

# News

01'2023



C6040:  
Ultra-compact Industrial PC



EL6761: 1-channel communication interface,  
ISO 15118 power-line, charge controller



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

## MX-System



Pluggable system solution for  
automation without control cabinet

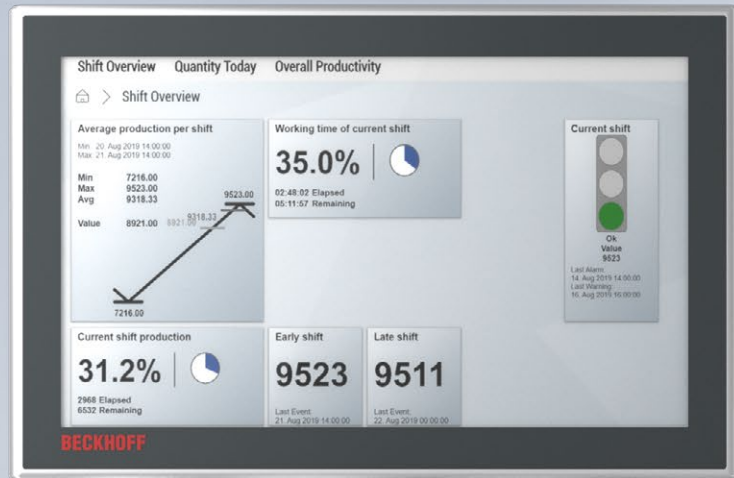


TwinCAT 3 Redundancy: The software  
solutions for increased plant availability

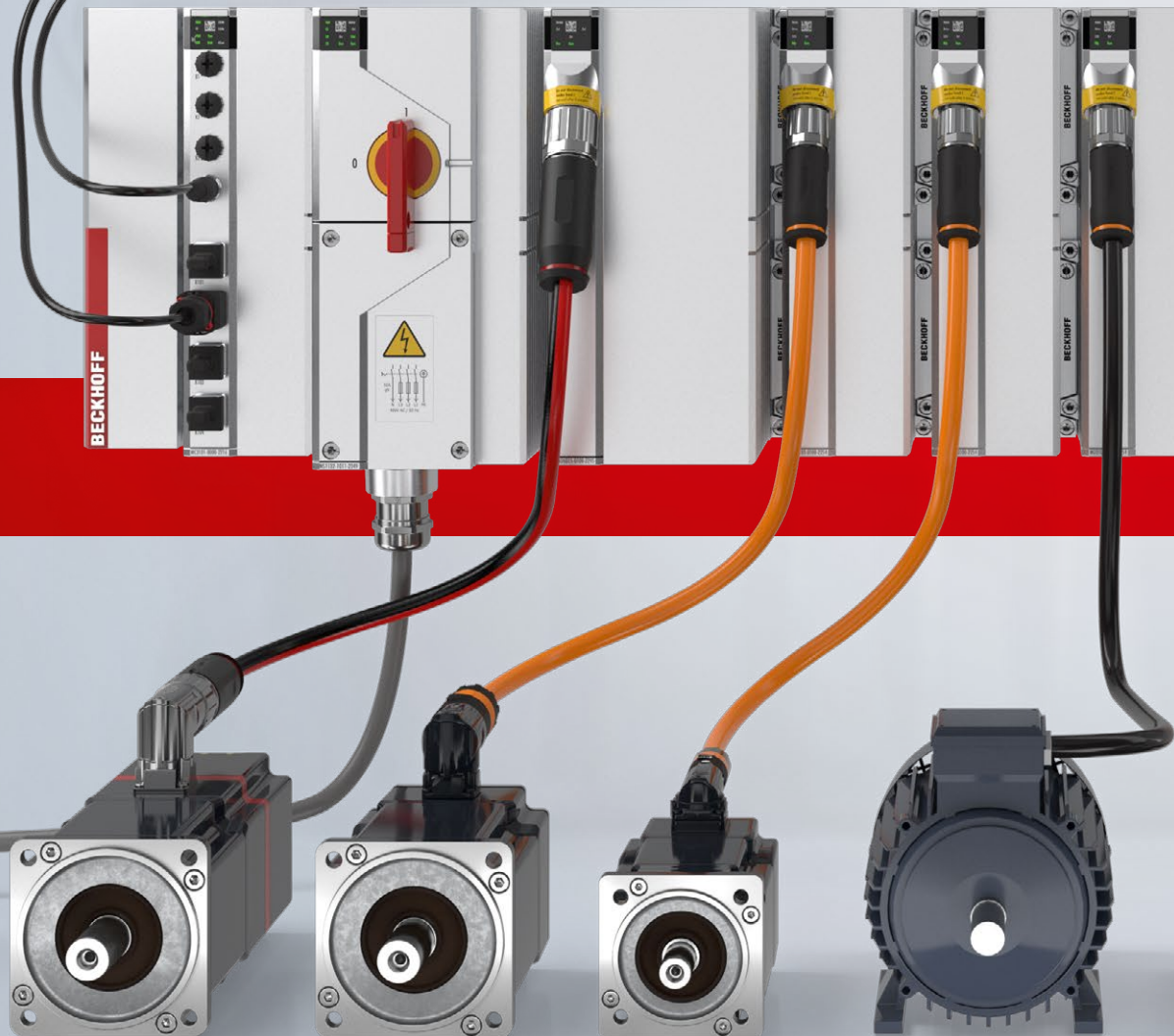


Vision: Complete and system-  
integrated image processing

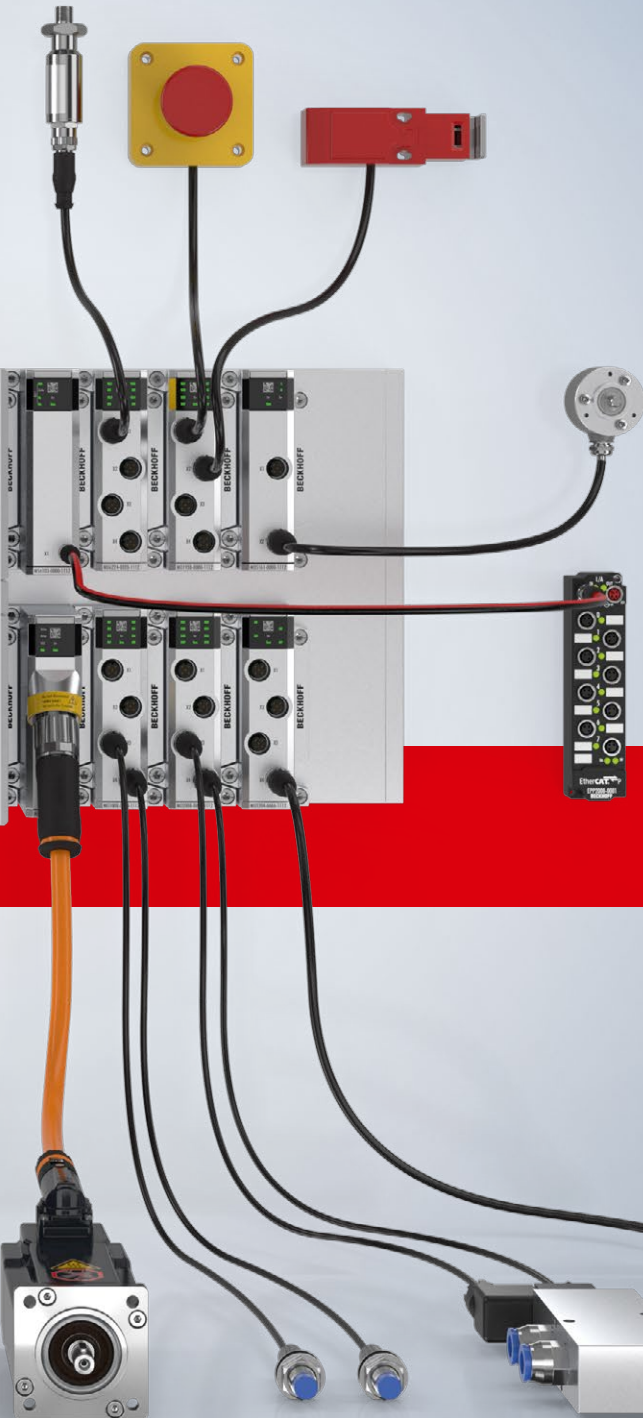
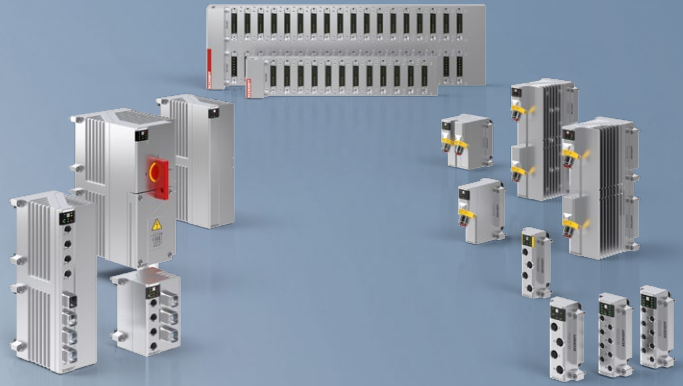
# Machine and plant concepts without control



**MX-System**



# cabinet in IP67



**i** With the new MX-System, Beckhoff is starting a revolution in the automation environment. The holistic, modular and pluggable principle makes it possible to substitute the control cabinet entirely. This means that machines and systems can now be designed and controlled entirely without control cabinets. The MX-System exemplifies system integration of all machine functionalities, as it harnesses all the advantages of PC- and EtherCAT-based control and communication technology, and provides corresponding modules for all control cabinet tasks.

