command and Byte Enable Signal of PCI
9.4 Technical Data of the Communication Protocols

9.4.1 CC-Link IE Field Basic Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>RY data: 128 bytes (1024 bits)</td>
</tr>
<tr>
<td></td>
<td>RWw data: 512 words (16 bit)</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>RX data: 128 bytes (1024 bits)</td>
</tr>
<tr>
<td></td>
<td>RWr data: 512 words (16 bit)</td>
</tr>
<tr>
<td>Occupied stations</td>
<td>1 … 16</td>
</tr>
<tr>
<td></td>
<td>(1 station has 64 bits RY data, 32 words RWw data, 64 bits RX data, and 32</td>
</tr>
<tr>
<td></td>
<td>words RWr data.)</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>SLMP Server and Client</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>Baud rate</td>
<td>100 MBit/s</td>
</tr>
<tr>
<td>Reference to firmware / stack version</td>
<td>V1.1</td>
</tr>
</tbody>
</table>

| Ports                                         |                                                                           |
| Cyclic data                                   | 61450 (UDP)                                                              |
| Discovery and SLMP Server                     | 61451 (UDP)                                                              |
| SLMP Parameter                                | 45237 (UDP)                                                              |
| SLMP Communication                            | 20000 (UDP)                                                              |

Table 127: Technical data CC-Link IE Field Basic Slave protocol

9.4.2 CC-Link IE Field Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station types</td>
<td>Remote Device Station, Intelligent Device Station</td>
</tr>
<tr>
<td>Remote Device Station</td>
<td></td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>RY data: 16 bytes (128 bits)</td>
</tr>
<tr>
<td></td>
<td>RWw data: 64 words (each 16 bit)</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>RX data: 16 bytes (128 bits)</td>
</tr>
<tr>
<td></td>
<td>RWr data: 64 words (each 16 bit)</td>
</tr>
<tr>
<td>Intelligent Device Station</td>
<td></td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>RY data: 256 bytes (2048 bits)</td>
</tr>
<tr>
<td></td>
<td>RWw data: 1024 words (each 16 bit)</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>RX data: 256 bytes (2048 bits)</td>
</tr>
<tr>
<td></td>
<td>RWr data: 1024 words (each 16 bit)</td>
</tr>
<tr>
<td>Remote Device Station, Intelligent Device Station</td>
<td></td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>SLMP</td>
</tr>
<tr>
<td>Baud rate</td>
<td>1 GBit/s, full-duplex</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V1.1</td>
</tr>
</tbody>
</table>

Table 128: Technical data CC-Link IE Field Slave protocol
9.4.3 EtherCAT Master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of EtherCAT slaves</td>
<td>Maximum of 388 slaves, if RCX_GET_SLAVE_HANDLES_REQ service is used for determining number of slaves. The number of usable slaves depends on several parameters: the available memory for the configuration file (see 'configuration file' below), used cycle time, frame propagation time.</td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>Appr. 4600 bytes, if no LRW command (Logical Read Write) is used for process data</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>Appr. 4600 bytes, if no LRW command (Logical Read Write) is used for process data</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>CoE (CANopen over EtherCAT): SDO, SDOINFO, Emergency FoE (File Access over EtherCAT) SoE (Servo Drive Profile over EtherCAT) EoE (Ethernet over EtherCAT) Configurable with SYCON.net: CoE If the file ETHERCAT.XML contains the appropriate configuration information (e.g. created with &quot;EtherCAT Configurator&quot;), following functions can be used: CoE, SoE, EoE</td>
</tr>
<tr>
<td>Mailbox protocols</td>
<td>CoE, EoE, FoE, SoE</td>
</tr>
<tr>
<td>Functions</td>
<td>Distributed Clocks Redundancy Slave diagnostics Bus scan</td>
</tr>
<tr>
<td>Minimum bus cycle time</td>
<td>250 µs, depending on the used number of slaves and the used number of cyclic input data and output data.</td>
</tr>
<tr>
<td>Topology</td>
<td>Line or ring</td>
</tr>
<tr>
<td>Slave station address range</td>
<td>1 – 14335</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3, 100 MBit/s, full-duplex</td>
</tr>
<tr>
<td>Configuration file (ETHERCAT.XML or CONFIG.NXD)</td>
<td>Maximum 1 MByte</td>
</tr>
<tr>
<td>Synchronization via ExtSync</td>
<td>Supported (not configurable with SYCON.net)</td>
</tr>
<tr>
<td>ENI Slave-to-Slave copy infos</td>
<td>Supported (not configurable with SYCON.net)</td>
</tr>
<tr>
<td>Hot Connect</td>
<td>Supported (not configurable with SYCON.net)</td>
</tr>
<tr>
<td>EoE (Ethernet over EtherCAT)</td>
<td>Via NDIS</td>
</tr>
<tr>
<td>Limitations</td>
<td>The size of the bus configuration file is limited by the size of the RAM disk (1 MByte) or Flash disk (3 MByte). Store-and-forward switches cannot be used within network topology due to hard receive timing model RCX_GET_SLAVE_HANDLES_REQ can only communicate up to 388 slaves. Process data is restricted by the dual-port memory to 5760 bytes.</td>
</tr>
<tr>
<td>Reference to firmware / stack version</td>
<td>V4.4</td>
</tr>
</tbody>
</table>

Table 129: Technical Data EtherCAT Master Protocol
### 9.4.4 EtherCAT Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>256* bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>256* bytes</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>SDO</td>
</tr>
<tr>
<td></td>
<td>SDO Master-Slave</td>
</tr>
<tr>
<td></td>
<td>SDO Slave-Slave (depending on Master capability)</td>
</tr>
<tr>
<td>Type</td>
<td>Complex Slave</td>
</tr>
<tr>
<td>Functions</td>
<td>Emergency</td>
</tr>
<tr>
<td>FMMUs</td>
<td>3</td>
</tr>
<tr>
<td>SYNC Manager</td>
<td>4</td>
</tr>
<tr>
<td>Distributed Clocks (DC)</td>
<td>Supported, 32 Bit</td>
</tr>
<tr>
<td>Baud rate</td>
<td>100 MBit/s</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>Limitation</td>
<td>LRW is not supported</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.5 and V4.7</td>
</tr>
</tbody>
</table>

**Table 130: Technical Data EtherCAT Slave Protocol**

**Note:** *The loadable firmware supports for the number of cyclic input data and for cyclic output data in total up to 512 bytes. If more than 256 bytes for input data or for output data shall be exchanged via EtherCAT, then a customer specific XML file is necessary. Additionally the following formula applies: The sum of the input data length and the output data length may not exceed 512 bytes, where each length has to be rounded up to the next multiple of 4 for this calculation.*
### 9.4.5 EtherNet/IP Scanner (Master)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of EtherNet/IP connections</td>
<td>64 connections for implicit and explicit</td>
</tr>
<tr>
<td>Maximum number of total cyclic input data</td>
<td>5712 bytes</td>
</tr>
<tr>
<td>Maximum number of total cyclic output data</td>
<td>5760 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>504 bytes per slave per telegram</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>504 bytes per slave per telegram</td>
</tr>
<tr>
<td>IO Connection type</td>
<td>Cyclic, minimum 1 ms (depending on used number of connections and used number of input and output data)</td>
</tr>
<tr>
<td>Maximum number of unscheduled data</td>
<td>1400 bytes per telegram</td>
</tr>
<tr>
<td>UCMM, Class 3</td>
<td>Supported</td>
</tr>
<tr>
<td>Explicit Messages, Client and Server Services</td>
<td>Get_Attribute_Single/All</td>
</tr>
<tr>
<td>Quick connect</td>
<td>Supported</td>
</tr>
<tr>
<td>Predefined standard objects</td>
<td>Identity Object</td>
</tr>
<tr>
<td></td>
<td>Message Route Object</td>
</tr>
<tr>
<td></td>
<td>Assembly Object</td>
</tr>
<tr>
<td></td>
<td>Connection Manager</td>
</tr>
<tr>
<td></td>
<td>Ethernet Link Object</td>
</tr>
<tr>
<td></td>
<td>TCP/IP Object</td>
</tr>
<tr>
<td></td>
<td>DLR Object</td>
</tr>
<tr>
<td></td>
<td>QoS Object</td>
</tr>
<tr>
<td>Maximal number of user specific objects</td>
<td>20</td>
</tr>
<tr>
<td>Network scan</td>
<td>Supported</td>
</tr>
<tr>
<td>Topology</td>
<td>Tree, Line, Ring</td>
</tr>
<tr>
<td>DLR (Device Level Ring)</td>
<td>Beacon based ‘Ring Node’</td>
</tr>
<tr>
<td>ACD (Address Conflict Detection)</td>
<td>Supported</td>
</tr>
<tr>
<td>DHCP</td>
<td>Supported</td>
</tr>
<tr>
<td>BOOTP</td>
<td>Supported</td>
</tr>
<tr>
<td>Baud rates</td>
<td>10 and 100 MBit/s</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>Switch function</td>
<td>Integrated</td>
</tr>
<tr>
<td>Limitations</td>
<td>CIP Sync Services are not implemented</td>
</tr>
<tr>
<td></td>
<td>TAGs are not supported</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.10</td>
</tr>
</tbody>
</table>

