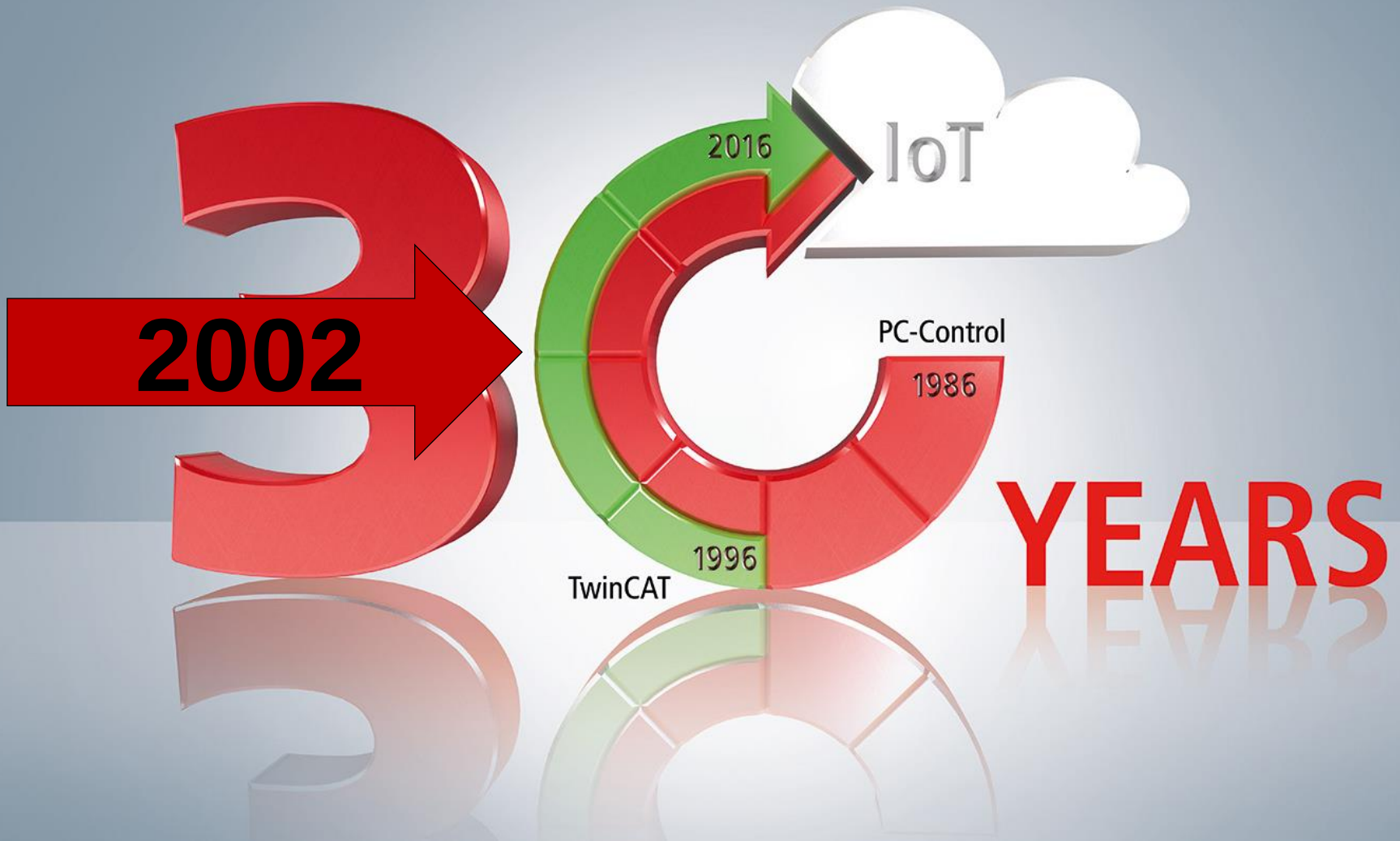
Beckhoff Embedded PC Product overview

BECKHOFF



30 years PC-based Control | 15 years Emdedded PCs

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30 years PC-based Control | 15 years Embedded PCs

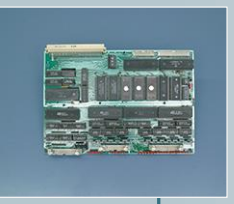
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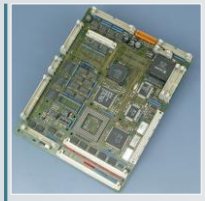
















µC-based Control

PC-based Control

PC-based Control

1980 1981 1983 1984 1985 1987 1991 1992 1993 1994 1997 2000

1982
P1000: Single-board motion controller

1986
PC Control: First PC-based machine controller

1988
S1000: Software PLC/NC on PC (DOS)

1989
Lightbus: High-speed fieldbus utilising optical fibre

1990
C2000: All-in-one PC motherboard

1995
Bus Terminal: fieldbus technolog in terminal block format

1996
TwinCAT: Real-time software package under Windows with PLC and Motion Control

1998
Control Panel: Remote IPC Control Panels

1999
Fieldbus Box: The I/O system in IP 67

30 years PC-based Control | 15 years Embedded PCs

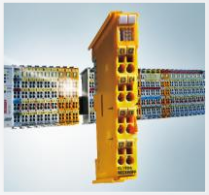
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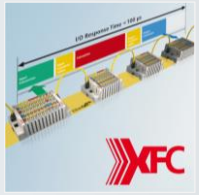




















PC-based Control

PC-based Control

2001 2004 2006 2009 2013 2016

2002 CX1000: Modular Embedded PCs for DIN rail mounting

2003 EtherCAT: Real-time Ethernet fieldbus system

2005 TwinSAFE: The compact safety solution

AX5000: EtherCAT Servo Drive

2007 Industrial Mother-boards: Made in Germany

2008 XFC: eXtreme Fast Control Technology

2010 TwinCAT 3: Extended Automation Technology (XAT)

2011 AM8000: Servo-motors with One Cable Technology

2012 XTS: eXtended Transport System

2014 C6670: Many-core industrial server

AX8000: Multi-axis servo system

2015 EtherCAT plug-in modules: Bus Terminals for circuit boards

1986 | First Beckhoff Industrial PC - C4000

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1986 | The first Beckhoff Industrial PC - C4000 ….

