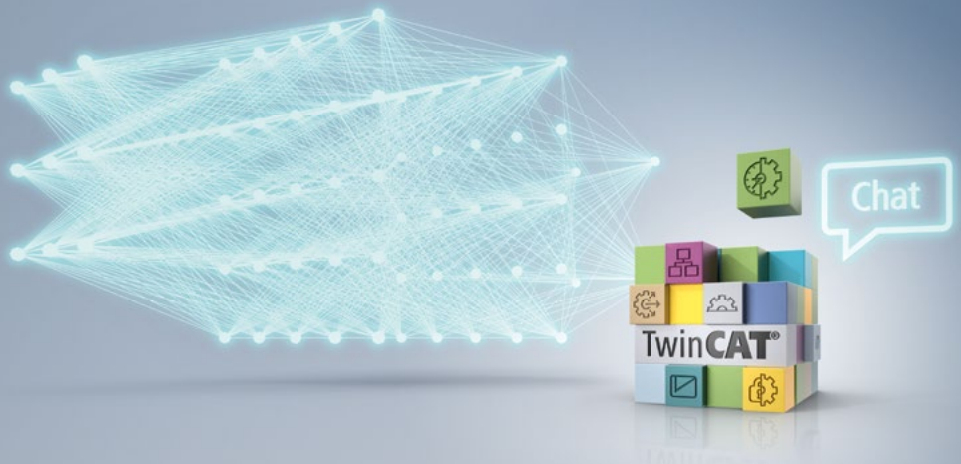
BECKHOFF New Automation Technology

News 01'2024

C6043:
Ultra-compact Industrial PC

EL4374/EP3751-0260: Multi-function and
3-axis accelerometer/gyroscope

AX8820:
Universal energy regeneration



TwinCAT Chat: More productivity
with AI-assisted engineering

MX-System: Three rows
for greater performance and modularity

Vision: Complete and system-
integrated image processing

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.

C6043: An ultra-compact Industrial PC with a powerful graphics card

Together with the C6040-0090, the C6043-0090 rounds out the C60xx ultra-compact Industrial PC series portfolio with even more powerful devices. This leap in performance is achieved through the consistent use of the latest Intel® Core™ processors, now in their 13th generation. 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.

In addition, the C6043 is equipped with an NVIDIA graphics card ex factory. An NVIDIA RTX™ A500 MX module from the Ampere generation with 2,048 CUDA cores is used. It's the perfect supplement for bringing in more parallel computing power for machine learning and vision applications, for example.

▶ **www.beckhoff.com/c6040**
▶ **www.beckhoff.com/c6043**

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.

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

Industrial PCs with latest Intel Atom® processor generation

Industrial and embedded PCs are equipped with the significantly more powerful Intel Atom® x6 series processor, a modern processor with a next-generation CPU and graphics performance. A dual- and a quad-core processor are used:

- Intel Atom® CPU, 1.4 GHz, 2 cores
- Intel Atom® CPU, 1.7 GHz, 4 cores

The following industrial PCs are equipped with the new processors:

- C6905 and C6915 compact Industrial PCs
- C6015, C6017, and C7015 ultra-compact Industrial PCs
- CP67xx, CP27xx, and CP37xx Panel PCs

The new CX53x0 Embedded PC series complements the existing DIN rail-mountable and fanless CX5000 series devices. It is also equipped with the Intel Atom® x6 series processors. A system or fieldbus module from the CX2000 family can still be plugged in via the multi-pin connector on the left-hand side, and the system can be expanded to include further interfaces.

The series comprises two devices that differ from each other in terms of processor type and RAM equipment:

- CX5330: Intel Atom® CPU, 1.4 GHz, 2 cores
- CX5340: Intel Atom® CPU, 1.7 GHz, 4 cores

▶ **www.beckhoff.com/cx53xx**

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.

