BECKHOFF New Automation Technology

News 05'2024

TwinCAT Core Boost for greater computing performance in real time

EL336x and EL336x-0100: Weighing technology terminals

AX8820: Universal energy regeneration

TwinCAT Machine Learning Creator: Fully automated from the data to the AI model

MX-System: Three rows for greater performance and modularity

Vision: Complete and system-integrated image processing

Discover all our product developments, extensions and innovations at

▸ www.beckhoff.com/product-news

The IPC Company

The Industrial PC (IPC) is the hardware centerpiece of PC-based control technology. Beckhoff supplies Industrial PCs suitable for any application, which are based on open standards, enabling individual configuration to meet a wide range of control requirements.

Whether in the form of an Embedded PC with a compact form-factor for DIN rail mounting, a control cabinet PC, or as a Panel PC, in-house motherboard development enables Beckhoff to respond quickly to IT trends and customer-specific requirements.

▸ www.beckhoff.com/ipc

- large model variety of Industrial PCs and Embedded PCs
- high-performance PCs, featuring a wide range of processors, from Intel® Celeron® to top of the line Core™ i9 processors
- long-term availability of all Industrial PCs and Embedded PCs
- As the inventor of PC-based control technology, Beckhoff closely cooperates with global technology partners Intel and Microsoft.

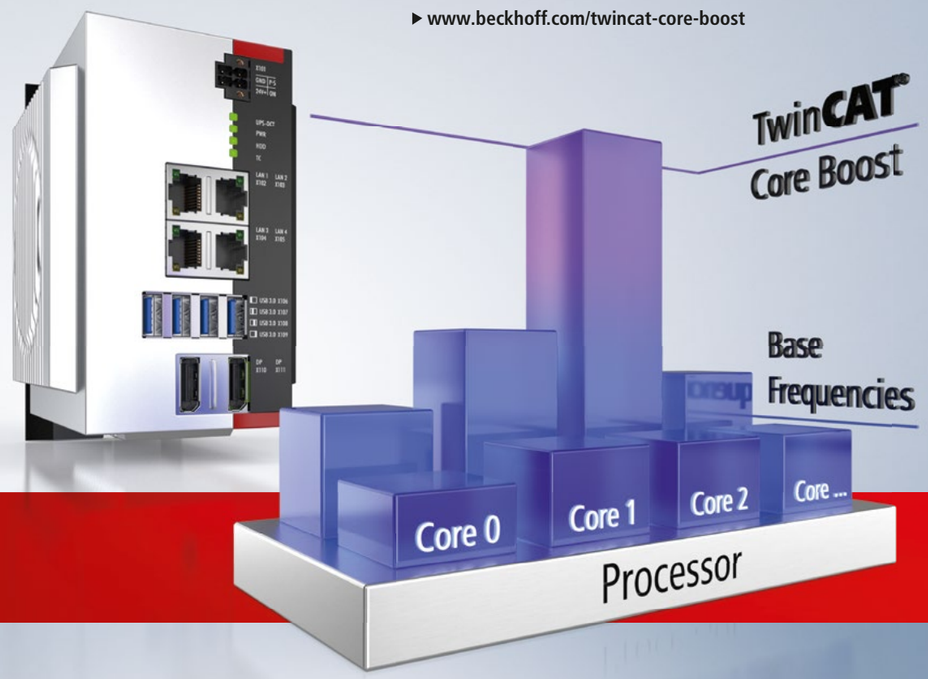
Achieve higher single-core performance with TwinCAT Core Boost

With TwinCAT Core Boost, the clock frequency of individual cores can be set individually. This allows higher clock frequencies to be achieved without compromising real time. Customers can allocate more resources to time-critical applications themselves, thus enabling faster computation. This reduces the application's cycle times or allows smaller processors to be used, thus cutting hardware and licensing costs.

TwinCAT Core Boost is based on Intel® Speed Shift Technology and can be used with the 11th, 12th, and 13th generations of Intel® Core™ processors in many industrial PCs.

Industrial PCs with an ATX motherboard will also be equipped with the 12th and 13th generation of the Intel® Core™ processors in the future. With the new processors, TwinCAT Core Boost can be used in the C5240, C6640, C6650, and C6675 Industrial PCs.

▶ **www.beckhoff.com/twincat-core-boost**



Execute AI applications with a small footprint and an external graphics card
The C6043 rounds out the ultra-compact industrial PC series with a particularly powerful device featuring the latest Intel® Core™ processors from the 12th and 13th generations. The hybrid architecture of the Intel® Core™ i5, i7, and i9 processors with a combination of performance and efficiency cores enables applications to be implemented on a total of up to 24 real cores.

What's more, the C6043 can also be equipped with an NVIDIA GPU graphics card ex factory. Available options include the NVIDIA RTX™ A500 from the Ampere generation and the NVIDIA RTX™ 2000 from the Ada Lovelace generation. With up to 3,072 CUDA® cores and up to 8 GB of graphics memory, the NVIDIA RTX™ 2000 offers plenty of parallel computing power. It makes an ideal addition to the processor for machine learning and vision applications.

▶ **www.beckhoff.com/c6043**

Industrial PCs with latest Intel Atom® processor generation

The new CX53x0 Embedded PC series is equipped with the significantly more powerful Intel Atom® x6 series processors, a modern processor with a next-generation CPU and graphics performance. A dual- and a quad-core processor are used. A system or fieldbus module from the CX2000 family can still be plugged in via the multi-pin connector on the left-hand side of the CX53x0, and the system can be expanded to include further interfaces. The series comprises two devices (CX5330 and CX5340) that differ from each other in terms of processor type and RAM equipment.

