



## SPS/IPC/DRIVES 2008

- Between November 25 and 27, 2008, around 1,400 exhibitors will present advanced products, technology trends and solutions at SPS/IPC/DRIVES in Nuremberg, Germany. The fair covers 11 exhibition halls with a total floor area of more than 90,000 m<sup>2</sup>. The complete range of Beckhoff products and PC-based and EtherCAT-based automation solutions will be on display at the 1,000 m<sup>2</sup> Beckhoff booth in Hall 7, Booth 406. The trade show booth is split into different sections for IPC, I/O, Motion and Automation, plus the Solution Forum, where industry-specific solutions will be shown.

### IPC | Intel® Atom™ and Core™2 Quad processors for finer scaling of PC-based control technology

The new generation of Intel® processors further enhances the scalability of PC-based control technology. "High Performance – Low Power" is the motto of the Industrial PCs with Intel® Atom™ CPU processors. Due to their low processor power consumption, these moderately priced controllers can be very compact and offer great potential for optimizations in a wide range of applications.

Atom™ processors, currently Intel's smallest CPU chip, make their entrance in a wide range of products. The highlight among the IPCs is the new C6915 control cabinet PC with 1.1 or 1.6 GHz Intel® Atom™ processor. It is the smallest Beckhoff IPC, measuring only 47 x 157 x 116 mm (W x H x D). Atom™ processors are also integrated in the CP62xx built-in Panel PC series and the CP77xx Panel PC series. New Industrial PCs with Intel® Core™2 Quad extend the performance range even higher. These multi-core processors for particularly "performance-hungry" controllers, such as Motion Control applications with many servo axes, are integrated into the new C6640 and C6650 IPCs, for example. For RAID systems, the C6650 includes two hard drive frames for SATA drives. The highly flexible control cabinet IPCs are equipped with the new Beckhoff CB1052 ATX motherboard for Core™2 Quad processors with GM45 (Montevina) chipset, which will also be used in other Beckhoff IPCs.

### Embedded PC | Even more compact with Atom™ processor

The new CX5000 Embedded PC series is also based on the Atom™ processor. In terms of performance, this series with ultra compact design is positioned between the CX1010 und the CX1020. The CX5000 is available in two versions: the CX5010 is equipped with a 1.1 GHz Atom™ processor, the CX5020 with a 1.6 GHz Atom™ processor. The CX5000 series integrates interfaces for either Bus Terminals or EtherCAT Terminals.





## CP-Link 3 | Ethernet-based multi-display link

At SPS/IPC/DRIVES 2008, ten years after the introduction of CP-Link technology, Beckhoff will present CP-Link 3, the next generation operating and visualization concept. CP-Link 3 is a pure software solution based entirely on standard hardware (100 Mbit/s Ethernet) and IP-based protocol for real-time transfer of image data. Networking can be done using cost-effective standard Ethernet cables (CAT 5), which are suitable for drag chains.

The screen content is recorded via a virtual graphics adapter on the host PC and sent via Ethernet to one or several Beckhoff Ethernet Panels or Panel PCs with Windows operating system (Windows CE, XP Embedded, XP). For display communication, TCP/IP or UDP/IP (Multicast) can be configured, depending on the operating mode. Up to 255 panels can be connected via different operating modes: single, extended or multi-desktop. As yet another highlight, CP-Link 3 also transfers USB, in addition to image data. "Virtual USB" emulates a USB root hub in the host PC (see page 16).

## XFC – the 100 $\mu$ s class of performance

Advanced Industrial PCs, ultra-fast I/O terminals, EtherCAT and TwinCAT automation software form the basis for XFC – eXtreme Fast Control Technology. XFC permits high-speed machine control systems with response speeds up to ten times higher. This leads to better control quality and faster sequences on the machine, so that the material, energy and production efficiency is significantly optimized. Special auxiliary controllers and expensive instrumentation interfaces can now be replaced with standard, cost-effective I/O terminals.