*Table 131: Technical Data EtherNet/IP Scanner Protocol*
### 9.4.6 EtherNet/IP Adapter (Slave)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of input data</td>
<td>504 bytes per assembly instance</td>
</tr>
<tr>
<td>Maximum number of output data</td>
<td>504 bytes per assembly instance</td>
</tr>
<tr>
<td>Maximum number of assembly instances</td>
<td>10</td>
</tr>
<tr>
<td>IO connection types (implicit)</td>
<td>Exclusive Owner</td>
</tr>
<tr>
<td></td>
<td>Listen Only</td>
</tr>
<tr>
<td></td>
<td>Input Only</td>
</tr>
<tr>
<td>IO Connection trigger types</td>
<td>Cyclic (minimum 1 ms*)</td>
</tr>
<tr>
<td></td>
<td>Application Triggered (minimum 1 ms*)</td>
</tr>
<tr>
<td></td>
<td>Change Of State (minimum 1 ms*)</td>
</tr>
<tr>
<td></td>
<td>* depending on number of connections and number of input and output data</td>
</tr>
<tr>
<td>Explicit Messages</td>
<td>Connected and unconnected</td>
</tr>
<tr>
<td>Unconnected Message Manager (UCMM)</td>
<td>Supported</td>
</tr>
<tr>
<td>Maximum number of connections</td>
<td>Implicit connections (Class 1): 5</td>
</tr>
<tr>
<td></td>
<td>Explicit connections (Class 3): 10</td>
</tr>
<tr>
<td></td>
<td>UCMM: 10</td>
</tr>
<tr>
<td>Predefined standard objects</td>
<td>Identity object (1, 0x01)</td>
</tr>
<tr>
<td></td>
<td>Message Router object (2, 0x02)</td>
</tr>
<tr>
<td></td>
<td>Assembly object (4, 0x04)</td>
</tr>
<tr>
<td></td>
<td>Connection Manager (6, 0x06)</td>
</tr>
<tr>
<td></td>
<td>DLR object (71, 0x47)</td>
</tr>
<tr>
<td></td>
<td>QoS object (72, 0x48)</td>
</tr>
<tr>
<td></td>
<td>TCP/IP object (245, 0xF5)</td>
</tr>
<tr>
<td></td>
<td>Ethernet Link object (246, 0xF6)</td>
</tr>
<tr>
<td>Maximum number of user specific objects</td>
<td>20</td>
</tr>
<tr>
<td>Supported functions, protocols and, services</td>
<td>TCP/IP, UDP/IP</td>
</tr>
<tr>
<td></td>
<td>DHCP, BOOTP</td>
</tr>
<tr>
<td></td>
<td>Quick Connect</td>
</tr>
<tr>
<td></td>
<td>Device Level Ring (DLR) - Media Redundancy</td>
</tr>
<tr>
<td></td>
<td>Address Conflict Detection (ACD)</td>
</tr>
<tr>
<td></td>
<td>Quality of Service</td>
</tr>
<tr>
<td></td>
<td>CIP Reset services - Identity Object Reset Service (Type 0 and 1)</td>
</tr>
<tr>
<td>Ethernet interface</td>
<td>10 and 100 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Integrated switch</td>
</tr>
<tr>
<td>Duplex modes</td>
<td>Half duplex, Full duplex, Auto negotiation</td>
</tr>
<tr>
<td>MDI modes</td>
<td>MDI, MDI-X, Auto-MDIX</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>Limitations</td>
<td>Tags are not supported.</td>
</tr>
<tr>
<td></td>
<td>Connection type &quot;Null forward Open&quot; is not supported.</td>
</tr>
<tr>
<td></td>
<td>CIP Motion is not supported.</td>
</tr>
<tr>
<td></td>
<td>CIP Safety is not supported.</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V3.6</td>
</tr>
</tbody>
</table>

*Table 132: Technical Data EtherNet/IP Adapter protocol*
### 9.4.7 Open Modbus/TCP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of input data</td>
<td>2880 Registers</td>
</tr>
<tr>
<td>Maximum number of output data</td>
<td>2880 Registers</td>
</tr>
</tbody>
</table>

**Acyclic communication**
- Read/Write Register:
  - Maximum 125 Registers per Read Telegram (FC 3, 4, 23),
  - Maximum 121 Registers per Write Telegram (FC 23),
  - Maximum 123 Registers per Write Telegram (FC 16)
- Read/Write Coil:
  - Maximum 2000 Coils per Read Telegram (FC 1, 2),
  - Maximum 1968 Coils per Write Telegram (FC 15)

**Modbus Function Codes**
- 1, 2, 3, 4, 5, 6, 7, 15, 16, 23*, 43
- *Function Code 23 can be used via the packet API, but not with the Command Table.*

**Protocol Mode**
- Message Mode (Client Mode):
  - Client (using the Command Table: The data is stored in the I/O process data image)
  - Client (using the packet API: The I/O process data image is not used)
  - Server (using the packet API: The I/O process data image is not used)
- I/O Mode (Server Mode):
  - Server (only) (The data is stored in the I/O process data image)

**Command table (Configuration API only)**
- Max. 16 servers configurable
- Max. 256 commands

**Baud rates**
- 10 and 100 MBit/s

**Data transport layer**
- Ethernet II, IEEE 802.3

**Reference to firmware/stack version**
- V2.6

*Table 133: Technical Data Open Modbus/TCP Protocol*

### 9.4.8 POWERLINK Controlled Node/Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>1490 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>1490 bytes</td>
</tr>
</tbody>
</table>

**Acyclic data transfer**
- SDO Upload/Download

**Functions**
- SDO over ASND and UDP

**Baud rate**
- 100 MBit/s, half-duplex

**Data transport layer**
- Ethernet II, IEEE 802.3

**Ethernet POWERLINK version**
- V 2

**Limitation**
- No slave to slave communication

**Reference to firmware/stack version**
- V3.4

*Table 134: Technical Data POWERLINK Controlled Node Protocol*
## 9.4.9 PROFINET IO-Controller

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| Maximum number of ARs (Application Relation)        | 128 for RT communication  
64 for IRT communication                                      |
| Maximum number of cyclic input data                 | 5652 bytes, including provider and consumer status                           |
| Maximum number of cyclic output data                | 5700 bytes, including provider and consumer status                           |
| Send clock                                          | 1 ms, 2 ms, 4 ms for RT mode  
250 µs, 500 µs, 1 ms, 2 ms, 4 ms for IRT mode                          |
| Performance limits of ARs                           | Max. 8 ARs, if a send clock < 500 µs  
Max. 16 ARs, if a send clock < 1 ms  
Max. 64 ARs, if a send clock < 2 ms                  |
| Maximum number of submodules                        | 2048                                                                         |
| Maximum amount of data per IOCR                     | 1440 bytes                                                                   |
| Number of IOCRs per AR                              | 1 Input IOCR  
1 Output IOCR                                                      |
| Maximum amount of data for acyclic read/write record access | 65536 bytes                                                   |
| Maximum amount of record data per AR                | 16384 bytes                                                                  |
| Alarm processing (configurable)                     | Stack processes alarms automatically  
Applikation processes alarms                                |
| Maximum number of ARVendorBlock                     | 256                                                                          |
| Maximum size of ARVendorBlockData                   | 512 bytes                                                                    |
| Device Access AR CMI Timeout                        | 20 s                                                                         |
| Functions                                           | Automatic Name Assignment  
Media Redundancy Client  
Media Redundancy Manager (requires license)                  |
| DCP function API                                    | Name Assignment IO-Devices (DCP SET NameOfStation)  
Set IO-Devices IP (DCP SET IP)  
Signal IO-Device (DCP SET SIGNAL)  
Reset IO-Device to factory settings (DCP Reset FactorySettings)  
Bus scan (DCP IDENTIFY ALL)  
DCP GET                                                  |
| PROFINET specification                              | Implemented according to V2.3 ED2 MU3  
Legacy Startup supported according to PROFINET specification V2.2 |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limitations</td>
<td>The size of the bus configuration file is limited by the size of the RAM Disk (1 Mbyte)</td>
</tr>
<tr>
<td></td>
<td>The usable (minimum) cycle time depends on the number of used IO Devices, the number of used input and output data.</td>
</tr>
<tr>
<td></td>
<td>RT over UDP not supported</td>
</tr>
<tr>
<td></td>
<td>Multicast communication not supported</td>
</tr>
<tr>
<td></td>
<td>DHCP is not supported (neither for PROFINET IO Controller nor for IO-Devices)</td>
</tr>
<tr>
<td></td>
<td>Only one IOCR per IO-Device per direction</td>
</tr>
<tr>
<td></td>
<td>One instance of DeviceAccess AR can be used at the same time only</td>
</tr>
<tr>
<td></td>
<td>MRPD is not supported</td>
</tr>
<tr>
<td></td>
<td>Planning of IRT is not done by the PROFINET IO Controller protocol stack</td>
</tr>
<tr>
<td></td>
<td>Sync Slave is not supported</td>
</tr>
<tr>
<td></td>
<td>One fragmented acyclic services can be used at the same time only</td>
</tr>
<tr>
<td></td>
<td>Multiple MRP Managers are not supported</td>
</tr>
<tr>
<td></td>
<td>One DCP Service can be used in parallel only</td>
</tr>
<tr>
<td></td>
<td>Multiple Sync Masters are not supported</td>
</tr>
</tbody>
</table>

