BECKHOFF New Automation Technology

Our philosophy
Advantage at the very core.
The Beckhoff Industrial PCs.

IPCs for any application: from automation to infrastructure.

Selecting an Industrial PC (IPC) from Beckhoff opens the door to a superior hardware solution that perfectly meets the requirements of any application. Whether for industrial or building automation, power generation or infrastructure, HMI or IoT applications, as the central platform in a complete Beckhoff control solution or just an IPC – all Beckhoff IPCs come with a built-in competitive edge. They are backed by a unique technological philosophy and superior in-house production processes.

Process Industries

Communication, IoT

Building Automation

HMI, Visualisation

Automation

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Infrastructure

Power Generation

All kinds of IPCs.
But all of the Beckhoff kind.

As a pioneer in industrial automation, Beckhoff offers a highly scalable portfolio of IPCs for any kind of installation format and protection class requirement. They have one thing in common – the Beckhoff look and feel. Starting with our selection of materials our engineers ensure that superior technological standards are reflected in the attractive design, high-quality build and surface finish of every product. The end result is a consistent, state-of-the-art user experience.

Control cabinet IPCs

These IPCs from Beckhoff are designed for installation in control cabinets and enclosures. An IPC and a Beckhoff Control Panel are an ideal combination and provide a versatile platform for machine and factory applications, especially with TwinCAT automation software.

Embedded PCs

The compact, DIN rail-mountable PCs from the CX series can be combined with a wide range of I/O modules to implement space-saving industrial control systems in control cabinets. Embedded PCs from Beckhoff are completely scalable according to your budget, performance requirements and control task complexity.

Panel PCs

Beckhoff Panel PCs are equipped with powerful processors ranging from ARM Cortex™ to Intel® Atom™ up to Intel® Core™ i7. For each application, we offer a matching Panel PC in a wide range of screen sizes based on your available space and performance requirements.

Control Panels

Beckhoff Control Panels are designed for installation in cabinets or on mounting arms. They feature up to IP 65 protection class and can be operated at distances up to 100 meters away from the PC. Available in many screen sizes as well as 4:3, 5:4 and 16:9 aspect ratios, Beckhoff Control Panels offer the ideal industrial display for any application.

More than 30 years of expertise: built into every IPC.

More than 30 years ago, Beckhoff developed the principle to use PC-based control technology for automated processes. The knowledge and expertise needed to design and build a great variety of Industrial PCs in-house has grown steadily ever since. Because of this and the close relationships between Beckhoff and global IT innovators such as Microsoft and Intel, users of Beckhoff IPCs will always enjoy a technological advantage.

Milestone: First all-in-one PC motherboard
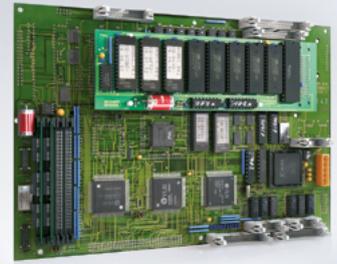
1990

