The PN/CAN gateway from Helmholz impresses drive technology specialists

Yes we CAN – Solutions for field bus communication

Compact and cost-effective, CANopen has prevailed as a preferred protocol in drive technology for good reason. For the integration of corresponding components into machine environments, however, this focus by drive manufacturers on individual bus systems can represent an obstacle if Profibus/PROFINET is already in place on the PLC side there. Here, field bus couplers like the PB/CAN gateway and PN/CAN gateway from Helmholz offer a practical way out. This solution is recommended by, among many others, maxon motor ag, a Swiss manufacturer of high-precision drive systems impressed by its advantages.

"Precise drive systems – among the best in the world." Sachseln, Switzerland-based maxon motor ag has achieved success in global markets by pursuing this aspiration since 1961. Brushless DC motors, one of the manufacturer's core areas of expertise, are first and foremost extremely compact, in addition to being highly dynamic – the smallest of these motors feature a diameter of just 4 mm, or half the length of a housefly's body. This predestines the maxon product range for use in small devices with high demands on drive technology like those seen in the medical-technology field.

Two current trends are making drive solutions from maxon increasingly interesting for classic mechanical engineering as well, though: market demand for smaller and smaller components on the one hand and the demand for better and better dynamics and high energy efficie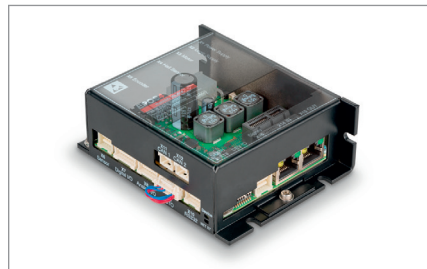ncy on the other – both with the goal of achieving greater machine throughput with the lowest possible energy consumption. Specific problems which can no longer be solved using conventional drives like those commonly used in the industry may arise as a result.

Communication between CANopen and the PROFINET network

Suitable "compact" drive solutions have one decisive disadvantage from the standpoint of mechanical engineers, however: they generally work with CANopen, or more precisely,

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the CiA® 402-series drive and motion control profile. This protocol is both sophisticated and attractively priced, but the field of mechanical engineering requires bus systems like PROFINET depending on the application type and PLC used. "These two spheres are not able to talk to one another very easily," said Jürgen Wagenbach, Head of Motion Control Customer Support at maxon, in summing up the situation.

Against this backdrop, a rising demand for connecting industrial Ethernet-based automation networks to field bus networks can be seen. The technical response to this problem is gateways, also known as couplers, which convert data in such a way that it can be transferred flawlessly from one industrial network to another. Automation technology specialist Helmholz is responding to this current market trend with a strategic range of gateways which is gradually

being expanded. The solution offered also includes application support and additional services for the intelligent and efficient use of the devices.

Service counts

maxon has been so impressed with this consistent service offering, among other things, that the manufacturer is more than happy to recommend Helmholz as a partner to customers with corresponding requirements. "We usually avoid making recommendations like this because it puts us in a position where have a responsibility, or are even making a 'promise,' to our customers for a good solution based on third-party products. But when it comes to Helmholz, we know that they provide outstanding support and that we can really rely on them to solve any problem." Jürgen Wagenbach sees another advantage in the fact that Helmholz "keeps an equally competent eye on both sides at the interface between field bus and PROFINET."
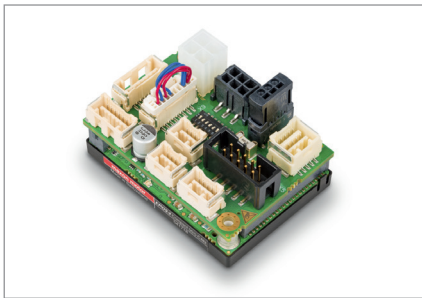
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Generally, though, problems aren't even allowed to arise, as Helmholz already keeps example programs on hand for the purpose of comprehensive application support for many applications and can create new ones according to the respective individual specifications. This means that parallel starts, for example, can be configured with absolute precision, where an application can be tested in advance and a solution developed and then deployed right away.