Reference to firmware / stack version V3.3

Table 135: Technical Data PROFINET IO Controller Protocol

### 9.4.10 PROFINET IO-Device

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>1440 bytes (including IOPS and IOCS)</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>1440 bytes (including IOPS and IOCS)</td>
</tr>
<tr>
<td>Maximum number of submodules</td>
<td>Depends on the firmware, can be configured via “Number of configurable submodules” in tag list. Up to 256 in general and may be smaller number for specific firmware.</td>
</tr>
<tr>
<td></td>
<td>Note: If the application uses max. 2 APIs, the “Number of configurable submodules” can be used. Each further API reduces the total number of usable submodules by 1.</td>
</tr>
<tr>
<td>Multiple Application Relations (AR)</td>
<td>Depends on the firmware, can be configured via “Number of additional IO Connections (ARs)” in tag list.</td>
</tr>
<tr>
<td></td>
<td>Up to 4 IO-ARs and one Supervisor-DA AR in general and may be smaller for numbers specific firmware.</td>
</tr>
<tr>
<td>Acyclic communication (Record objects)</td>
<td>Read/Write Record, max supported size can be configured via taglist.</td>
</tr>
<tr>
<td>Alarm types</td>
<td>Process Alarm, Diagnostic Alarm, Return Of Submodule Alarm, Plug Alarm (implicit), Pull Alarm (implicit), Update Alarm, Status Alarm, Upload and Retrieval Notification Alarm</td>
</tr>
<tr>
<td>Diagnosis entries</td>
<td>Depends on the firmware, can be configured via “Number of available Diagnosis buffers” in tag list.</td>
</tr>
<tr>
<td></td>
<td>Up to 256 application diagnosis records of type Channel or Extended Channel Diagnosis in general and may be smaller number for specific firmware.</td>
</tr>
<tr>
<td>Identification &amp; Maintenance (I&amp;M)</td>
<td>I&amp;M0 Read: Either integrated for slot 0 / subslot 1 or forwarded to the application for each submodule.</td>
</tr>
<tr>
<td></td>
<td>I&amp;M1-5 Read/Write: Either built in for Slot 0 / Subslot 1 or pass through to application for any submodule. I&amp;M4 and I&amp;M5 are inactive by default.</td>
</tr>
<tr>
<td>Topology recognition</td>
<td>LLDP, SNMP V1, Physical Device Record Objects</td>
</tr>
<tr>
<td>Minimum cycle time (MinDeviceInterval)</td>
<td>RT_CLASS_1: 1 ms (min. SendClockFactor 32)</td>
</tr>
<tr>
<td></td>
<td>RT_CLASS_3: 250 µs (min. SendClockFactor 8)</td>
</tr>
<tr>
<td>IRT support</td>
<td>RT_CLASS_3</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Media redundancy</td>
<td>MRP Client</td>
</tr>
<tr>
<td>Additional supported features</td>
<td>&quot;Shared Device&quot;</td>
</tr>
<tr>
<td></td>
<td>Asset Management</td>
</tr>
<tr>
<td></td>
<td>PROFIenergy ASE</td>
</tr>
<tr>
<td>Baud rate</td>
<td>100 MBit/s</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3, MAUType 16</td>
</tr>
<tr>
<td>PROFINET IO specification</td>
<td>V2.3, PNIO_version 2.35</td>
</tr>
<tr>
<td></td>
<td>V2.2 (&quot;legacy startup&quot;) is supported</td>
</tr>
<tr>
<td>Conformance Class</td>
<td>C</td>
</tr>
<tr>
<td>Application IP stack API</td>
<td>The lwIP IP stack can be used by the application via Socket API Packets.</td>
</tr>
<tr>
<td></td>
<td>Up to 8 sockets are available to the Application.</td>
</tr>
<tr>
<td>Application Raw Ethernet API</td>
<td>Sending and Receiving Raw Ethernet Frames as Application is supported</td>
</tr>
<tr>
<td>Restrictions</td>
<td>RT over UDP not supported.</td>
</tr>
<tr>
<td></td>
<td>Multicast communication not supported.</td>
</tr>
<tr>
<td></td>
<td>DHCP is not supported.</td>
</tr>
<tr>
<td></td>
<td>The amount of configured I/O-data influences the minimum cycle time</td>
</tr>
<tr>
<td></td>
<td>that can be reached.</td>
</tr>
<tr>
<td></td>
<td>Only 1 Input-CR and 1 Output-CR per AR are supported.</td>
</tr>
<tr>
<td></td>
<td>Little endian byte order not supported.</td>
</tr>
<tr>
<td></td>
<td>System Redundancy (SR-AR) and Dynamic Reconfiguration are not supported.</td>
</tr>
<tr>
<td></td>
<td>The usage of PROFINET CombinedObjectContainer is not supported.</td>
</tr>
<tr>
<td></td>
<td>SharedInput is not supported.</td>
</tr>
<tr>
<td></td>
<td>MRPID is not supported.</td>
</tr>
<tr>
<td></td>
<td>DFP and other HighPerformance-profile related features are not supported.</td>
</tr>
<tr>
<td></td>
<td>Submodules cannot be configured or used by an AR in subslot 0.</td>
</tr>
<tr>
<td></td>
<td>The stack does not support usage of PDEV submodules</td>
</tr>
<tr>
<td></td>
<td>(InterfaceSubmodule or PortSubmodule) outside of slot 0.</td>
</tr>
<tr>
<td></td>
<td>In addition the InterfaceSubmodule is only supported in subslot 0x8000 and</td>
</tr>
<tr>
<td></td>
<td>the PortSubmodules are only supported in subslots 0x8001 and 0x8002.</td>
</tr>
<tr>
<td>Reference to stack version</td>
<td>V4.5</td>
</tr>
</tbody>
</table>

*Table 136: Technical Data PROFINET IO-Device protocol*

The maximum values for number of submodules, Multiple Application Relations, Acyclic communication, and Diagnosis entries are configuration parameters in the tag list of a firmware. Each of these features require resources and have to be set in order to not exceed the available resource (e.g. RAM) of a device.
### 9.4.11 Sercos Master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>5760 bytes (including Connection Control per Connection)</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>5760 bytes (including Connection Control per Connection)</td>
</tr>
<tr>
<td>Maximum number of configured slave devices</td>
<td>511</td>
</tr>
<tr>
<td>Minimum cycle time</td>
<td>250 µs</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>Service channel: Read/Write/Commands</td>
</tr>
<tr>
<td>Functions</td>
<td>Bus Scan</td>
</tr>
<tr>
<td>Communication phases</td>
<td>NRT, CP0, CP1, CP2, CP3, CP4</td>
</tr>
<tr>
<td>Topology</td>
<td>Line and double ring</td>
</tr>
<tr>
<td>Redundancy</td>
<td>supported</td>
</tr>
<tr>
<td>NRT channel</td>
<td>supported</td>
</tr>
<tr>
<td>Hot-Plug</td>
<td>supported</td>
</tr>
<tr>
<td>Cross Communication</td>
<td>supported, but only if the master is configured by the host application program by packets.</td>
</tr>
<tr>
<td>Baud rate</td>
<td>100 MBit/s, full duplex</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>Auto crossover</td>
<td>supported</td>
</tr>
<tr>
<td>Supported Sercos version</td>
<td>Communication Specification Version 1.3</td>
</tr>
<tr>
<td>TCP/IP stack</td>
<td>integrated</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.1</td>
</tr>
</tbody>
</table>

**Table 137: Technical Data Sercos Master Protocol**

### 9.4.12 Sercos Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic produced data</td>
<td>132 bytes (including Connection Control and IO Status)</td>
</tr>
<tr>
<td>Maximum number of cyclic consumed data</td>
<td>124 bytes (including Connection Control and IO Status)</td>
</tr>
<tr>
<td>Maximum number of slave devices</td>
<td>8</td>
</tr>
<tr>
<td>Sercos addresses</td>
<td>1 … 511</td>
</tr>
<tr>
<td>Minimum cycle time</td>
<td>250 µs</td>
</tr>
<tr>
<td>Topology</td>
<td>Line and ring</td>
</tr>
<tr>
<td>Communication phases</td>
<td>NRT, CP0, CP1, CP2, CP3, CP4, HP0, HP1, HP2</td>
</tr>
<tr>
<td>Descriptors for connections (including Connection Control and IO Status/Control)</td>
<td>Max. 64</td>
</tr>
<tr>
<td>Acyclic Communication (Service Channel)</td>
<td>Read/Write/Standard Commands</td>
</tr>
<tr>
<td>Cross Communication (CC)</td>
<td>Supported</td>
</tr>
<tr>
<td>Baud rate</td>
<td>100 MBit/s</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>Supported Sercos version</td>
<td>Communication Specification Version 1.1.2 and 1.3.1</td>
</tr>
</tbody>
</table>

**Table 138: Technical Data Sercos Slave Protocol**
### Technical Data

#### Supported User SCP Profiles
- SCP_WD Version 1.1.1
- SCP_Diag Version 1.1.1
- SCP RTBU Version 1.1.1
- SCP_MUX Version 1.1.1
- SCP_SIG Version 1.1.1
- SCP_ExtMUX Version 1.1.2
- SCP_RTBListProd Version 1.3
- SCP_RTBListCons Version 1.3
- SCP RTBUWordProd Version 1.3
- SCP RTBUWordCons Version 1.3
- SCP_OvsBasic Version 1.3
- SCP_WDCON Version 1.3

#### Supported FSP profiles
- FSP_IO
- FSP_Drive
- FSP_Encoder

#### SCP Sync
- Supported

#### SCP_NRT
- Supported

#### S/IP
- Supported

#### Identification LED
- Supported

#### Storage location of object dictionary
- Mixed mode

#### Limitations
- Max. 2 connections: 1 for consumer and 1 for producer
- Modifications of the Service-Channel Object Dictionary will be volatile after reset (if it resides on device)

#### Reference to firmware/stack version
- V3.5

---

**Table 138: Technical Data Sercos Slave Protocol**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported FSP profiles</td>
<td>FSP_IO, FSP_Drive, FSP_Encoder</td>
</tr>
<tr>
<td>SCP Sync</td>
<td>Supported</td>
</tr>
<tr>
<td>SCP_NRT</td>
<td>Supported</td>
</tr>
<tr>
<td>S/IP</td>
<td>Supported</td>
</tr>
<tr>
<td>Identification LED</td>
<td>Supported</td>
</tr>
<tr>
<td>Storage location of object dictionary</td>
<td>Mixed mode</td>
</tr>
<tr>
<td>Limitations</td>
<td>Max. 2 connections: 1 for consumer and 1 for producer, Modifications of the Service-Channel Object Dictionary will be volatile after reset (if it resides on device)</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V3.5</td>
</tr>
</tbody>
</table>

---

**9.4.13 VARAN Client (Slave)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>128 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>128 bytes</td>
</tr>
<tr>
<td>Memory Area</td>
<td>Read Memory Area 1, Write Memory Area 1, Read Memory Area 2, Write Memory Area 2</td>
</tr>
<tr>
<td>Functions</td>
<td>Memory Read, Memory Write</td>
</tr>
<tr>
<td>Integrated 2 port splitter for daisy chain topology</td>
<td>Supported</td>
</tr>
<tr>
<td>Baud rate</td>
<td>100 MBit/s</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>Ethernet II, IEEE 802.3</td>
</tr>
<tr>
<td>VARAN protocol version</td>
<td>1.1.1.0</td>
</tr>
<tr>
<td>Limitations</td>
<td>Integrated EMAC for IP data exchange with client application not supported, SPI single commands (optional feature) not supported</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V1.1</td>
</tr>
</tbody>
</table>