First PC-based machine controller

1986

Milestone: First Control Panel
operation separate from the IPC

Milestone: First modular
Embedded PC for DIN rail mounting

Milestone: Industrial server
for many-core control

1998

2002

2014
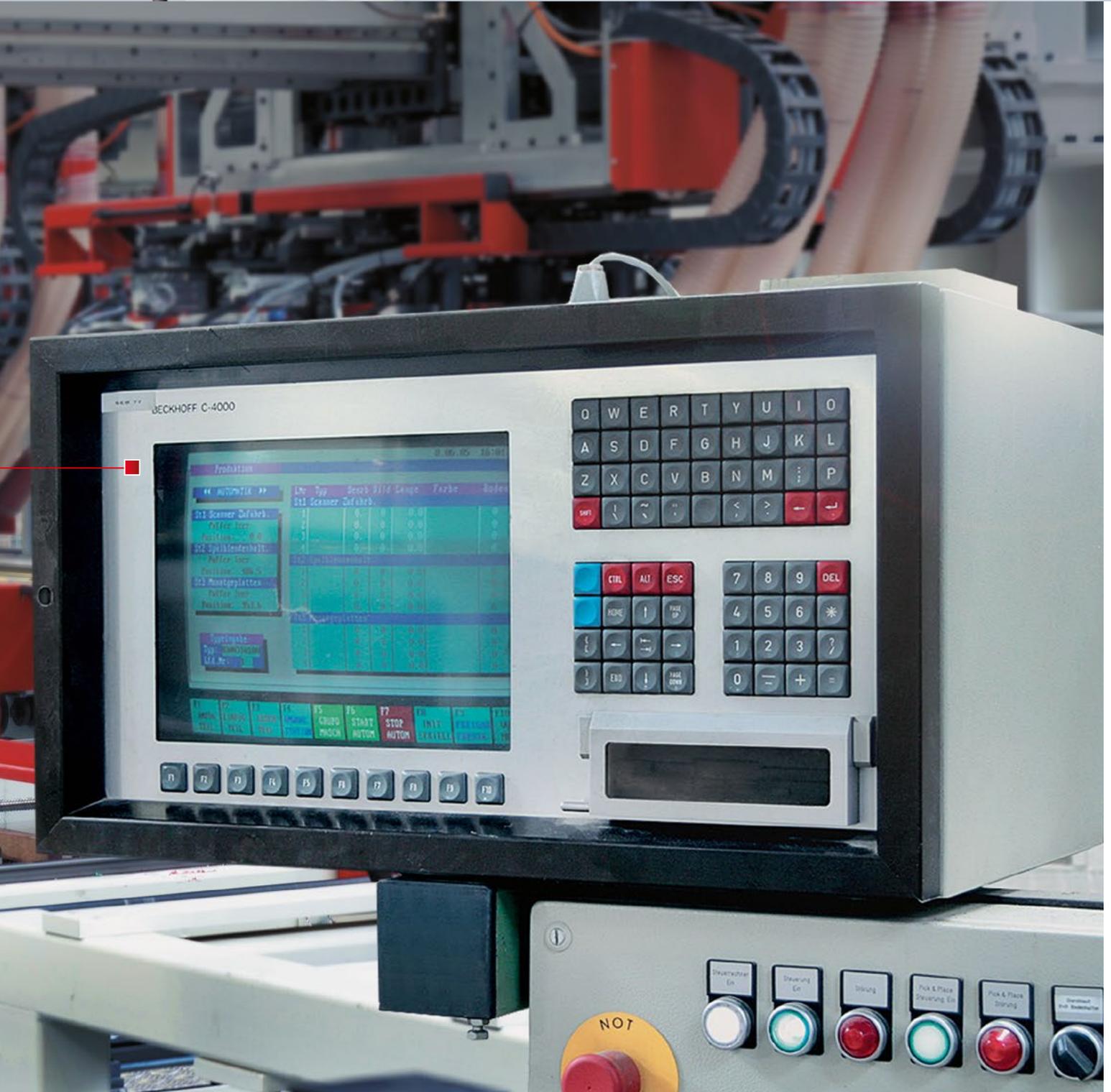
Our hardware,
our software,
premium design:

Only the combination
makes an IPC
a Beckhoff IPC.

- In-house development, design and production of motherboards, housings and transmission technology
- Highest mechanical and electrical stability
- Highly compact designs
- Hard real-time PC-based control
- Approved with TwinCAT software

- In-house BIOS programming and configuration for various CPUs and chipsets
- Appropriate selection of hardware drivers
- Perfect integration of the EtherCAT protocol
- Perfectly harmonised hardware and software system
- Consistent compatibility across product portfolio

- Premium look and feel
- Unmistakable Beckhoff design
- High-quality materials and appearance

X101

GND	P-S
24V+	ON

LAN 1
X102

LAN 2
X103

DP out
X104

USB 2.0
X105

USB 3.0
X103

Hardware: in-house. Performance testing: in-house. Advantage: in-house.

How do you achieve best-in-class mechanical and electronic stability for highly available and powerful IPC technology? The keys are to develop, design and manufacture in-house. At Beckhoff, this seamless chain of integrated processes begins with the in-house production of motherboards. It ends with rigorous in-house testing to validate the performance of the hardware in interaction with TwinCAT control software. As a user, you can count on long-term product availability and a complete system that is optimally coordinated.

Shock- and vibration-proof

**International approvals**

Exchangeable storage media
- scalable configuration

Convenient component accessibility
- very maintenance-friendly

100 % in-house motherboard development –
Designed in Germany
- system from a single source

100 % in-house motherboard production – Made in Germany
- end-to-end traceability