Combined analog inputs and outputs in IP20

The EL4374 EtherCAT Terminal is the first multi-functional analog terminal in the IP20 portfolio and combines two analog inputs and two analog outputs that can be individually parameterized for current or voltage mode via TwinCAT. The terminal features 16 bit resolution and a 1 ksps sampling rate per channel, plus a technical measuring and output range of ±107%. The latter allows commissioning with sensor values in the limit range and evaluation according to NAMUR NE43. The EL4374 also marks a first in that it can be used to operate 20 mA loads with up to 750 ohms.

▸ **www.beckhoff.com/el4374**

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**

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

EtherCAT I/Os with TwinSAFE SC technology

The TwinSAFE SC (TwinSAFE Single Channel) technology expands standard EtherCAT I/Os to include the TwinSAFE SC function and enables standard signals to be used for safety tasks in any networks or fieldbuses. At the same time, the typical signal properties and standard product functions are retained. The new EL3314-0092 EtherCAT Terminal and the new EJ5101-0090 EtherCAT plug-in module provide additions to the IP20 portfolio in the analog input and angle/displacement measurement areas. The EP6224-0092 EtherCAT Box with IO-Link is available in IP67. All TwinSAFE SC I/Os are characterized by a yellow marking on the front of the housing.

▶ **www.beckhoff.com/twinsafe-sc**

Integrated acceleration and rotation measurement

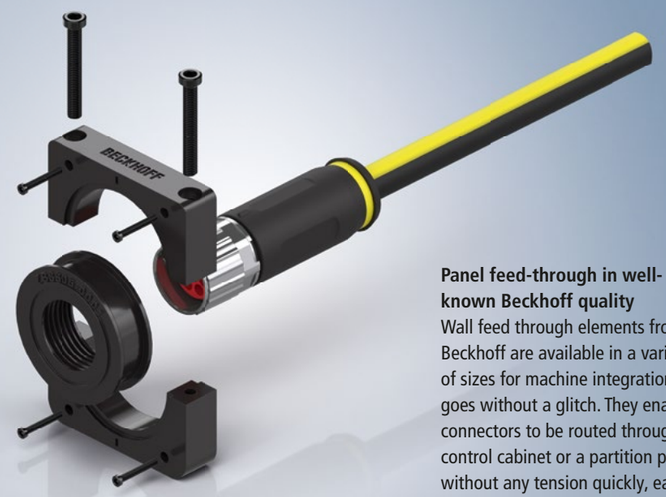
In addition to an ultra-low-noise 3-axis accelerometer with high resolution and a variety of measuring range options, the EP3751-0260 EtherCAT Box now also features a 3-axis gyroscope. This combination makes it possible to measure both the inclination and the rotary motion in the case of moving objects. Potential applications include building monitoring, bridge monitoring, and robotics.

▶ **www.beckhoff.com/ep3751-0260**

IEC standardization for modular hybrid connectors promotes user safety and opens up new markets

Beckhoff hybrid connectors are among the first products to comply with the future IEC 61076-2-118 standard. This standard is expected to be published at the end of 2024. The primary aim of establishing a global standard like this is to ensure security for the customer or user, not only with regard to supply chains and second-source strategies, but also in terms of the level of product reliability defined by established and widely adopted standards. The portfolio of hybrid connectors has already proved itself thousands of times in the field. Hybrid connectors are essentially used to transmit power and data via a single line to save on cables and connectors. The uniform data module, which is used in all four sizes – B12, B17, B23, and B40 – offers an additional advantage thanks to its high modularity.

▶ **www.beckhoff.com/oca**



Panel feed-through in well-known Beckhoff quality

Wall feed through elements from Beckhoff are available in a variety of sizes for machine integration that goes without a glitch. They enable connectors to be routed through a control cabinet or a partition panel without any tension quickly, easily and reliably.

▶ **www.beckhoff.com/assembly**

Power supplies | 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.

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

DESIGN AWARD 2023

ATRO

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**

Easily pluggable motor and link modules make it possible to create individual robot solutions.

The internal media feed allows endless rotaion for all axes.

Optimally matched software and hardware components from a single source

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

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**

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.

