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**

Smallest PC cards on the automation market M.2 2230 & hPCIe

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 drivers 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.

hilscher
COMPETENCE IN COMMUNICATION

MOST FLEXIBLE PC CARD PORTFOLIO ON THE MARKET – **cifX**

Card formats

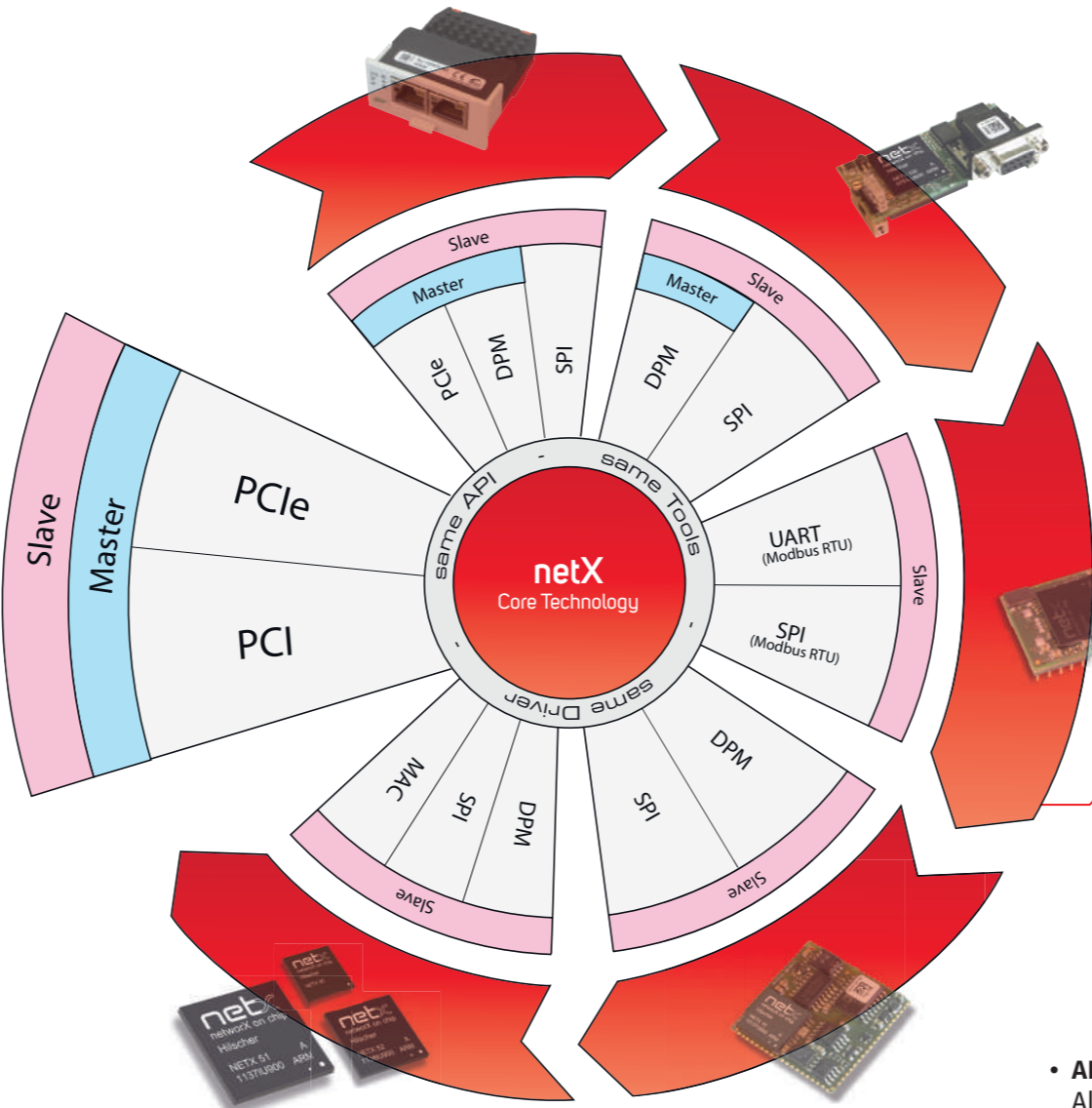**PC/104**
- -20 ... +70°C
- +3,3 V / typ. 650 mA
- 97,0 x 91,0 x 24,0 mm

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 ... +65°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
- -20 ... +70°C
- +3,3 V / typ. 330 mA
- 26,8 x 30,0 x 7,2 mm

NEW!

