

NEWS

Page 1

POWERLINK ideally complements CANopen**Shanghai, Lyon, Nuremberg – EPSG trade show participation**

Page 2

Sign up now for POWERLINK sales training workshop

Page 3

EPSG provides free-of-charge test kit service

Page 4

Redundant POWERLINK-based slip ring network

Page 5 - 7

POWERLINK's added values top top speed**Kontakt:****EPSG POWERLINK-OFFICE**

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POWERLINK ideally complements CANopen

The Ethernet Powerlink Standardization Group and its members have issued a number of texts which describe how CAN and POWERLINK networks can be integrated into a complete system combining the strengths of both network types. Applications requiring bandwidth beyond the scope of CAN-based solutions can be implemented with POWERLINK, utilizing the full functionality of CANopen protocols. The EPSG has described POWERLINK as CANopen's "legitimate successor" in its press releases, which has caused misunderstandings with some readers. Holger



Bild: Holger Zeltwanger, geschäftsführendes Vorstandsmitglied von CiA

Zeltwanger, manager and board member of CAN in Automation (CiA) has therefore rightly pointed out to us that it would be less misleading to describe POWERLINK as "an ideal extension for CANopen", thereby avoiding the false impression that the EPSG plans to replace CAN or CANopen with POWERLINK.

There is, however, no talk of that. CANopen still forms the foundation of many industrial applications and will continue to do so for a long time: "We are registering continuing growth.

Apart from machine control and medical technology applications, CANopen will also be used in power plants in the future", says Zeltwanger. Because of CANopen's considerable advantages, the EPSG has fully integrated CANopen mechanisms and ensured full compatibility between CANopen and POWERLINK. The EPSG will continue to closely cooperate with the CiA, establishing POWERLINK as an ideal CAN and CANopen extension in order to provide maximum customer benefits.

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Shanghai, Lyon, Nuremberg – EPSG trade show participation

The Ethernet POWERLINK Standardization Group invites all interested parties to visit the EPSG booth at this year's upcoming automation trade shows. The next opportunity for a visit is the Industrial Automation Show (formerly FAA/INTERKAMA) which will take place from November 6 – 10 in Shanghai. The EPSG will exhibit in hall E1, booth C064. The SCS (Systèmes, Composants et Solutions) will take place in Lyon, France, from November 13 – 16, and the EPSG will be present in hall 6, booth 6D19. At this year's last trade show, the SPS/IPC/DRIVES in Nuremberg, Germany (Nov 27 – 29), the EPSG can be found in hall 6, booth 114.

FAA Shanghai 6 – 10 November / SCS Lyon 13 – 16 November / SPS/IPC/DRIVES 27 – 29 November

NEWS

Page 1

POWERLINK ideally complements CANopen**Shanghai, Lyon, Nuremberg – EPSG trade show participation**

Page 2

Sign up now for POWERLINK sales training workshop

Page 3

EPSG provides free-of-charge test kit service

Page 4

Redundant POWERLINK-based slip ring network

Page 5 - 7

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Sign up now for POWERLINK sales training workshop

A reminder: The first training workshop for POWERLINK sales staff will take place on October 15, 2007. Interested parties can contact the POWERLINK office until October 5 to sign up.



Figure: EPSG sales experts Rüdiger Eikmeier and Stefan Schönegger

EPSG sales experts Stefan Schönegger and Rüdiger Eikmeier will point out the workings of POWERLINK, highlight the added benefits for customers and end users, and also give an overview of competing products.

The course is aimed at sales persons with either basic knowledge about real-time communication systems or without prior knowledge of the subject. It focuses on talking points and explanatory techniques which serve to quickly and easily demonstrate POWERLINK's functional principle and advantages to potential customers. In the following, Schönegger and Eikmeier will illustrate the added benefits provided by POWERLINK's technical features. Safety, crosstraffic capability, the option to implement any network topology and the openness of the standard, for instance, are advantages which create investment safety and minimize costs for users. As a conclusion, the speakers will provide an overview about the major competing products, giving a general outline of their key features and functional differences compared with POWERLINK.