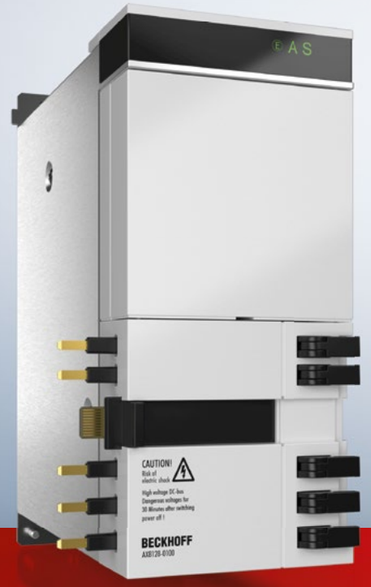
In terms of technology, the AM8300 series is based on the tried-and-tested AM8000 motor and its advantageous modular system, which allows for a wide range of options while maintaining consistent availability. A seamless portfolio for all applications is formed by five flange sizes, each available in 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**

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

Higher-performance axis module in the same form factor



The AX8128 axis module boosts performance for single axes in the AX800 multi-axis system with 28 A. Using SiC modules increases the rating by 55%, even when the housing remains the same size. The axis module contains the DC link and the inverter for supplying the motor. Depending on the required number of axes, the various axis modules are connected to the supply module to create the optimal layout for the machine.

▶ **www.beckhoff.com/ax8128**

Power supply and distribution module with extended mains voltage range

With the AMP8000 distributed servo drive system, the servo drive is relocated directly from the control cabinet to the machine. In interaction with the further components for power supply (AMP8600), distribution (AMP8800), and coupling to the AX8000 multi-axis servo system (AX8000), the AMP8000 distributed servo drive offers a compact and flexible solution for modular machines.

Thanks to the extended mains voltage range of 1 x 230 V AC/ 3 x 208…480 V AC, the AMP8000 distributed servo drive system is now even more flexible and suitable for further applications.