X101

GND | P-S
24V+ | ON

LAN 1
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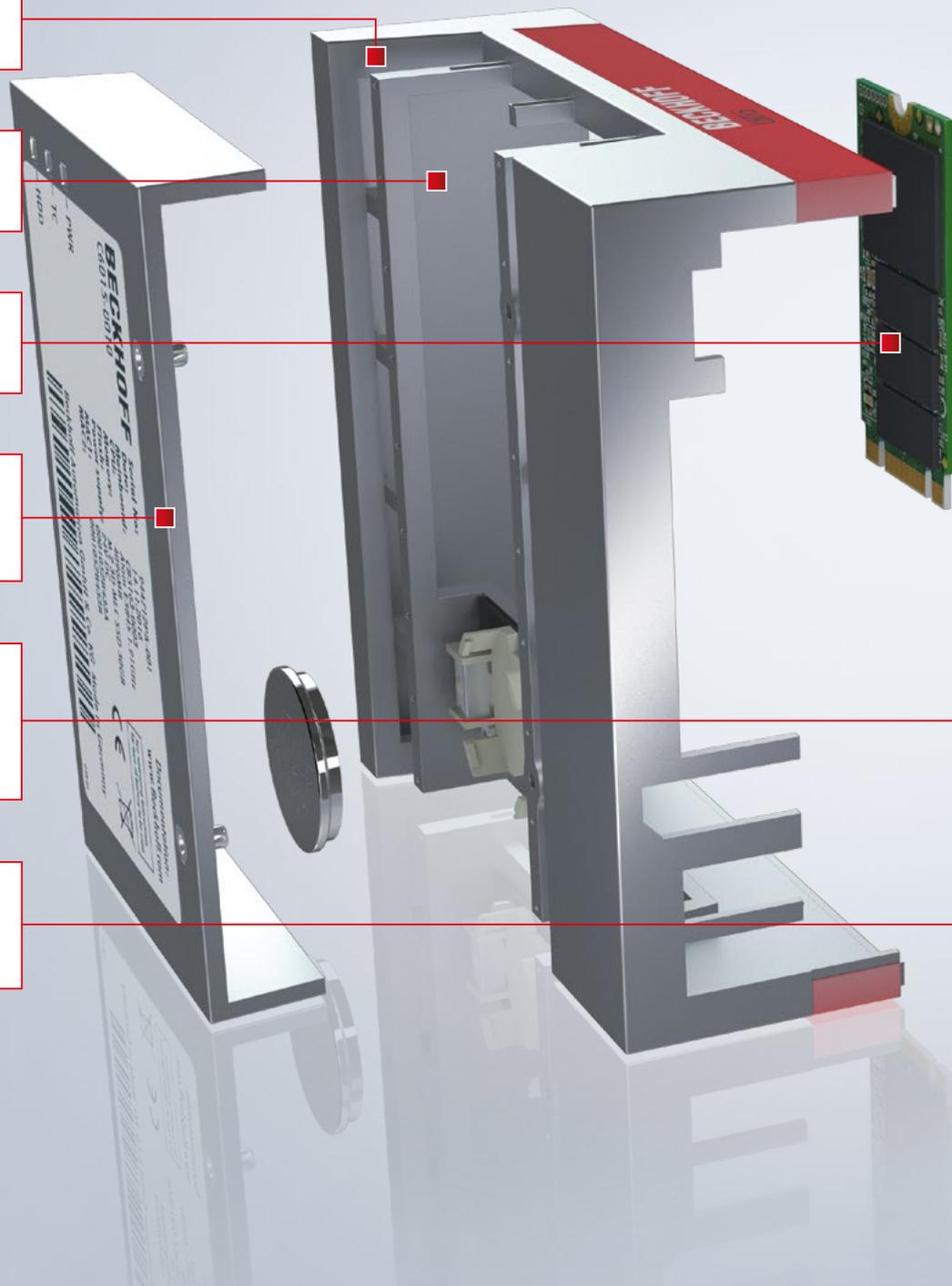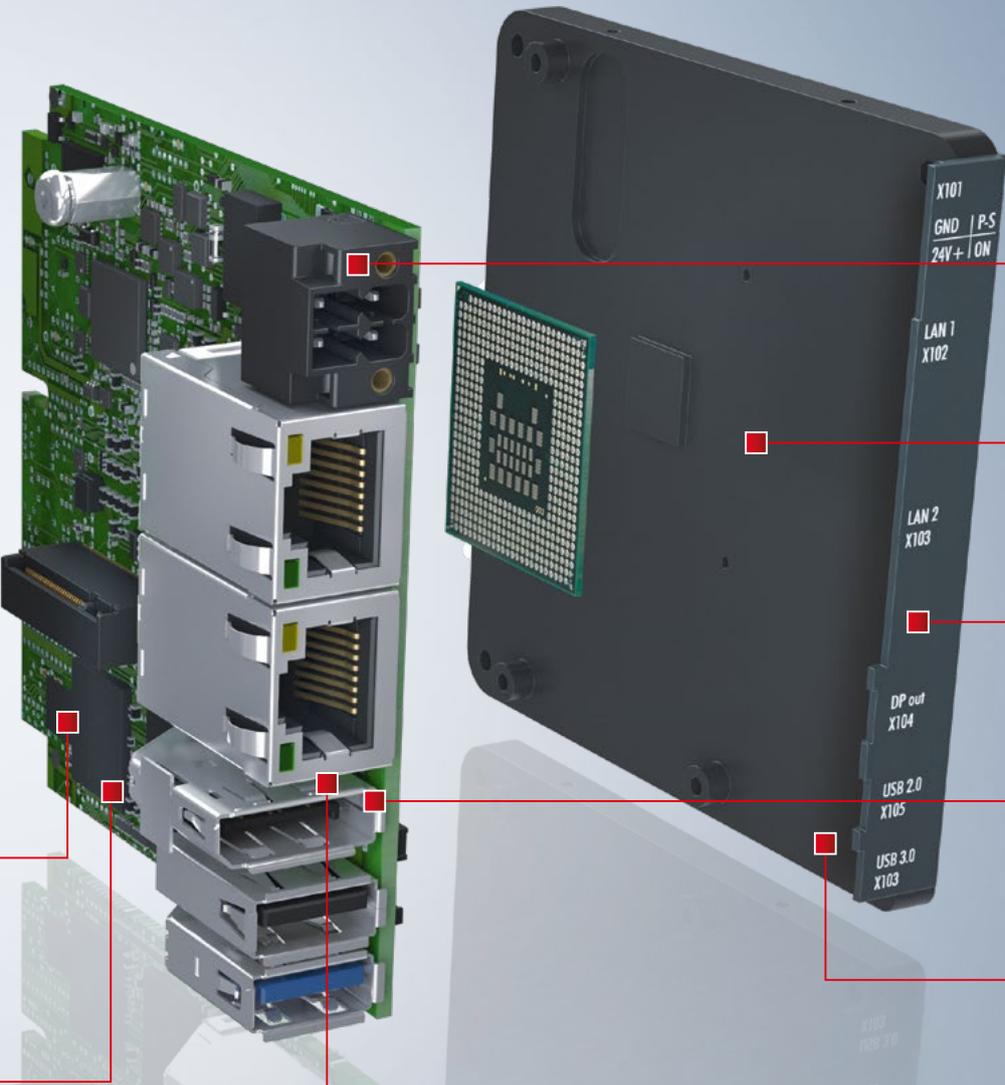
Flexible installation options

