cifX

PC cards for Real-Time Ethernet and Fieldbus

- All common PC card formats
- All major industrial protocols
- One hardware for all Real-Time Ethernet protocols
- Master and Slave
- Wide range of device drivers
- Same application interface for all networks

PC cards in all formats for all protocols

The cifX PC card family is the unified standard supporting all Real-Time Ethernet and Fieldbus systems for PC based automation.

The protocol stack is executed autonomously on the PC card and process data exchange with the host is done via Dual-Port-Memory or DMA (Direct Memory Access). Thanks to the common Hilscher Platform Strategy all PC cards use the same driver and tools - independent of protocol and card format. Thanks to the netX technology there is exactly one hardware needed for the realization of all Real-Time Ethernet protocols. A change of the communication protocol is done by just loading a different firmware.

Always the right solution! Different cable lengths, M-12 connectors, additional NVRAM, extended temperature range, 2-channel cards or detached network interfaces – numerous hardware options always offer the right solution for your application. On top, a wide range of device drivers and a C-Toolkit, free of charge, are available.

The PC based automation is evolving and the Hilscher cifX PC card family keeps the pace. With continuous expansion for new standards, protocols and formats, as M.2, mini PCIe halfsize or CC-Link IE Field, customers are always prepared for new market demands.
cifX - Most flexible PC card portfolio on the market

Card formats

PC/104
-20 ... +70°C
3.3 V / typ. 650 mA
97.0 x 91.0 x 24.0 mm

PCI-104
-20 ... +70°C
3.3 V / typ. 650 mA
97.0 x 91.0 x 24.0 mm

PCI
-20 ... +70°C
3.3 V / typ. 650 mA
120.0 x 86.0 x 18.5 mm

Compact PCI
-20 ... +70°C
3.3 V / typ. 650 mA
162.5 x 100.0 x 20.0 mm

Mini PCI
-20 ... +70°C
3.3 V / typ. 650 mA
60.0 x 45.0 x 9.5 mm

PCI Express
-20 ... +55°C, -20 ... +70°C
3.3 V / typ. 800 mA
120.0 x 86.0 x 18.5 mm

Low Profile PCI Express
-20 ... +55°C, -20 ... +70°C
3.3 V / typ. 800 mA
119.0 x 69.0 x 18.5 mm

Mini PCI Express
-20 ... +55°C, -20 ... +70°C
3.3 V / typ. 800 mA
51.0 x 30.2 x 11.0 mm

Mini PCIe halfsize
-25 ... +70°C
TBD
26.8 x 30 x 8.5 mm

M.2
-25 ... +70°C
TBD
30 x 22 x 8.7 mm

Platform Strategy
Same API, same driver, same tools for all card formats & protocols

Hardware-Options

- Extended temperature
  For the usage in high temperature environments, all cifX cards support an extended temperature range

- Additional NVRAM
  Mini PCI Express and Low Profile PCI Express types can be ordered with an additional NVRAM for 128 kByte remanent data

- Rotary Switch
  A rotary switch on PCI, PCI Express and Low Profile PCI Express cards allows an easy and reliable slot assignment

- 2-Channel Cards
  For compact systems with limited internal slots, 2-channel cards for Fieldbus and Real-Time Ethernet are available

Detached network interface

- AIFX-RE with RJ45 connectors
  PCI-104, PC/104, mini PCI, mini PCI Express, mini PCIe halfsize and M.2 cards come with a detached network interface, which is equipped with RJ45 connectors

- AIFX-RE/M12 with M12 connectors
  Alternatively, all cards with a detached Real-Time Ethernet network interface are available with D-coded M12 connectors

- Different cable lengths
  For flexible mounting the detached network interface can be delivered with cable lengths of 15 or 20cm for Real-Time Ethernet and 15 or 30cm for Fieldbus
Unique diversity & simplicity for all Use-Cases

**Universal PC card for Master & Slave**

Hilscher’s PC cards cifX are based on the multiprotocol chip netX 100 and are designed as so called universal cards. Means the same card can be used as Master or as Slave, respectively one hardware supports all Real-Time Ethernet systems - all using the same application interface. A change of functionality is done by just loading an appropriate firmware and adding a software license for the master.

In addition dedicated PC cards, as for CC-Link IE Field or netX 90 based cards, are designed for Slave only.

**Real-Time Ethernet & Fieldbus protocols**

As specialist for industrial communication Hilscher offers the largest selection of protocols used in the factory automation. Besides traditional Fieldbusses, all major Real-Time Ethernet protocols are available as Master or Slave.

**Device Drivers**

For a quick and easy integration Hilscher offers a wide range of device drivers. Besides a C-Toolkit free of charge, drivers for all relevant operating systems, as well as soft-PLC drivers from 3rd party suppliers, are available.

