

Intelligent compact drives with bus interfaces

ebm-papst is continuously expanding its product range of electrical drive systems for industrial applications.

Our customers in the mechanical and plant engineering sector are looking for compact and powerful drive systems that can receive commands from higher-level controllers via standard bus interfaces and return actual values and status messages to the control system.

A new addition to our range is the new ECI 63.xx K5 series in the power range from 180 to 370 watts. Based on a BLDC internal rotor motor with integrated electronics module, this series includes a standard CANopen interface (Fig. 1).

With the integrated, freely programmable sequence control (PLC functionality), technology functions can be implemented directly in the drive; the previously required PLC is thus either unburdened or can ideally be dispensed with altogether. The drive can be controlled via the digital and analog inputs and outputs— our range of Industry 4.0-capable drive systems has thus been expanded to include an additional electronic module.

These compact drive systems offer a cost-optimized alternative to conventional AC servomotors in many applications. Compared to AC standard motors with frequency converters, this series offers increased efficiency and a higher power density.

Although Ethernet-based bus systems are now required in many applications, CANopen remains a popular option when the number of nodes in a system increases. This is because systems with CANopen offer considerable cost advantages in terms of hardware and implementation. The performance of the CANopen protocol is more than adequate for many industrial applications.

The ECI 63.xx K5 supports the communication and motion profiles in accordance with IEC 61800-7 (DS402). This means that the drive can be operated with positioning, speed, current or torque control. Interpolated positioning with cyclic set value requirement is also implemented. Referencing of the drive position can be carried out using normalized homing methods, as well as via a gentle movement onto a blocker/mechanical stop.

In addition, thanks to the integrated intelligence, the drive can be freely programmed in a similar manner to a PLC. For example, the drive's functions are implemented in such a way that it can be controlled virtually at will via the integrated I/Os without the need for motion commands via CANopen. Thanks to the integrated PLC functionality, the drive can also be used as a CAN master. As a result, in less complex applications, networks can be set up that operate as a standalone application without a higher-level PLC. The possibility of dispensing with a higher-level PLC has a positive effect on the cost situation (Figs. 2 and 3, before/after comparison).

The ECI 63.xx K5 incorporates an integrated encoder system as standard, which resolves the position of the output shaft to 12 bits. This achieves a high degree of positioning accuracy. Even slow speeds and standstill can be smoothly controlled, thus permitting the use of a very wide speed range.

With the easy-to-use commissioning and parameterization software *epTools*, the drive can be conveniently operated directly from a PC via CANopen. The most important parameters

are displayed in the tool's configuration window. Any number of additional parameters can be added to the interface and uploaded to the drive. The entire parameter set can also be saved on a PC. The *epTools* software is available free of charge (Figs. 4 and 5).

The status window in *epTools* enables the relevant measurement values and drive status information to be visualized. As a result, controllers can be quickly optimized and commissioning simplified.

The control window in *epTools* lets the user operate the drive in different operating modes and directly specify both controller release and set-points. Digital inputs and outputs can also be set manually in this window.

An application-specific program for the integrated PLC can be easily compiled in another *epTools* window and uploaded to the drive.

Those interested in learning more can view the documentation for the new drive solutions (technical data, drawings, and 3D models) in the ebm-papst ZEITLAUF online portal, and print or download them as required.

Of course, the ECI 63.xx K5 preferred types, both as solo and gear motors, will be included in the online portal and will be available for dispatch within 48 hours from receipt of order.

Fig. 1 A BLDC internal rotor motor with integrated electronics module includes a standard CANopen interface.