## EtherCAT Terminals | Power over EtherCAT and other functional extension options

The EtherCAT Terminal system from Beckhoff optimally supports the technological features of EtherCAT. To this end, the I/O system has been complemented with additional terminals: the EK1132 EtherCAT branch terminal supports Power over EtherCAT, based on the IEEE standard 802.3af. A standard EtherCAT/Ethernet cable is used for the fieldbus signal and the power supply. EtherCAT sensors up to 15.4 Watts can be connected to the EK1132. When using TwinCAT as the EtherCAT master, the EK1132 also supports coupling and uncoupling of EtherCAT devices during operation (Hot Connect) (see page 19).

With the EtherCAT distributed clocks, all devices in an EtherCAT network can be synchronized with a tolerance of less than 100 ns.

With the new EL6688 communication terminal, synchronization according to the IEEE1588 standard can also take place across sites and locations, so that different machines, system components or production lines can be synchronized with each other or with an external clock – for example a GPS receiver – with high precision. In this way, a high-precision, technology- and vendor-independent global timebase is available that can be used for time stamping of measured data, for example (see page 12).



Further EtherCAT Terminals, such as the EL6851 DMX master terminal for lighting and stage equipment and the EL2902, a 2-channel version of the TwinSAFE digital output terminal with an output current of 2.3 A, complement the product range. The EL2902 is suitable for hydraulic valves and power contactors, for example. In terms of cost optimizations, the EtherCAT I/O system has been extended with the EL6002 (RS232) and EL6022 (RS485) serial interfaces and the 2-channel EL5002 SSI encoder interface.



## Water- and dust-proof EtherCAT I/Os

The Beckhoff EtherCAT system has been expanded with new IP 67 modules. In parallel with the Beckhoff EtherCAT Terminals, all modules have a direct EtherCAT interface. The high performance of EtherCAT is therefore maintained right down to each IP 67 box. With dimensions of only 126 x 30 x 26.5 mm (H x W x D) the modules are exceptionally small and are particularly suitable for applications where space is tight. The EtherCAT connection is established via screw connectors.

## Scientific Automation: instrumentation integration

The Beckhoff I/O systems have also been complemented for measuring applications: the "digital multimeter in a Bus Terminal" for current and voltage measurement can process measurement readings directly in the I/O system or from the higher-level control system. The use of the new Beckhoff KL3681 I/O terminal (Bus Terminal) and EL3681 (EtherCAT Terminal) significantly increases flexibility thanks to the wide range input and automatic measuring range selection. High precision and simple, high-impedance measurement from 30 mV to 300 V allows the Bus Terminal to be used like a modern digital multimeter (see page 9). The new EL3201-0010/-0020 PT100 terminals are designed for high-precision temperature measurement with an accuracy of 0.04 K. They offer an ideal solution for high-performance and high-precision instrumentation.

Instrumentation is also increasingly becoming an integrated component of the software PLC. TwinCAT Scope 2 is the new software oscilloscope for the suite of automation software from Beckhoff. Graphic display of curves is essential for optimizing controllers and setting drive axes. In order to utilize the extended graphics features of new PC generations, including DirectX, Beckhoff has redesigned the scope software for the TwinCAT software suite, which was originally developed several years ago. The system's simple configuration, advanced graphics and functional extensions offer a robust foundation for measuring tasks (see page 8).

### The main information at a glance:

- | SPS/IPC/DRIVES 2008, Nuremberg Exhibition Center, Germany
- | November 25 – 27, 2008
- | Opening hours:
  - Tuesday, 9 am – 6 pm
  - Wednesday, 9 am – 7 pm
  - Thursday, 9 am – 5 pm

| Beckhoff main booth: Hall 7, Booth 406

### Beckhoff at partner booths:

- | EtherCAT Technology Group, Hall 6, Booth 208
- | PROFIBUS user organisation, Hall 6, Booth 210
- | PLCopen, Hall 7, Booth 660

Further information:

- [www.beckhoff.com/sps](http://www.beckhoff.com/sps)
- [www.mesago.com/sps](http://www.mesago.com/sps)