In addition, the following industrial PCs are equipped with the new Intel Atom x6® series processors:

- C6905 compact Industrial PC
- C6015, C6017, and C7015 ultra-compact Industrial PCs
- CP27xx, CP37xx, CP37xx-1600, CP6700 and CP6706 Panel PCs

▶ **www.beckhoff.com/cx53xx**
▶ **www.beckhoff.com/ipc**

Industrial server for control cabinet installation
The new C6670-0020 industrial server is equipped with two Intel® Xeon® scalable processors from the 5th generation with up to 32 cores per CPU and a memory of 128 to 1,024 GB DDR5 RAM. This makes it ideal for machine controls with the XPlanar planar motor system. The C6670-0020 can be ordered with M.2 NVMe SSDs up to 640 GB and up to two hard disks with 1, 2, or 4 TB. It also features five free PCIe slots for EtherCAT or Ethernet fieldbus cards or similar.

▶ **www.beckhoff.com/c6670-0020**

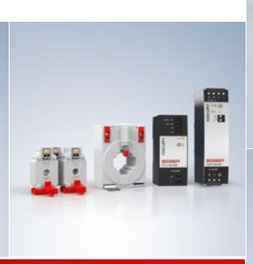
Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

The I/O Company

Beckhoff supplies a complete range of fieldbus components for all common I/O and bus systems. With Bus Terminals offering IP20 protection and Fieldbus Box modules in IP67, a comprehensive range of devices is available for a wide variety of signal types and fieldbus systems. In addition to components for conventional bus systems, Beckhoff offers an integrated product range optimized for EtherCAT. Invented by Beckhoff, this real-time Ethernet solution for industrial automation has global acceptance and is characterized by outstanding performance and simple handling. The result is high-precision machine and plant control and significantly increased production efficiency.

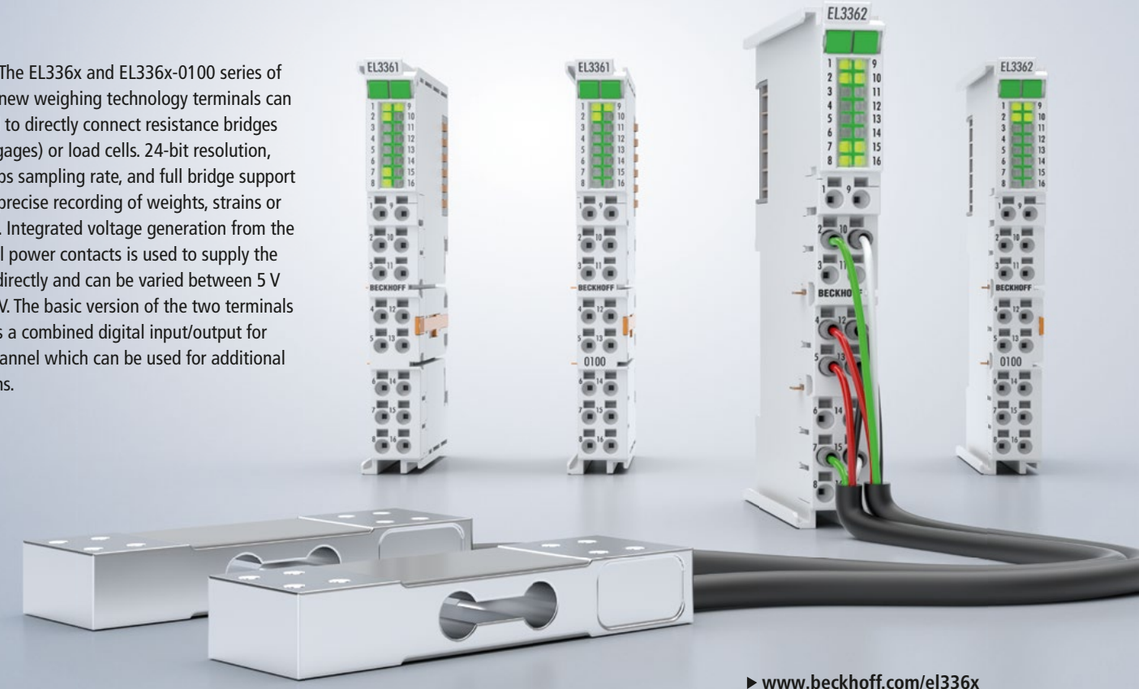
▸ www.beckhoff.com/io
▸ www.beckhoff.com/ethercat ▸ www.ethercat.org

- comprehensive, modular I/O system for all signal types and fieldbus systems
- universal product range optimized for EtherCAT
- high investment security: mature I/O technology based on more than 25 years of success in the field
- EtherCAT communication has been proven in practice for 20 years and is a worldwide standard.

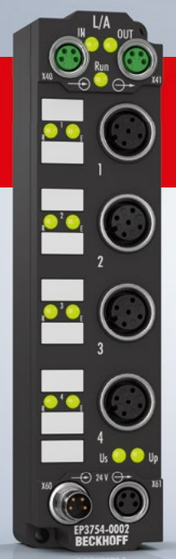


Optimized weighing technology: Multi-channel measuring bridge detection with integrated power supply

The EL336x and EL336x-0100 series of new weighing technology terminals can be used to directly connect resistance bridges (strain gages) or load cells. 24-bit resolution, a 10-ksps sampling rate, and full bridge support enable precise recording of weights, strains or torques. Integrated voltage generation from the terminal power contacts is used to supply the bridge directly and can be varied between 5 V and 10 V. The basic version of the two terminals also has a combined digital input/output for each channel which can be used for additional functions.



▸ **www.beckhoff.com/el336x**



Multifunctional box for analog input signals: Combined functions in a sleek package