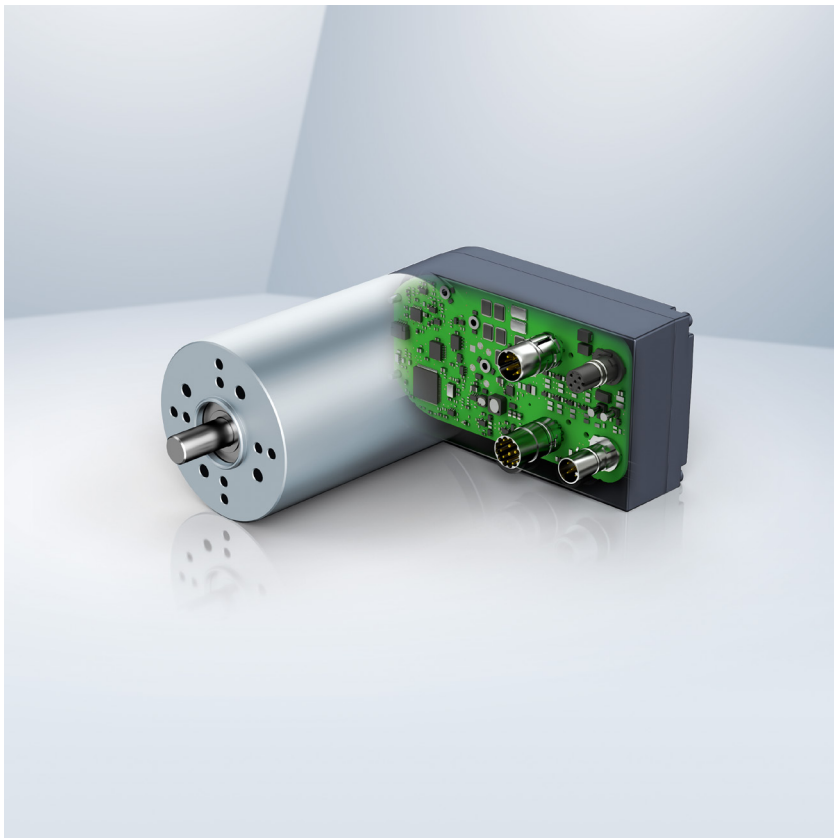


Fig. 2+3: before/after comparison: Thanks to the integrated intelligence, the drive can be freely programmed in a similar manner to a PLC, what offers the possibility of dispensing with a higher-level PLC.

