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Contact:

POWERLINK-OFFICE der EPSG
Kurfuerstenstraße 112
10787 Berlin · Germany
Phone: +49 . 30 . 85 08 85 -29
Fax: +49 . 30 . 85 08 85 -86
info@ethernet-powerlink.org
www.ethernet-powerlink.org

Compelling discussions at POWERLINK conference in Paris

More than 50 attendees from more than 30 companies participated in the POWERLINK conference which took place on June 9, 2009, at the Crowne Plaza Hotel in Paris. The discussions focussed on new developments and products in the fields of machine and process control, embedded real-time systems and industrial vision as well as strategic aspects of open source politics and legal issues concerning the licensing of free software. Moreover, many manufacturers presented new developments and products in a showroom – such as Alstom, who demonstrated the functionality of a highly available POWERLINK network by means of a test setup. Another part of the exhibition showcased new POWERLINK sensors from manufacturers including POSITAL, MTS Sensors and TR Electronic.

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Certification meeting of POWERLINK manufacturers

In line with the ongoing certification, manufacturers of POWERLINK-compatible devices met from June 16 to 18 in the Berlin-based EPSG technology center in order to certify the correct functioning of their basic stacks. The renowned certification laboratory „Institute of Embedded Systems" of Zurich's University of Applied Sciences, which has developed the certification together with the EPSG, used a special certifica-

Certification meeting in the EPSG technology center in Berlin

tion Master to test the reaction of Slaves to all kinds of communication errors.
The meeting also served as a plugfest which gave various manufacturers the opportunity to test the smooth interaction of their devices. "In addition to single tests, cross-testing of Slave and Master solutions is important to ensure the overall compatibility in POWERLINK environments", summarizes Stephan Kirchmayer, head of the technology working group of the EPSG.

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How to POWERLINK-enable devices: Downloadable overview of implementation options

POWERLINK Slaves can be implemented either as pure software solutions or with additional hardware support. While the first option is realized with the POWERLINK stack running on the application processor, there are several implementation options for hardware-based Slave solutions, such as FPGAs, PCI boards, or single chips, which allow users to create customized solutions and which vary in terms of performance, flexibility and price. The EPSG website now provides a downloadable table which concisely arranges the available solutions according to hardware, manufacturer, interfaces and their license model. You can find the overview of POWERLINK Slave implementations in the download section of the EPSG website under the heading "POWERLINK documents".
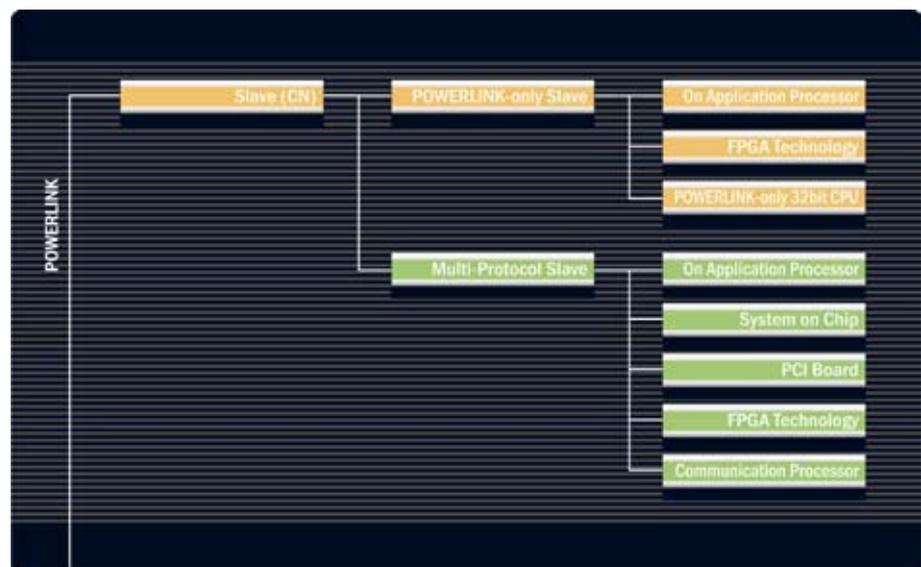
Various POWERLINK Slave implementation options

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POWERLINK implementation on Blackfin DSP architecture ensures real-time transfer of audio and video data