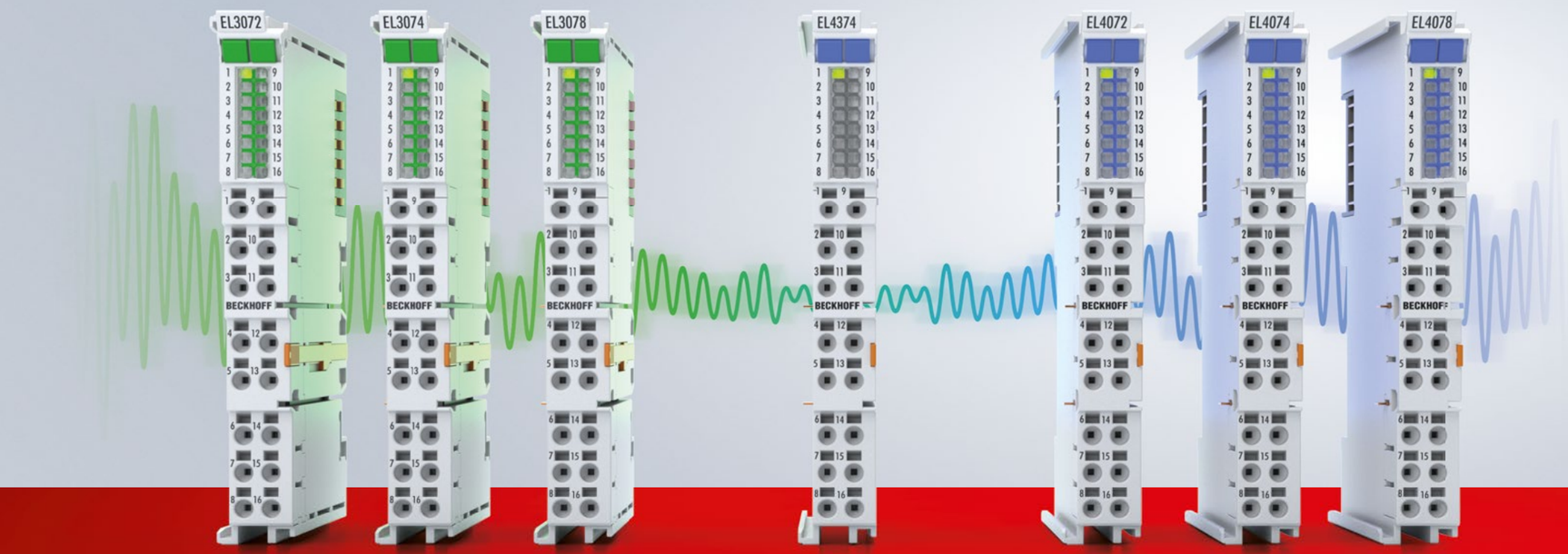
The EP3754-0002 EtherCAT Box module combines the functionalities of various analog input modules in a single housing. With four inputs which are individually parameterizable via EtherCAT, this multi-box module measures and forwards voltage, current, resistance, and temperature values in a 16-bit resolution.

Both thermocouples and standard measuring resistors can be used for temperature measurement. In addition to galvanic isolation, adjustable input filters and automatic limit value monitoring, the EP3754-0002 promises flexible applicability and optimized storage thanks to the bundling of functions in the smallest possible space.

▸ **www.beckhoff.com/ep3754-0002**

Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

Analog multi-I/Os with 16 bits and up to 8 channels



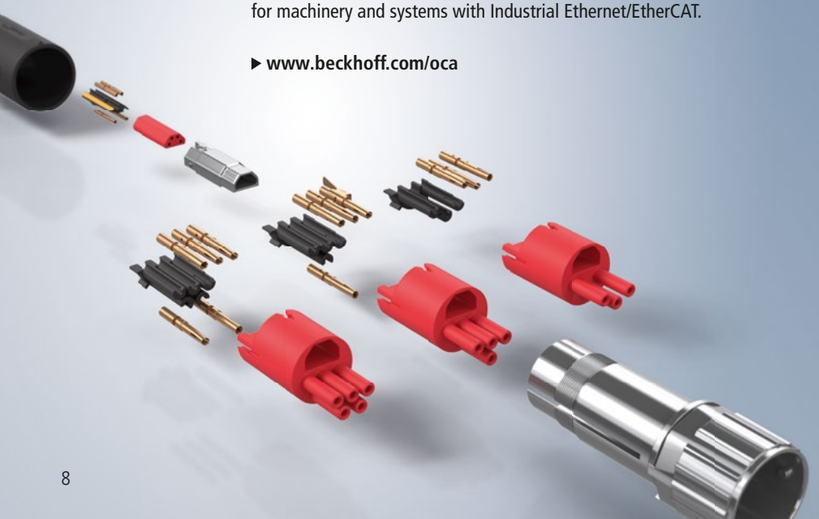
The EL3078 input and the EL4072, EL4074, and EL4078 outputs will be added to the range of analog multi-functional terminals which includes the EL3072 and EL3074 inputs and the EL4374 combination terminal. All terminals in this range are equipped with a 16-bit resolution, a 2-ksps sampling rate and up to eight channels, thus setting the standard for analog signal processing.

The EL3078 has been added to the portfolio; it is an 8-channel terminal with the same functions as the 2- and 4-channel versions that are already available. The EL307x inputs process all known standard signals in the ±10 V and ±20 mA range, and the new EL407x outputs give out these signals in the same range. All outputs can be parameterized individually and are single-ended to reduce cabling work. The current outputs can have high load resistances and detect operating faults such as overload, wire breakage, or short circuiting via a diagnostic feature. The EtherCAT Terminals have an extended output range of ±107% which can also be used to transmit atypical setpoints, e.g. for error transmission.

▶ **www.beckhoff.com/el307x-el4x7x**
▶ **www.beckhoff.com/multi-io**

Gigabit data core for hybrid connectors: Maximizing performance and modularity
Thanks to its high speed of up to 10 Gbit/s and 500 MHz, the new gigabit data core for hybrid connectors is suitable for all automation applications that require maximum performance. It fits seamlessly into the familiar modular system and is available with all power pole patterns and in all sizes. The data core is designed for use with a standard AWG26 wire cross-section and can also be used for standard Ethernet transmissions, along with EtherCAT G and EtherCAT G10. This is the perfect connection technology for implementing backbone applications for machinery and systems with Industrial Ethernet/EtherCAT.

▶ **www.beckhoff.com/oca**



EnDat 2.2 interface and oversampling
The EL5031-0011 EtherCAT Terminal enables encoders with an EnDat 2.2 interface to be connected directly. This means that position values, diagnostic data, and other information can be read out bidirectionally and automatically. The terminal uses the oversampling principle to process position values, which enables fine-resolution position detection. It also provides an additional encoder supply of 5 V or 9 V. Additional extensive functions ensure that less time and money is spent on commissioning during use.