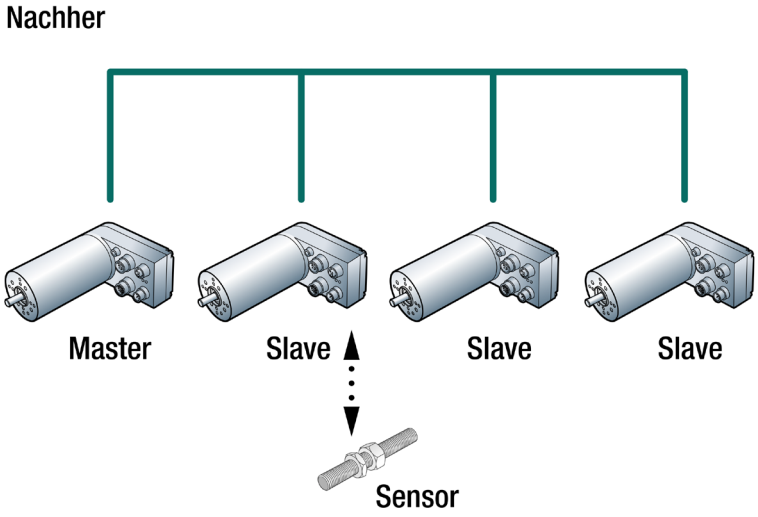
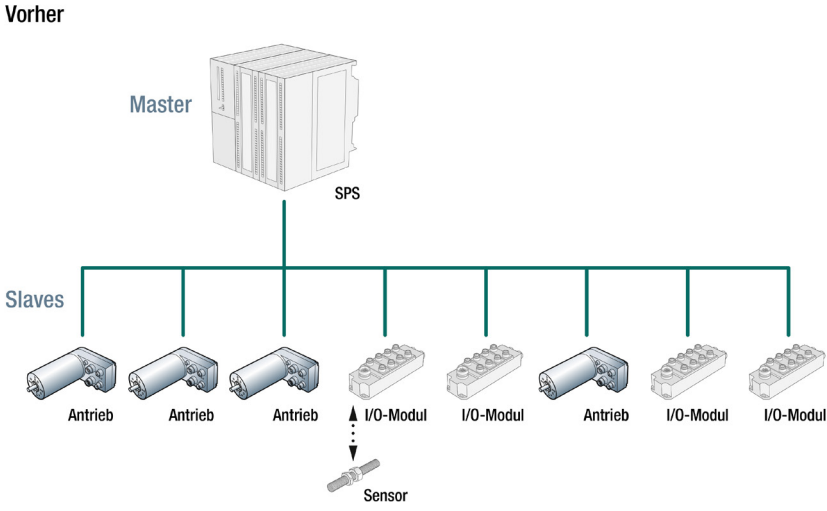
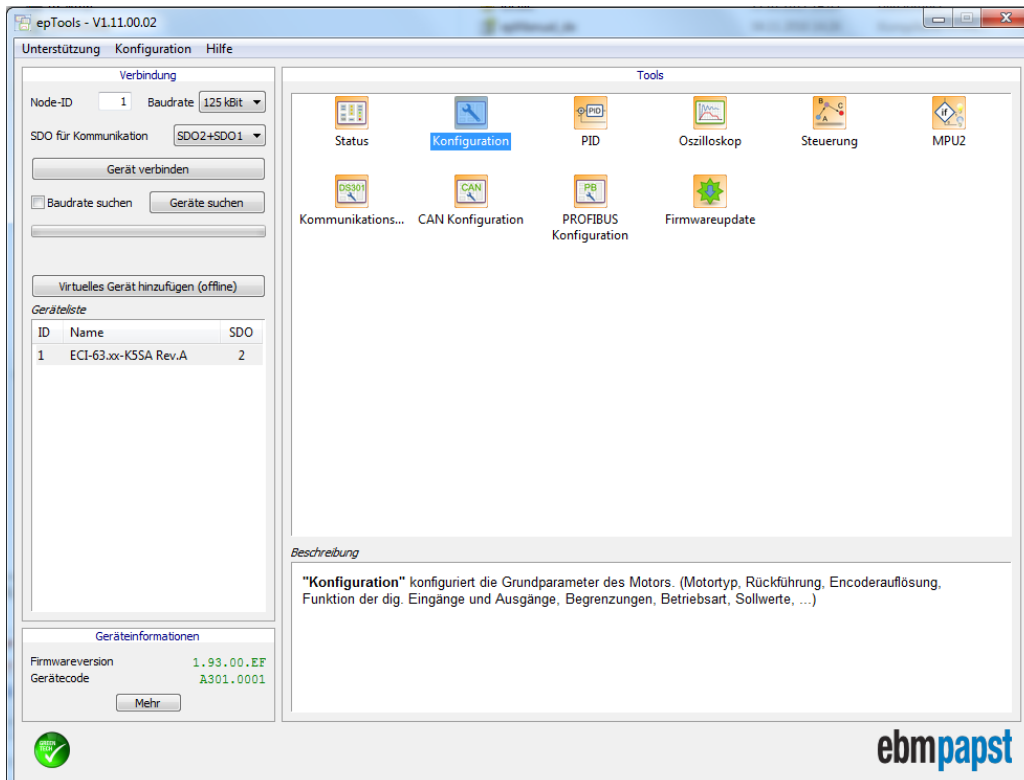
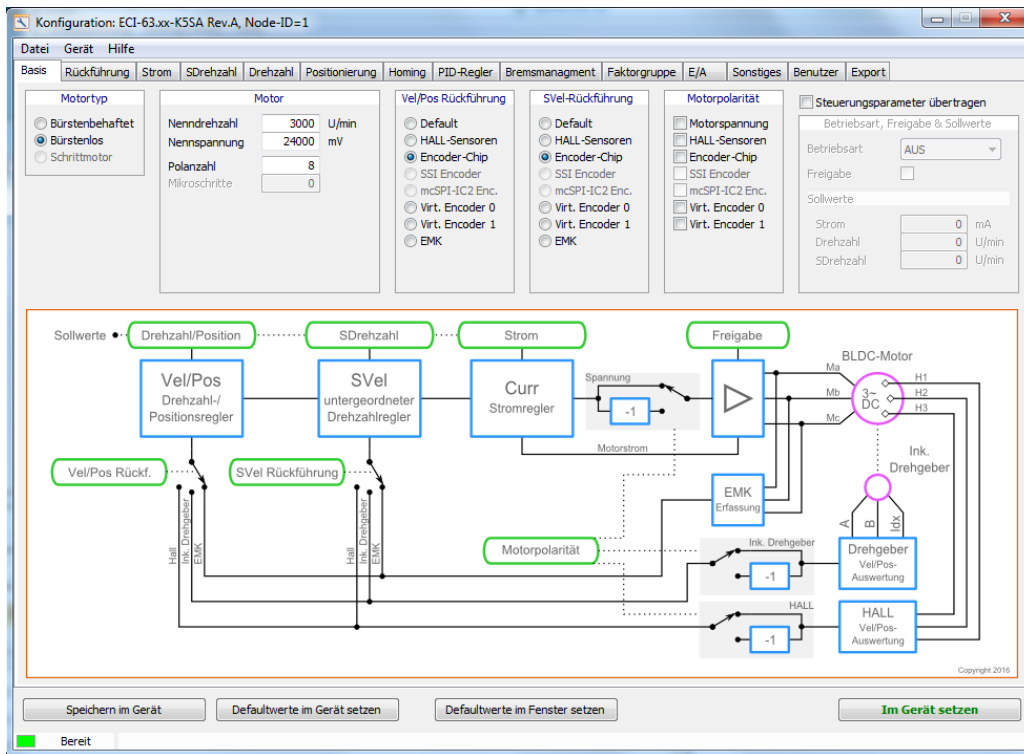


Fig. 4+5: With the easy-to-use commissioning and parameterization software *epTools*, the drive can be conveniently operated directly from a PC via CANopen.



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