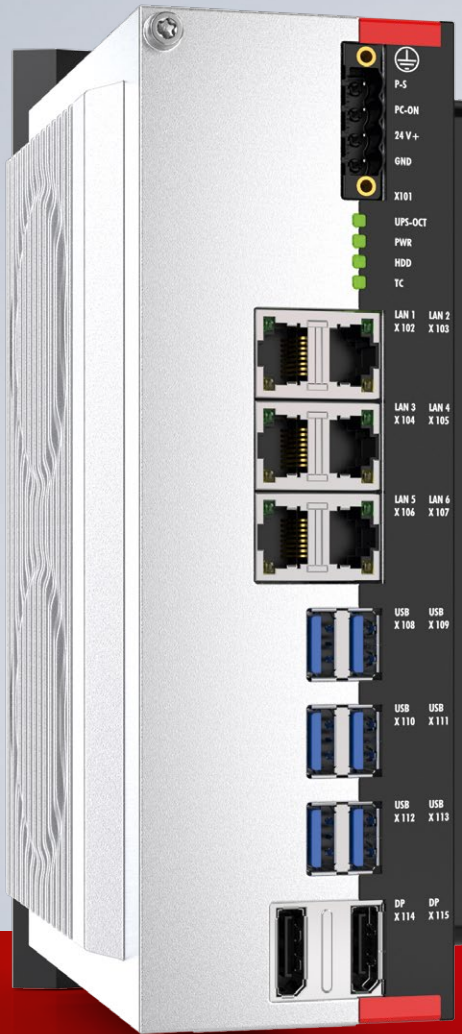
All electronic functionalities of the control cabinet are provided by means of the corresponding connectors on appropriately designed backplanes. The MX-System provides a full range of function modules from the areas of IPC, bus coupler, I/O, motion, relay and system. The combination of baseplate and function modules results in an IP67-protected unit that is optimized in terms of installation space, that combines all control cabinet properties and tasks and can be mounted directly on the machine.

► [www.beckhoff.com/mx-system](http://www.beckhoff.com/mx-system)

## News | MX-System



# Ultra-compact Industrial PC with 12<sup>th</sup> generation Intel® Core™ processors



**i** The addition of the even more powerful C6040-0090 to the ultra-compact C60xx Industrial PC series from Beckhoff is opening up a whole new world of possibilities for users. This leap in performance is achieved through the consistent use of the latest Intel® Core™ processors, now in their 12<sup>th</sup> generation. For the very first time, the Intel® Core™ i7 and i9 processors are built in a hybrid architecture. This combination of performance and efficiency cores allows applications to be implemented on a total of 12 or 16 real cores. While performance cores are primarily suitable for high-performance, single-thread applications, many additional threads can be executed in real-time or in user mode on the additional efficiency cores.

The ultra-compact C6040 is ideal for applications including extensive axis control, complex HMI applications, extremely short cycle times, machine learning, and vision.

► [www.beckhoff.com/c6040](http://www.beckhoff.com/c6040)

## **i** The 11<sup>th</sup> generation of Intel® Core™ processors in ultra-compact Industrial PCs and in Industrial PCs with a 3½-inch motherboard

As the first processor generation with Intel® Speed Shift Technology, which allows the clock frequency of the individual cores to be set individually, the 11<sup>th</sup> generation of the Intel® Core™ processors is available in Industrial PCs with a 3½-inch motherboard as well as in the ultra-compact C602x and C603x Industrial PCs. Even at the base frequency, this new processor generation offers significantly higher computing power in PCs with a 3½-inch motherboard. With the C603x Industrial PCs, even higher CPU performance is possible than with PCs with a 3½-inch motherboard thanks to the more effective cooling. This enables individual configuration of single cores beyond the base frequency in the long term. Regardless of the cooling performance of the individual PC housings, individual cores can be clocked higher from this processor generation onwards if other cores are clocked lower at the same time.

All industrial PCs with Intel® Core™ processors in the 11<sup>th</sup> generation offer USB 3.2 Gen. 2 interfaces with 10 Gbit/s. This makes the USB twice as fast as in previous industrial PC generations.





**i Compact PC control for a wide range of applications**  
 The new CX9240 Embedded PC is a compact, DIN rail-mountable Ethernet control system which also has a 1.2 GHz ARM Cortex™ A53 CPU and represents a further development of the CX9020. The more powerful processor with four cores is used here. The CX9240 features two independent 1 Gbit Ethernet interfaces, which enable significantly higher transfer rates. With 2 GB LPDDR4 RAM, the main memory has also been doubled compared to the predecessor device.