---

**Table 139: Technical Data VARAN Client Protocol**
## 9.4.14 PROFIBUS DP Master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of PROFIBUS DP slaves</td>
<td>125 (DPV0/DPV1)</td>
</tr>
<tr>
<td>Maximum number of total cyclic input data</td>
<td>5712 bytes</td>
</tr>
<tr>
<td>Maximum number of total cyclic output data</td>
<td>5760 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>244 bytes per slave</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>244 bytes per slave</td>
</tr>
<tr>
<td>Configuration data</td>
<td>Max. 244 bytes per slave</td>
</tr>
<tr>
<td>Parameterization data per slave</td>
<td>7 bytes standard parameter per slave</td>
</tr>
<tr>
<td></td>
<td>Max. 237 bytes application specific parameters per slave</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>DPV1 class 1 read, write</td>
</tr>
<tr>
<td></td>
<td>DPV1 class 1 alarm</td>
</tr>
<tr>
<td></td>
<td>DPV1 class 2 initiate, read, write, data transport, abort</td>
</tr>
<tr>
<td>Maximum number of acyclic read/write</td>
<td>240 bytes per slave and telegram</td>
</tr>
<tr>
<td>Functions</td>
<td>Configuration in Run (CiR), requires host application program support</td>
</tr>
<tr>
<td></td>
<td>Timestamp (Master functionality)</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Supported, requires host application program support</td>
</tr>
<tr>
<td>Baud rate</td>
<td>9.6 kBits/s, 19.2 kBits/s, 31.25 kBits/s, 45.45 kBits/s, 93.75 kBits/s, 187.5 kBits/s, 500 kBits/s, 1, 5 MBit/s, 3 MBit/s, 6 MBit/s, 12 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Auto baud rate detection is not supported</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>PROFIBUS FDL</td>
</tr>
<tr>
<td>Limitations</td>
<td>DPV2 isochronous mode and slave slave communication are not supported.</td>
</tr>
<tr>
<td></td>
<td>The redundancy function can not be used, if the master is configured by the host application program by packets.</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.8</td>
</tr>
</tbody>
</table>

*Table 140: Technical Data PROFIBUS DP Master Protocol*
### 9.4.15 PROFIBUS DP Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>244 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>244 bytes</td>
</tr>
<tr>
<td>Maximum number of acyclic data (read/write)</td>
<td>240 bytes/telegram</td>
</tr>
<tr>
<td>Maximum number of modules</td>
<td>24</td>
</tr>
<tr>
<td>Configuration data</td>
<td>Max. 244 bytes</td>
</tr>
<tr>
<td>Parameter data</td>
<td>237 bytes application specific parameters</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>DP V1 Class 1 Read/Write</td>
</tr>
<tr>
<td></td>
<td>DP V1 Class 1 Alarm</td>
</tr>
<tr>
<td></td>
<td>DP V1 Class 2 Read/Write/Data Transport</td>
</tr>
<tr>
<td>Baud rate</td>
<td>9.6 kBits/s, 19.2 kBits/s, 31.25 kBits/s, 45.45 kBits/s, 93.75 kBits/s, 187.5 kBits/s, 500 kBits/s, 1.5 MBits/s, 3 MBits/s, 6 MBits/s, 12 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Auto baudrate detection is supported</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>PROFIBUS FDL</td>
</tr>
<tr>
<td>Limitations</td>
<td>SSCY1S – Slave to slave communication state machine not implemented</td>
</tr>
<tr>
<td></td>
<td>Data exchange broadcast not implemented</td>
</tr>
<tr>
<td></td>
<td>I&amp;M LR services other than Call-REQ/RES are not supported yet</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.10</td>
</tr>
</tbody>
</table>

**Table 141: Technical Data PROFIBUS DP Slave Protocol**

### 9.4.16 PROFIBUS MPI

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of MPI connections</td>
<td>126</td>
</tr>
<tr>
<td>Maximum number of write data</td>
<td>216 bytes</td>
</tr>
<tr>
<td>Maximum number of read data</td>
<td>222 bytes</td>
</tr>
<tr>
<td>Functions</td>
<td>MPI Read/Write DB (data block), M (marker), Q (output), C (Counter), T (Timer)</td>
</tr>
<tr>
<td></td>
<td>MPI Read I (Input)</td>
</tr>
<tr>
<td></td>
<td>Data type bit to access to DB (data block), M (marker), Q (output) and I (Input, read only)</td>
</tr>
<tr>
<td></td>
<td>MPI Connect (automatically when first read/write function is used)</td>
</tr>
<tr>
<td></td>
<td>MPI Disconnect, MPI Disconnect All</td>
</tr>
<tr>
<td></td>
<td>MPI Get OP Status</td>
</tr>
<tr>
<td></td>
<td>MPI transparent (expert use only)</td>
</tr>
<tr>
<td>Baud rate</td>
<td>Fixed values ranging from 9.6 kBits/s to 12 MBit/s</td>
</tr>
<tr>
<td></td>
<td>Auto-detection mode is supported</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>PROFIBUS FDL</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>2.4</td>
</tr>
</tbody>
</table>

**Table 142: Technical Data PROFIBUS-MPI Protocol**
## 9.4.17 CANopen Master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of CANopen nodes</td>
<td>126</td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>3584 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>3584 bytes</td>
</tr>
<tr>
<td>Maximum number of receive PDOs</td>
<td>512</td>
</tr>
<tr>
<td>Maximum number of transmit PDOs</td>
<td>512</td>
</tr>
<tr>
<td>Exchange of process data</td>
<td>Via PDO transfer:</td>
</tr>
<tr>
<td></td>
<td>- synchronized,</td>
</tr>
<tr>
<td></td>
<td>- remotely requested and</td>
</tr>
<tr>
<td></td>
<td>- event driven (change of date)</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>SDO Upload/Download, max. 512 bytes per request</td>
</tr>
<tr>
<td>Functions</td>
<td>Emergency message (consumer and producer)</td>
</tr>
<tr>
<td></td>
<td>Node guarding / life guarding, heartbeat</td>
</tr>
<tr>
<td></td>
<td>PDO mapping</td>
</tr>
<tr>
<td></td>
<td>NMT Master</td>
</tr>
<tr>
<td></td>
<td>SYNC protocol (producer)</td>
</tr>
<tr>
<td></td>
<td>Simple boot-up process, reading object 1000H for identification</td>
</tr>
<tr>
<td>Baud rates</td>
<td>10 kBits/s, 20 kBits/s, 50 kBits/s, 100 kBits/s, 125 kBits/s, 250 kBits/s, 500 kBits/s, 800 kBits/s, 1 MBits/s</td>
</tr>
<tr>
<td>CAN layer 2 access</td>
<td>Send/receive via API supported (11 bit/29 bit)</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>CAN Frames</td>
</tr>
<tr>
<td>CAN Frame type for CANopen</td>
<td>11 Bit</td>
</tr>
<tr>
<td>Reference to version</td>
<td>V2.14</td>
</tr>
</tbody>
</table>

Table 143: Technical Data CANopen Master Protocol
### 9.4.18 CANopen Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>512 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>512 bytes</td>
</tr>
<tr>
<td>Maximum number of receive PDOs</td>
<td>64</td>
</tr>
<tr>
<td>Maximum number of transmit PDOs</td>
<td>64</td>
</tr>
<tr>
<td>Exchange of process data</td>
<td>Via PDO transfer</td>
</tr>
<tr>
<td></td>
<td>- synchronized,</td>
</tr>
<tr>
<td></td>
<td>- remotely requested and</td>
</tr>
<tr>
<td></td>
<td>- event driven (change of date, event timer)</td>
</tr>
<tr>
<td></td>
<td>On request of the host application program by packet</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>SDO upload/download (server only)</td>
</tr>
<tr>
<td></td>
<td>Emergency message (producer)</td>
</tr>
<tr>
<td></td>
<td>Timestamp (producer/consumer)</td>
</tr>
<tr>
<td>Functions</td>
<td>Node guarding / life guarding</td>
</tr>
<tr>
<td></td>
<td>Heartbeat: 1 producer, max. 64 consumer</td>
</tr>
<tr>
<td></td>
<td>PDO mapping</td>
</tr>
<tr>
<td></td>
<td>NMT Slave</td>
</tr>
<tr>
<td></td>
<td>SYNC protocol (consumer)</td>
</tr>
<tr>
<td></td>
<td>Error behaviour (configurable):</td>
</tr>
<tr>
<td></td>
<td>- in state operational: change to state pre-operational</td>
</tr>
<tr>
<td></td>
<td>- in any state: no state change</td>
</tr>
<tr>
<td></td>
<td>- in state operational or pre-operational: change to state stopped</td>
</tr>
<tr>
<td>Baud rates</td>
<td>10 kBits/s, 20 kBits/s, 50 kBits/s, 100 kBits/s, 125 kBits/s, 250 kBits/s,</td>
</tr>
<tr>
<td></td>
<td>500 kBits/s, 800 kBits/s, 1 MBits/s</td>
</tr>
<tr>
<td></td>
<td>Auto baudrate detection is supported</td>
</tr>
<tr>
<td>CAN layer 2 access</td>
<td>Send/receive via API supported (11 bit/29 bit)</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>CAN Frames</td>
</tr>
<tr>
<td>CAN Frame type for CANopen</td>
<td>11 Bit</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V3.7</td>
</tr>
</tbody>
</table>

*Table 144: Technical Data CANopen Slave Protocol*
### 9.4.19 DeviceNet Master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of DeviceNet slaves</td>
<td>63</td>
</tr>
<tr>
<td>Maximum number of total cyclic input data</td>
<td>3584 bytes</td>
</tr>
<tr>
<td>Maximum number of total cyclic output data</td>
<td>3584 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>255 bytes/connection</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>255 bytes/connection</td>
</tr>
<tr>
<td>Maximum Configuration data</td>
<td>1000 bytes/slave</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>Explicit connection</td>
</tr>
<tr>
<td>All service codes are supported</td>
<td></td>
</tr>
<tr>
<td>Connections</td>
<td>Bit Strobe</td>
</tr>
<tr>
<td>Change of State</td>
<td>Cyclic</td>
</tr>
<tr>
<td>Poll</td>
<td>Explicit Peer-to-Peer Messaging</td>
</tr>
<tr>
<td>Function</td>
<td>Quick Connect</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>Explicit and I/O</td>
</tr>
<tr>
<td>UCMM</td>
<td>Supported</td>
</tr>
<tr>
<td>Objects</td>
<td>Identity Object (Class Code 0x01)</td>
</tr>
<tr>
<td></td>
<td>Message Router Object (Class Code 0x02)</td>
</tr>
<tr>
<td></td>
<td>DeviceNet Object (Class Code 0x03)</td>
</tr>
<tr>
<td></td>
<td>Connection Object (Class Code 0x05)</td>
</tr>
<tr>
<td></td>
<td>Acknowledge Handler Object (Class Code 0x06)</td>
</tr>
<tr>
<td>Baud rates</td>
<td>125 kBits/s, 250 kBit/s, 500 kBit/s</td>
</tr>
<tr>
<td>All baudrate detection is not supported</td>
<td></td>
</tr>
<tr>
<td>Data transport layer</td>
<td>CAN frames</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.4</td>
</tr>
</tbody>
</table>