M.2
- -20 ... +70°C
- +3,3 V / typ. 330 mA
- 30,0 x 22,0 x 7,0 mm

Platform Strategy

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

netX
Core Technology

PCIe
PCI
Slave
Master
same API - same Tools
same Driver
UART (Modbus RTU)
SPI (Modbus RTU)
Slave
Master
DPM
SPI
PCIe
DPM
SPI
MAC
SPI
DPM
SPI
DPM
Slave

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 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

NEW!

- **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
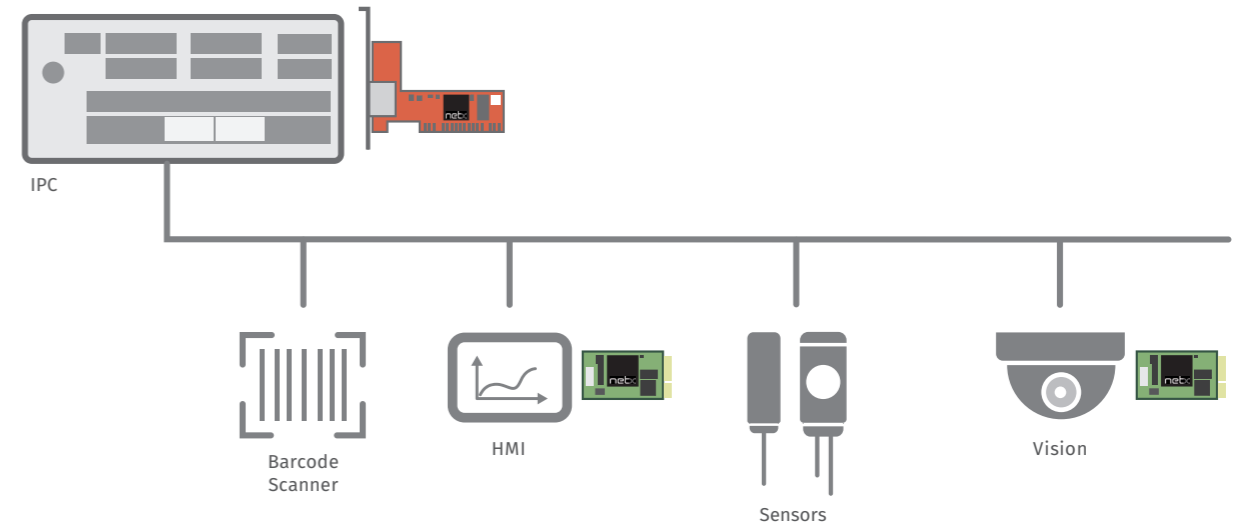
UNIQUE DIVERSITY & SIMPLICITY – **FOR ALL USE-CASES**

IPC

Barcode Scanner

HMI

Sensors

Vision

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 master functionality.

Dedicated PC cards, as for CC-Link IE Field or netX 90 based cards, are designed for Slave functionality 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.

EtherCAT®   EtherNet/IP™   ETHERNET POWERLINK   sercos the automation bus

DeviceNet™   CANopen   CC-Link   VARAN

CC-Línk IE Field Basic   CC-Línk IE Field   Modbus

PROFIBUS   PROFINET   ASi

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 softPLC drivers from 3rd party suppliers, are available.

Microsoft Windows   INDUSTRIAL COMMUNICATIONS SOLUTIONS   IntervalZero   INtime Real-time for Windows   Linux

QPC OLE for Process Control   QNX PARTNER NETWORK   VxWorks   Microsoft Windows CE

AREAS OF USE

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
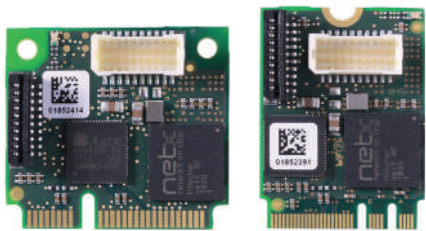- Wide range of device drivers

Vision

- For small & compact systems, e.g. smart cameras
- Cards for extended temperature range
- Smallest multiprotocol PC card on the automation market
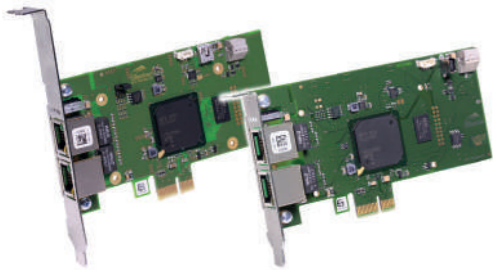
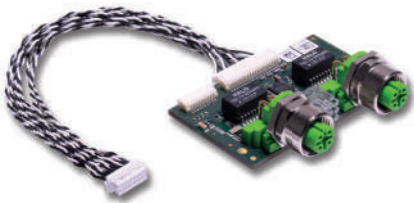# PRODUCT MATRIX– **ALL FORMATS AND ALL NETWORKS**