► [www.beckhoff.com/cx9240](http://www.beckhoff.com/cx9240)

## News | Industrial PC

**i A modern CPU architecture and more computing power for compact controls**

The CX82xx Embedded PC series is a further development of the CX81xx series and unites higher computing power with a compact format for a wide range of automation tasks. Equipped with a fast ARM Cortex™ A53 processor with 64 bit architecture, a higher clock frequency of 1.2 GHz and two CPU cores are available for compact controls. This advanced CPU with the same low power consumption expands application options. In addition, the series features the faster 1 Gbit Ethernet interface and the double 1 GB LPDDR4 RAM main memory. Currently, the Embedded PC series includes the following devices:

- CX8200 with Gbit interface,
- CX8210 with Gbit and EtherCAT slave interface,
- CX8280 with Gbit and RS232/RS485 interface,
- CX8290 with Gbit interface and second, switched Ethernet port for various Ethernet protocols.

► [www.beckhoff.com/cx82xx](http://www.beckhoff.com/cx82xx)





**i** End-to-end charging infrastructure communication with the EL6761 charge controller terminal as a communication interface in accordance with IEC 61851 and ISO 15118

With the EL6761 charge controller terminal, Beckhoff enables communication for the charging infrastructure both to the EV (Electric Vehicle) and to the higher-level charging management system. For transporting all necessary data between the car and the charging station, two completely independent communication standards are supported: PWM communication and power-line communication. In combination with OCPP via TF6771 as interface to higher-level controllers, this results in a complete communication system for charging infrastructure applications.

► [www.beckhoff.com/el6761](http://www.beckhoff.com/el6761)

# News | I/O

**i** Running lights or animations: EtherCAT Terminal controls pixel LEDs

The EL2574 enables the control of LEDs with an integrated chip. If these pixel LEDs are connected in a strip or matrix formation, all LEDs can be controlled differently to create effects such as running lights or animations. The EL2574 supports applications like pick-by-light, machine status display, position marking or stage and show.

► [www.beckhoff.com/el2574](http://www.beckhoff.com/el2574)



**i** EPX1058, EPX3184, EPX3158 | 8-channel digital input, 4- and 8-channel analog outputs, Ex i

The blue ELX terminal portfolio is constantly being expanded. Now IP67-protected modules of the new EPX series can also be used for the first time in hazardous areas. An 8-channel digital input and two analog inputs with four or eight channels will be available at the beginning. Thanks to future certification in accordance with ATEX and IECEx, the EPX EtherCAT Box modules meet all industry-specific guidelines for explosion protection and can be used in almost every market worldwide.

► [www.beckhoff.com/epx](http://www.beckhoff.com/epx)



**i** I/O multi-interfaces for universal use

The EL8601-8411 EtherCAT Terminal and the IP67-protected EP8601-0022 EtherCAT Box are multi-interfaces and combine configurable digital and analog inputs and outputs. The digital inputs can also be used for encoders or as counters, for example, and the digital outputs can be implemented as PWM signals. The analog inputs/outputs can be configured as current or voltage signals.

The I/O multi-interfaces offer a compact solution for applications in which only a few complex signals are required. The wide range of possible applications makes it an ideal complement to the CX7000 Embedded PC.

► [www.beckhoff.com/el8601-8411](http://www.beckhoff.com/el8601-8411)  
 ► [www.beckhoff.com/ep8601-0022](http://www.beckhoff.com/ep8601-0022)





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

ATRO



## News | Motion

**i** 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.

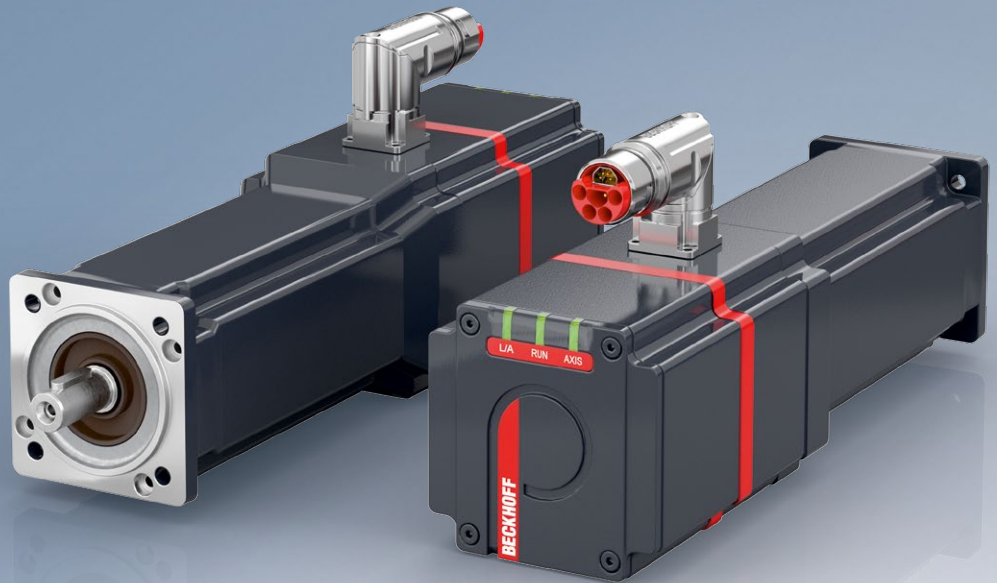
► [www.beckhoff.com/atro](http://www.beckhoff.com/atro)