Flexible form factors
- optimised for any application

Industrial temperature ranges

Passive cooling concepts
- maintenance-free operation

Long-term available components
- highest investment security

EMC-optimised design

Robust ports and connections

Beckhoff BIOS and diagnostics: the best software for the Beckhoff hardware.

High performance hardware needs capable software to match. With the company's own BIOS development, Beckhoff can offer fully customised software packages. The same applies to our Windows operating system image development and our IPC diagnostics for standardised access to all IPC information. Our in-house software development also ensures the system's real-time capability to perform TwinCAT real-time tests and adapt the IPC software even more precisely to the hardware.

Integrated diagnostics
- minimised downtime

Optional RAID data storage
- highest data availability

Integrated security
- protection against unauthorised access

Operating systems with long-term availability
- long-term machine concepts
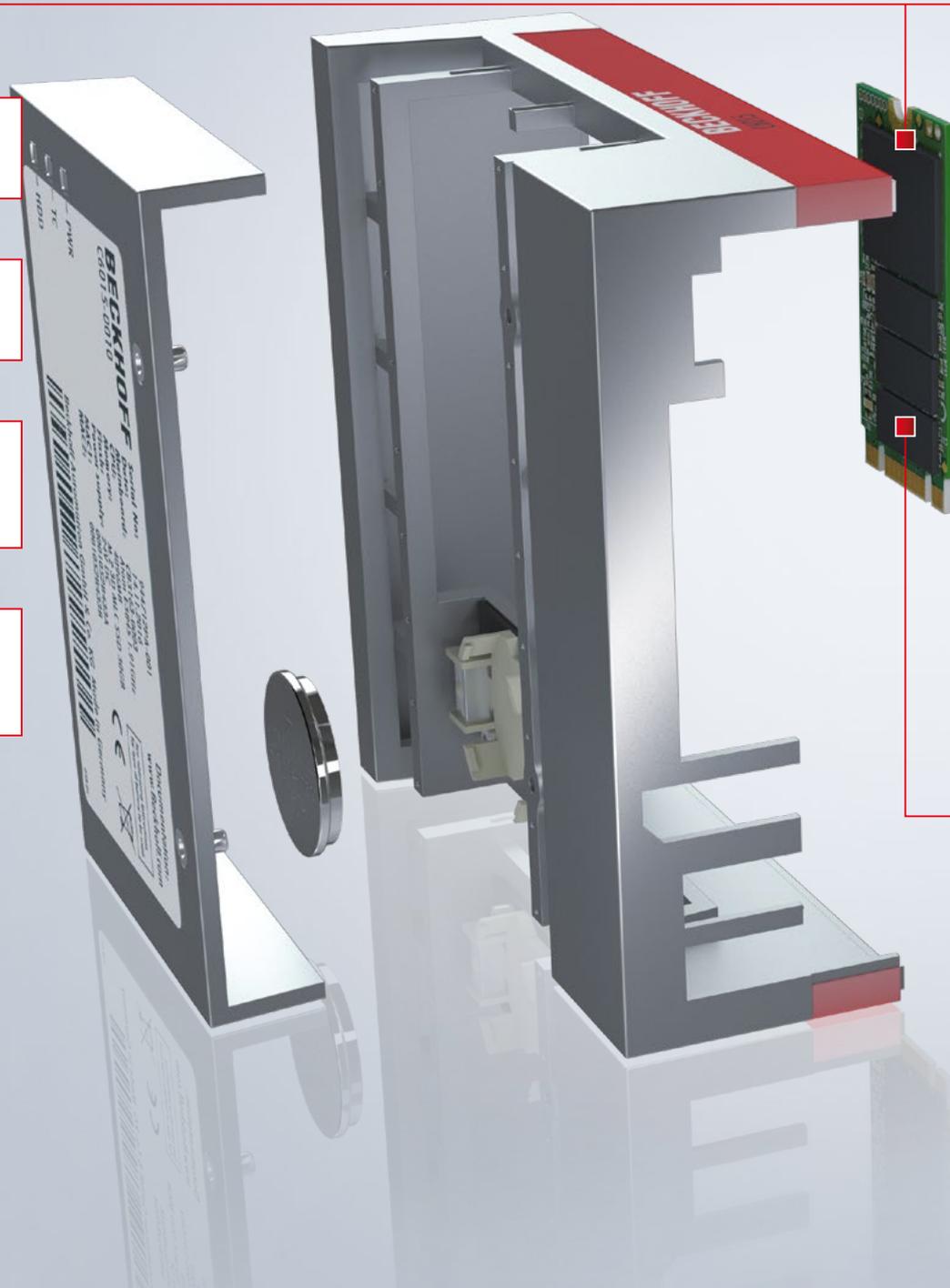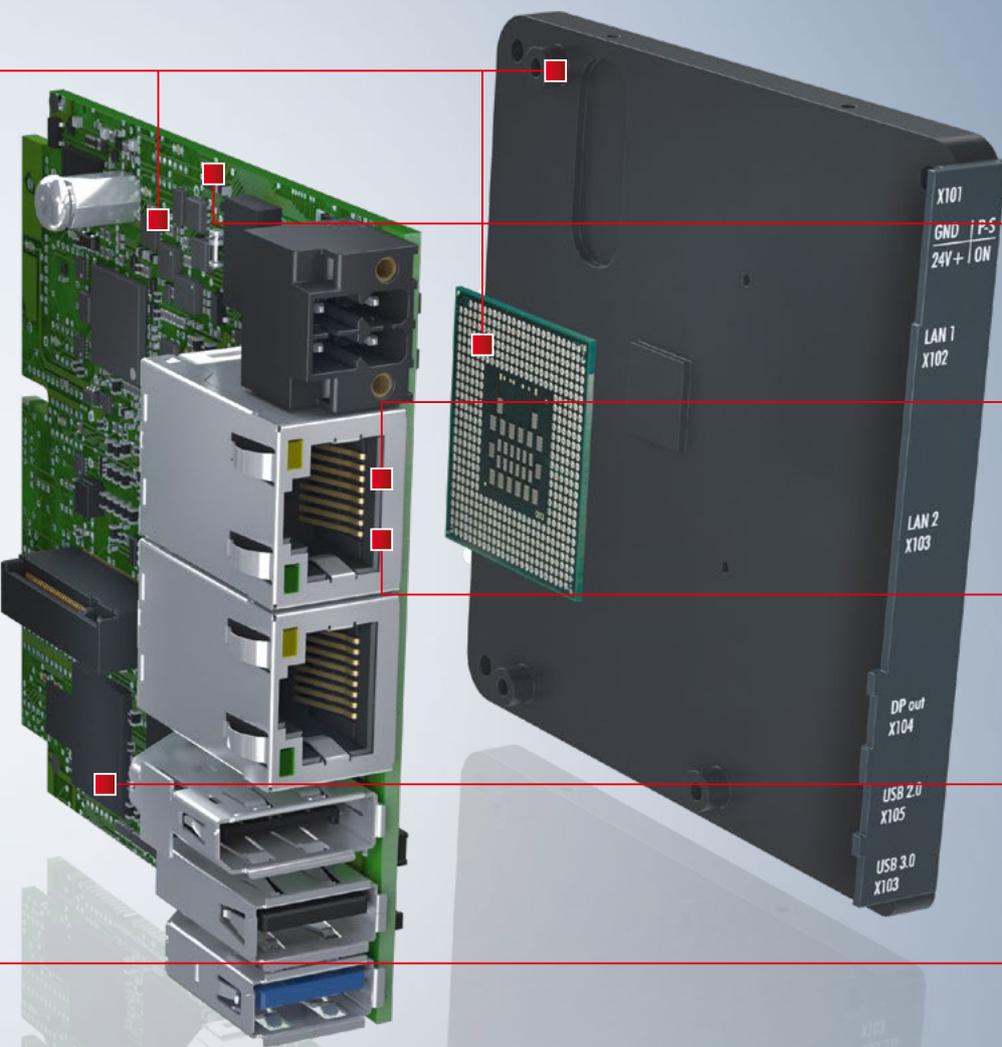
Optimised TwinCAT control software platform

Optional IoT communication
- for all applications

EtherCAT-compatible interfaces
- real-time capable up to cycle times of 12.5 µs

Beckhoff BIOS
- optimised system stability

In-house image creation
- customer-specific adaptations

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24V+ | ON

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X103

Superior technology at first sight. Premium look and feel.