Table 145: Technical Data DeviceNet Master Protocol
## 9.4.20 DeviceNet Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of cyclic input data</td>
<td>255 bytes</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>255 bytes</td>
</tr>
<tr>
<td>Acyclic communication</td>
<td>Get_Attribute_Single/All</td>
</tr>
<tr>
<td></td>
<td>Max. 240 bytes per request</td>
</tr>
<tr>
<td></td>
<td>Set_Attribute_Single/All</td>
</tr>
<tr>
<td></td>
<td>Max. 240 bytes per request</td>
</tr>
<tr>
<td>Connections</td>
<td>Poll</td>
</tr>
<tr>
<td></td>
<td>Change-of-state</td>
</tr>
<tr>
<td></td>
<td>Cyclic</td>
</tr>
<tr>
<td></td>
<td>Bit-strobe</td>
</tr>
<tr>
<td>Explicit messaging</td>
<td>Supported</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>Explicit and I/O</td>
</tr>
<tr>
<td>UCMM</td>
<td>Not supported</td>
</tr>
<tr>
<td>Baud rates</td>
<td>125 kBits/s, 250 kBit/s, 500 kBit/s</td>
</tr>
<tr>
<td></td>
<td>Auto baudrate detection is not supported</td>
</tr>
<tr>
<td>Data transport layer</td>
<td>CAN frames</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.5</td>
</tr>
</tbody>
</table>

Table 146: Technical Data DeviceNet Slave Protocol
### 9.4.21 AS-Interface Master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of supported slaves</td>
<td>Max. 62 slaves</td>
</tr>
<tr>
<td>Maximum number of total cyclic input data</td>
<td>Max. 248 bits using digital slaves</td>
</tr>
<tr>
<td></td>
<td>Max. 248 bytes using analog (transparent) slaves</td>
</tr>
<tr>
<td></td>
<td>The maximum number depends on the used slave profiles</td>
</tr>
<tr>
<td>Maximum number of total cyclic output data</td>
<td>Max. 248 bits using digital slaves</td>
</tr>
<tr>
<td></td>
<td>Max. 248 bytes using analog (transparent) slaves</td>
</tr>
<tr>
<td></td>
<td>The maximum number depends on the used slave profiles</td>
</tr>
<tr>
<td>Maximum number of cyclic input data</td>
<td>Max. 4 Bit digital data</td>
</tr>
<tr>
<td></td>
<td>Max. 4 channel with up to 16 bit analog data</td>
</tr>
<tr>
<td></td>
<td>The maximum number depends on the used slave profiles</td>
</tr>
<tr>
<td>Maximum number of cyclic output data</td>
<td>Max. 4 Bit digital data</td>
</tr>
<tr>
<td></td>
<td>Max. 4 channel with up to 16 bit analog data</td>
</tr>
<tr>
<td></td>
<td>The maximum number depends on the used slave profiles</td>
</tr>
<tr>
<td>Parameterization data</td>
<td>4 bit per standard slave</td>
</tr>
<tr>
<td></td>
<td>3 bit per extended slave</td>
</tr>
<tr>
<td>Maximum number of acyclic read/write</td>
<td>Max. 220 bytes for string transfer</td>
</tr>
<tr>
<td>Functions</td>
<td>Support of data exchange via combined transaction types 1, 2, 3, 4 and 5 (CTT 1-5)</td>
</tr>
<tr>
<td></td>
<td>Automatic address assignment</td>
</tr>
<tr>
<td></td>
<td>Modification of address and Extended ID1-Code of Slave supported</td>
</tr>
<tr>
<td></td>
<td>Profile for extended Master: M4</td>
</tr>
<tr>
<td>Baud rate</td>
<td>166,67 kBaud</td>
</tr>
<tr>
<td>AS-Interface specification</td>
<td>3.0 Revision 2</td>
</tr>
<tr>
<td>Limitations</td>
<td>‘Synchronous Data I/O Mode’ not supported</td>
</tr>
<tr>
<td>Reference to firmware/stack version</td>
<td>V2.4</td>
</tr>
</tbody>
</table>

Table 147: Technical Data AS-Interface Master Protocol
### 9.4.22  CC Link Slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firmware works according to CC-Link Version 2.0:</strong></td>
<td></td>
</tr>
<tr>
<td>Station Types</td>
<td>Remote Device Station (up to 4 occupied stations)</td>
</tr>
<tr>
<td>Maximum input data</td>
<td>368 bytes</td>
</tr>
<tr>
<td>Maximum output data</td>
<td>368 bytes</td>
</tr>
<tr>
<td>Input data remote device station</td>
<td>112 bytes (RY) and 256 bytes (RWw)</td>
</tr>
<tr>
<td>Output data remote device station</td>
<td>112 bytes (RX) and 256 bytes (RWr)</td>
</tr>
<tr>
<td>Extension cycles</td>
<td>1, 2, 4, 8</td>
</tr>
<tr>
<td>Baud rates</td>
<td>156 kBit/s, 625 kBit/s, 2500 kBit/s, 5 MBit/s, 10 MBit/s</td>
</tr>
<tr>
<td>Limitation</td>
<td>Intelligent Device Station not supported</td>
</tr>
<tr>
<td><strong>Firmware works according to CC-Link Version 1.11:</strong></td>
<td></td>
</tr>
<tr>
<td>Station Types</td>
<td>Remote I/O station, Remote device station (up to 4 occupied stations)</td>
</tr>
<tr>
<td>Maximum input data</td>
<td>48 bytes</td>
</tr>
<tr>
<td>Maximum output data</td>
<td>48 bytes</td>
</tr>
<tr>
<td>Input data remote I/O station</td>
<td>4 bytes (RY)</td>
</tr>
<tr>
<td>Output data remote I/O station</td>
<td>4 bytes (RX)</td>
</tr>
<tr>
<td>Input data remote device station</td>
<td>4 bytes (RY) and 8 bytes (RWw) per occupied station</td>
</tr>
<tr>
<td>Output data remote device station</td>
<td>4 bytes (RX) and 8 bytes (RWr) per occupied station</td>
</tr>
<tr>
<td>Baud rates</td>
<td>156 kBit/s, 625 kBit/s, 2500 kBit/s, 5 MBit/s, 10 MBit/s</td>
</tr>
<tr>
<td>Firmware</td>
<td>V2.12</td>
</tr>
</tbody>
</table>

*Table 148: Technical Data CC-Link-Slave-Protocol*
10 Dimensions

10.1 Tolerances of the shown Card Dimensions

The manufacturing tolerance of the printed circuit boards of the PC card cifX is ± 0.1 mm per milled PCB edge. For all dimensions of the PCB indicated on the drawings (in the sections Dimensions PC Cards cifX PCI and PCI Express from page 207 and Dimensions PC Cards cifX Low Profile PCI Express from page 240) thus results for the length L and the width W, a tolerance of ± 0.1 mm (per milled edge) x 2 = ± 0.2 mm.

\[ W = [\text{width of the board in mm}] \pm 0.2 \text{ mm} \]
\[ L = [\text{length of the board in mm}] \pm 0.2 \text{ mm} \]

The depth T of the PCB depends on the highest part used or the circuit board plus the descenders. The thickness of the PCB is = 1.6 mm ± 10%.

**Note:** The dimensions (L x W x H) specified in section Technical Data PC Cards cifX on page 137 (and also the identical values in the data sheet cifX and on the 'Hilscher Site') are rounded and unified for the respective types of card. Here the depth of the PC cards PCI (CIFX 50), PCI Express (CIFX 50E) or Low Profile PCI Express (CIFX 70E) has been equated to the rounded width of the front panel.
10.2 Dimensions PC Cards cifX PCI and PCI Express

10.2.1 CIFX 50-RE

Figure 67: Dimensions CIFX 50-RE (from Hardware Rev.3)
10.2.2 CIFX 50E-RE, CIFX 50E-RE\ET

Figure 68: Dimensions CIFX 50E-RE (from Hardware Rev.4), CIFX 50E-RE\ET (from Hardware Rev.1)
10.2.3 Front Panel CIFX 50-RE, CIFX 50E-RE or CIFX 50E-RE\ET

Material:
Edelstahl gebürstet 0,8 mm
Toleranzen:
Bohrdurchmesser: +/-0,05 mm
Längenmaß: +/- 0,1 mm

Material:
Brushed stainless steel 0.8 mm
Tolerances:
Drilling diameter: +/- 0.05 mm
Length: +/- 0.1 mm

Figure 69: Dimensions Front Panel CIFX 50-RE, CIFX 50E-RE or CIFX 50E-RE\ET
10.2.4 CIFX 50E-CCIES

Figure 70: Dimensions CIFX 50E-CCIES (from Hardware Rev.1)
10.2.5 Front Panel CIFX 50-CCIES

**Material:**
Edelstahl gebürstet 0,8 mm

**Toleranzen:**
Bohrdurchmesser: +/-0,05 mm
Längenmaß: +/- 0,1 mm

**Material:**
Brushed stainless steel 0.8 mm

**Tolerances:**
Drilling diameter: +/- 0.05 mm
Length: +/- 0.1 mm

[Figure 71: Dimensions Front Panel CIFX 50E-CCIES]
10.2.6 CIFX 50-DP, CIFX 50E-DP

Figure 72: Dimensions CIFX 50-DP (Hardware Rev.5)
Figure 73: Dimensions CIFX 50E-DP (Hardware Rev.6)
10.2.7 Front Panel CIFX 50-DP or CIFX 50E-DP

Material:
Edelstahl gebürstet 0,8 mm
Toleranzen:
Bohrdurchmesser: +/-0,05 mm
Längenmaß: +/- 0,1 mm

Material:
Brushed stainless steel 0.8 mm
Tolerances:
Drilling diameter: +/- 0.05 mm
Length: +/- 0.1 mm

Figure 74: Dimensions Front Panel CIFX 50-DP or CIFX 50E-DP
10.2.8 CIFX 50-CO, CIFX 50E-CO