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



The internal media feed allows endless rotation for all axes.

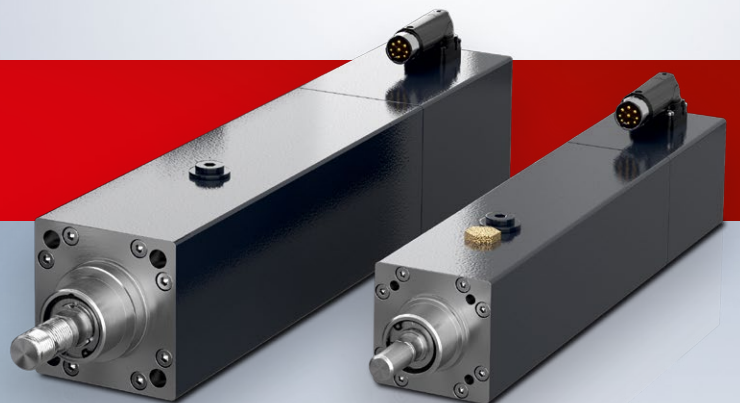
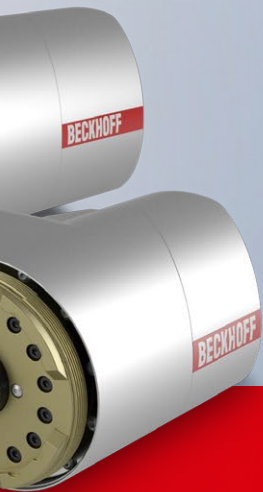


**i** AMP8500 | Synchronous Servomotors with increased rotor moment of inertia and with integrated servo drive

The AMP8500 series extends the AMP8000 range of distributed servo drives with a complete series with increased rotor moment of inertia for applications with large loads and requirements for high synchronization.

The new series covers a wide performance range with three sizes and up to three lengths with standstill torques ranging from 1.36 to 11.80 Nm. Due to the high rotor inertia, the control of the AMP8500 is simplified in areas where a high external inertia has to be moved, since the distributed servo drives tend to vibrate less and can be adjusted much more easily. The 24-bit SIL 2 safety encoder is integrated as standard for high-precision applications.

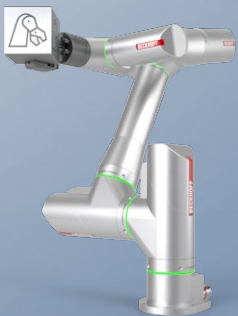
► [www.beckhoff.com/amp8500](http://www.beckhoff.com/amp8500)



**i** AA3100 | Electric cylinders for compact drive technology

The electric cylinders of the AA3100 series are ideally suited as direct drives for linear applications with high process forces and speeds. The advantages with regard to force, dynamics and compactness meet the advantages of servo technology such as controlled positioning, safe holding at a standstill and high energy efficiency. The new series for the extra-low voltage range from 24 to 48 V DC extends the range of applications for electric cylinders into compact drive technology. The two flange sizes provide a peak force of 2500 to 11,600 N and a maximum speed of 0.12 to 0.56 m/s, depending on the lead.

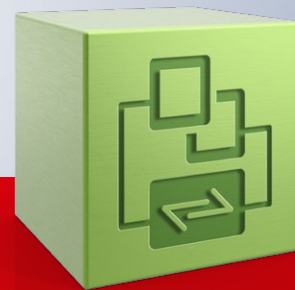
► [www.beckhoff.com/aa3100](http://www.beckhoff.com/aa3100)



Optimally matched software and hardware components from a single source



# Redundant controller operation with TwinCAT 3 Controller Redundancy



**i** When it comes to redundant controller operation, TF1100 TwinCAT 3 Controller Redundancy with its system-integrated software solution allows two standard industrial PCs to be operated as redundant controllers that both run the same PLC program in just a few steps. An additional, high-performance network connection between the two controllers provides the necessary data synchronization, and the fact that standard Ethernet is used means no additionally developed dedicated hardware components are required. With virtually no effort at all, this ensures that only one of the two industrial PCs addresses the fieldbus components at any given time and that the control programs are executed on both computers with the same database. If one controller fails, the second controller seamlessly takes over, preventing

plant downtime and data loss. Communication with higher-level systems is enabled transparently with TwinCAT Controller Redundancy, so that they are always communicating with the principal system. It is also possible to target both controllers at the same time for tasks that include monitoring the device status for diagnostic purposes.