WHAT'S NEW?

cifX M.2 & mini PCIe halfsize

- Smallest multiprotocol PC cards on the automation market
- For small & 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

Note: Original size

cifX 4000

- High-Performance PC card for Real-Time Ethernet as Master & Slave and IoT
- Increased performance for big amounts of I/O data
- One hardware for all Real-Time Ethernet Master & Slave protocols

AIFX-RE\M12

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

System bus / Product	Processor	Universal Card (Master & Slave)	AS-i [1]	CANopen	CC-Link [2]	DeviceNet	Profibus [3]	CC-Link IE Field [2]	CC-Link IE Field Basic [2]	EtherCAT	Ethernet/IP	POWERLINK [2]	Modbus	Profinet	sercos	[2]	NVRAM	2-Kanal	M12 Connector
PC/104 CIFX 104	netX 100	✓	–	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–	✓
PCI 104 CIFX 104C	netX 100	✓	–	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–	✓
PCI CIFX 50	netX 100	✓	✓	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–[4]	–
Compact PCI CIFX 80	netX 100	✓	–	✓	✓	–	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–	–
Mini PCI CIFX 90	netX 100	✓	–	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–	✓
PCI Express CIFX 50E & CIFX PCIE 4000	netX 100/ 4000	✓	✓	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–[4]	–
Low Profile PCIe CIFX 70E & CIFX LPCIE 4000	netX 100/ 4000	✓	–	✓	–	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–	–
Mini PCI Express CIFX 90E	netX 100	✓	–	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓[4]	✓
M.2 [2] CIFX M223090	netX 90	–	–	–	–	✓	–	✓	–	✓	✓	✓	–	✓	–	–	–	–	–
Mini PCIe halfsize [2] CIFX HPCIE 90	netX 90	–	–	–	–	✓[5]	–	✓[5]	✓[5]	✓	✓	✓[5]	✓[5]	–	–	–	–	–	–

1) Master only
2) Slave only
3) also MPI
4) 2-Channel card available in following combinations: 2ASM, 2DP, 2CO, 2DN, 2DP\CO, 2DP\DN, 2CO\DN
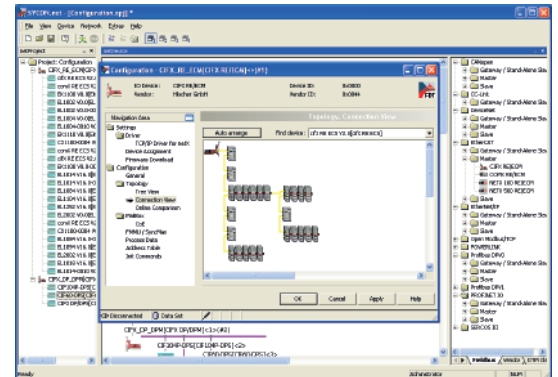5) Coming soon

PRODUCT INFORMATION
TECHNICAL DATA

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

- 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
- Graphical and intuitive configuration tool for a simple and fast commissioning

Technical Data	
Weight	max. 150 g
Certification	CE Sign, RoHS, Reach, UL
Emission	EN 55011:2009 + A1:2010, CISPR 11, Class A
Galvanic Isolation	potential free isolated
Dual-Port-Memory	64 kByte, 8-/16 bit
LED Indicators	SYS, COM 0, COM 1, Link, Rx/Tx
\ET	extended temperature range
\MR	128 kByte MRAM
\F	detached network interface
\M12	detached network interface with M12-connectors
\20	20 cm connection cable
\30	30 cm connection cable

Note: All technical data may be changed without further notice.

Product Overview	
CIFX 50-XX	PCI, 33 MHz, DPM, IO-DMA
CIFX 50E-XX	PCI Express, One-Lane-Port
CIFX PCIE 4000-XX	PCI Express, One-Lane-Port
CIFX 70E-XX	Low Profile PCI Express, One-Lane-Port
CIFX LPCIE 4000-XX	Low Profile PCI Express, One-Lane-Port
CIFX 80-XX	Compact PCI, 33MHz, DPM, IO-DMA
CIFX 90-XX\F	Mini PCI, 33 MHz, DPM, IO-DMA
CIFX 90E-XX\F	Mini PCI Express, One-Lane-Port
CIFX 104-XX*	PC/104, 33 MHz, DPM
CIFX 104C-XX*	PCI 104, 33 MHz, DPM, IO-DMA
CIFX M223090-XX\F	M.2 PCI Express, One-Lane-Port
CIFX HPCIE90-XX\F	Mini PCI Express halfsize, One-Lane-Port

*= available in the variants: \F, -R, -R\F

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