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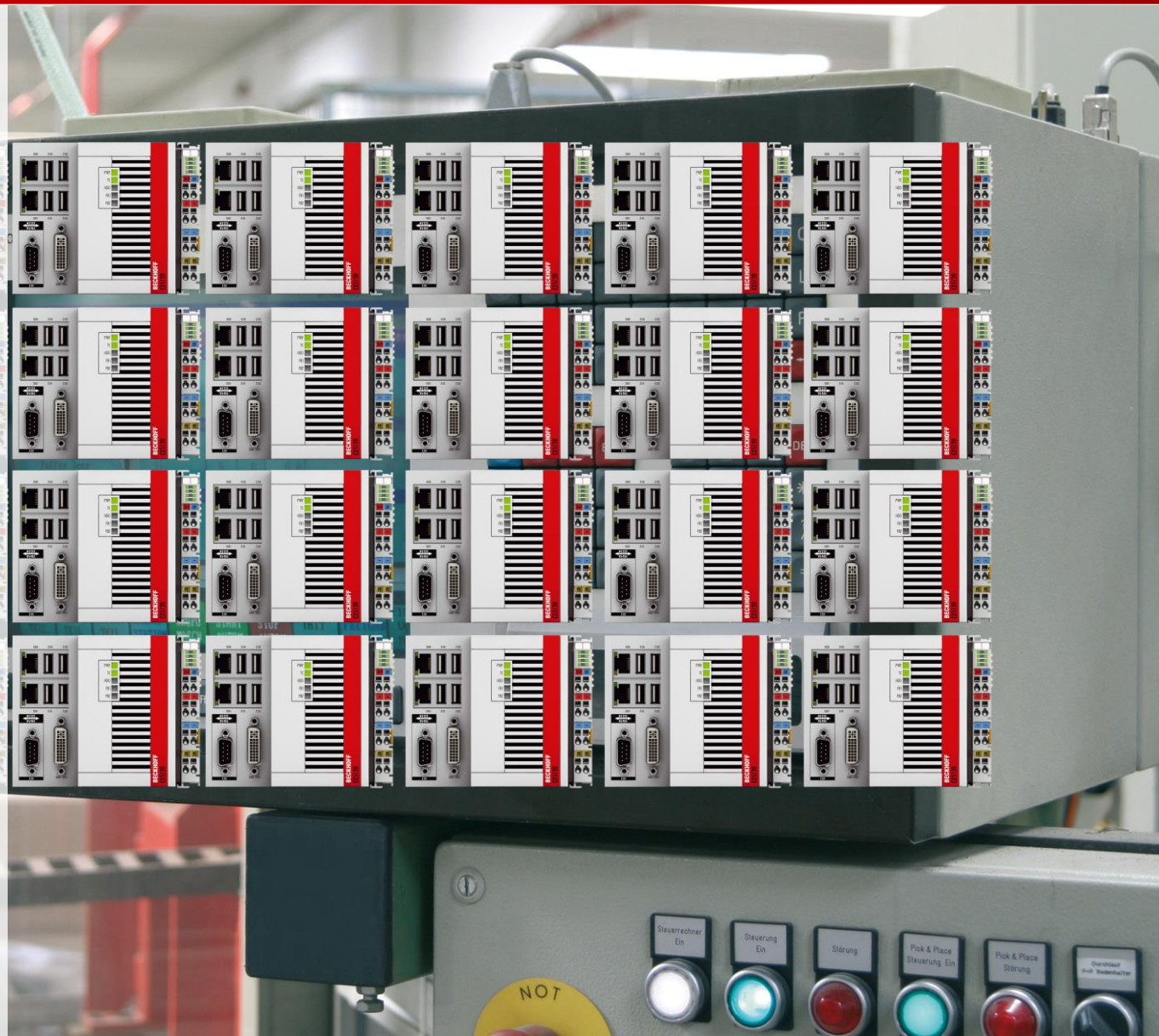
- 1 Core CPU
- 16-bit PC
- 10 MHz
- 640 kB RAM
- 20 MB HDD



…. can host more than 24 x CX5140 PCs

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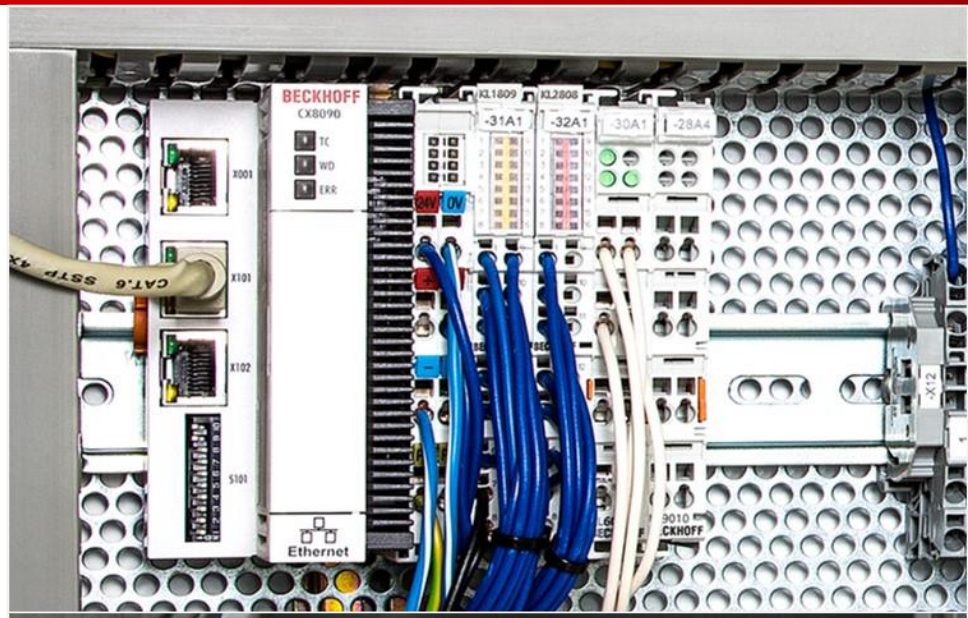
- 24 x 4 Cores
  = 96 Cores
- 1,91GHz each
  = 183 GHz
- 8 GB RAM each
  = 768 GB RAM