The unmistakable design and high-quality finish of Beckhoff IPCs are fixed parameters of product development from the start. The housings of our Control Panels are prime examples, which are milled from a solid block of aluminium. We manufacture the housings this way because we want our premium design philosophy to be apparent and tangible for the end customer while at the same time enhancing the value of machines and systems. In many cases, Panel PCs or Control Panels serve as front-ends with high recognition value.

reddot design award

CX2020
Revolution on DIN rail: The powerful CX2020 combines high computing performance in a compact design with direct connection to the I/O system.

Control Panels in special stainless steel housings are used in the most demanding environments, such as the food, beverage and pharmaceutical industries.

Multi-touch panels on mounting arms
Arm-mounted sophistication: The fully
IP 65-compliant Control Panels in robust anodized
aluminium housings with tempered-glass
fronts can be used for many applications.

C6015
Flexibility redefined: With exceptional space and
cost savings, the ultra-compact C6015 IPC is the ideal
solution for a multitude of control applications.

CX8190
Functionality meets high-end design: The
CX81xx Embedded PC series in Bus Coupler
format delivers impressive computing perfor-
mance in an ultra-compact controller using
TwinCAT 3 software.

Highly scalable and customisable:

Only the combination ensures a perfect fit for your application.

- Flexible form factors
- Scalable CPU architectures: ARM, x86
- Storage media flexibility: HDD, SSD, CFast, µSD
- Wide range of interfaces and screen sizes
- For all protection classes and installation requirements

- Customised models in terms of mechanics, electrical and electronic components, software and design
- Integration of external hardware
- Integration of industry-specific functionalities
- Tailored to specific applications and corporate design guidelines

As broad as the application spectrum itself: the IPC portfolio

Select the Beckhoff IPC that perfectly matches the job. Beckhoff offers a highly scalable portfolio of IPCs ranging from single-core to multi-core and many-core with all types of interfaces, display sizes, form factors with different or identical CPUs, and various protection classes. Another key benefit is guaranteed long-term availability throughout the product portfolio – a total of five years for Industrial PCs and 10 years for Embedded PCs. End customers enjoy peace of mind knowing that their products will be supported in the long term: through hardware updates with easy CPU integration in the same form factor, reduced cost of software images and training, as well as fast customer service response times.

Performance

ARM Cortex™-A9, 800 MHz

ARM Cortex™-A8, 1 GHz

Intel® Atom™ E3815, 1.46 GHz

Variety

Multi-touch Panel PC

Control cabinet Industrial PC

19-inch slide-in Industrial PC

"Economy" control cabinet Industrial PC

Display connectivity solutions

DVI/USB: up to 50 m

IP 20

IP 65

Display sizes

7-inch

12-inch

15-inch
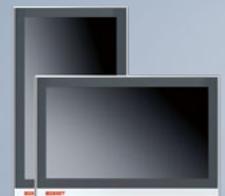
15.6-inch

Intel® Atom™ E3845,
1.91 GHz, 4 cores

Intel® Core™ i7 2715QE
2.1 GHz, 4 cores

Intel® Xeon® D-1559
1.5 GHz, 12 cores

7-inch "Economy"
built-in Panel PC

Fanless built-in
Industrial PC

Multi-touch
Control Panel with
push-button extension

Control cabinet Industrial PC

Embedded PC

Control cabinet
industrial server

CP-Link 4: up to 100 m

Panel PC

IP 20

IP 65

IP 20

IP 65
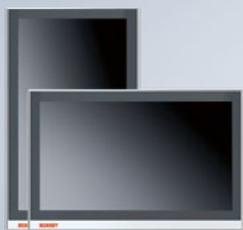
18.5-inch

19-inch
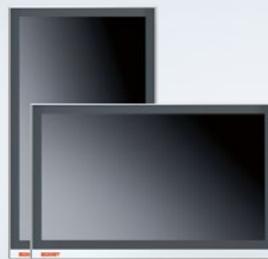
21.5-inch
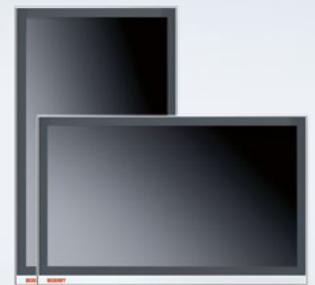
24-inch

Great variety from the start: standard IPCs with variable configuration.

