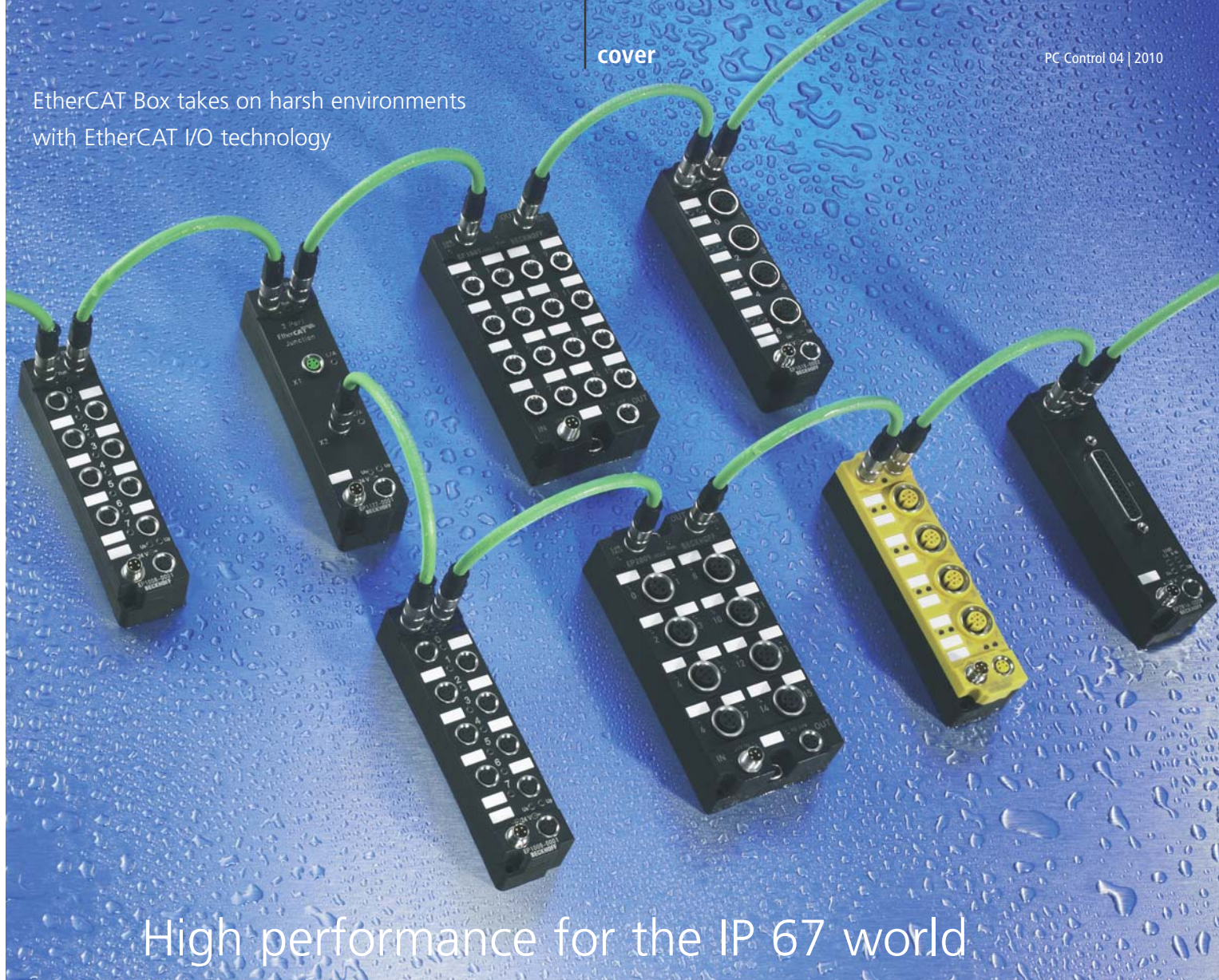


EtherCAT Box takes on harsh environments with EtherCAT I/O technology



High performance for the IP 67 world

In an interview with Stefan Ziegler, editor-in-chief of Elektro Automation, Dirk Bechtel, Product Manager for fieldbus systems at Beckhoff, describes the technical highlights and practical advantages of the EtherCAT Box, with which the high performance of EtherCAT can also be used in environments that require IP 67 devices. Along with numerous new items at the SPS/IPC/DRIVES trade show, this system is an ideal supplement to the EtherCAT I/O portfolio.