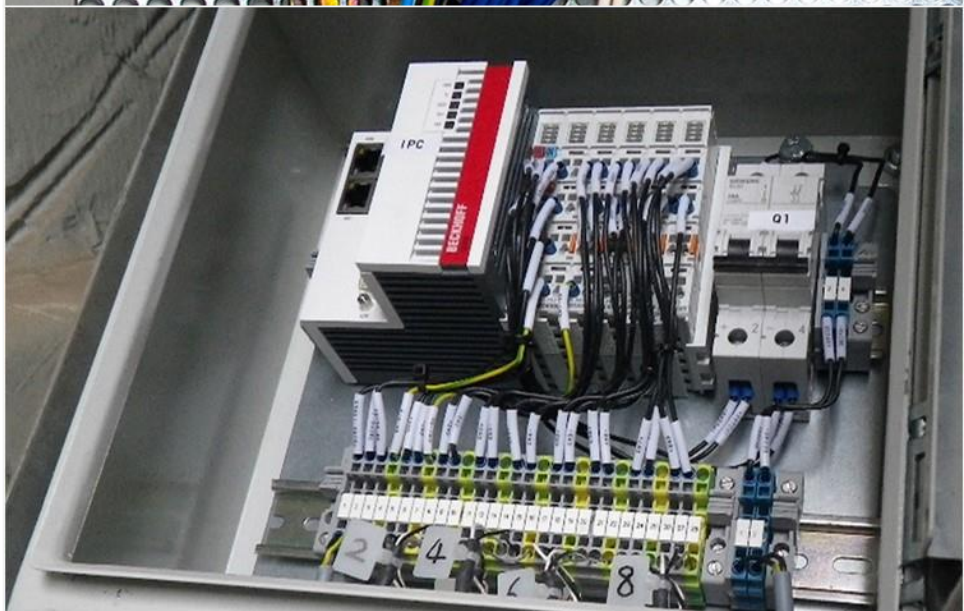


Modular DIN-rail mounted Industrial PC series

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- Space-saving installation on the DIN rail
- Maximised performance in a compact formfactor
- Direct connection of I/O components
- 15 CPU modules with different processors
- PLC, Motion Control and visualisation in one unit
- no routine maintenance
- optimised price/performance ratio