**Industrial PC**

- Plant control or local machine control
- Independent of the IPC - all formats and protocols as Master & Slave
- Same API and drivers for all cards

**HMI Panels**

- Monitoring and machine operation
- One hardware for all Real-Time Ethernet systems
- Wide range of device drivers

**Vision**

- For small & compact systems, e.g. smart cameras
- Cards for extended temperature range
- Smallest multiprotocol PC card on the automation market
**What’s new?**

- **cifX M.2 & mini PCIe halfsize**
  - Smallest multiprotocol PC cards on the automation market
  - For small and compact systems with a size of 22x30 mm or 30x26.8 mm
  - Optimized for extended temperature and smallest footprint
  - One hardware for all Real-Time Ethernet Slave protocols

- **cifX 4000**
  - High-Performance PC card for Real-Time Ethernet as Master & Slave and IoT
  - Increased performance for big amounts of I/O data
  - PC card for dual-channel Real-Time Ethernet

- **AIFX-REIM12**
  - For high protection in harsh environments
  - Ratings up to IP67 in customer designs
  - Available for all Real-Time Ethernet types with detached network interfaces

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### Product Matrix

**All formats - All networks**

<table>
<thead>
<tr>
<th>Systembus</th>
<th>Universal Card</th>
<th>NVRAM2-Kanal</th>
<th>M12 Connector</th>
<th>Universal Card</th>
<th>NVRAM2-Kanal</th>
<th>M12 Connector</th>
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</thead>
<tbody>
<tr>
<td>PCI/104</td>
<td>CIFX 104</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>PCI 104</td>
<td>CIFX 104C</td>
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<td>✔</td>
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<td>✔</td>
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<tr>
<td>PCI</td>
<td>CIFX 90</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Compact PCI</td>
<td>CIFX 80</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Mini PCI</td>
<td>CIFX 90</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>PCI Express</td>
<td>CIFX 50E &amp; CIFX PCIe 4000</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Low Profile PCIe</td>
<td>CIFX 70E &amp; CIFX PCIe 4000</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Mini PCI Express</td>
<td>CIFX 90E</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>M.2 (2)</td>
<td>CIFX M223090</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Mini PCIe halfsize (3)</td>
<td>CIFX HPECIE 95</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

1) Master only
2) Slave only
3) Also MPI
2) Slave only
1) Master only
4) 2-Channel card available in following combinations: 124MS, 10X 8X, 8X 8X, 8X 8X, 8X 8X
5) For POE Express only: 124MS, 8X 8X
6) Coming soon (2019)
7) Coming soon (2020)
8) Coming soon (2021)
Scope of delivery

A complete software package is always included in the scope of delivery. This package consists of one FDT-based configuration tool (IEC standard) for all products and networks, loadable firmware, documentation and a driver toolkit. Numerous drivers for different operating systems are also available.

Configuration

- Graphical and intuitive configuration tool for a simple and fast commissioning
- One tool for all products and automation networks
- Configuration of Master and Slave
- Based on common FDT / DTM standards
- Including topology editor for PROFINET I/O IRT Controller

Technical Data / Product Overview

**Note:** All technical data is preliminary and may be changed without further notice.

### Parameter Value

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Weight</td>
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<tr>
<td>CE-Sign</td>
<td>yes</td>
</tr>
<tr>
<td>Certification</td>
<td>RoHS, Reach, UL</td>
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<tr>
<td>Emission</td>
<td>EN 55011:2009 + A1:2010, CISPR 11, Class A</td>
</tr>
<tr>
<td>Galvanic Isolation</td>
<td>potential free isolated</td>
</tr>
<tr>
<td>1ET</td>
<td>extended temperature range</td>
</tr>
<tr>
<td>1MR</td>
<td>128 kByte MRAM</td>
</tr>
<tr>
<td>1F</td>
<td>detached network interface</td>
</tr>
<tr>
<td>1M12</td>
<td>detached network interface with M12-connectors</td>
</tr>
<tr>
<td>1/20</td>
<td>20 cm connection cable</td>
</tr>
<tr>
<td>1/30</td>
<td>30 cm connection cable</td>
</tr>
<tr>
<td>Dual-Port-Memory</td>
<td>64 kByte, 8-16 bit</td>
</tr>
<tr>
<td>LED Indicators</td>
<td>SYS, COM 0, COM 1, Link, Rx/Tx</td>
</tr>
</tbody>
</table>

### Article System Interface

<table>
<thead>
<tr>
<th>Article</th>
<th>System Interface</th>
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<tbody>
<tr>
<td>CIFX 50-XX</td>
<td>PCI, 33 MHz, DPM, IO-DMA</td>
</tr>
<tr>
<td>CIFX 50E-XX</td>
<td>PCI Express, One-Lane-Port</td>
</tr>
<tr>
<td>CIFX PCIe 4000</td>
<td>Low Profile PCI Express, One-Lane-Port</td>
</tr>
<tr>
<td>CIFX 70E-XX</td>
<td></td>
</tr>
<tr>
<td>CIFX LPCIE 4000</td>
<td></td>
</tr>
<tr>
<td>CIFX 80-XX</td>
<td>Compact PCI, 33MHz, DPM, IO-DMA</td>
</tr>
<tr>
<td>CIFX 90-XXF</td>
<td>Mini PCI, 33 MHz, DPM, IO-DMA</td>
</tr>
<tr>
<td>CIFX 90E-XXF</td>
<td>Mini PCI Express, One-Lane-Port</td>
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<tr>
<td>CIFX 104-XX*</td>
<td>PC/104, 33 MHz, DPM</td>
</tr>
<tr>
<td>CIFX 104G-XX*</td>
<td>PCI 104, 33 MHz, DPM, IO-DMA</td>
</tr>
<tr>
<td>CIFX M223090-XXF</td>
<td>M.2 PCI Express, One-Lane-Port</td>
</tr>
<tr>
<td>CIFX HPCI80-XXF</td>
<td>Mini PCI Express halfsize, One-Lane-Port</td>
</tr>
</tbody>
</table>

* available in the variants: ‘F’, ‘R’, ‘RF’