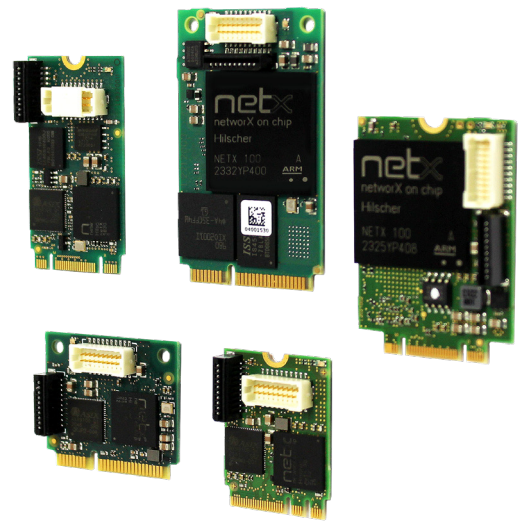# Mini PC Cards

Smallest PC cards on the automation market

→ Mini PC cards in M.2, mini PCIe
and mini PCIe halfsize format

→ All major industrial protocols
as Master and Slave

→ High operating temperature up to 70 °C

→ Low power consumption down to 1 W

→ Secure boot and cryptographic algorithm
for netX 90 based PC cards

EtherCAT · PROFINET · PROFIBUS · VARAN · sercos the automation bus · DeviceNet · CANopen · OPC UA

CC-Link · CC-Link IE Field Basic · Modbus · EtherNet/IP · ETHERNET POWERLINK · MQTT

Available formats

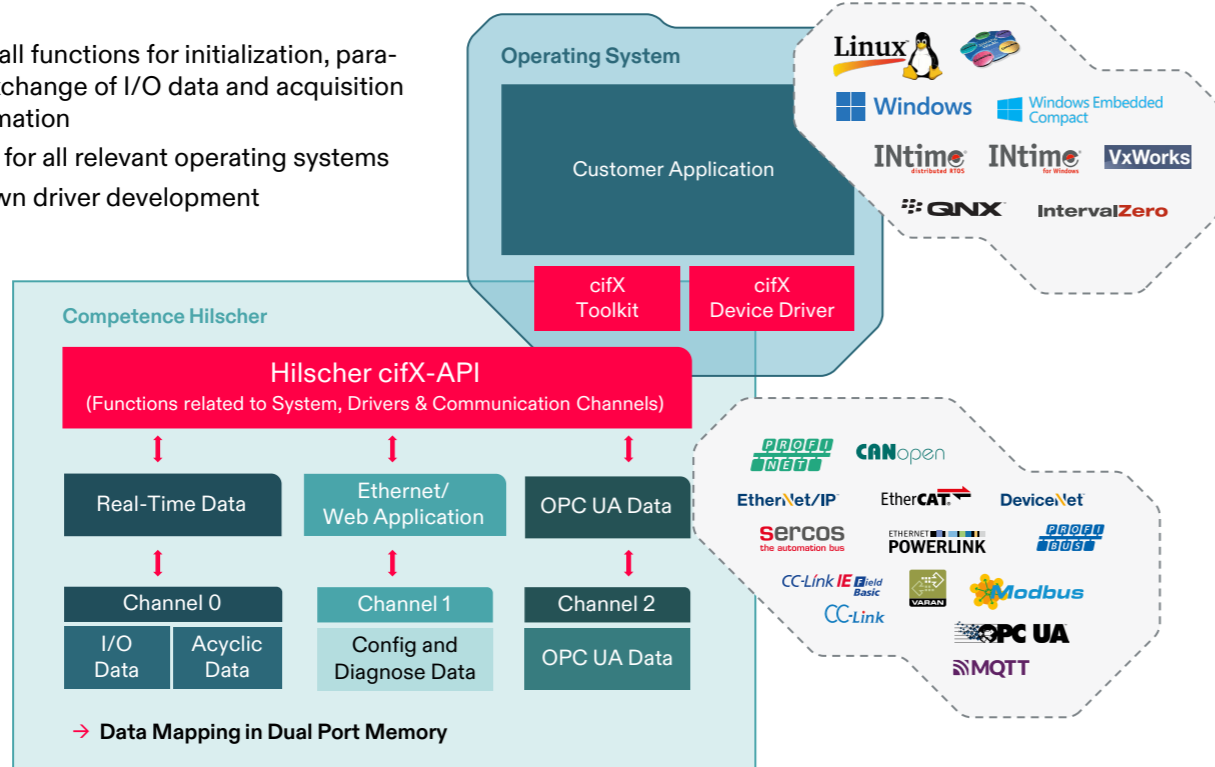|	CIFX HPCIE90	CIFX M223090AE	CIFX M224290BM	CIFX M3042100BM	CIFX 90E
Card format	Mini PCIe halfsize	M.2	M.2	M.2	Mini PCIe
Dimensions (L x W x H)	26 × 30 × 7,5 mm	30 × 22 × 7 mm	42 × 22 × 7 mm	42 × 30 × 7 mm	60 × 45 × 11 mm
Mounting / Keying	Mini PCI Express slot (3.3 V)	Mini PCI Express slot (3.3 V) for M.2-type 2230-D3, Dual key A-E	Mini PCI Express slot (3.3 V) for M.2-type 2242-D3, Dual key B-M	Mini PCI Express slot (3.3 V) for M.2-type 3042-D3, Dual key B-M	Mini PCI Express slot (3.3 V)
Master / Slave	Slave only	Slave only	Slave only	Master and Slave	Master and Slave
Security & IIoT ready	✓	✓	✓	-	-