The venue for this course will be the first floor of the Mövenpick Airport Restaurant & Conference Center in Nuremberg. The workshop will take place from 10 am to 4 pm. Lunch is included in the registration fee (max. 76 Euro per person) which will be collected directly at the venue.

NEWS

Page 1

POWERLINK ideally complements CANopen**Shanghai, Lyon, Nuremberg – EPSG trade show participation**

Page 2

Sign up now for POWERLINK sales training workshop

Page 3

EPSG provides free-of-charge test kit service

Page 4

Redundant POWERLINK-based slip ring network

Page 5 – 7

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EPSG provides free-of-charge test kit service

The Ethernet Powerlink Standardization Group helps potential POWERLINK users to become familiar with the technology and to overcome initial obstacles in product development. For that purpose, the EPSG sales team provides this target group with POWERLINK test kits. Each kit contains the hard- and software required to quickly implement a POWERLINK node which enables users to test all network management and communication functions.

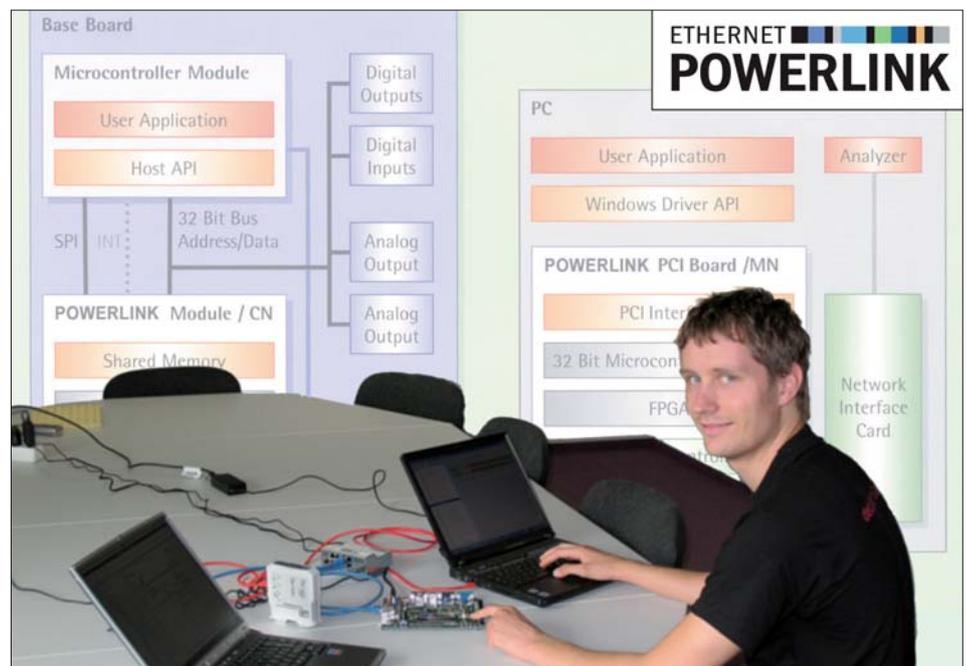


Figure: Users can quickly implement a POWERLINK node with POWERLINK test kits

A POWERLINK network consists of a Managing Node (MN) and at least one Controlled Node (CN). The MN coordinates data communication, CNs represent the application devices. Via the test kit's control elements, users can simulate process signals in the Controlled Node which are displayed by LEDs. Since POWERLINK is based on CANopen mechanisms, the target hardware acts like an I/O device in accordance with CiA standards. The hardware package includes a POWERLINK Managing Node, the target hardware required for creating a Controlled Node, cables, a POWERLINK interface, a hub and a power supply unit. Managing Node software, analysis tools and applications for demonstration purposes are also included. To operate the node, users merely require the test kit and a laptop or a PC. Another laptop and a second interface are needed if users wish to closely analyze network traffic by means of advanced tools which are optionally available.

The use of one test kit is free of charge for four weeks. Interested parties are invited to send an application to the POWERLINK office which will forward the request to the test kit providers.