PN/CAN gateway

The specific technical solution for connecting CAN devices to PROFINET is the PN/CAN gateway from Helmholz. Altogether, five types are available for the various CAN protocols, including a version specially designed for the profile CiA® 402 series. On the PROFINET network, the PN/CAN gateway is a PROFINET I/O device supporting transfer rates up to 100 Mbps full duplex and up to 1 Mbps on the CAN bus. The I/O data of the CAN subscribers is transparently displayed and freely configurable on the PROFINET network and can thus be processed directly in the PLC. The features of the PN/CAN gateway are rounded out by MRP (media redundancy) as well as extensive diagnostic

EPOS2 Positioning controllers with CAN

functions and an interface for online diagnostics. The CANopen PN/CAN gateway represents a full-fledged CANopen master. As a master, it supports gateway network management, SYNC telegrams and node guarding/heartbeat for monitoring subscribers and LSS services. Up to 16 PDOs can be configured for each CANopen slave. It is also possible to configure CANopen subscribers using SDO frames and to administer emergency messages.

Comprehensive gateway range

The PN/CAN gateway is a component of Helmholz's gateway range, which has PROFINET (thus far the market-dominating industrial Ethernet standard) at its center. In addition to the PN/CAN gateway, three other gateway types are available: the DP/PN coupler for the connection of PROFIBUS networks to PROFINET networks, the PN/Modbus TCP coupler for PROFINET-to-Modbus connections and the PN/PN coupler for the connection of two separate PROFINET networks.

All Helmholz gateways work without additional complex software tools. The PROFIBUS/PROFINET tool already in use by the user is sufficient for parametrization, configuration and operation. Gateways can be fully configured using a GSD or GSDML file integrated in the hardware configurator.

Other software tools for parameterization or handling blocks for programming are not required. Gateway use is correspondingly simple, which is of major importance to many Helmholz customers. Alternatively, the gateways provide an overview of the status and configuration of the device as well as the option to carry out a firmware update. Another feature common to Helmholz gateways is their small size.

Summary

Special drive-technology tasks in mechanical engineering frequently require communication between a CANopen network and PROFINET-based automation networks. maxon motor ag relies on PN/CAN gateways from Helmholz here. This Swiss manufacturer of high-precision drive systems was not only impressed by the technical reliability of these gateways, but (first and foremost) by the comprehensive solution-oriented application support for customers provided by Helmholz.
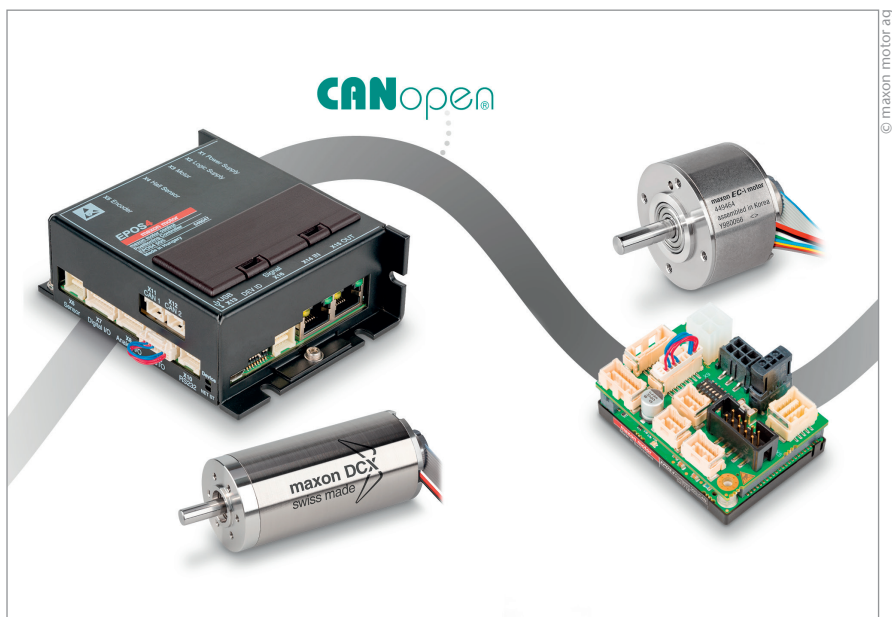
Easy to use Positioning controllers: EPOS4 with CAN and DCX/EC-i motors