▶ **www.beckhoff.com/el5031-0011**

Reinforced and stabilized voltages with DC/DC converters

The new PS9700 DC/DC converters transform supplied DC voltages up to max. 750 V into an electrically isolated output voltage of 24 V. The refreshed and stabilized voltage provides consumers with an ideal supply over long distances without fear of voltage drops or interruptions. Ideal areas of use are, for example, applications in which battery voltages are refreshed and converted.

▶ **www.beckhoff.com/ps9000**

Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

The Motion Company

In combination with the motion control solutions offered by the company's TwinCAT automation software, Beckhoff Drive Technology provides an advanced, all-inclusive drive system. PC-based control technology from Beckhoff is ideally suited for single- and multi-axis positioning tasks with high dynamic requirements.

The AX5000 and AX8000 Servo Drive series with high-performance EtherCAT communication offer the best-possible performance and dynamics. Servomotors with One Cable Technology (OCT), combining power and feedback systems into one standard motor cable, reduce material and commissioning costs.

▸ www.beckhoff.com/motion

- scalable product range of servo drive technology
- integrated safety technology in compliance with safety performance level PL e, integrated into compact drive technology up to safety performance level PL d
- As the pioneer of One Cable Technology and the eXtended Transport System, Beckhoff specializes in manufacturing efficient, space-saving motion solutions.

Universal energy regeneration

The AX8820 universal regenerative unit is used to feed regenerative energy back into the supply mains. It is compatible with the AX8000 multi-axis servo system, AX5000 digital compact servo drives, and third-party devices.

Sinusoidal energy regeneration prevents the typical mains distortions seen with block-shaped recovery. For effective energy management, the regenerative energy is initially stored in the DC link. The recovery into the supply mains does not begin until shortly before the overvoltage threshold of the connected devices is reached. Multiple regenerative units can be operated in parallel to ensure the regenerative power is optimally adapted to the requirements of the machine.

▸ **www.beckhoff.com/ax8820**

Compact, integrated stepper motor drive for control cabinet-free machines

In the compact drive technology product range (up to 48 V DC), the integrated ASI8100 stepper motor drive combines a stepper motor, stepper motor output stage, and fieldbus connection in a space-saving design for all motion requirements in the power range up to 250 W. As an EtherCAT slave, the ASI8100 can be placed directly on the machine without a control cabinet or upstream I/O level, allowing for compact, control cabinet-free machines. The monitoring is indicated by the integrated status LEDs.

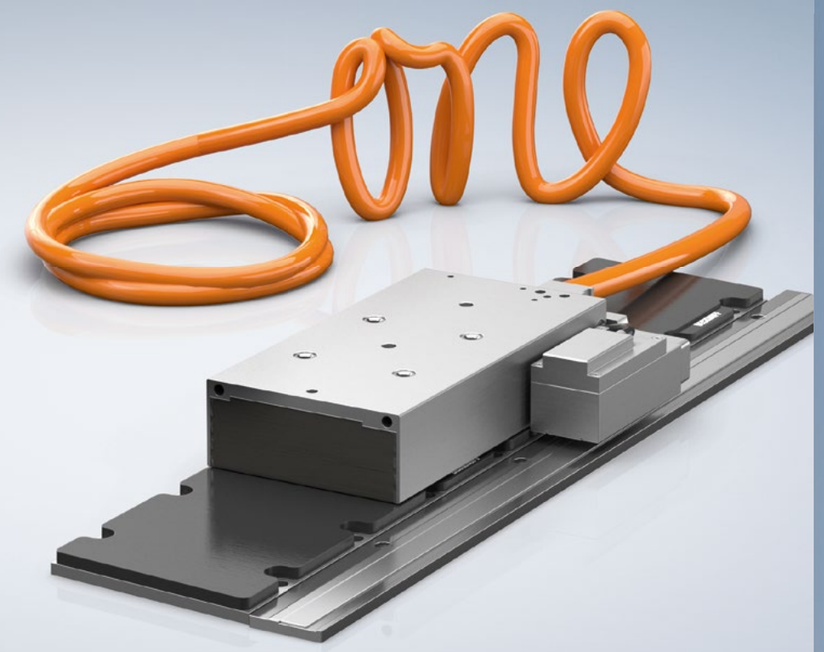
▸ **www.beckhoff.com/asi8100**

Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

Linear servomotors with One Cable Technology

The linear motors in the AL8000 and AL8100 series are suitable for highly dynamic and powerful linear axes. They boast a large portfolio of primary parts that differ in their number of coils and matched winding types. The product portfolio is supplemented by secondary parts in varying lengths, enabling a wide range of different applications to be implemented.

In addition to the standard version, both series are now also available with One Cable Technology. The OCT solution for linear motors eliminates the need for feedback lines, similar to the established OCT solution for rotary motors. This not only reduces the number of cables, but also offers a whole host of other advantages, such as reduced cabling effort, simplified mechanical installation, and fast commissioning thanks to an electronic name plate.



▶ **www.beckhoff.com/al8000**
▶ **www.beckhoff.com/al8100**
▶ **www.beckhoff.com/oct**

New form factor for optimum use of space

The new APS42xx-1x00 (160 or 320 x 320 mm) XPlanar tiles not only take up less space, but also cut the cost of XPlanar applications by up to 50%. The dimensions of the tiles allow 1- or 2-way operation of XPlanar movers with a width of 155 mm within a compact space.

The XPlanar system has even been extended to include additional features, including STO functionality for the first time. This allows the relevant systems to be safely switched off to a dead stop. The APS42xx family also facilitates new applications through increased dynamics, improved precision, and simplified installation.

▶ **www.beckhoff.com/aps4224**
▶ **www.beckhoff.com/aps4242**
▶ **www.beckhoff.com/aps4244**

Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

ATRO: Automation Technology for Robotics – the modular industrial robot system

The ATRO system from Beckhoff is a modular industrial robot system that can be used to assemble the optimal robot structures for different applications on an individual and flexible basis. Standardized motor modules with integrated drive functionality, together with link modules in various designs and lengths, enable almost limitless combinations of mechanics. The complete integration of the control into the holistic control platform TwinCAT offers direct access to a wide range of proven automation functions.