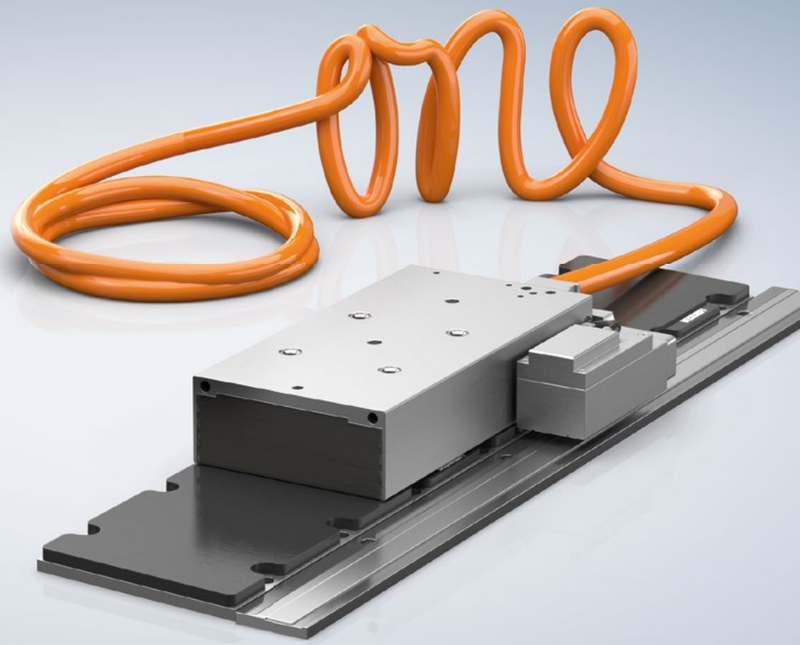
▶ **www.beckhoff.com/amp8000**

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

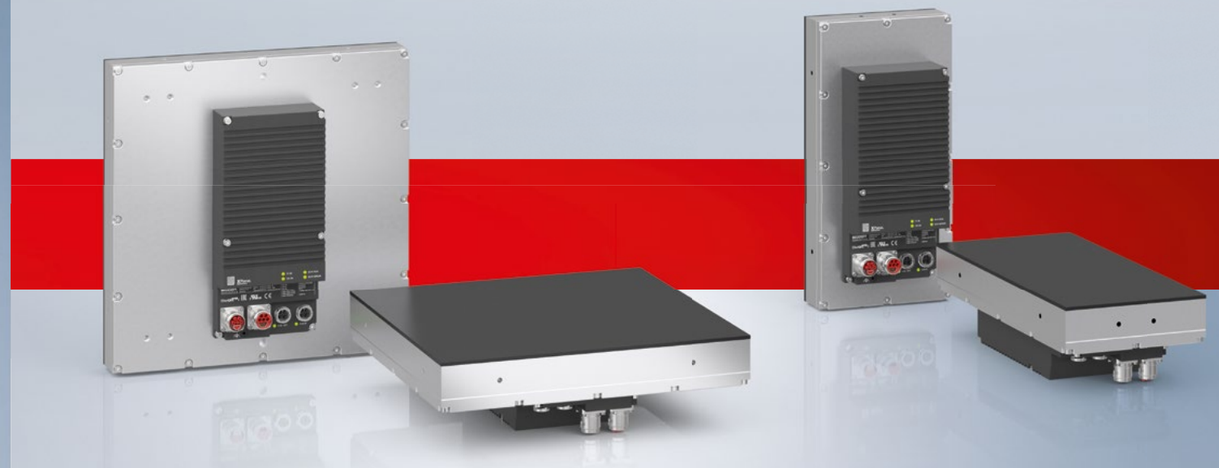
Linear servomotors with One Cable Technology

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 APS4244-1x00 (320 x 320 mm) and APS4242-1x00 (320 x 160 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 APS424x family also facilitates new applications through increased dynamics, improved precision, and simplified installation.

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

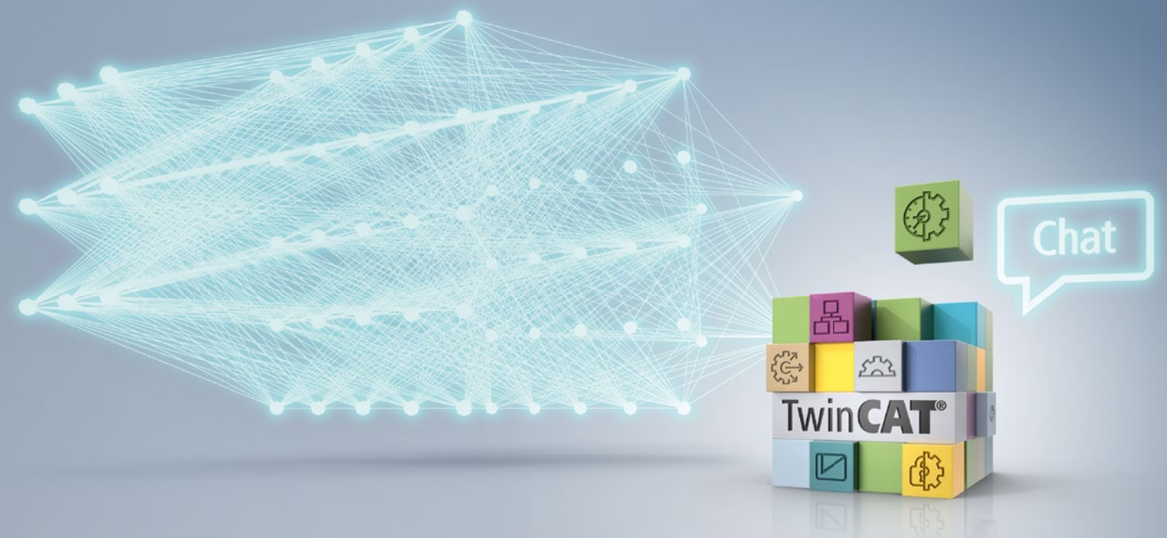
The Automation Company

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

Simplified commissioning of servo axes with TwinCAT 3 Autotuning
With TE5960 TwinCAT 3 Autotuning, optimizing drives is no longer the exclusive domain of experts. The iterative tuning procedure of the drive parameters facilitates the identification of the mechanics as well as the load inertia, controller parameters, and filter settings. The calculated parameters can be loaded directly into the servo drives via the TwinCAT 3 Drive Manager 2. In just a few seconds, the tuning process is complete, making this a much more efficient approach than the previous manual method. At the same time, experts can still rely on transparency, since the optimization results are displayed with amplitude and phase progression in the Bode plot graphic.

