

Ethernet I/Os for robot control system

→ As one of the top manufacturing countries in the world, Japan is naturally one of the biggest markets for control systems in the world. However, foreign manufacturers are still finding it difficult to establish a foothold in Japan, with Mitsubishi Electric and Omron dominating approximately 75 % of the Japanese PLC market. Beckhoff has been represented in Japan since 2004 through the Tokyo-based company K.MECS Co. Ltd. and has already had some successes. One example is a robot control automation project for Kanto Seiki.



Masahiko Hashizume, director of the development division at Kanto Seiki, presented his PC-based robot control system at Jimtof, the largest trade show for the machine tool sector in Japan.



Kanto Seiki Co. Ltd. developed the Ethernet-based robot control system with BK9000 for robots with 4 to 6 axes.

Kanto Seiki Co. Ltd. is based in Maebashi-Shi, 100 km north of Tokyo, and specializes in material handling systems. In cooperation with Denso, a global supplier for the automotive sector, Kanto Seiki developed PC-based robot controllers (type RC5 and RC7) that are specially designed for robots with 4 to 6 axes, featuring limited I/O options for controlling peripheral devices (robot arms, etc.). Additional I/Os are required if a larger number of peripheral devices are to be integrated. The conventional solution was not flexible enough and too expensive, so Masahiko Hashizume, director of the development division at Kanto Seiki, started looking for an alternative I/O system. He was delighted when he discovered Beckhoff Bus Terminals at a trade show: "While modular I/O systems were already available in Japan, most of them required backplanes and quite a bit of space. In contrast, the modular Bus Terminals from Beckhoff are very compact."

Kanto Seiki therefore decided to use the Bus Terminal system with Ethernet networking. The BK9000 Ethernet Bus Coupler is connected via the Ethernet port on the robot or with a higher-level controller. This enables additional modular I/Os to be added as required. Conventional LAN components can be used for the wiring. Kanto Seiki uses Modbus TCP as their Ethernet protocol. A robot control software library was developed as an application aid for the BK9000.

The new robot control system was presented at Jimtof, the largest trade show for the machine tool sector in Japan. "The feedback exceeded our expectations," said

Hashizume and continued: "Many visitors, including Denso were impressed by the Ethernet-based robot system utilizing the BK9000. Initially, Denso was sceptical about I/O connections via Ethernet because in the past, they had used Ethernet only for communication systems and were not convinced about the reliability of the system. The application presented at the trade show demonstrated the reliability of Ethernet in practice."

Toshiyuki Kameda, managing director of K.MECS, the Japanese distribution partner of Beckhoff, considers the success of Beckhoff technology against the background of Japan's history and its special market mechanisms. Japan has a very traditional attitude. Historically, the country only opened up to the West under pressure, with associated consequences for technological development. "Today, Japan has become a modern culture," said Toshiyuki Kameda, "and I am optimistic that Beckhoff technology will be able to break into and revive the Japanese market."

→ Kanto Seiki Co. Ltd. www.kantoseiki.co.jp

→ K.MECS Co. Ltd. www.kmecs.com