The new AX8000 multi-axis servo system, with a compact form factor for space-saving control cabinet installation, enables high-precision positioning and machining processes with extremely short control cycles. Additional features include fast installation and commissioning by simply plugging together the desired axis modules, as well as One Cable Technology (OCT) and the direct integration of safety functionality and mains filters.

Beckhoff Drive Technology: AX8000, the new high-performance, multi-axis servo system

Compact multi-axis system with maximum control speeds, plus fast installation
The new AX8000 is designed as a drive controller that is suitable for meeting high requirements with regard to control speed and accuracy, as well as optimized utilization of space. The dynamic multi-axis system has a modular design and includes various supply modules, single and double-axis modules, and a capacitor module. With a height of just 230 mm and a width of either 60 or 90 mm, the individual AX8000 modules and the complete AX8000 multi-axis systems are exceptionally compact, which facilitates space-saving and cost-effective design of control cabinets and switchgear enclosures. Fast and simple installation of the components enable further cost reductions.

Fastest possible performance with highly precise positioning
The EtherCAT-based AX8000 compact drive system combines powerful FPGA technology with multi-core ARM processors. FPGA-based control algorithms with multi-channel current control technology enable sample and response times of less than 1 µs for current control as well as velocity control cycle times as low as 16 µs, depending on the configured switching frequency. The minimum EtherCAT cycle time is 62.5 µs. For motion applications this means that, with this powerful new Drive Technology system from Beckhoff, the fastest possible control performance and high-precision positioning can be achieved, along with an increased contour sharpness in processing and higher production output, boosting the bottom line.

Modular system design caters to a wide range of applications
Two 60 mm and two 90 mm wide power supply module variants are available for different worldwide voltage systems: 100 to 230 V AC with 20 or 40 A for Asia and North America as well as 400 to 480 V AC with 20 or 40 A for Europe and North America. A brake resistor, brake chopper, and mains filter are integrated in all four versions. Therefore, no further external components are required, which reduces both the variability of parts and space requirements.

In order to implement the desired axis configurations, a 60 mm wide single-axis module with a rated current of 8 A and an equally wide double-axis module with 2 x 6 A are available along with a 90 mm single-axis module with a rated current of 18 A. Considerably lower rated motor currents are covered via the scalable motor current measurement. The one-cable solution OCT (One Cable Technology), for which the AM8000 servomotor series is optimized for, is used as the efficient feedback and connection system. Additionally, the AX8000 system provides four digital inputs per axis – two of them preconfigured for onboard safety functions.
**Simplified logistics and installation**

The AX8000 simplifies logistics and inventory management – through the integration of a mains filter and brake resistor, for example, and through the use of fewer, more flexible system components. Due to the highly scalable motor current measurement, a comprehensive range of applications can be completely covered just with 8 and 18 A modules, effectively reducing the usual required assortment of different module types.

The TwinCAT runtime integrated into the AX8000 series provides convenient software modules, among other things, for highly precise control of speed and position. The customer can program Motion Control objects using IEC 61131-3 languages, C++, and MATLAB®/Simulink®. Efficient diagnostic tools are provided in the TwinCAT Scope software oscilloscope and the axis optimization functions provided with TwinCAT Bode Plot.

Fast and efficient installation is enabled by the integrated AX-Bridge quick-connection system, which connects the AX8000 modules in a fail-safe manner, all without tools by means of spring force accessories. This bridges the DC Link, 24 V DC, and the EtherCAT connection. Other useful features include centring for easier alignment of the axis modules and the simple connection of motors via One Cable Technology with a quick-connector, driving reductions in the number of required cables.

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**Further information:**

www.beckhoff.com/AX8000

**Product announcement**

Estimated market release: 3rd quarter 2015