Figure 75: Dimensions CIFX 50-CO (Hardware Rev.5)
Figure 76: Dimensions CIFX 50E-CO (from Hardware Rev.4)
10.2.9 Front Panel CIFX 50-CO or CIFX 50E-CO

Material:
Edelstahl gebürstet 0.8 mm
Toleranzen:
Bodendurchmesser: +/- 0.05 mm
Längenmaß: +/- 0.1 mm

Material:
Brushed stainless steel 0.8 mm
Tolerances:
Drilling diameter: +/- 0.05 mm
Length: +/- 0.1 mm

Figure 77: Dimensions Front Panel für CIFX 50-CO or CIFX 50E-CO
10.2.10 CIFX 50-DN, CIFX 50E-DN

Figure 78: Dimensions CIFX 50-DN (Hardware Rev.5)
Figure 79: Dimensions CIFX 50E-DN (from Hardware Rev.4)
10.2.11 Front Panel CIFX 50-DN or CIFX 50E-DN

Figure 80: Dimensions Front Panel CIFX 50-DN or CIFX 50E-DN

Material:
Edelstahl gebürstet 0,3 mm
Toleranzen:
Bohrdurchmesser: +/- 0,05 mm
Längenmaß: +/- 0,1 mm

Material:
Brushed stainless steel 0.3 mm
Tolerances:
Drilling diameter: +/- 0.05 mm
Length: +/- 0.1 mm
10.2.12 CIFX 50-CC, CIFX 50E-CC

Figure 81: Dimensions CIFX 50-CC (Hardware Rev.2)
Figure 82: Dimensions CIFX 50E-CC (from Hardware Rev.4)
10.2.13 Front Panel CIFX 50-CC or CIFX 50E-CC

Figure 83: Dimensions Front Panel CIFX 50-CC or CIFX 50E-CC
10.2.14 CIFX 50-2DP

Figure 84: Dimensions CIFX 50-2DP (Hardware Rev.3)
10.2.15 CIFX 50E-2DP

Figure 85: Dimensions CIFX 50E-2DP (Hardware Rev.1)
Figure 86: Dimensions CIFX 50-2DP\CO (Hardware Rev.2)
Figure 87: Dimensions CIFX 50E-2DP\CO (Hardware Rev. 1)
Figure 88: Dimensions CIFX 50-2DP\DN (Hardware Rev.1)
Figure 89: Dimensions CIFX 50E-2DP\DN (Hardware Rev. 1)
10.2.20 CIFX 50-2CO

Figure 90: Dimensions CIFX 50-2CO (Hardware Rev.2)
Figure 91: Dimensions CIFX 50E-2CO (Hardware-Rev. 1)
10.2.22 CIFX 50-2CO\DN

Figure 92: Dimensions CIFX 50-2CO\DN (Hardware Rev.1)
10.2.23 CIFX 50E-2CO\DN

Figure 93: Dimensions CIFX 50E-2CO\DN (Hardware Rev. 1)
10.2.24 CIFX 50-2DN

Figure 94: Dimensions CIFX 50-2DN (Hardware Rev.2)
Figure 95: Dimensions CIFX 50E-2DN (Hardware Rev. 1)
10.2.26 Front Panel CIFX 50-2FB

Figure 96: Dimensions Front Panel CIFX 50-2FB
10.2.27 CIFX 50-2ASM, CIFX 50E-2ASM

Figure 97: Dimensions CIFX 50-2ASM (Hardware Rev.2)
Figure 98: Dimensions CIFX 50E-2ASM (from Hardware Rev.2)
10.2.28 Front Panel CIFX 50-2ASM, CIFX 50E-2ASM

Material:
Edelstahl gebürstet 0.8 mm
Toleranzen:
Bohrdurchmesser: +/-0.05 mm
Längenmaß: +/-0.1 mm

Material:
Brushed stainless steel 0.8 mm
Tolerances:
Drilling diameter: +/- 0.05 mm
Length: +/- 0.1 mm

Figure 99: Dimensions Front Panel CIFX 50-2ASM, CIFX 50E-2ASM
10.3 Dimensions PC Cards cifX Low Profile PCI Express

10.3.1 CIFX 70E-RE, CIFX 70E-RE\MR

Figure 100: Dimensions CIFX 70E-RE and CIFX 70E-RE\MR (Hardware Rev.1)
10.3.2 Front Panel CIFX 70E-RE, CIFX 70E-RE\MR

Material:
Edelstahl gebürstet 0.8 mm
Toleranzen:
Bohrdurchmesser: +/-0.05 mm
Längenmaß: +/-0.01 mm

Material:
Brushed stainless steel 0.8 mm
Tolerances:
Drilling diameter: +/-0.05 mm
Length: +/-0.01 mm

Figure 101: Dimensions Front Panel für CIFX 70E-RE, CIFX 70E-RE\MR
Figure 102: Dimensions CIFX 70E-CCIES (from Hardware Rev. 1)
10.3.4 Front Panel CIFX 70-CCIES

Figure 103: Dimensions Front Panel CIFX 70-CCIES
10.3.5 CIFX 70E-DP, CIFX 70E-DP\MR

Figure 104: Dimensions CIFX 70E-DP and CIFX 70E-DP\MR (Hardware Rev.1)
Figure 105: Blende für CIFX 70E-DP, CIFX 70E-DP\MR

Material:
Edelstahl gebürstet 0.8 mm

Toleranzen:
Bohrdurchmesser: +/- 0.05 mm
Längenmaß: +/- 0.01 mm

Material:
Brushed stainless steel 0.8 mm

Tolerances:
Drilling diameter: +/- 0.05 mm
Length: +/- 0.01 mm
10.3.6 CIFX 70E-CO, CIFX 70E-CO\MR

Figure 106: Dimensions CIFX 70E-CO and CIFX 70E-CO\MR (Hardware Rev.1)
10.3.7 Front Panel CIFX 70E-CO, CIFX 70E-CO\MR

Material:
Edelstahl gebürstet 0,8 mm
Toleranzen:
Bohrdurchmesser: +/- 0.05 mm
Längenmaß: +/- 0.01 mm

Material:
Brushed stainless steel 0.8 mm
Tolerances:
Drilling diameter: +/- 0.05 mm
Length: +/- 0.01 mm

Figure 107: Dimensions Front Panel für CIFX 70E-CO, CIFX 70E-CO\MR
10.3.8 CIFX 70E-DN, CIFX 70E-DN\MR

Figure 108: Dimensions CIFX 70E-DN and CIFX 70E-DN\MR (Hardware Rev.1)
10.3.9 Front Panel CIFX 70E-DN, CIFX 70E-DN\MR

Figure 109: Dimensions Front Panel CIFX 70E-DN, CIFX 70E-DN\MR
11 Annex

11.1 References


[3] Design - Specification for VARAN Rev. 0.76, section 5.1.4 VARAN Splitter

References Protocol API Manuals

- CC-Link IE Field Slave Protocol API, Revision 2, Hilscher GmbH 2020
- CC-Link IE Field-Basic Slave Protocol API, Revision 1, Hilscher GmbH 2018
- DeviceNet Slave Protocol API Manual, Revision 18, Hilscher GmbH 2020
- EtherCAT Master Protocol API Manual (V4), Revision 5, Hilscher GmbH 2017
- EtherCAT Slave Protocol API Manual (V4), Revision 12, Hilscher GmbH 2020
- Open Modbus/TCP Protocol API Manual, Revision 11, Hilscher GmbH 2018
- PROFINET IO-Controller Protocol API Manual, Revision 5, Hilscher GmbH 2017
- PROFINET IO-Device Protocol API Manual (V3), Revision 17, Hilscher GmbH 2017
- Sercos Slave Protocol API Manual (V3), Revision 17, Hilscher GmbH 2017
- VARAN Client Protocol API Manual, Revision 4, Hilscher GmbH 2021

Table 149: References Protocol API Manuals

11.1.1 References PCI Specifications

<table>
<thead>
<tr>
<th>No.</th>
<th>Specification</th>
<th>Revision</th>
<th>Version</th>
<th>Date</th>
<th>www</th>
</tr>
</thead>
<tbody>
<tr>
<td>[bus spec 1]</td>
<td>PCI Local Bus Specification</td>
<td>2.3</td>
<td>-</td>
<td>February 21, 2003</td>
<td>pcisig.com</td>
</tr>
</tbody>
</table>

Table 150: References PCI Specifications
11.1.2 References Safety


11.1.3 Used Terminology

PC Card cifX Communication Interfaces of the cifX family of Hilscher based on the netX technology.

CIFX 50-RE Example for the product name for a PC card cifX Real-Time Ethernet.

CIFX 50-XX Example (‘XX’ replaces ‘RE’, ‘DP’, ‘CO’, ‘DN’ or ‘CC’)

For further terminology to the PC cards cifX, its installation, configuration and operation refer to glossary in the annex.
11.2 Conventions in this Manual

Instructions and results
1. Operational purpose
2. Operational purpose
   - Instruction
   - Result

Signs and Signal Words

<table>
<thead>
<tr>
<th>Sign</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>➤</td>
<td>General note</td>
</tr>
<tr>
<td>!</td>
<td>Important note that must be followed to prevent malfunctions</td>
</tr>
<tr>
<td>🌟</td>
<td>Reference on further information (acc. to ISO 7010 M001)</td>
</tr>
<tr>
<td>🔧</td>
<td>Disconnect the power plug (acc. to ISO 7010 M006)</td>
</tr>
<tr>
<td>⚠️</td>
<td>Warning of Personal Injury and Property Damage Message (acc. to ISO 7010 W001) USA: Warning of Personal Injury</td>
</tr>
<tr>
<td>🚨</td>
<td>As in the scope of the ANSI Z535 Standard (for USA) instructions to a property damage message may not contain a warning triangle, this property damage messages are listed separately for the USA.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Warning of hazardous voltage! (acc. to ISO 7010 W012)</td>
</tr>
<tr>
<td>❗️</td>
<td>Danger to life, risk of injury by electric shock</td>
</tr>
<tr>
<td>🚨</td>
<td>USA: Warning of hazardous voltage! (acc. to ANSI Z535.4)</td>
</tr>
<tr>
<td>⚠️</td>
<td>Danger to life, risk of injury by electric shock</td>
</tr>
<tr>
<td>⚡️</td>
<td>USA: Warning of damage due to electrostatic discharge (acc. to IEC 60417-5134)</td>
</tr>
</tbody>
</table>

Table 151: General Signs, Principles, Safety signs

<table>
<thead>
<tr>
<th>Signal word</th>
<th>USA</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DANGER</td>
<td>🚨</td>
<td>Indicates a hazardous situation which if not avoided, will result in death or serious injury.</td>
</tr>
<tr>
<td>WARNING</td>
<td>🚨</td>
<td>Indicates a hazardous situation which if not avoided, could result in death or serious injury.</td>
</tr>
<tr>
<td>CAUTION</td>
<td>🚨</td>
<td>Indicates a hazardous situation which if not avoided, may result in minor or moderate Injury.</td>
</tr>
<tr>
<td>NOTICE</td>
<td>🚨</td>
<td>Indicates a property damage message.</td>
</tr>
</tbody>
</table>

Table 152: Signal Words
11.3 Legal Notes

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- Nuclear fusion processes in nuclear power plants;
- Medical devices used for life support and
- Vehicle control systems used in passenger transport

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- For designing, engineering, maintaining or operating nuclear systems;
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The warranty obligation shall not apply if the notification of defect is not asserted promptly, if the purchaser or third party has tampered with the products, if the defect is the result of natural wear, was caused by unfavorable operating conditions or is due to violations against our operating regulations or against rules of good electrical engineering.
practice, or if our request to return the defective object is not promptly complied with.