▸ www.beckhoff.com/te5960

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

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 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.

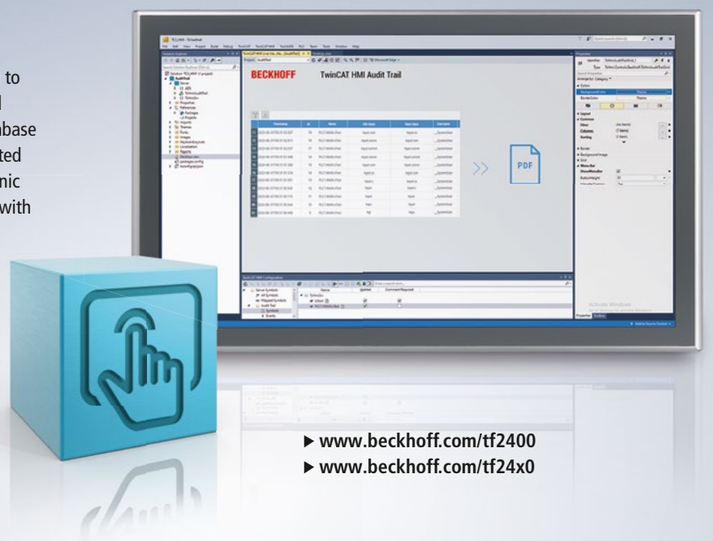
All details on the new features of TwinCAT 3.1 Build 4026:

▶ **www.beckhoff.com/build4026**

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.

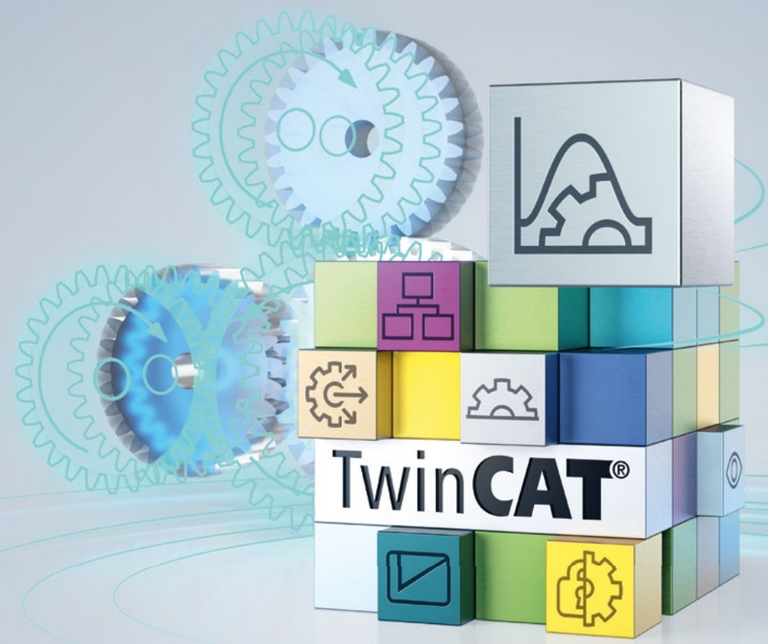
In addition to generating PDF reports and electronic signatures, TF2400 also includes 250 audit trail symbols, which can be expanded using the TF24x0 TwinCAT 3 HMI Audit Trail Symbols Pack.



▶ **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**

View, customize, and create XML-based nodesets

When the OPC UA technology is implemented in machines, it is important to establish conformity to a companion specification or a customer-specific information model so that the machine can be integrated into the existing and standardized environment as smoothly as possible.