Long-term availability across the entire range

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> 10 years

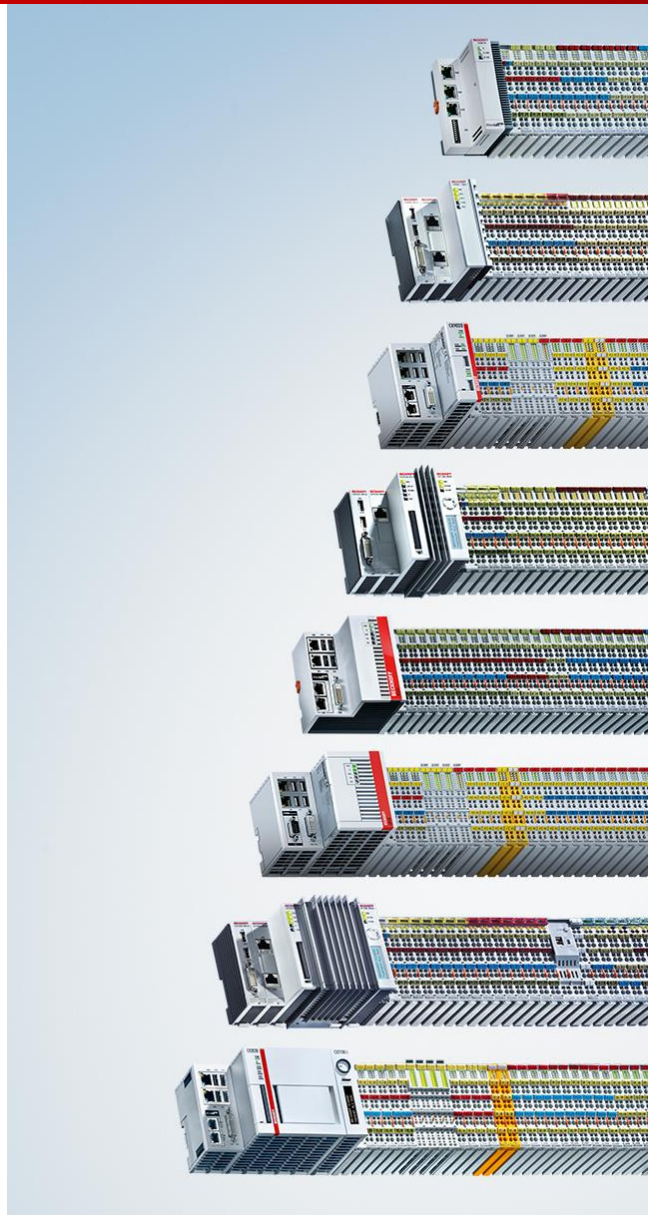


+ 10 years service period in addition

Scalable performance classes

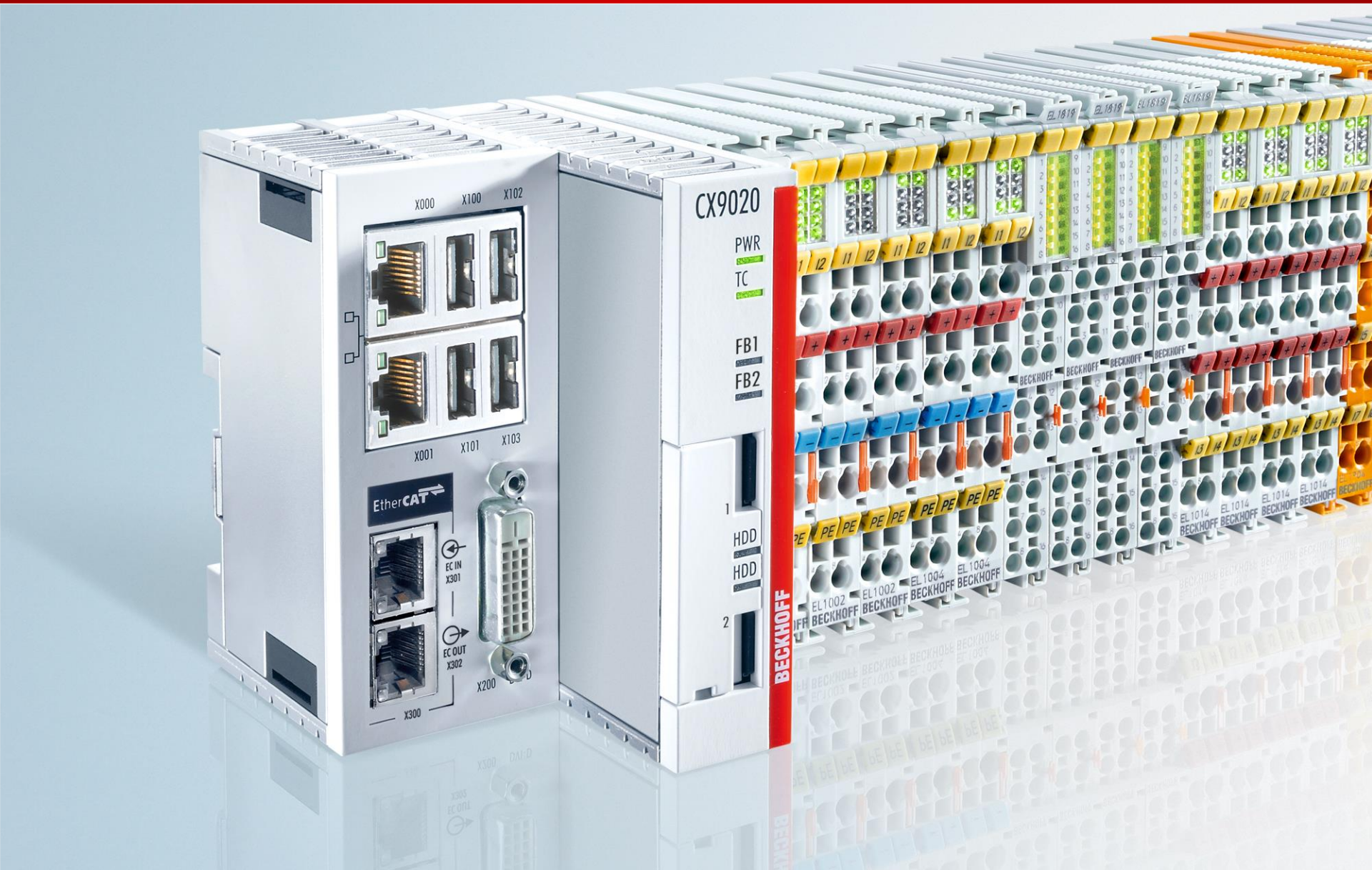
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- **CX8000** | Basic CX with ARM9 CPU, 400 MHz
- **CX9000/CX9010** | Ethernet controller with Intel® IXP420 XScale® CPU up to 533 MHz
- **CX9020** | High-performance controller with ARM Cortex™-A8, 1 GHz
- **CX1010** | Basic CX with 500 MHz CPU
- **CX50xx/CX51xx** | Compact CX with Intel® Atom™ up to 1.9 GHz
- **CX1020/CX1030** | High-performance CX up to Intel® Pentium® M 1.8 GHz
- **CX2000** | High-performance CX up to Intel® Core™ i7 2.1 GHz, quad-core



CX9020 Embedded PC series

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CX9020 | Highlights

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1 GB DDR3 RAM

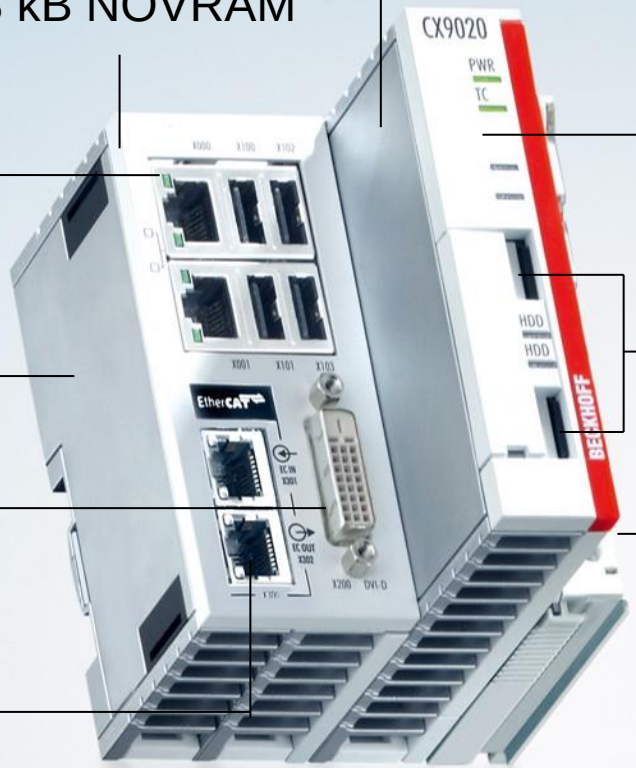
128 kB NOVRAM

2 x Ethernet and
4 x USB connection

ARM Cortex™-A8
processor, 1 GHz

DVI connection

Multi-option
interface
(e.g. RS232,
PROFIBUS,
CANopen,
EtherCAT)



256 MB microSD
(optional expansion)

2 x microSD card slot

E-bus/K-bus
interface

CX9020 | Software

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- operating system:
  - Windows Embedded Compact 7
- TwinCAT:
  - TwinCAT PLC runtime
  - TwinCAT NC PTP runtime
  - TwinCAT 3 (optional)