▶ **www.beckhoff.com/atro**

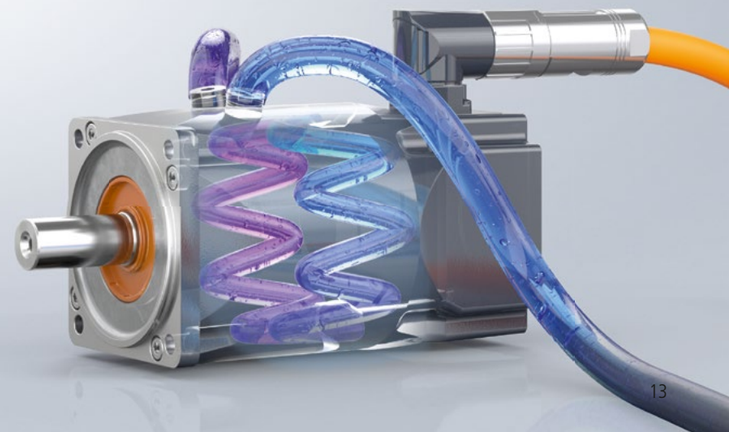
Water-cooled high-performance servomotors

The AM8300 series expands the servomotor portfolio to include a modular motor series with integrated water cooling. Thanks to its efficiently integrated water cooling, the AM8300 achieves an extremely high power density, allowing it to deliver up to 40 kW of power within a very compact space, depending on its size. Compared to conventional convection-cooled motors, the power output increases many times over.

In terms of technology, the AM8300 series is based on the tried-and-tested AM8000 motor and its advantageous modular system, which allows for a wide range of options while maintaining consistent availability. A seamless portfolio for all applications is formed by five flange sizes, each available in three different lengths. With its water cooling system and high IP65 protection rating, the AM8300 is also suitable for demanding environmental conditions – particularly those with high ambient temperatures. As for the cooling circuit, this is connected via standardized threads.

The AM8300 motors are designed to work seamlessly with the servo drives from the AX5000 and AX8000 series and can also be paired with the AG2300 and AG2400 gear series.

▶ **www.beckhoff.com/am8300**



The Automation Company

Beckhoff offers comprehensive system solutions in numerous performance classes for all areas of automation. The control technology is exceptionally scalable – from high-performance Industrial PCs to mini-PLCs – and can be adapted precisely to application-specific requirements. TwinCAT automation software integrates real-time control with PLC, NC and CNC functions in a single feature-filled package.

▸ www.beckhoff.com/automation

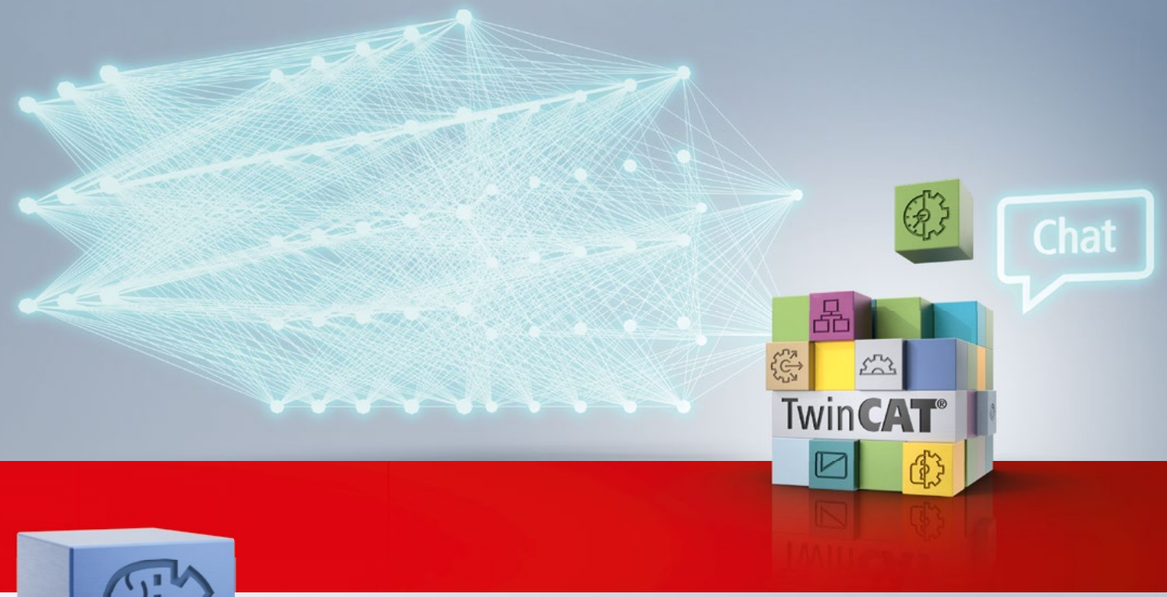
- efficient, universal engineering
- programming in different languages
- Open, hardware-independent control system gives freedom of choice in terms of automation and control components.
- scalable control platform from single- to multi-core CPUs
- all control functions on a single, centralized platform: PLC, motion control, robotics, measurement technology, a.o.

TwinCAT Chat: More productivity with AI-assisted engineering

Beckhoff has developed TwinCAT Chat to increase productivity in TwinCAT Engineering. With TwinCAT Chat, large language models (LLMs), such as ChatGPT by OpenAI, can be used to develop a TwinCAT project quickly and conveniently. Various tasks, from code creation to code revision/optimization to documentation, are performed efficiently. The code generated by the LLMs can also easily be integrated into existing engineering projects and used immediately. TwinCAT Chat also offers direct access to Beckhoff documentation and creates HMI controls independently. This plays a crucial role in designing and configuring user interfaces in the engineering process.

TwinCAT Chat thus reduces the time, costs, and resources needed and simplifies the engineering workflow.