empowering communication

Mini PC Cards
One-stop shop for industrial communication

hilscher

Wide range of device drivers

» Standard user interface (cifX API) for all device drivers
» With contains all functions for initialization, para-metrisation, exchange of I/O data and acquisition of status information
» Device drivers for all relevant operating systems
» C-toolkit for own driver development

Operating System

Customer Application

Linux
Windows
Windows Embedded Compact
INtime distributed RTOS
INtime for Windows
VxWorks
QNX
IntervalZero

Competence Hilscher

cifX Toolkit | cifX Device Driver

Hilscher cifX-API
(Functions related to System, Drivers & Communication Channels)

Real-Time Data	Ethernet/ Web Application	OPC UA Data

Channel 0	Channel 1	Channel 2
I/O Data | Acyclic Data	Config and Diagnose Data	OPC UA Data

→ **Data Mapping in Dual Port Memory**

PROFINET
CANopen
EtherNet/IP
EtherCAT
DeviceNet
sercos the automation bus
ETHERNET POWERLINK
PROFIBUS
CC-Link IE Field Basic
VARAN
Modbus
CC-Link
OPC UA
MQTT

Protocol Highlights

PROFINET

» IO-Controller & IO-Device
» Isochronous Real Time (IRT)
» S2 System Redundancy
» I&M 1-5
» PROFIenergy ASE
» „Shared Device"
» Fast Startup

EtherNet/IP

» Scanner & Adapter
» Device level Ring (DLR) | Media redundancy
» Address Conflict Detection (ACD)
» CIP Sync
» Quick Connect

EtherCAT

» Master & Slave
» SDO client and server side protocol
» CoE Emergency messages (CoE)
» Ethernet over EtherCAT (EoE)
» File Access over EtherCAT (FoE)
» Servo-over-EtherCAT (SoE)
» Hot Connect

netX networX on chip Hilscher netX 90

Security ready

→ Cycptocore hardware accelerator for hash, symmetric & asymmetric encription
→ Secure Boot option
→ Security Configuration with key generation and software signing
→ Secure Communication with certificate & key and user management
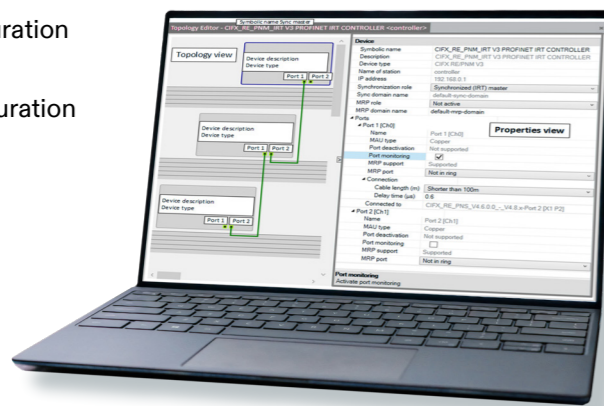
netX networX on chip Hilscher netX 90 **IIoT**

Industrial IoT ready

→ PROFINET, EtherCAT, EtherNet/IP or ModbusTCP combined with OPC UA / MQTT
→ OPC UA Server (Base Specifcation Version 1.04) and MQTT publisher (Version 3.1.1)
→ IoT configuration plug-in for standard communication studio

Configuration Tool: Communication Studio

One Configuration and diagnosis tool chain for all networks

» Offline configuration
  • Selecting and configuring a driver, device assignment
  • Configuring the fieldbus
» Online commissioning
  • Connecting the device
  • Downloading the configuration
» Diagnosis
» OPC UA and MQTT configuration