For cost effective, midsized automation tasks



Windows Embedded Compact 7

For all areas of automation

BECKHOFF



For all areas of automation

BECKHOFF



CX2000 Embedded PC series

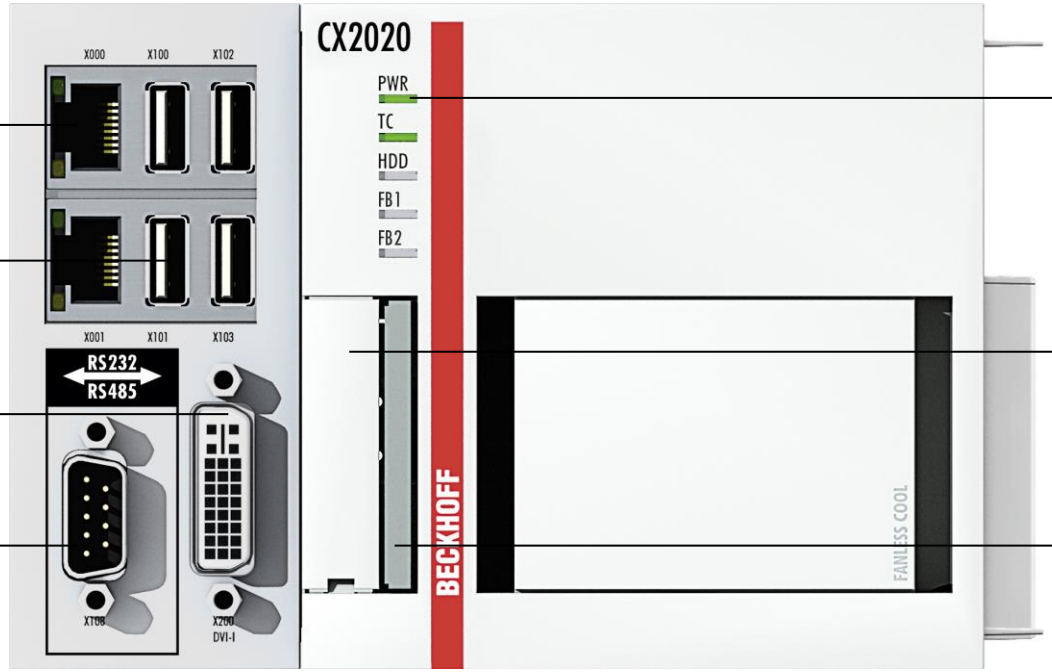
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CX2000 | Different CPU modules

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- **Intel® Celeron® 1.4 GHz, single-core**
- **Intel® Core™ i7, 1.5 GHz, dual-core**
- **Intel® Core™ i7, 2.1 GHz, quad-core**



2 independent Ethernet ports

4 x USB 2.0

DVI connection

Multi-option interface (e.g. RS232, PROFIBUS, CANopen)

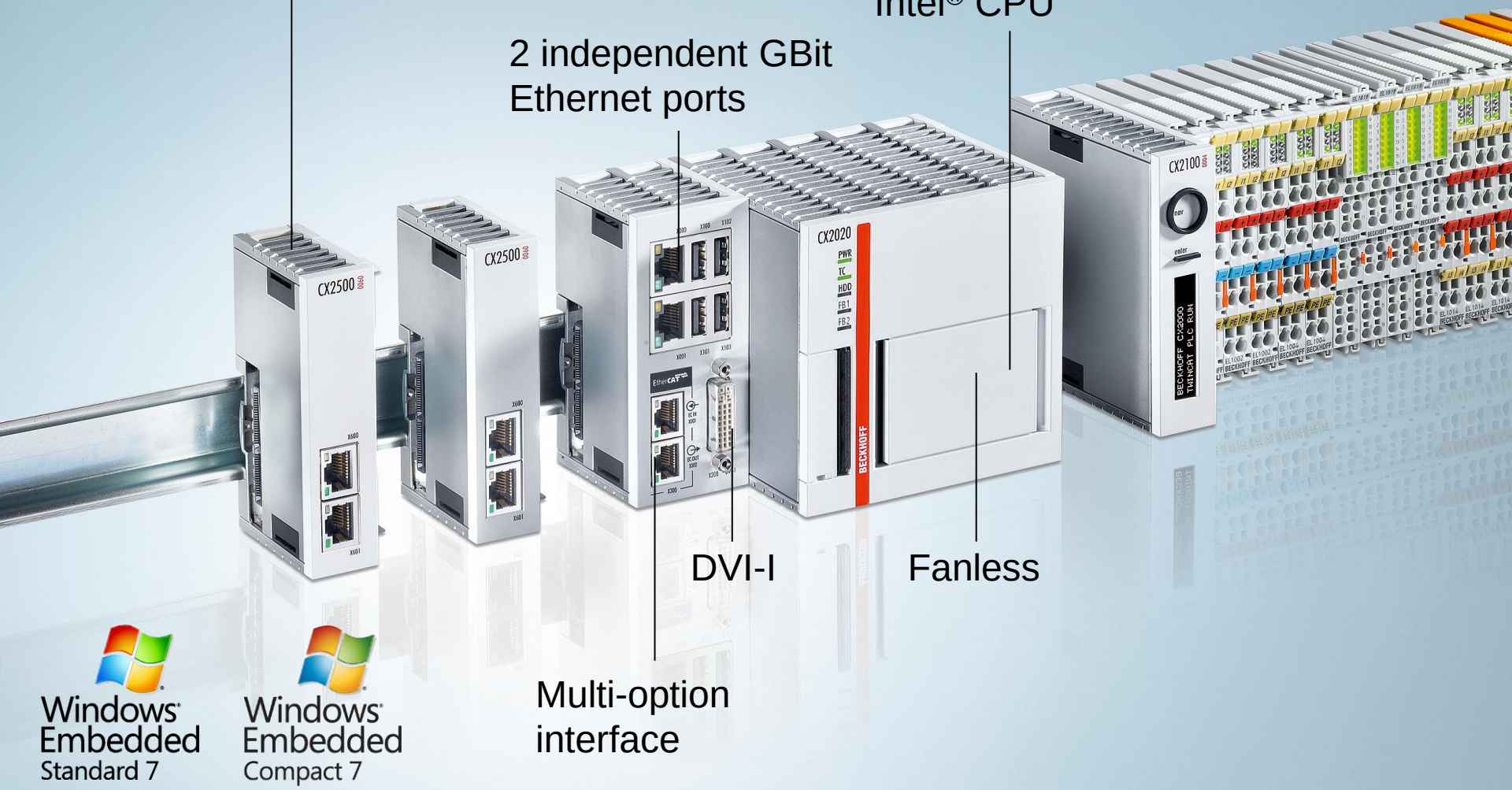
Status LEDs

Battery compartment (under the flap)