- ▶ [www.beckhoff.com/tf1100](http://www.beckhoff.com/tf1100)
- ▶ [www.beckhoff.com/redundancy](http://www.beckhoff.com/redundancy)



# Optimized communication with charging stations for electric cars



## News | TwinCAT

**i** With the TF6771 TwinCAT 3 IoT OCPP, the IoT product portfolio is expanded by the Open Charge Point Protocol (OCPP) on the basis of the WebSocket protocol, which has recently been introduced for the IoT driver. OCPP standardizes the communication between charging stations for all types of electric vehicles and the associated central management systems (CSMS). OCPP is implemented as a C++ driver with the associated PLC library as wrapper and can therefore be used in classic PLC projects as well as in custom C++ applications. OCPP versions 1.6 and 2.0.1 are primarily implemented here on account of their market relevance.

The OCPP product addresses two use cases for the control: In the first use case, TwinCAT is used as a control for a charging station in conjunction with the

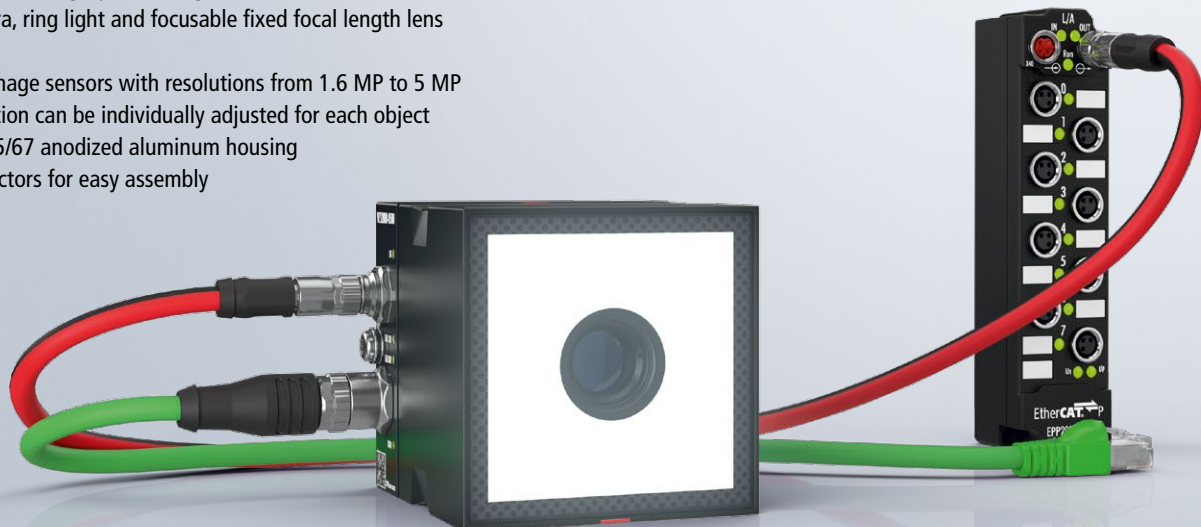
new EL6761 terminal before being connected to a CSMS as an OCPP client. In this case, communication between the charging station and the car is executed by the EL6761 via powerline communication in accordance with ISO 15118. The second use case, conversely, focuses on connecting other charging stations via the OCPP protocol; in this case, TwinCAT represents part of the CSMS and provides local load management for a charging station network, for example. In this case, too, TwinCAT may still be connected to a remote CSMS in parallel to facilitate location-independent functions such as authentication or invoicing mechanisms, and much more besides.

► [www.beckhoff.com/tf6771](http://www.beckhoff.com/tf6771)



**Start directly into industrial image processing with the unit**

- unit consisting of camera, ring light and focusable fixed focal length lens with liquid lens
- color or monochrome image sensors with resolutions from 1.6 MP to 5 MP
- multicolor LED illumination can be individually adjusted for each object
- enclosed in elegant IP65/67 anodized aluminum housing
- laterally oriented connectors for easy assembly



# Vision: Complete and system-integrated machine vision

**i** The balanced hardware portfolio for machine vision allows complete system integration from a single source. It includes area-scan cameras, the rugged C-mount lenses, multicolor LED illumination in bar, panel and ring designs and complete units consisting of camera, illumination and focusable optics. All components can be easily integrated into both new and existing control environments, as well as optimally synchronized with all machine and plant processes.

