CANopen for Chinese product quality

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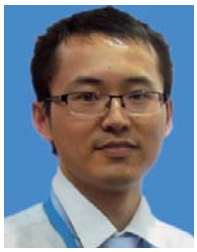

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More and more system designers and system integrators in China focus on CANopen. High reliability, real-time capability, low-cost, fault-tolerance and compatibility are key components of CANopen. To extend CANopen concepts and support more efficient CANopen systems in China, Hongke Technology makes every effort to help Chinese system designers integrate their own CANopen applications. Because they can take advantage of a mature and reliable CANopen source code, developers can save time and money. By using the CANopen Protocol Stack Source Code by the German company Sys Tec Electronic, Hongke Technology helps spreading CANopen in the Chinese market.

In China, Hongke Technology has managed to help engineers in developing servo drives and controllers, motion controller cards, medical equipment, sensors, encoders, door control systems, laser systems, mining controllers, HVAC control systems and more - all based on CANopen communication.

A lot of these products are already available off the shelf. For complicated tasks, the company also provides an OEM porting service. The motion controller card serves the production quality inspection of newly manufactured motors in testing different operating functions.

The controller takes charge of managing and testing eight servo drives.

It works as a CANopen master and features two CAN ports for a CANopen interface. The CANopen source code used in the motion controller card and in the testing platform is modular. The testing platform is based on a TI AM335x ARM Cortex-A8 running an RTLinux operating system.

The CANopen source code implements the complete functionality according with the CiA 301 specification and it supports the standard compliant design of fully-featured CANopen master or slave devices. The structure is scalable and portable. Written entirely in Ansi-C, the source code allows custom tailoring of the stack to every application. The continuous modularization of functionalities and implementation in Ansi-C makes porting to different target systems possible. Great importance was set on scalability and performance. Sys Tec Electronic provides a most convenient environment for development, integration and testing of CANopen applications.

With the benefit of the modular, scalable and portable structure of the CANopen source code, the motion controller card builds a modular structure with four layers. The first layer is the Development Environment CAN driver software, provided by the AM335x ARM Cortex-A8. The second layer is the CANopen protocol stack layer, based on the CANopen source code framework, including CANopen standard communication protocols, PDO, SDO, NMT, SYNC, etc. The layer transforms the CAN signal of the master controller into a CANopen protocol. The third layer is the CCM layer, which achieves the CCM main function. It provides the function interface of CANopen read/write, the packaging of API, and predefines the object dictionary of application object parameters. The fourth layer is the application layer. The servo drive responses to the call of the CCM main functions and implements the servo motion project according to different testing scenarios.

The key point of this project is an integrated development process. It can be integrated successfully thanks to the experience of Sys Tec Electronic in hardware system integration with Linux. The well-defined API allows for an easy use of the CANopen services without diving into details of the implementation. Additionally, the example programs target specific demo projects, and the comprehensive documentation assists the complete project step-by-step.

Currently, many similar CANopen development projects can be found in China, which not only brings the German state-of-the-art CANopen technology to China but also allows developers to constantly absorb the essence of advanced technology. Thanks to this cooperation, new CANopen applications will bring vitality to the potential Chinese market. ◀

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PCAN-Diag 2

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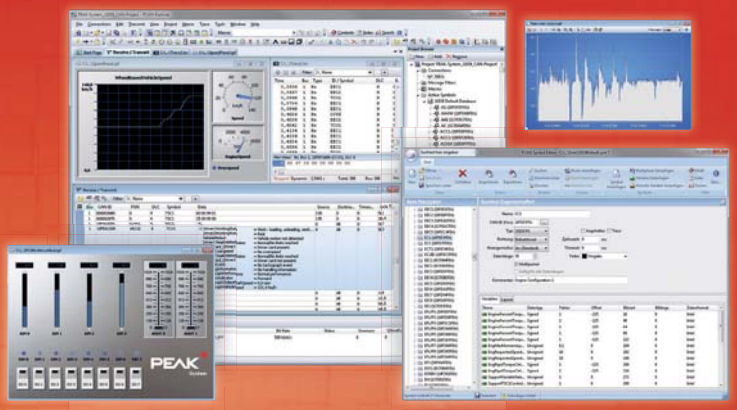

PCAN-Explorer 5

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CAN interface for PCI Express slots. 1, 2, and 4-channel versions with galvanic isolation available.

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