CFast

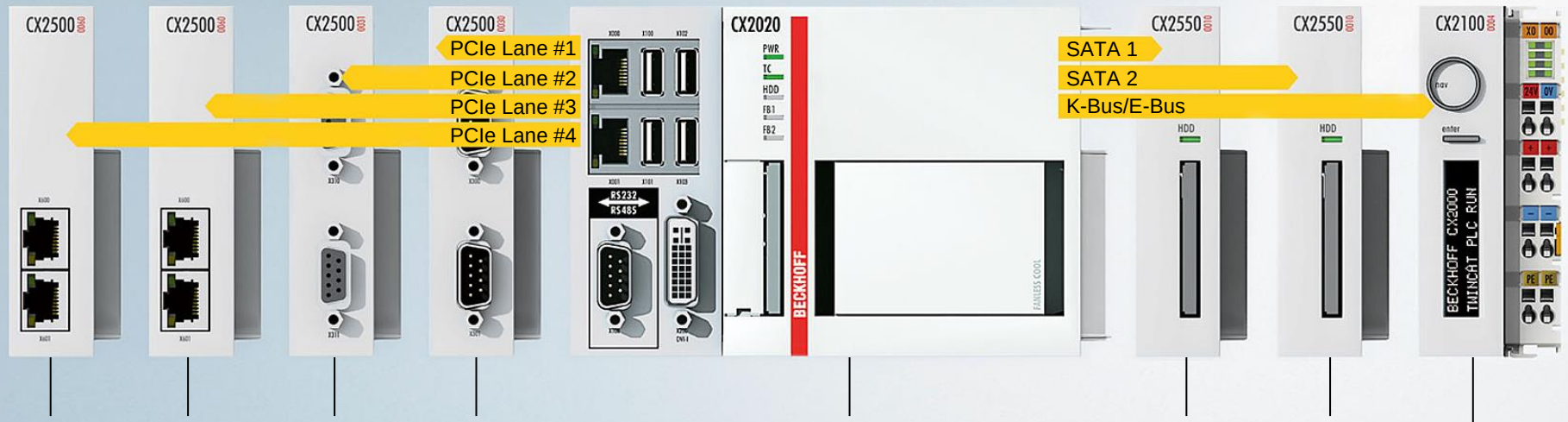
CX2000 | Highlights

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CX2000 | PCI Express as an extension bus

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Extension modules, left (max. 4)