With the EtherCAT Box, Beckhoff has “transferred” the EtherCAT Terminals from the IP 20 to the IP 67 world. What are the special features and unique selling points of the system and which applications lend themselves to its use?

Dirk Bechtel: The EtherCAT Box integrates the well-known and the proven: the IP 67 technology familiar from the original Beckhoff Fieldbus Box, our know-how with all major signal types and the fast and flexible EtherCAT system. Put simply, we have placed our IP 20 EtherCAT terminals in a waterproof and dustproof package. The user, for example the machine manufacturer, does not have to give any consideration to lower-level subsystems, data consistencies, transmission bandwidths, topologies, etc. when designing. In an ideal case, only the absolute necessities remain in the control cabinet; the complete I/O infrastructure can be built directly

into the machine. Of course, this is particularly advantageous where space in the control cabinet is at a premium – the classic case for the use of IP 67 I/Os – or where mechanical machine units are to be docked or undocked. This is made possible by the Hot Connect modules. Example applications are packaging plants, assembly machines or conveyor systems. From a purely practical point of view, it has proven to be the case so far that mainly digital and analog inputs and outputs are used in the field. However, more complex technologies such as the EP7041 Stepper Motor Box or serial interface modules such as the EP6002 are being increasingly used. Also, infrastructure modules such as the EP1122 Junction Box allow a much more flexible machine structure. All things considered, IP 20 solution from Beckhoff is optimally supplemented with an IP 67 counterpart.

What are the technical highlights of the EtherCAT Box and in particular the current new solutions at the SPS/IPC/DRIVES show in November 2010?

The main highlight is the consistent integration of EtherCAT into each individual box in a small housing size. The complete integration of EtherCAT technology, including Distributed Clocks, Hot Connect, Time Stamp and so on enables the seamless use of this technology outside the control cabinet. Alongside an incremental encoder box and an analog input/output box, we will also present new IP 67 safety variants at SPS/IPC/DRIVES in Germany. In order to also use the EtherCAT Box in other environments, which has been requested by many users, we have extended the operating temperature range to well below zero (Celsius).

With regard to engineering and installation, are there any special advantages associated with the predefined cable sets or plug connectors, and why is Beckhoff using M8 plug connectors as the connection method?

The use of prefabricated cable sets essentially gives you the following advantages: time savings when cabling, avoidance of wiring errors and

savings on maintenance efforts. The M8 plug connector is increasingly being used in newer installations, by the way: one plug – one signal, while the M12 is standardized in certain industries. We didn't want to "rock the boat," which is why we support both variants. The available space was the decisive factor for the EtherCAT cabling. Two M12 plug connectors would simply not have fit into the given basic format of the boxes (126 x 30 mm). Thanks to the screened plugs of the M8 EtherCAT connections in conjunction with suitable Ethernet cables, we can also guarantee a distance of 100 m between two EtherCAT Box Modules. The same applies here: of course the users themselves can manufacture the cables as required using cable sold by the meter and plugs that can be assembled in the field, but the majority of customers use our wide range of prefabricated cables in the widest variety of lengths and cable materials.

EtherCAT Box www.beckhoff.com/EtherCAT-Box

Stefan Ziegler
Editor-in-chief, Elektro Automation, Germany



Dirk Bechtel, Product Manager Fieldbus Systems: "Thanks to the integrated EtherCAT interface, the modules can be connected directly to an EtherCAT network without an additional coupler box; the high performance of EtherCAT is retained into each IP 67 box. Each box is an autonomous EtherCAT slave that is connected directly to an EtherCAT controller via an Ethernet cable with 100Base-TX."