A POWERLINK implementation on a Blackfin DSP architecture from Analog Devices allows users to design a cost-efficient, reliable system suitable for the real-time transfer of audio and video data as well as production process control. Working on a project aiming at the synchronous transfer of audio data, Didier Mauuary, Managing Director of Ondis Technologies and member of the Ethernet POWERLINK Standardization Group (EPSG), and his development team have ported a POWERLINK stack to a Blackfin537 processor.
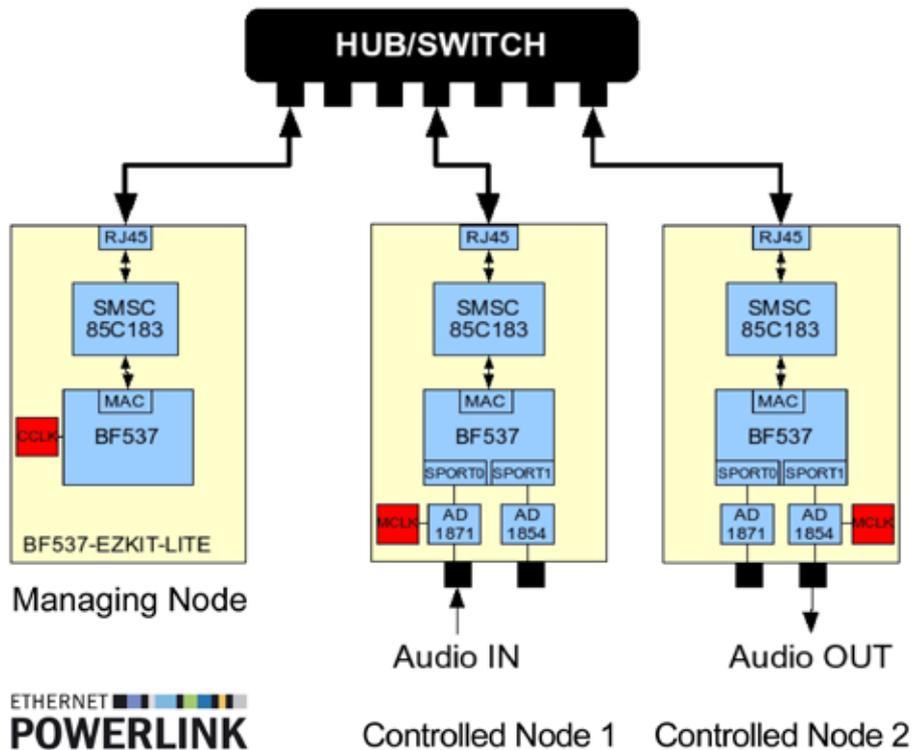
Network test set-up for real-time audio data transfer with POWERLINK

The test set-up achieved a quality which can, according to Mauuary, easily compete with proprietary systems on the market. Network technology for audio signal processing, which is used in sonar technology, in airports and train stations, public buildings and stage technology, must fulfill strict requirements on real-time capability and bandwidth. One central challenge for developers is minimizing jitter: if the timing signal, which is sent by the control system in order to synchronize all nodes, jitters too much, the audio transfer quality will be compromised. "Up to now, the market consists of proprietary Ethernet-based isolated solutions", explains Mauuary. "So far, none of the

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approximately twelve common Industrial Ethernet standards has been used for multimedia applications." The POWERLINK implementation, however, allows for the transfer of data from industrial video and audio applications as well as standard automation data from sensors, actuators and digital I/Os. According to Mauuary, Blackfin technology provides a hardware basis with unique qualifications for media convergence. Blackfin processors provide all peripheral features of universal microcontrollers. Moreover, Blackfin technology includes peripheral blocks for audio and video applications. Equipped with a CAN and an Ethernet MAC controller, Blackfin537 processors were the first choice for the implementation of a convergent industrial fieldbus protocol. Its openness (the open source version openPOWERLINK can be downloaded free of charge), its close adherence to the Ethernet standard and the specific data traffic organization make the real-time protocol POWERLINK ideally suited for this solution, says Mauuary.

SHOWTECH 2009:
redundant POWERLINK networks for safe stage technology

For audiences to experience thrilling effects, substantial know-how is required from stage technicians: today, state-of-the art automation technology is employed backstage at show events, concerts and theaters. Real-time data transfer is used to synchronize special effects, spotlights and sound and video systems. Many drive systems ensure that stage components and backdrops weighing tons can be moved. Thus, the safety

SHOWTECH 2009: safe technology was a key topic for manufacturers of stage control systems

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and reliability of stage technology was a key topic for many exhibitors at the SHOWTECH trade show which took place in June in Berlin. Especially strict safety requirements apply where drive technology is used to move heavy loads directly above the heads of people on stage. Not only mechanics and electric motors must ensure safe operation: no safety critical transfer errors must occur in data traffic, which serves to actuate electric and electronic components. At this year's SHOWTECH, it was made clear that the Industrial Ethernet system POWERLINK is the most suitable protocol for manufacturers of stage technology which can be used to develop safe, redundant control networks. The real-time protocol allows for the easy integration and synchronization of intelligent drive systems in decentralized network structures. From a safety standpoint, such structures offer the advantage of having few contact points, since contacts always form potential weak spots. "An extremely robust system with great interference resistance, POWERLINK has proven itself especially in safety-critical real-time applications", explains Rüdiger Eikmeier, managing director of the POWERLINK user organization EPSG. "Therefore, POWERLINK is increasingly being used in products which must ensure great reliability, and will thus become a standard in stage technology."

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