▸ **www.beckhoff.com/twincat-chat**



TwinCAT Machine Learning Creator: Fully automated from the data to the AI model

The TwinCAT 3 Machine Learning Creator automatically creates AI models based on data sets. These AI models can be optimized in terms of their accuracy and latency to ensure they run efficiently on Beckhoff IPCs with TwinCAT products. The generated models can also still be used as standardized ONNX models beyond the Beckhoff product range. For use with TwinCAT products, a PLCopen XML with IEC 61131-3 code is created in addition to the ONNX file, which describes the complete AI pipeline and can be imported seamlessly into TwinCAT.

The no-code development platform enables non-AI experts to efficiently develop high-quality AI applications. The Creator automates time-consuming AI development processes, even for data scientists, standardizes the creation of AI models in the company, and uses state-of-the-art AI methods from the field of AutoML (Automated Machine Learning).

The development tool for AI applications provides extensive and transparent methods for displaying the behavior of the AI models created and comparing them with each other. The ability to generate automated reports supports auditing processes for AI model creation.

▸ **www.beckhoff.com/te3850**
▸ **www.beckhoff.com/machine-learning**

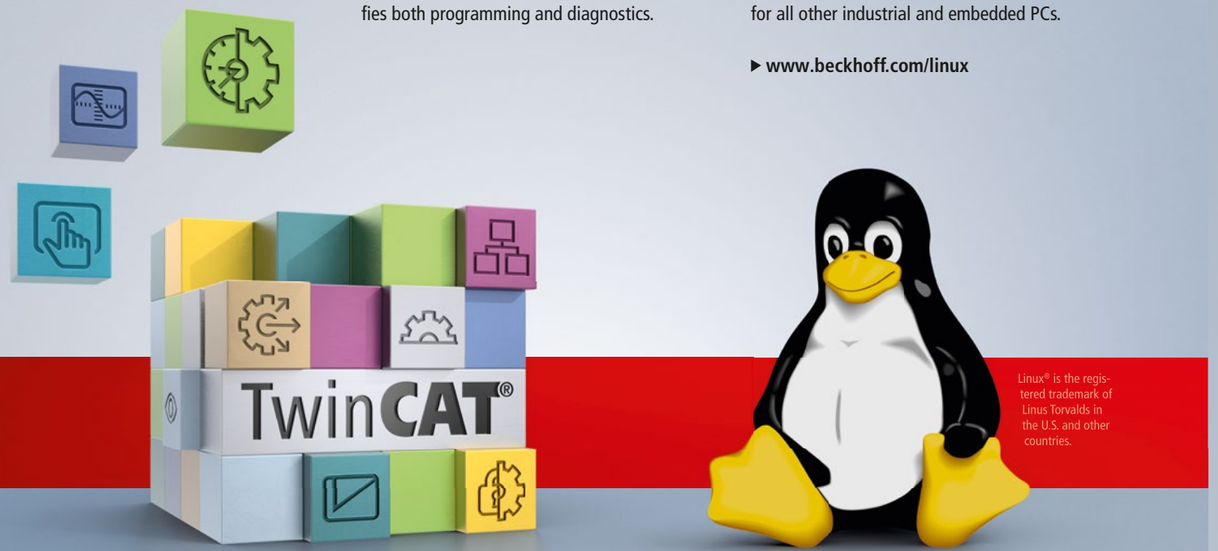
Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

Linux®-based real-time control with TwinCAT

With the TwinCAT Runtime for Linux®, Beckhoff is opening up new application possibilities for real-time control. In the future, several TwinCAT Runtimes will be able to be execute on one industrial PC for the first time, enabling users to combine different system parts on one large computer, for example. This simplifies both programming and diagnostics.

TwinCAT Runtime for Linux® is based on Beckhoff's own Linux® distribution, which expands the choice of operating systems in addition to Windows and TwinCAT/BSD. Initially, the new CX82x0 and CX9240 ARM-based Embedded PCs will be offered with Linux® runtime. The Beckhoff Linux® distribution will then be successively rolled out for all other industrial and embedded PCs.

▶ **www.beckhoff.com/linux**

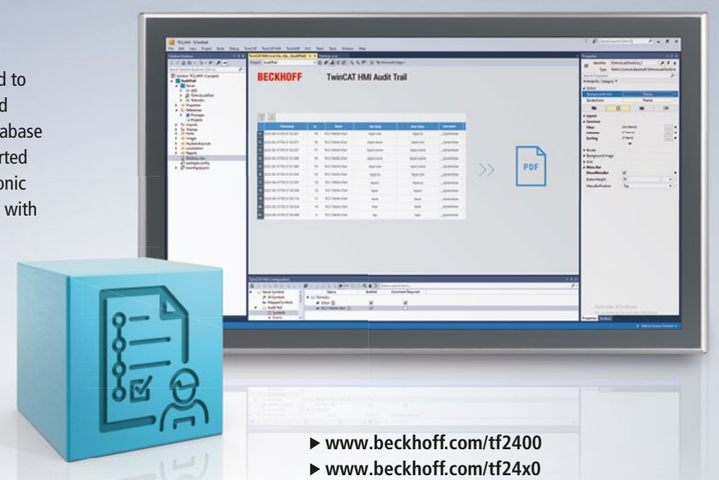


Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

TwinCAT HMI: A new function with TwinCAT 3 HMI Audit Trail

The TF2400 TwinCAT 3 HMI Audit Trail extension enables changes to the HMI operator and system events that have occurred to be securely recorded so that they can be traced chronologically. The entries are stored in a database and can be generated as a PDF report or exported in different formats (JSON, HTML, CSV). Electronic signatures allow a user to be re-authenticated with higher privileges. This product enables applications to be developed according to the provisions of FDA 21 CFR part 11, GAMP and GMP.

In addition to generating PDF reports and electronic signatures, TF2400 also includes 250 audit trail symbols, which can be expanded using the TF24x0 TwinCAT 3 HMI Audit Trail Symbols Pack.