## Full scalability of the vision system

All components are optimally matched to each other and can be combined according to the modular principle to suit the vision application. The flexibility and scalability make it easy for users to start their own vision applications, implement them efficiently, and expand them further. For simple integration, including into existing control systems, the unit is available as a complete solution consisting of a camera, illumination, and focusable lens.

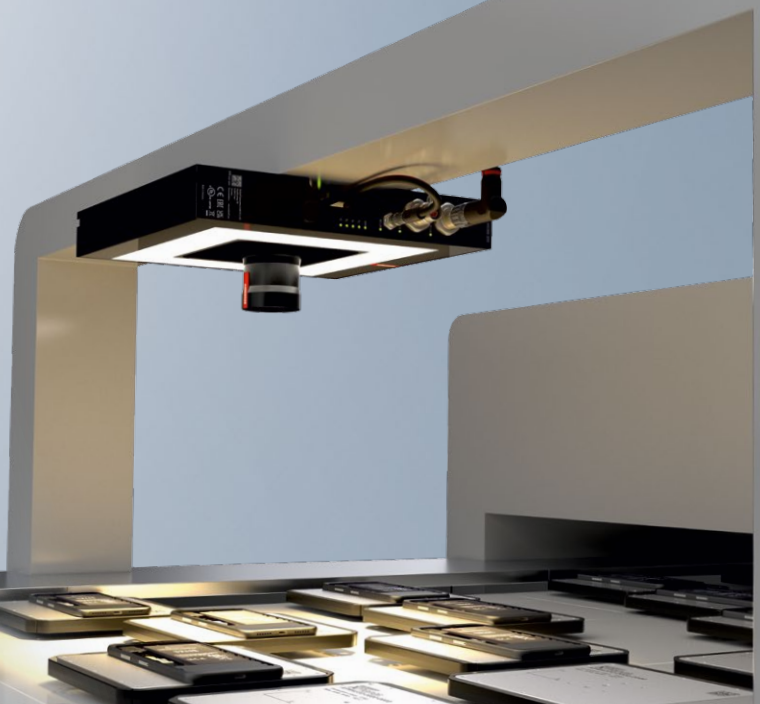
► [www.beckhoff.com/vision](http://www.beckhoff.com/vision)



## News | Vision

### Full synchronization with all EtherCAT-based machine processes via distributed clocks

- cost-effective use of the high transmission rate of 2.5 Gbit/s
- faster response times thanks to industrial LAN technology for any cable length
- optimally matched to the powerful industrial PCs
- efficient interaction of all system components for maximum productivity



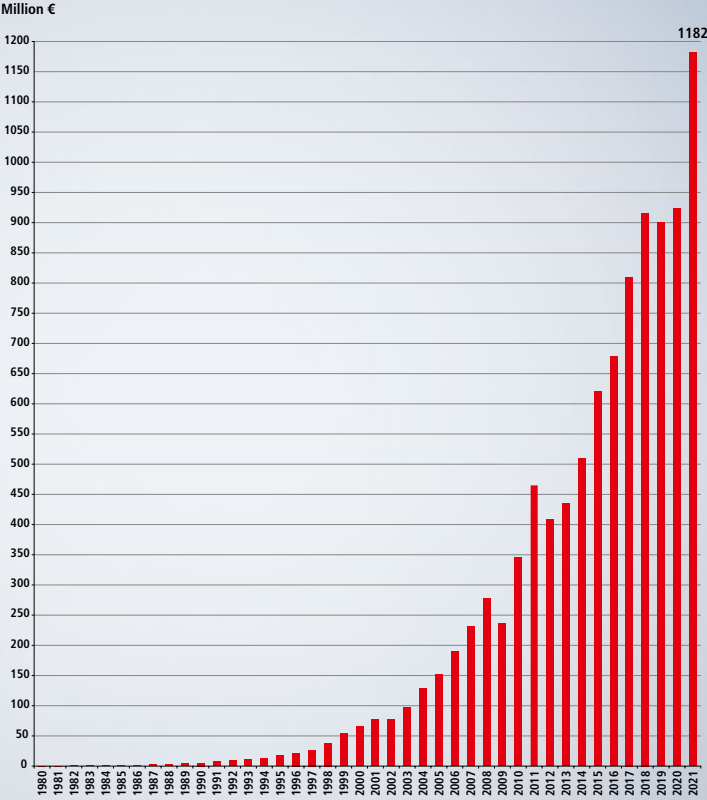


# New Automation Technology



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.