Almost no applications are exactly alike, and neither are most of the standard IPCs from Beckhoff. Their flexibility in configuration allows users to choose exactly the devices that are best-suited to their specific applications. With processors ranging from Intel® Celeron® to Core™ i7, different RAM and storage options, various operating systems and TwinCAT generations – the menu of options is vast, resulting in an almost unlimited variety of standard IPC models.

Processors

Intel® Celeron® Intel® Pentium® Intel® Core™ i3 Intel® Core™ i5 Intel® Core™ i7

Main memory

4 GB DDR4 RAM 8 GB DDR4 RAM 16 GB DDR4 RAM 32 GB DDR4 RAM

Mass storage

2 1/2-inch HDD 2 1/2-inch SSD CFast

PCIe modules

CP-Link 4 Ethernet USB 3.0 COM (RS232, RS485, RS422) NOVRAM PROFIBUS PROFINET DVI

Software

Windows 7 Windows 10 Windows Server RAID 32/64 Bit Diagnostics UPS TwinCAT 2 TwinCAT 3

As desired: customer-specific features and designs.

Besides the high scalability of the Beckhoff IPC portfolio and the ability to configure standard IPCs individually, Beckhoff IPCs can be designed and built for customer-specific requirements. The spectrum of options is exceptionally broad and ranges from company logos or special labels and individualised functions to IPCs built in total accordance with the customer's corporate design.

Your labels.

Your configuration.

Your features.

Your Corporate Design.

Globally available for decades:

Only the combination ensures optimum investment protection.

- Long-term availability of standard form factors
- Long-term stocking of processors and chips
- Complete support for the product lifecycle
- Long-term availability of all IPC series in the portfolio

- Long-term strategic stocking of components to ensure supply availability

- Availability in more than 70 countries
- Globally available service

State-of-the-art manufacturing standards and superior stock management.

Each Beckhoff IPC comes with maximum delivery reliability and investment protection. Besides featuring form factors and model series with long-term availability, Beckhoff virtually eliminates supply bottlenecks through superior inventory and stock management. By keeping up to six months' worth of raw materials and components in stock, Beckhoff can deliver even when global market conditions become challenging.
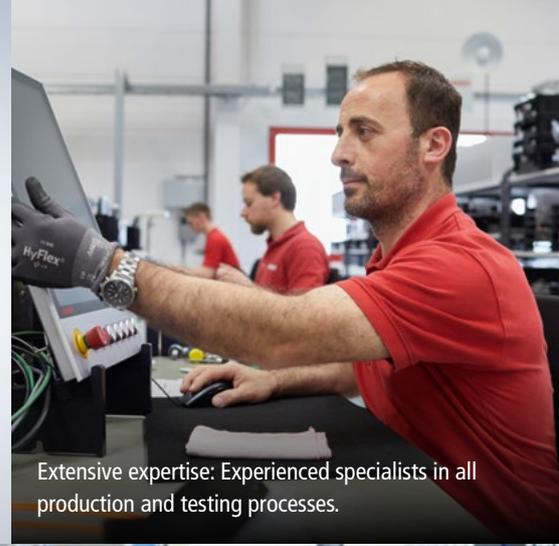
Extensive expertise: Experienced specialists in all production and testing processes.

High level of vertical integration: With fully automated electronics manufacturing systems, Beckhoff ensures highest quality over the entire lifecycle of each product.
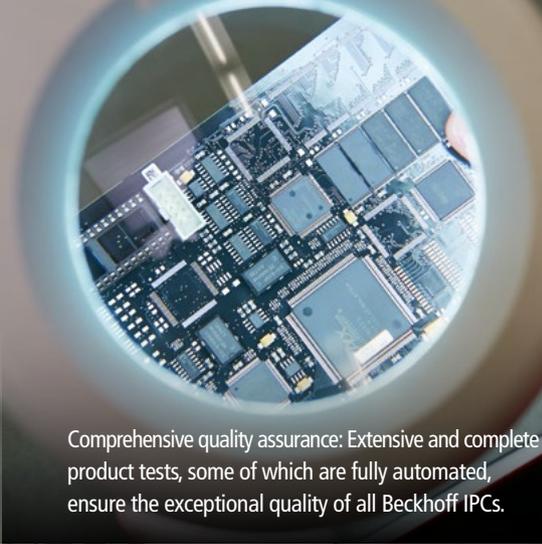
Comprehensive quality assurance: Extensive and complete product tests, some of which are fully automated, ensure the exceptional quality of all Beckhoff IPCs.
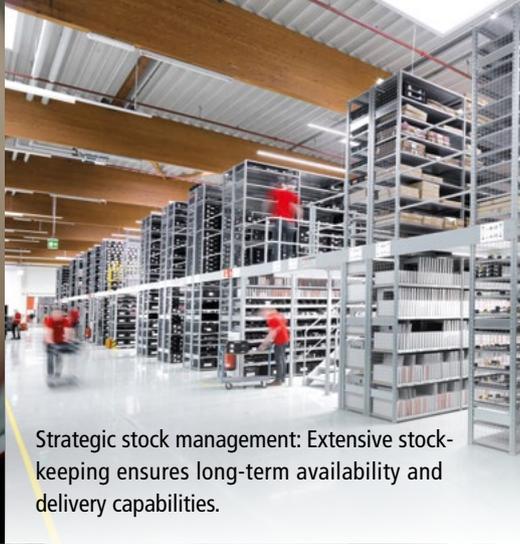
Strategic stock management: Extensive stock-keeping ensures long-term availability and delivery capabilities.