▶ **www.beckhoff.com/tf2400**
▶ **www.beckhoff.com/tf24x0**

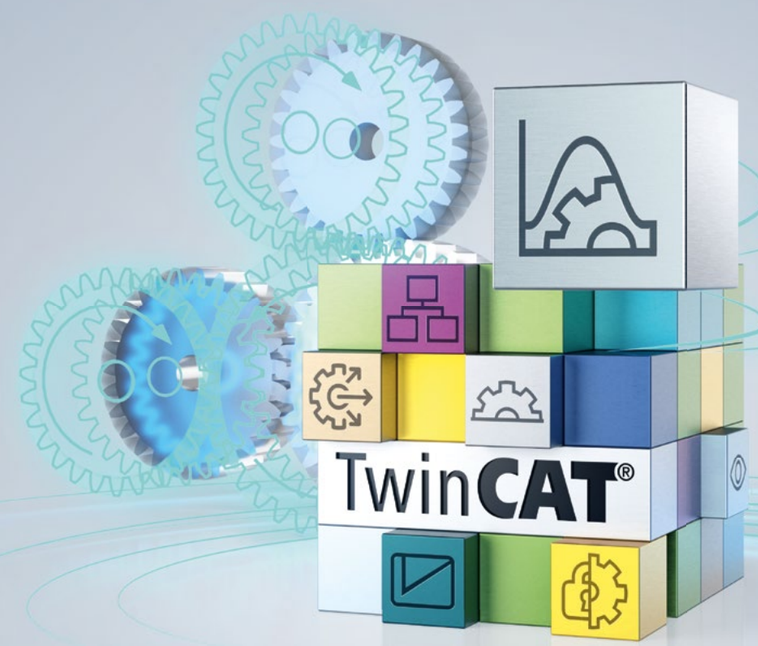
Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

Next generation of motion control with TwinCAT MC3

Motion control is an established and essential component of TwinCAT and is successfully used in many projects across industries.

TwinCAT MC3 is the next generation of motion control. All the successful features of the previous TwinCAT NC2 motion control solution are also present in the latest generation of the TwinCAT MC3. TwinCAT MC3 is thus fully integrated into the TwinCAT system. Axes continue to be abstracted so that programming is independent of the hardware and axes can be simulated.

However, the new modular architecture of TwinCAT MC3 is a crucial advantage. This includes multi-core and multi-task support with the option to synchronize movement across all CPU cores. In addition, there is no longer a fixed limit on the number of axes in the new generation. These vital features make TwinCAT MC3 a high-performance tool in the motion software solution field.



▶ **www.beckhoff.com/twincat-mc3**

TwinCAT 3.1: Build 4026
With the latest version of TwinCAT 3, Build 4026, Beckhoff provides even more flexibility in automation development through increased modularization and additional extensions.

Thanks to the innovation in the new, modularized TwinCAT Package Management setup, specific software packages can be selected, installed, and updated according to preference. This results in independent installation which takes far less time. TwinCAT 3.1 Build 4026 can also support Microsoft Visual Studio 2022, constituting another important developmental leap. This provides a 64-bit environment for engineering, allowing more memory to be used for larger projects. PLC programming has also been enhanced with a number of small changes, further increasing the efficiency of TwinCAT 3.

All details on the new features of TwinCAT 3.1 Build 4026:

▶ **www.beckhoff.com/build4026**

The System Company

For the first time in machine and system engineering, the MX-System enables completely control cabinet-free automation solutions. By consistently combining, applying and further developing Beckhoff's expertise, a holistic, modular pluggable system has been created. The combination of MX-System baseplate and MX-System function modules resulting from the modular construction kit combines all tasks and features of a control cabinet: energy supply, fuse protection and distribution, generation and monitoring of auxiliary voltages, sequence control with the inputs and outputs, control of motors and actuators as well as the connection level for the field devices. The full system integration of all machine functionalities is achieved via freely selectable IPC, coupler, I/O, drive, relay and system modules, which can be configured and combined suitable for the specific application.

▸ www.beckhoff.com/mx-system

- designed for the greatest possible resistance over a long period of time
- distribution of voltage and EtherCAT via standardized connectors
- assembly and wiring in the shortest possible time thanks to the modular design principle
- flexible and precisely adaptable to application requirements
- advantages throughout the entire machine life cycle with the MX-System

Three rows for greater performance and modularity

MX-System

Future MX-System applications can soon be implemented with 3-row baseplates – these offer the option of using more single modules or larger, more powerful ones. In addition to the baseplate, function modules for power supply (with main switch function up to 63 A), DC link power supply and servo drive (28 A) are available from the launch for the new size.

- MB3112-0000-0000
- MD6040-0002-3445
- MD8128-0100-3255
- MS1163-2201-3449

▸ www.beckhoff.com/mb3112-0000-0000
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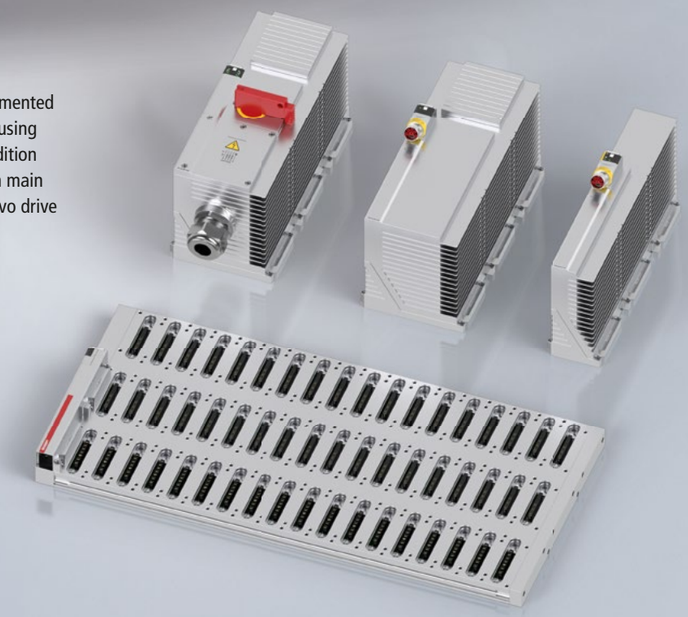


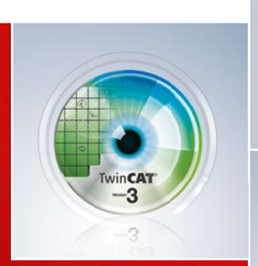
Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

The Vision Company

As a specialist for PC-based control technology, Beckhoff consistently aims to integrate all machine functionalities into one control platform. With TwinCAT Vision, this has included image processing within software since 2017. The machine vision product spectrum is now complete thanks to the introduction of the comprehensive hardware range from Beckhoff. Machine builders and end users thus have a complete image processing system at their disposal that covers all the necessary components from software to illumination which, integrated into the system, provides users with significant competitive advantages.