**Costs of support, maintenance, customization and product care**

Please be advised that any subsequent improvement shall only be free of charge if a defect is found. Any form of technical support, maintenance and customization is not a warranty service, but instead shall be charged extra.

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11.4 Licenses

If a PC Card cifX is used as a Slave, neither for the firmware nor for the configuration software SYCON.net a license is required.

Licenses will be required if the PC Card cifX is used with

- a firmware with master functionality*.

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

11.4.1 License Note about VARAN Client

In order to use the PC Card cifX with VARAN, you need a license which you can acquire at the VNO (VARAN Bus-Nutzerorganisation, Bürmooser Straße 10, A-5112 Lamprechtshausen, info@varan-bus.net) after getting a member of VON.

The license as well as the Vendor ID and the Device ID can be adjusted with the SYCON.net configuration software or with the netX Configuration Tool.
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Linux is a registered trademark of Linus Torvalds.

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Adobe-Acrobat® is a registered trademark of the Adobe Systems Incorporated.

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11.6 EtherCAT Disclaimer

EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

To get details and restrictions regarding using the EtherCAT technology refer to the following documents:

- “EtherCAT Marking rules”
- “EtherCAT Conformance Test Policy”
- “EtherCAT Vendor ID Policy”

These documents are available at the ETG homepage www.ethercat.org or directly over info@ethercat.org.

A summary over Vendor ID, Conformance test, Membership and Network Logo can be found hereafter.
11.6.1 EtherCAT Summary over Vendor ID, Conformance test, Membership and Network Logo

11.6.1.1 Vendor ID

The communication interface product is shipped with Hilscher’s secondary vendor ID, which has to be replaced by the Vendor ID of the company shipping end products with the integrated communication interface. End Users or Integrators may use the communication interface product without further modification if they re-distribute the interface product (e.g. PCI Interface card products) only as part of a machine or machine line or as spare part for such a machine. In case of questions, contact Hilscher and/or your nearest ETG representative. The ETG Vendor-ID policies apply.

11.6.1.2 Conformance

EtherCAT Devices have to conform to the EtherCAT specifications. The EtherCAT Conformance Test Policies apply, which can be obtained from the EtherCAT Technology Group (ETG, www.ethercat.org).

Hilscher range of embedded network interface products are conformance tested for network compliance. This simplifies conformance testing of the end product and can be used as a reference for the end product as a statement of network conformance (when used with standard operational settings). It must however be clearly stated in the product documentation that this applies to the network interface and not to the complete product.

Conformance Certificates can be obtained by passing the conformance test in an official EtherCAT Conformance Test lab. Conformance Certificates are not mandatory, but may be required by the end user.

11.6.1.3 Certified Product vs. Certified Network Interface

The EtherCAT implementation may in certain cases allow one to modify the behavior of the EtherCAT network interface device in ways which are not in line with EtherCAT conformance requirements. For example, certain communication parameters are set by a software stack, in which case the actual software implementation in the device application determines whether or not the network interface can pass the EtherCAT conformance test. In such cases, conformance test of the end product must be passed to ensure that the implementation does not affect network compliance.

Generally, implementations of this kind require in-depth knowledge in the operating fundamentals of EtherCAT. To find out whether or not a certain type of implementation can pass conformance testing and requires such testing, contact EtherCAT Technology Group (“ETG”, www.ethercat.org) and/or your nearest EtherCAT conformance test centre. EtherCAT may allow the combination of an untested end product with a conformant network interface. Although this may in some cases make it possible to sell the end product without having to perform network conformance tests, this approach is generally not endorsed by Hilscher. In case of questions, contact Hilscher and/or your nearest ETG representative.

11.6.1.4 Membership and Network Logo

Generally, membership in the network organization and a valid Vendor-ID are prerequisites in order to be able to test the end product for conformance. This also applies to the use of the EtherCAT name and logo, which is covered by the ETG marking rules.

Vendor ID Policy accepted by ETG Board of Directors, November 5, 2008
11.7 Notes on earlier Hardware Revisions

11.7.1 Failure in 10 MBit/s Half Duplex Mode and Workaround

The note is only valid for the PC cards cifX up to serial numbers indicated:

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<th>Part No</th>
<th>up to Serial Number</th>
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<td>CIFX 50-RE</td>
<td>1250.100</td>
<td>22414</td>
</tr>
<tr>
<td>CIFX 50E-RE</td>
<td>1251.100</td>
<td>20167</td>
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**Failure of the Network Communication**

- Do not operate hardware with the communication controllers netX 50, netX100 or netX 500 with the protocols Ethernet TCP/UDP/IP, EtherNet/IP or Modbus TCP at 10 MBit/s in half-duplex mode, otherwise failure of the network communication can occur.
- Use only switches or 10/100 MBit/s dual-speed hubs and ensure that the network operates at 100 MBit/s and in full-duplex mode.

**USA:**

**Failure of the Network Communication**

- Do not operate hardware with the communication controllers netX 50, netX100 or netX 500 with the protocols Ethernet TCP/UDP/IP, EtherNet/IP or Modbus TCP at 10 MBit/s in half-duplex mode, otherwise failure of the network communication can occur.
- Use only switches or 10/100 MBit/s dual-speed hubs and ensure that the network operates at 100 MBit/s and in full-duplex mode.

**Affected Hardware**

Hardware with the communication controller netX 50, netX 100 or netX 500; netX/Internal PHYs.

**When can this Failure occur?**

When using standard Ethernet communication with 10 MBit/s half duplex mode, the PHY gets stuck in case of network collisions. Then no further network communication is possible. Only device power cycling allows Ethernet communication again.

This problem can only occur with Ethernet TCP/UDP IP, EtherNet/IP or Modbus TCP protocols when using hubs at 10 MBit/s. The issue described above is not applicable for protocols which use 100 MBit/s or full duplex mode.

**Solution / Workaround:**

Do not use 10 MBit/s-only hubs. Use either switches or 10/100 MBit/s Dual Speed hubs, to make sure the netX Ethernet ports are connected with 100 MBit/s or in full duplex mode.

This erratum is fixed with all components of the ‘Y’ charge (9 digit charge number shows ‘Y’ at position 5 (nnnnYnnnn)).

**Reference**

“Summary of 10BT problem on EthernetPHY”, RenesasElectronics Europe, April 27, 2010
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11.10 Glossary

10-Base T

Standard for communication on Ethernet over twisted pair lines with RJ45 connectors and a **Baud rate** of 10 MBit/s (according to the IEEE 802.3 specification).

100-Base TX

Standard for communication on Ethernet over unshielded twisted pair lines with RJ45 connectors and a **Baud rate** of 100 MBit/s according to the IEEE 802. Specification

1000BASE-T

Standard for communication on Ethernet over unshielded twisted pair lines with RJ45 connectors and a **Baud rate** of 1 GBit/s according to the IEEE 802.3ab Specification.

Auto-Crossover

Auto-Crossover is a feature of an interface: An interface with Auto-Crossover capability will automatically detect and correct if the data lines have been exchanged vice versa.

Auto-Negotiation

Auto-Negotiation is a feature of an interface: An interface with Auto-Negotiation will automatically determine a set of correct communication parameters.

Baud rate

Data transmission speed of a communication channel or interface.

Boot loader

Program loading the firmware into the memory of a device in order to be executed.

CC-Link IE Field

Communication system for industrial Ethernet designed and developed by Mitsubishi Electric Corporation, Tokyo, Japan, for high data throughput based on Gigabit

CC-Link IE Field Master

Station in the CC-Link IE Field network controlling parameters and managing cyclic communication

CC-Link IE Field Slave

Station in the CC-Link IE Field network communicating with a master station

CC-Link IE Field Basic

Communication system for Industrial Ethernet designed and developed by Mitsubishi Electric Corporation, Tokyo, Japan, providing CC-Link IE Field with a speed of 100 Mbit/s based on TCP/IP
CC-Link IE Field Basic Master

Station in the CC-Link IE Field Basic network controlling parameters and managing cyclic communication

CC-Link IE Field Basic Slave

Station in the CC-Link IE Field Basic network communicating with a master station

Ch0, Ch1 ...

Within the configuration software SYCON.net the communication channels are named 'Ch0', 'Ch1' ....

For the Real-Time-Ethernet devices cifX, comX and netJACK and the Real-Time Ethernet protocols used with it, the following shall apply:

‘Ch0’ in SYCON.net: Both ports of the Ethernet RJ45 connector CH0 and CH1 are assigned always to channel 0 in SYCON.net.

‘Ch1’ in SYCON.net: Depending on the firmware channel 1 in SYCON.net can be used as an additional communication channel.

CH0, CH1 (Ch0, Ch1)

Names for the ports of an Ethernet RJ45 socket with two Ethernet channels.

CH0 stands for Ethernet channel 0.

CH1 stands for Ethernet channel 1.

cifX

Communication Interface based on netX

cifX TCP/IP Server

cifX TCP Server.exe

Program for the remote diagnostics via Ethernet.

