

TwinCAT/BSD: New operating system for Beckhoff Industrial PCs

## Multi-core-capable, Unix-compatible operating system for TwinCAT 3 real-time applications

TwinCAT/BSD provides an alternative operating system for all of the latest Beckhoff Industrial PC platforms. TwinCAT/BSD combines the TwinCAT runtime with FreeBSD, an industrial proven and reliable open source operating system. FreeBSD is Unix-compatible and is continually being developed further, improved and optimized as an open source project by a large group of developers. The system – and thus also TwinCAT/BSD – supports both 32- and 64-bit platforms and makes scalable systems possible in a wide range of CPUs from ARM to Intel® Xeon® CPUs.

The current minimum size of a basic image is around 300 MB, with a very small RAM consumption of less than 100 MB. Therefore, very compact controllers can be realized with TwinCAT/BSD and all TwinCAT 3 runtime functions can be used. The programming is still carried out on a Windows development computer and with TwinCAT 3 XAE integrated in Visual Studio®.



TwinCAT/BSD is designed as a successor to Windows CE for Beckhoff Industrial PCs, but is also suitable in many applications as an alternative to the more complex Windows 7 and 10 operating systems.

# TC/BSD



The new TwinCAT/BSD operating system offers multi-core support, making it possible to reserve individual cores exclusively for TwinCAT if required. In addition to a large number of FreeBSD and Linux programs, TwinCAT functions can also be installed via the Beckhoff Package Server. Moreover, uncomplicated updates of the operating system and the TwinCAT runtime are possible in this way via the network.

More information:

[www.beckhoff.com/twincat-bsd](http://www.beckhoff.com/twincat-bsd)

EL51xx: EtherCAT I/O series extended by four highly compact, high-performance terminals

## Compact and cost-effective analysis of incremental signals

The four new EtherCAT Terminals acquire incremental signals with high frequencies up to 5 MHz and feature numerous parameterization options and integrated functions that enable optimum adaptation to control tasks.

Each EtherCAT Terminal offers an integrated sensor supply, parameterizable to 5, 12 or 24 V. Encoders with differential RS422, 5 V TTL or open collector interface can be connected. Based on internal pull-up resistors, no external wiring is required for open collector analysis. Additional 24 V digital inputs are used to save, lock and set the counter value. A wide range of integrated functions, such as rotary axis functionality, workpiece measurement and standstill mon-

itoring, also enable data pre-processing directly in the terminal. Beyond that, the measurement of period, frequency and speed with a resolution of 10 ns is also available. In addition, a duty cycle measurement of the incoming signal is implemented. Due to the optional interpolating micro-increment functionality, the terminals can determine even more precise axis positions for dynamic axes. The synchronous reading of the position values with other process data in the EtherCAT system is realized via the high-precision EtherCAT distributed clocks. This enables simple and precise synchronization of controller tasks.

EP7402: IP67 EtherCAT I/O  
for conveyor control

## Integrated compact motor controller reduces cabling effort and increases diagnostic capabilities for roller conveyor systems

The EP7402 EtherCAT Box from Beckhoff boosts efficiency and space savings in roller conveyor systems.

With the new EP7402 EtherCAT Box from Beckhoff, the control architecture and cabling of roller conveyor systems become significantly more efficient. With the high IP67 protection rating, this compact motor controller for BLDC motors is ideally suited for conveyor tasks in intralogistics and assembly technology as well as in the packaging, food and beverage industries.

The EP7402 EtherCAT Box offers two outputs with integrated motion controller for the direct connection of 24 V DC conveyor roller motors or other BLDC motors (up to 3.5 A). Eight additional digital inputs/outputs enable connection of e.g. photoelectric switches and communication between the different box modules in operation without a PLC. The EP7402 takes over the complete control of a roller motor independently of the conveyor or motor manufacturer. The control of the motors is sensorless. Maximum rated current, acceleration or deceleration ramps and various other parameters can be configured, allowing optimal adaptation to different applications.

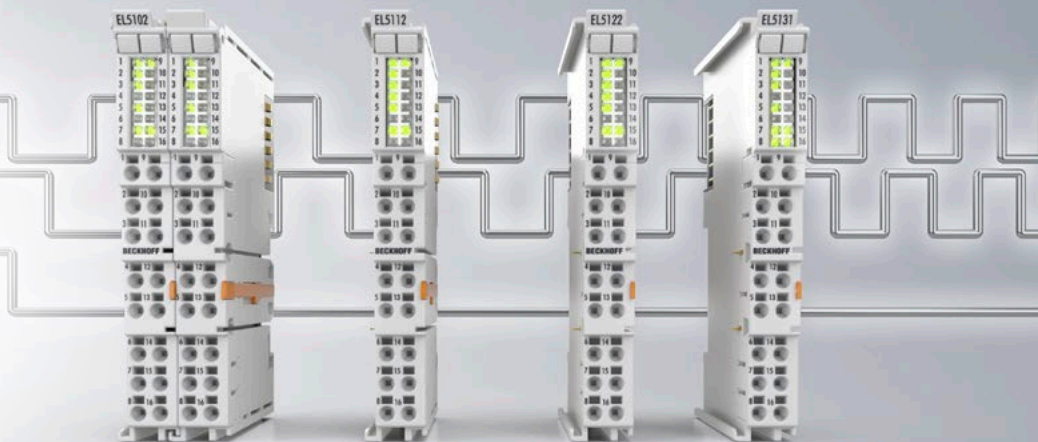
In conveyor operation the EP7402 can also be operated without a PLC and provides functions such as Zero Pressure Accumulation (ZPA), single or block discharge. Further EtherCAT devices such as digital and analog I/Os, barcode readers or safety devices can be connected to the additional EtherCAT junction. The EtherCAT Box with IP67 protection rating measures only 174 mm x 60 mm x 36.5 mm and can be easily mounted in standard C-channel or L-brackets on the conveyor frame. It requires no additional protective covering, which saves additional installation space. Power supply and EtherCAT communication take place via a single cable with a B23 ENP hybrid connector (28 A/45 °C current carrying capacity).

More information:

[www.beckhoff.com/ep7402](http://www.beckhoff.com/ep7402)

The EL51xx series is extended by the following EtherCAT Terminals:

- EL5102: 2-channel incremental encoder interface, 5 V (RS422, TTL, open collector)
- EL5112: 2-channel incremental encoder interface, 5 V (2 x AB or 1 x ABC RS422, TTL, open collector)
- EL5122: 2-channel incremental encoder interface, 5 V single-ended (TTL, open collector)
- EL5131: 1-channel incremental encoder interface, 5 V with two parameterizable 24 V DC outputs



More information:

[www.beckhoff.com/el51xx](http://www.beckhoff.com/el51xx)