▸ www.beckhoff.com/vision

- complete hardware portfolio for industrial image processing
- ultra-fast EtherCAT performance and robust design
- perfect synchronization with any process
- simple, direct integration into the control
- open and scalable machine vision system



GOLD AWARD 2023

reddot winner 2023

Get started with machine vision right away with this unit

Four new area scan camera units have been added to the VUI2000 series
The Vision Unit Illuminated (VUI) is a compact unit comprising the camera, illumination, and focusable optics complete with liquid lens technology. It significantly reduces installation and commissioning work. Due to focus adjustment during runtime, the unit is particularly well-suited to alternating product heights, such as those found in logistics. What's more, all functional components are encased in an attractive anodized aluminum housing that offers IP65/67 protection. Beckhoff is expanding its area scan camera portfolio with four devices featuring color or monochrome image sensors with resolutions of 2.3 MP or 3.1 MP in a 16 mm focal length.

▸ **www.beckhoff.com/vui2000-0216**
▸ **www.beckhoff.com/vui2001-0216**
▸ **www.beckhoff.com/vui2000-0316**
▸ **www.beckhoff.com/vui2001-0316**

New functions in TwinCAT 3 Vision

The TwinCAT 3 Vision software portfolio has been expanded to include options for camera integration and image processing functions:

The TF7020 TwinCAT 3 Vision Beckhoff Camera Connector enables Beckhoff cameras to be integrated directly into the TwinCAT architecture. The connector establishes the basis for communication and provides up to 64 camera connections.

TF7255 TwinCAT 3 Vision Code Quality complements the basic package with functions for quality evaluation of various 1D and 2D codes. This assures high-quality code and problems in code creation are detected at an early stage.

TF7260 TwinCAT 3 Vision OCR adds optical character recognition to the basic package. Application examples include verification of best-before dates and batch numbers.

TF7810 TwinCAT 3 Vision Neural Network adds the option to use neural networks for data analysis to the basic package. With the help of these models, complex data analyses can be learned automatically. Application examples include object detection and segmentation, classification and anomaly detection for quality control, and process monitoring.

▸ **www.beckhoff.com/tf7020**
▸ **www.beckhoff.com/tf7255**
▸ **www.beckhoff.com/tf7260**
▸ **www.beckhoff.com/tf7810**

Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

New Automation Technology

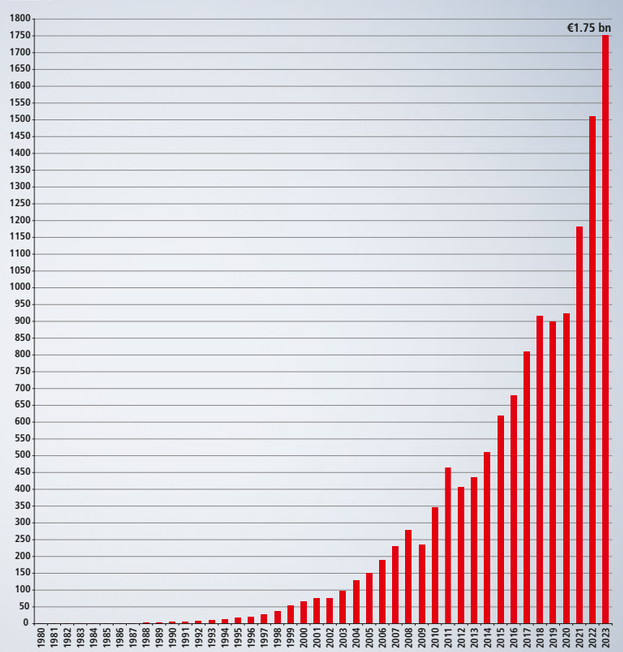
Beckhoff implements open automation systems using proven PC-based control technology. The main areas that the product range covers are industrial PCs, I/O and fieldbus components, drive technology, automation software, control cabinet-free automation, and hardware for machine vision. Product ranges that can be used as separate components or integrated into a complete and mutually compatible control system are available for all sectors. Our New Automation Technology stands for universal and industry-independent control and automation solutions that are used worldwide in a large variety of different applications, ranging from CNC-controlled machine tools to intelligent building control.

Since Beckhoff's foundation in 1980, the development of innovative products and solutions on the basis of PC-based control technology has been the foundation of the company's continued success. We recognized many standards in automation technology that are taken for granted today at an early stage and successfully introduced to the market as innovations. Beckhoff's philosophy of PC-based control as well as the invention of the Lightbus system and TwinCAT automation software are milestones in automation technology and have proven themselves as powerful alternatives to traditional control technology. EtherCAT, the real-time Ethernet solution, provides a powerful and future-oriented technology for a new generation of control concepts.

Beckhoff Automation at a glance

- 2023 global sales: €1.75 billion (+16%)
- Headquarters: Verl, Germany
- Managing owner: Hans Beckhoff
- Employees worldwide: 5,500
- Engineers: 2,000
- Subsidiaries/representative offices worldwide: 40
- Sales offices in Germany: 23
- Representatives worldwide: > 75

Beckhoff Automation



Sales from 1980 through 2023.
Status: March 2024

Worldwide presence on all continents
The corporate headquarters of Beckhoff Automation GmbH & Co. KG in Verl, Germany, is the site of the central departments such as development, production, administration, sales, marketing, support and service. Beckhoff's presence in the international market is guaranteed by its subsidiaries. Beckhoff is represented in more than 75 countries by worldwide cooperation partners.

DK1312-0524

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