Name: cifX TCP/IP Server for SYCON.net

User Interface: TCP/IP Server for cifX

Coil

A coil is a single bit in the memory that can be accessed using Modbus: read or write access with FC 1, 5, 15. Depending on the used Modbus function code a single coil or several coils lying in succession can be accessed.

CSP

electronic device data sheet, required for each CC-Link device

CSPP

(CSP+) Control and communication system profile, respectively specification and device description file that contains and provides the necessary data on CC-Link compatible devices for commissioning, operation and maintenance.
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.

DHCP

Dynamic Host Configuration Protocol

This is a protocol simplifying the configuration of IP networks by automatically assigning IP addresses.

Discrete Input

A “Discrete Input” (as defined in the Modbus terminology) is a single bit in the memory which can be accessed using Modbus (read with FC 2).

DP

Decentral Periphery

DPM

Dual-Port Memory

EDS

Electronic Data Sheet

EDS file

A special kind of Device Description File used for example by EtherNet/IP.

ET

Extended Temperature Range (Operating Temperature)

PC cards cifX with the addition of "ET" at the end of the part name can be used in an extended operating temperature range. Details to the operating temperature range are given in the technical data to the respective card.

EtherCAT

A communication system for industrial Ethernet designed and developed by Beckhoff Automation GmbH.

Ethernet

A networking technology used both for office and industrial communication via electrical or optical connections. It has been developed and specified by the Intel, DEC and XEROX. It provides data transmission with collision control and allows various protocols. As Ethernet is not necessarily capable for real-time application, various real-time extensions have been developed.

EtherNet/IP

A communication system for industrial Ethernet designed and developed by Rockwell. It partly uses the CIP (Common Industrial Protocol).
**EtherNet/IP Scanner**

A Scanner exchanges real-time I/O data with Adapters and Scanners. This type of node can respond to connection requests and can also initiate connections on its own.

**EtherNet/IP Adapter**

An Adapter emulates functions provided by traditional rack-adaptor products. This type of node exchanges real-time I/O data with a Scanner Class product. It does not initiate connections on its own.

**Ethernet POWERLINK**

A communication system for industrial Ethernet designed and developed by B&R. It partly uses CANopen technologies.

**FDL**

Fieldbus Data Link defines the PROFIBUS communication on layer 2, identical for DP and FMS.

**Firmware**

Software running inside a device providing the basic functionality of this device. It can be updated by a firmware download.

**Full duplex**

Full duplex denominates a telecommunication system between two communication partners which allows simultaneous communication in both directions is called a full-duplex telecommunication system. At such a system, it will be possible to transmit data even if currently data are received. Full-duplex is the opposite of Half_duplex.

**Function code**

A function code (FC) is a standardized method to access, i.e. read or write on coils (Bits) or registers via Modbus.

Modbus function codes are elements of Modbus request/reply telegrams.

**GSD**

Generic Station Description, Device description file

**GSD file**

A special kind of Device Description File used by PROFIBUS (GSD = Generic Station Description).

**GSDML**

Generic Station Description Markup Language

XML based device description file.

**GSDML file**

A special kind of XML-based Device Description File used by PROFINET.
Half duplex

Half duplex denominates a telecommunication system between two communication partners which does not allow simultaneous, but alternating, communication in both directions is called a half-duplex telecommunication system. At such a system, receiving data inhibits the transmission of data. Half-duplex is the opposite of _Full_duplex._

Hub

A network component connecting multiple communication partners with each other. A hub does not provide own intelligence, thus it does not analyze the data traffic and sends received data to all connected communication partners. A hub can be used for setting up a star topology.

Industrial Ethernet

See Real-Time Ethernet

IP

Internet Protocol.

IP belongs to the TCP/IP family of protocols and is defined in RFC791. It is based on layer 3 of the ISO/OSI 7 layer model of networking.

It is a connectionless protocol, i.e. you do not need to open a connection to a computer before sending an IP data packet to it. Therefore IP is not able to guarantee that the IP data packets really arrive at the recipient. On IP level neither the correctness of data nor the consistence and completeness are checked.

IP defines special addressing mechanisms, see IP Address.

IP Address

Address within IP (the Internet Protocol, part of TCP/IP).

An IP address is an address identifying a device or a computer within a network using the IP protocol. IP addresses are defined as a 32 bit number. Usually, for ease of notation the IP address is divided into four 8 bit numbers which are represented in decimal notation and separated by points:

\[ \text{a.b.c.d} \]

where a.b.c.d are each integer values between 0 and 255.

Example: 192.168.30.15

However, not all combinations are allowed, some are reserved for special purposes.

The IP address 0.0.0.0 is defined as invalid.

MAC-ID

MAC = Media Access Control

Definition for Ethernet:

A MAC-ID is on delivery a unique (physical) Ethernet address of the device.

MAC-IDs are defined as a 48 bit number. Usually, for ease of notation the MAC-ID address is divided into six 8 bit numbers which are represented in hexadecimal notation and separated by “minus”-signs (-):
A-B-C-D-E-F

where A-B-C-D-E-F are each integer values between 0 and 255.
Example: 00-02-A2-20-91-18

Definition for DeviceNet: The MAC-ID is the network address of the device. The network address of a device serves to distinguish itself on a DeviceNet fieldbus system from any other device or Slave on this network. This should be a unique number for each device. A valid MAC-ID address is within a range of 0 to 63 and can be re-entered and changed in the MAC-ID box in the Device Configuration Dialog.

Master

Type of device that initiates and controls the communication on the bus

Modbus Data Model

The data model distinguishes four basic types of data areas:
• Discrete Inputs (inputs) = FC 2 (Read)
• coils (outputs) = FC 1, 5, 15 (Write and Read back)
• Input register (input data) = FC 4 (Read)
• Holding register (output data) = FC 3, 6, 16, 23 (Write and Read back).
It should be noted, however, that depending on the device manufacturer and device type:
• the data area in the device may be present or not,
• and two data areas can be combined into one data region. For example, discrete inputs and input registers can be a common data area, which can be accessed with read-FC 2 and FC 4.
• Further FC 1 and FC 3 are used instead of reading back the inputs to read the outputs.

MPI

Multi Point Interface
The MPI is a proprietary interface of the SIMATIC® S7® series of PLCs. It is compatible to PROFIBUS and based on RS-485. It usually works with a transmission rate of 187.5 kBaud.

netX

networX on chip, Hilscher network 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 diagnosis of the devices.

Object Dictionary

An object dictionary is a storage area for device parameter data structures. It is accessed in standardized manner.
Open Modbus/TCP

A communication system for Industrial Ethernet designed and developed by Schneider Automation and maintained by the Modbus-IDA organization based on the Modbus protocols for serial communication.

PCB

Printed Circuit Board, (printed = machine-made) circuit board

PCle

Abbreviation for PCI Express

PC Card cifX

Communication Interfaces of the cifX product family of Hilscher on the basis of the communication controller netX 100:

- CC-Link IE Field
- CC-Link IE Field Basic
- EtherCAT
- EtherNet/IP
- Open-Modbus/TCP
- POWERLINK
- PROFINET IO
- Sercos
- VARAN

as Communication Interface netX with PCI Bus

- PCI (CIFX 50),
- PCI Express (CIFX 50E),
- Low Profile PCI Express (CIFX 70E, CIFX 100EH-RE\CUBE*),
- Compact PCI (CIFX80),
- Mini PCI (CIFX90),
- Mini PCI Express (CIFX 90E),
- PCI-104 (CIFX 104C)

and as Communication Interface netX with ISA Bus

- PC/104 (CIFX 104).
  *only Real-Time Ethernet

PROFINET

A communication system for Industrial Ethernet designed and developed by PROFIBUS & PROFINET International (PI). It uses some mechanisms similar to those of the PROFIBUS field bus.

PROFINET IO Controller

A PROFINET control unit responsible for the defined run-up of an I/O subsystem and the cyclic or acyclic data exchange.
PROFINET IO Device

A PROFINET field device that cyclically receives output data from its IO-Controller and responds with its input data.

RE

RE stands for Real-Time Ethernet

Real-Time Ethernet

Real-Time Ethernet (Industrial Ethernet) is an extension of the Ethernet networking technology for industrial purposes with very good real-time features and performance. There is a variety of different Real-Time Ethernet systems on the market which are incompatible with each other. The most important systems of these are

- CC-Link IE Field
- CC-Link IE Field Basic
- EtherCAT
- EtherNet/IP
- Ethernet POWERLINK
- Open Modbus/TCP
- PROFINET
- Sercos
- VARAN

Register

A register is a 16-bit wide storage area for data which can be accessed and addressed as a unit by some of the Modbus Function Codes.

Depending on the used Modbus function code a single register or multiple registers sequentially located can be accessed.

Modbus differs Input Registers (FC 4) and Holding Registers (FC 3, 6, 16, 23).

Remanent

Remanent memory holds its data even after power-off, for instance flash memory is remanent. It is also called non-volatile memory.

RJ45

A connector type often used for Ethernet connection. It has been standardized by the Federal Communications Commission of the USA (FCC).

Sercos

A communication system for industrial Ethernet designed and developed by Bosch-Rexroth and supported by Sercos International.

Slave

Type of device that is configured by the Master and which then performs the communication
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.

SYCON.net
FDT/DTM based configuration and diagnosis software by Hilscher

SYNC
Synchronization cycle of the master

TCP/IP
Transport Control Protocol/Internet Protocol connection-orientated, secure transfer protocol as basis for the Internet-protocols

UCMM
Unconnected Message Manager

VARAN
Versatile Automation Random Access Network
A communication system for industrial Ethernet based on the DIAS-BUS developed by Sigmatek. The system is supported by the VARAN-BUS-NUTZERORGANISATION (VNO).

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).

X1, X2, X3, X4 …
serve as position names on the circuit board but can also have other or extended meanings

X1, X2
(names on the front panel) … serve for PC cards cifX PCI and PCI Express with 2 channels to identify the respective communication channel:
X1 stands for fieldbus 1 (channel X1; in SYCON.net assigned to Ch0).
X2 stands for fieldbus 2 (channel X2; in SYCON.net assigned to Ch1).

XDD file
A special kind of Device Description file used by Ethernet POWERLINK.

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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