## Beckhoff Automation



Sales from 1980 through 2021.  
Status: March 2022



### Global presence

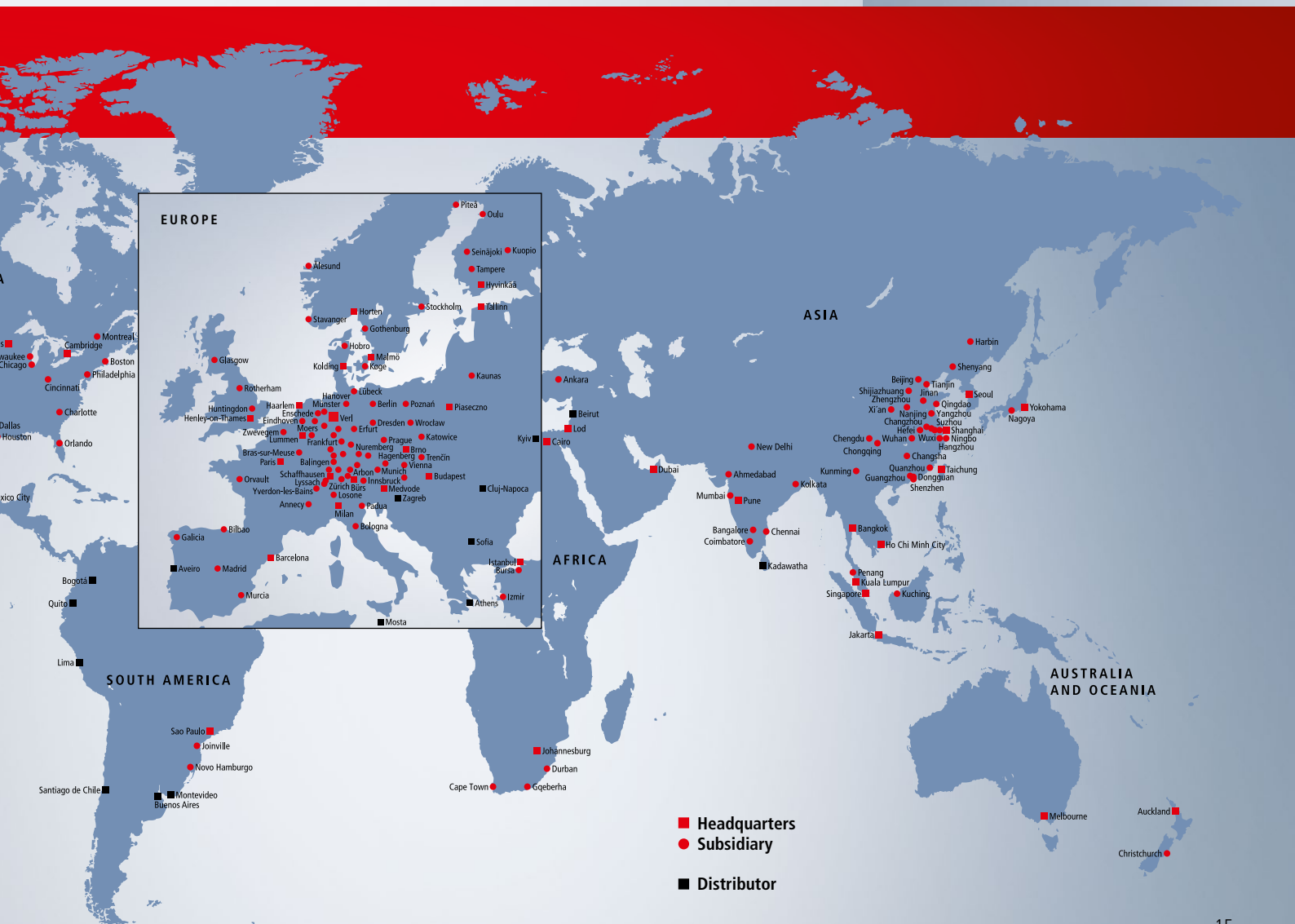
The central divisions of Beckhoff, such as development, production, administration, distribution, marketing, support and service are located at the Beckhoff Automation GmbH & Co. KG headquarters in Verl, Germany. Rapidly growing presence in the international market is taking place through subsidiaries. Through worldwide co-operation with partners, Beckhoff is represented in more than 75 countries.



### Beckhoff Automation at a glance

- 2021 global sales: €1.182 billion (+28%)
- Headquarters: Verl, Germany
- Managing owner: Hans Beckhoff
- Employees worldwide: 5,000
- Engineers: 1,900
- Subsidiaries/representative offices worldwide: 39
- Sales offices in Germany: 24
- Representatives worldwide: >75

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.





All Information:

► [www.beckhoff.com](http://www.beckhoff.com)

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