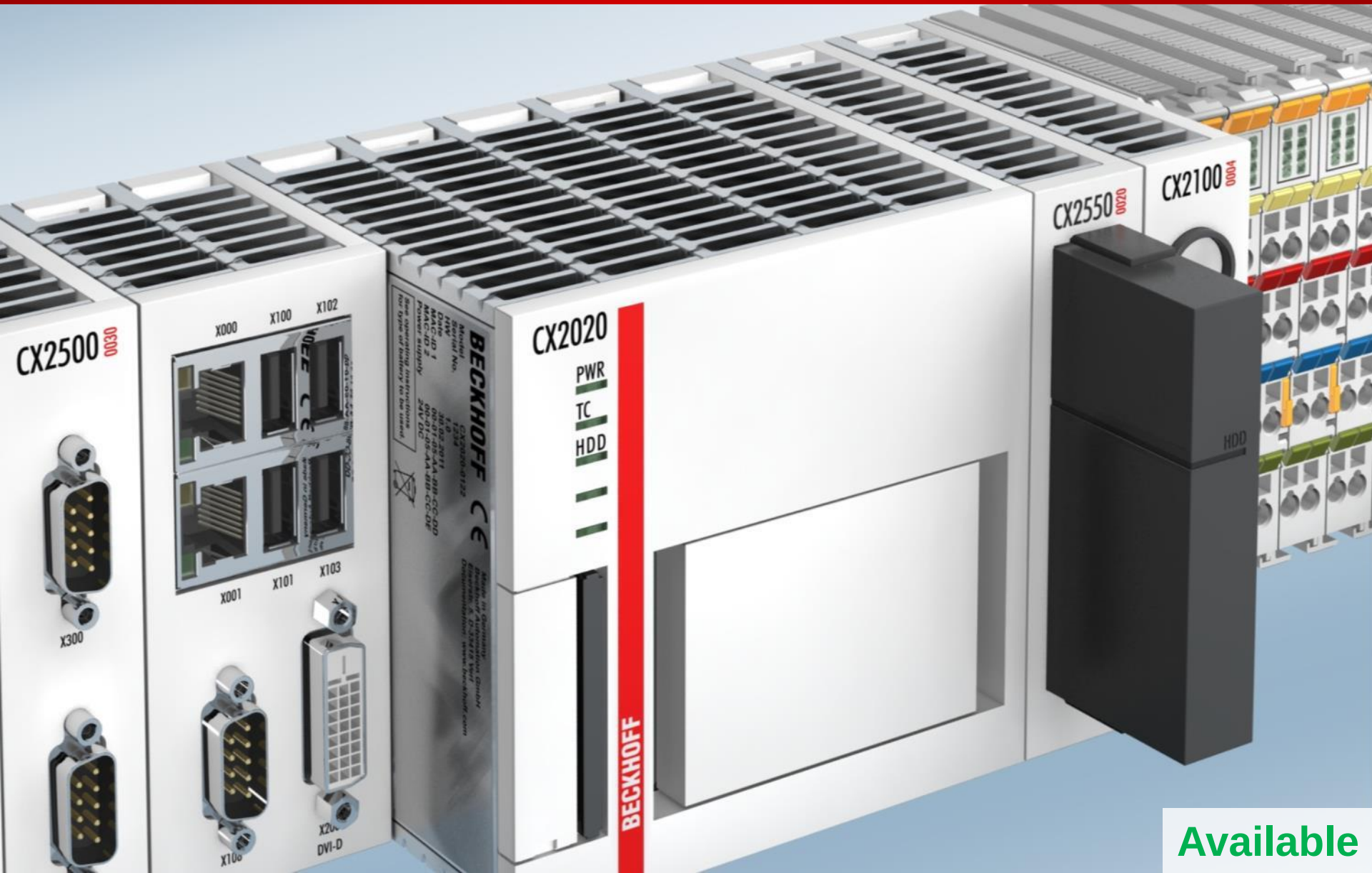
CPU

Extension modules, right

Power supply unit

CX2550-0020 | 2,5“ HDD/SSD Module

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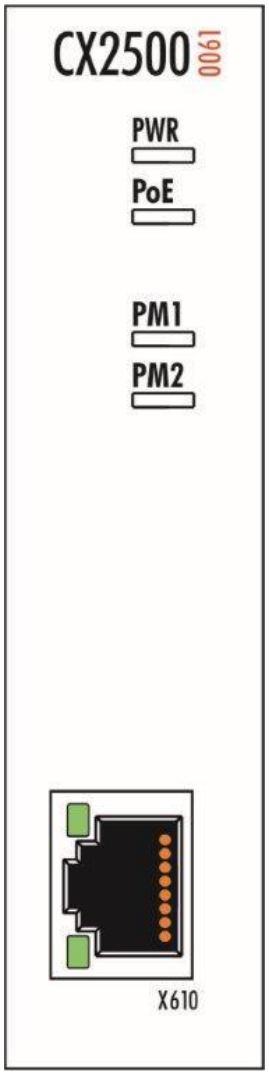


Available

CX2500-0061 | GBit Ethernet PoE Module

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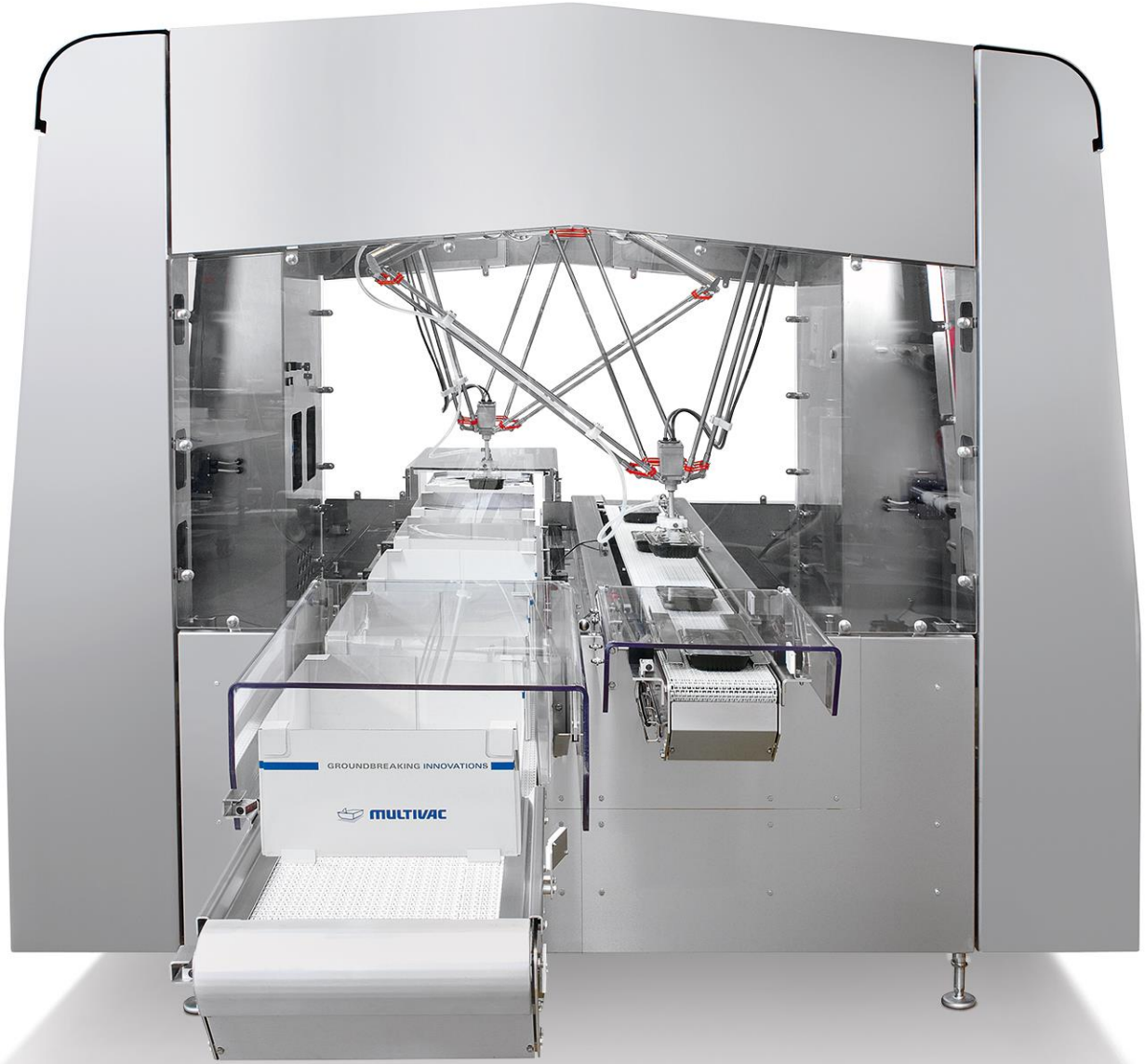
- GBit Ethernet interface
- PoE supply for external PoE devices like cameras, access points, scanner, …
- PoE class 0, 1, 2, 3, 4
- PoE standard IEEE802.3af-2003
- Max. power output 15.4 W



Available

For all areas of automation

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For all areas of automation

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Industry 4.0 - IoT | What does this mean for CX …?