All in one package

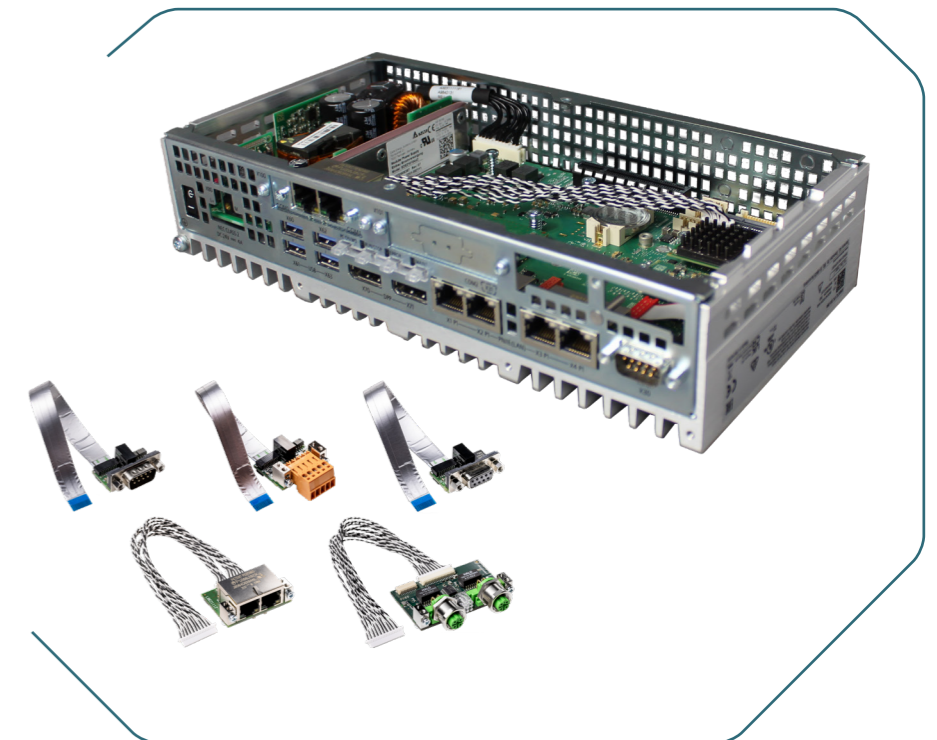→ Bundle of hardware, firmware, license, device driver / toolkit, configuration tool and support.

Additional fee for license and selected drivers

Fan-less integration for cost sensitive designs

» Up to 60°C operating temperature with 0.0 m/s airflow
» Housing connecting without cooling unit

Connection to any network

» RJ45, M12, SubD and CombiCon interface available
» Fieldbus specific interface and Diagnostic LEDs
» Different cable length from 5 cm to 30 cm
» Built your own interface based on schematics and BOM

empowering communication

	CIFX HPCIE90	CIFX M223090AE	CIFX M224290BM	CIFX M3042100BM	CIFX 90E
Bus Type	Mini PCI Express (H2), one-lane port	PCI Express M.2, one-lane port	PCI Express M.2, one-lane port	PCI Express M.2, one-lane port	Mini PCI Express, one-lane port
Communication Controller	netX 90	netX 90	netX 90	netX 100	netX 100
Integrated Flash	8 MB SDRAM	8 MB SDRAM	8 MB SDRAM	8 MB SDRAM	8 MB SDRAM
Integrated RAM	8 MB + 1 MB	8 MB + 1 MB	8 MB + 1 MB	4 MB serial Flash-EPROM	4 MB serial Flash EPROM
Size of the Dual-Port Memory	32 Kbyte	32 Kbyte	32 Kbyte	64 Kbyte	64 Kbyte
Power supply	+3.3 VDC ±5%	+3.3 VDC ±5%	+3.3 VDC ±5%	+3.3 VDC ±5%	+3.3 VDC ±5%
Current consumption at 3.3 V	310 mA (max.)	330 mA (max.)	330 mA (max.)	650 mA (max.)	800 mA (max.)
Operating temperature range, Air flow 0.5 m/s	-20 °C ... +70 °C	-20 °C ... +70 °C	-20 °C ... +70 °C	-20 °C ... +65 °C	-20 °C ... +65 °C
Operating temperature range, Air flow 0.0 m/s	-20 °C ... +60 °C	-20 °C ... +60 °C	-20 °C ... +60 °C	-20 °C ... +50 °C	-20 °C ... +50 °C
Storage temperature range	-40 °C ... +85 °C	-40 °C ... +85 °C	-40 °C ... +85 °C	-40 °C ... +85 °C	-40 °C ... +85 °C
CE sign, UKCA sign, RoHS	✓	✓	✓	✓	✓

Product name	Brief description	Part number	Industrial Ethernet	PROFIBUS	CANopen	DeviceNet	CC-Link	2x PROFIBUS	2x CANopen	2x DeviceNet
CIFX HPCIE90	PC Card Mini PCI Express halfsize	1424.XXX	.101	.401	.501	.511	-	-	-	-
CIFX M223090AE	PC Card M.2 2230 Key A+E	1443.XXX	.101	.401	.501	.511	-	-	-	-
CIFX M224290BM	PC Card M.2 2242 Key B+M	1445.XXX	.101	.401	.501	.511	-	-	-	-
CIFX M3042100BM	PC Card M.2 3042 Key B+M	1456.XXX	.101	.401	.501	.511	-	-	-	-
CIFX 90E	PC Card Mini PCI Express	1291.XXX	.100	.410	.500	.510	.744	-	-	-
CIFX 90E-2	2-Channel PC Card Mini PCI Express	1293.XXX	-	-	-	-	-	.414	.504	.514

Product variants	Brief description
\+ML	Master License for netX 100 based cifX card
\PNSSR	License for PROFINET IO-Device S2 System Redundancy
\M12	Detached network interface with M12-connectors

→ Mini PC Cards
Service-Hotline: +49 (0) 6190 9907-90
www.hilscher.com

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