Flexible assembly concept: Strategic capacity and production planning for reliable delivery performance of lot sizes as small as one.

Globally available: Industrial PCs from Beckhoff.

Beckhoff – New Automation Technology

Beckhoff implements open automation systems based on PC Control technology for more than 35 years. The product range covers Industrial PCs, I/O and Fieldbus Components, Drive Technology and automation software. For all areas of application, product series are available that can be used as separate components or integrated into a complete and seamless control system. The Beckhoff "New Automation Technology" philosophy represents innovative control and automation solutions that are used worldwide in a wide variety of different applications and industries, ranging from CNC-controlled machine tools and wind turbines to intelligent building automation.

Worldwide presence on all continents

The worldwide presence of Beckhoff in more than 75 countries ensures fast service and support for globally operating customers in their local language. Moreover, geographical proximity helps us develop an in-depth understanding of the technical challenges our customers are faced with around the world.


EUROPE

Piteå, Oulu, Alesund, Seinäjoki, Kuopio, Tampere, Hyvinkää, Horten, Stockholm, Tallinn, Stavanger, Gothenburg, Hobro, Malmö, Køge, Kolding, Glasgow, Kaunas, Rotherham, Lübeck, Hanover, Berlin, Poznań, Piaseczno, Huntingdon, Haarlem, Munster, Henley-on-Thames, Enschede, Verl, Dresden, Wrocław, Eindhoven, Moers, Erfurt, Katowice, Kyiv, Zwevegem, Frankfurt, Prague, Lummen, Nuremberg, Bras-sur-Meuse, Hagenberg, Brno, Paris, Balingen, Vienna, Trenčín, Schaffhausen, Arbon, Munich, Budapest, Orvault, Lyssach, Zürich, Bürs, Innsbruck, Medvode, Yverdon-les-Bains, Losone, Zagreb, Annecy, Padua, Cluj-Napoca, Milan, Bologna, Galicia, Bilbao, Sofia, Aveiro, Madrid, Istanbul, Bursa, Barcelona, Murcia, Izmir, Athens, Mosta

NORTH AMERICA

Vancouver, Minneapolis, Montreal, Cambridge, Milwaukee, Chicago, Boston, Denver, Philadelphia, Cincinnati, San Jose, Charlotte, San Diego, Dallas, Houston, Orlando, Mexico City

SOUTH AMERICA

Bogotá, Quito, Lima, Sao Paulo, Joinville, Novo Hamburgo, Santiago de Chile, Montevideo, Buenos Aires

AFRICA

Johannesburg, Durban, Cape Town, Gqeberha

ASIA

Ankara, Beirut, Lod, Cairo, Kyiv, New Delhi, Dubai, Ahmedabad, Mumbai, Pune, Bangalore, Coimbatore, Chennai, Kadawatha

Owner-led management and a strong team spirit provide the foundation for continuous innovation.

Beckhoff at a glance

- headquarters in Verl, Germany
- 1.182 billion euros in global sales in 2021
- 5000 employees worldwide
- 1900 engineers
- 39 subsidiaries/representative offices worldwide
- 24 branch offices in Germany
- more than 75 distributors worldwide

(Status: March 2022)

▶ **www.beckhoff.com**

A S I A

Harbin
Shenyang
Beijing
Tianjin
Shijiazhuang
Jinan
Seoul
Zhengzhou
Qingdao
Xi'an
Nanjing
Yangzhou
Yokohama
Changzhou
Suzhou
Nagoya
Hefei
Shanghai
Chengdu
Wuhan
Wuxi
Ningbo
Chongqing
Hangzhou
Changsha
Kunming
Quanzhou
Taichung
ata
Guangzhou
Dongguan
Shenzhen

Bangkok
Ho Chi Minh City
Penang
Kuala Lumpur
Singapore
Kuching
Jakarta

AUSTRALIA AND OCEANIA

Melbourne
Auckland
Christchurch

■ Headquarters
● Subsidiary
■ Distributor

Million €

1182

Sales development

Take the lead with
IPC technology from Beckhoff:
▶ **www.beckhoff.com/ipc**

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