TE6100 TwinCAT 3 OPC UA Nodeset Editor can be used to load companion specifications (or the resulting nodeset files) and use them for modeling the machine project in TwinCAT 3 OPC UA.

More information on embedding the Nodeset Editor into the OPC UA environment:

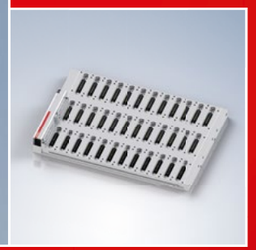
▶ **www.beckhoff.com/opc-ua**
▶ **www.beckhoff.com/te6100**

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

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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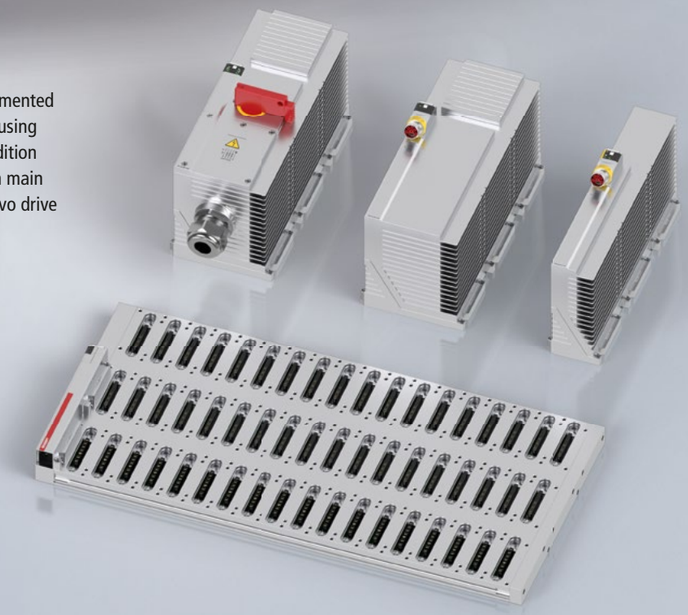


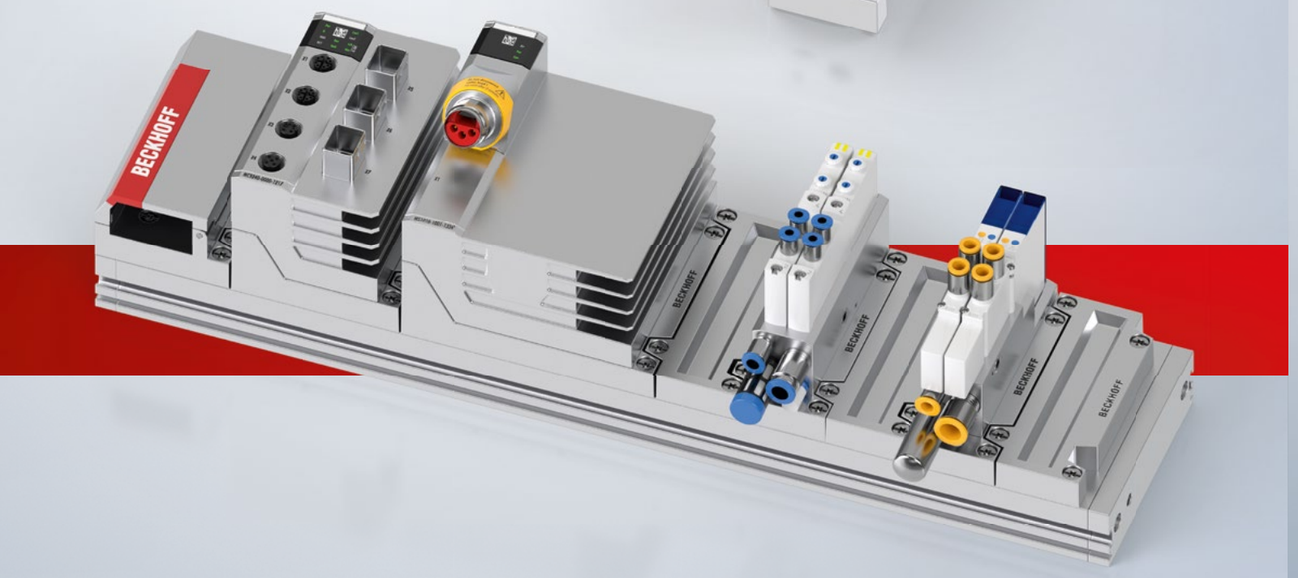
Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