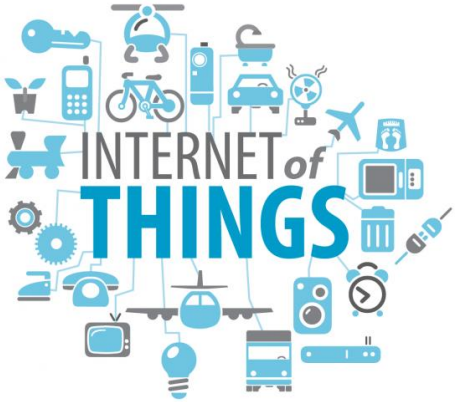
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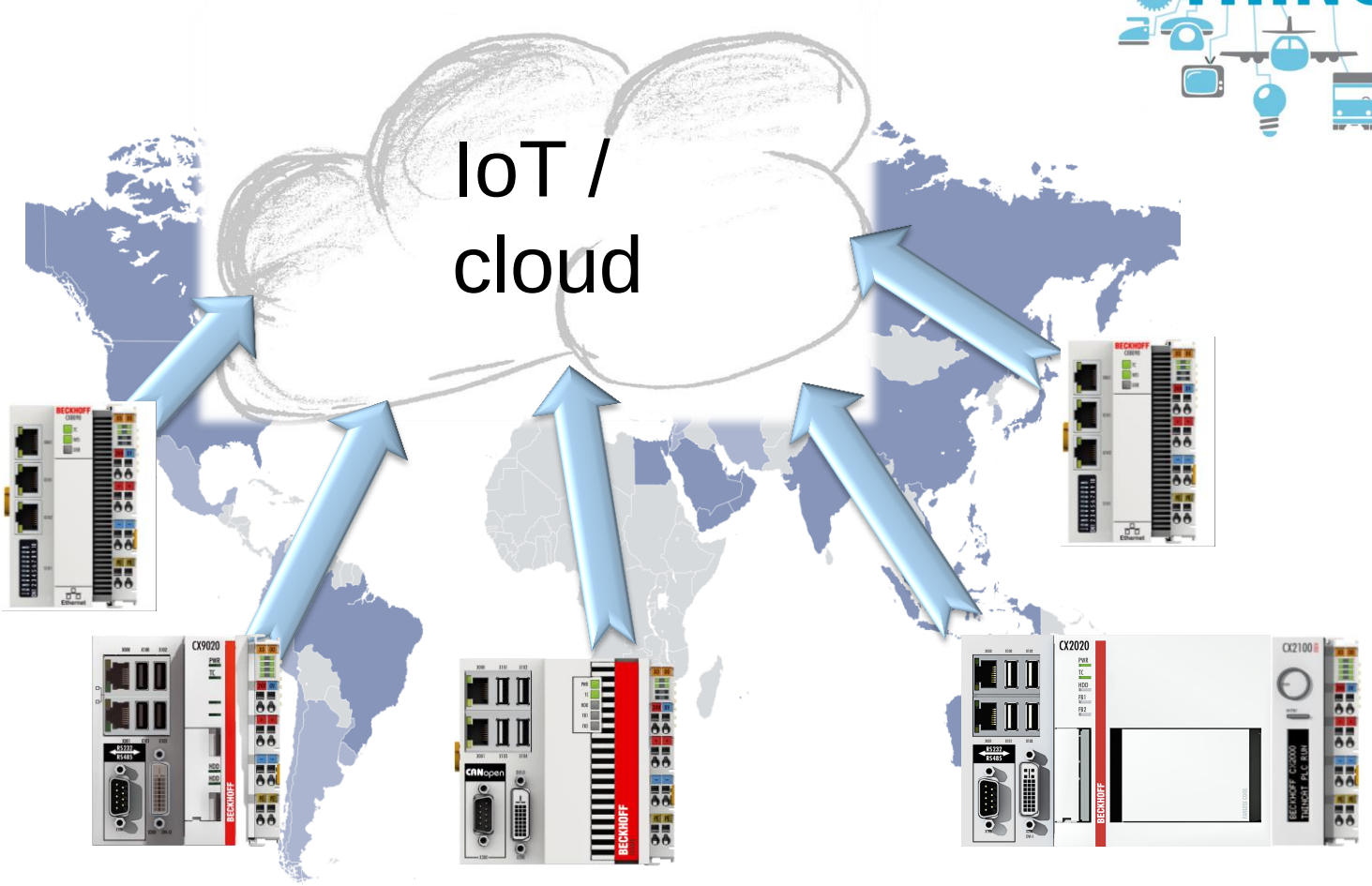


Industry 4.0 - IoT | What does this mean for CX …?

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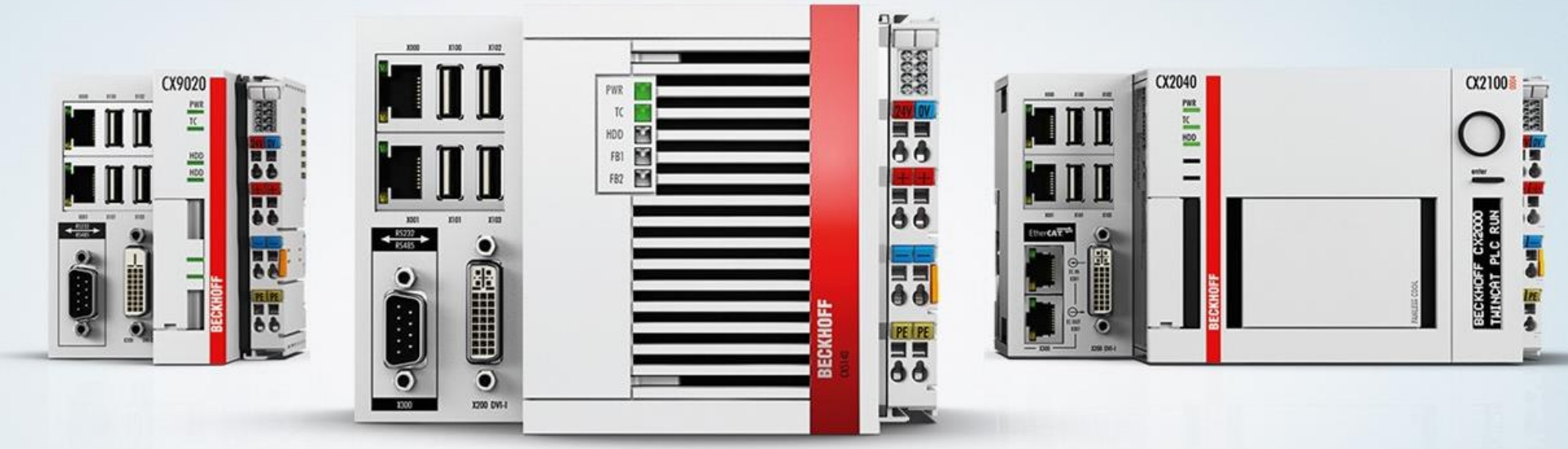
- **CX is an IoT controller !!!**
  - Controls the machine → **Controller**
  - Sends data to the cloud → **IoT**





Beckhoff | Founder of Industrial Embedded PCs

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