Scope of functions expanded to include pneumatics

Two new pneumatic modules allow valves from Festo (VUVG series) or SMC (JSY3000 series) to be integrated directly into the MX-System. The MO2414 and MO2424 socket modules form the interface between the MX-System and the valve. While the socket modules provide valve air supply and control signals, the outgoing hoses are connected directly to the respective valve.

- MO2414-0000-1110 (Festo)
- MO2424-0000-1110 (SMC)

▶ **www.beckhoff.com/mo2414-0000-1110**
▶ **www.beckhoff.com/mo2424-0000-1110**



High-performance power supply modules for motion and robotics applications

The new 48 V/40 A power supply units provide four new variants to extend the application range of the MX-System. 48 V DC devices, such as XTS, ATRO, or up to six AMI8100s, can now also be connected directly to the pluggable modules at the front.

- MS6040-2100-2340 ▶ **www.beckhoff.com/ms6040-2100-2340**
- MS6140-2202-2345 ▶ **www.beckhoff.com/ms6140-2202-2345**
- MS6240-2205-2345 ▶ **www.beckhoff.com/ms6240-2205-2345**
- MS6640-2202-2342 ▶ **www.beckhoff.com/ms6640-2202-2342**

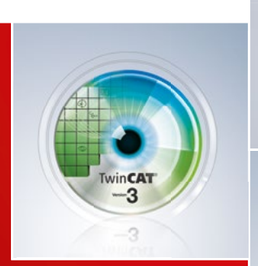
Product announcement For availability status of the new products see Beckhoff website at: www.beckhoff.com

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



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

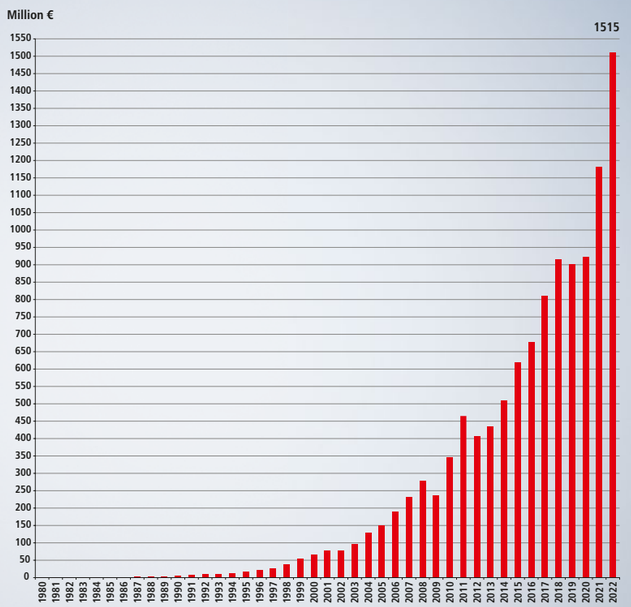
Beckhoff implements open automation systems using proven PC-based control technology. The main areas that the product range covers are industrial PCs, I/O and fieldbus components, drive technology, automation software, control cabinet-free automation, and hardware for machine vision. Product ranges that 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

- 2022 global sales: €1.515 billion (+28%)
- Headquarters: Verl, Germany
- Managing owner: Hans Beckhoff
- Employees worldwide: 6,000 (September 2023)
- Engineers: 2,300
- Subsidiaries/representative offices worldwide: 40
- Sales offices in Germany: 24
- Representatives worldwide: > 75

Beckhoff Automation



Sales from 1980 through 2022.
Status: March 2023

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.

DK1312-1123

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