NEWS

Page 1

POWERLINK ideally complements CANopen**Shanghai, Lyon, Nuremberg – EPSG trade show participation**

Page 2

Sign up now for POWERLINK sales training workshop

Page 3

EPSG provides free-of-charge test kit service

Page 4

Redundant POWERLINK-based slip ring network

Page 5 - 7

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Redundant POWERLINK-based slip ring network

In industrial plants, fieldbus-coupled devices are often subject to strong vibrations. The resulting mechanical stress on data cables can lead to fieldbus failures. If applications are wired in a line topology, this will affect all devices behind the cable break. Fully redundant network concepts, however, are very costly and are therefore more or less limited to process industry applications. Users who operate POWERLINK networks in machine building applications can resort to ring redundancy which provides a simple and cost-efficient alternative.

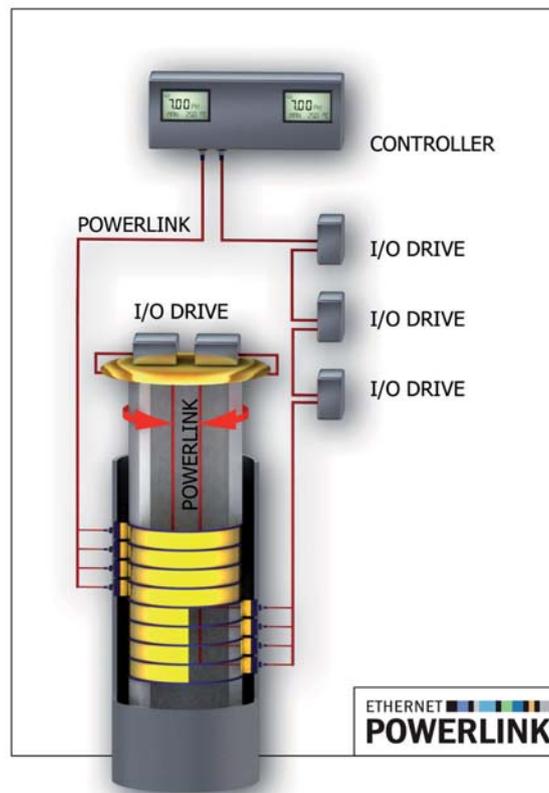


Figure: Slip ring application featuring a redundant ring topology

This topology means that applications are connected to the control unit in a ring shape, i.e. with the beginning and the end of the communication line plugged to the control unit. This obviously requires a control system with two interfaces which support redundant operation. Application devices also need to feature two interfaces. The network detects cable malfunctions and switches to the redundant data channel within the same cycle, thereby ensuring continuous operation. Even rotating applications such as rotary tables, which do not allow for fixed cable connections and instead require slip ring connectors for bus connection and power supply, can be secured by means of redundant ring networks. In slip rings, which consist of one static and one rotary component, signals are transferred either via brushes and a gliding contact, or a capacitive contact is used. The number of channels provided for that purpose depends on the build type. In addition to the active signal channel, a redundant route is reserved which can be used for data communication if the first channel fails. To operate a redundant ring network, users merely require suitable control software to manage the data outputs and an additional data cable to transform a line into a ring topology.

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NEWS

Page 1

POWERLINK ideally complements CANopen**Shanghai, Lyon, Nuremberg – EPSG trade show participation**

Page 2

Sign up now for POWERLINK sales training workshop

Page 3

EPSS provides free-of-charge test kit service

Page 4

Redundant POWERLINK-based slip ring network

Page 5 - 7

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POWERLINK's added values top top speed

The search for the “best” real-time fieldbus tends to be dominated by the one criterion of speed. As a result of that, other technical features, which may be of great importance depending on the planned application and which provide additional benefits, often receive too little attention. Only by taking them into account, however, do users get the full picture to support their decision-making process. The narrow focus on speed is reminiscent of children only just learning to play a super-car top trumps game: all cards are played for speed and the highest value wins the trick, even though speed may often not be particularly significant in the real world. What use is your desert racer's Vmax, if what you really need is a vehicle to haul great loads over uneven terrain? Or, back to automation: what good is a perfectly configured central control system, if your application actually calls for a decentral control concept?

Don't lose your hand because others try to make it a one-trump game. Make the smarter move and also play your other trumps. Besides top speed, POWERLINK's added values include the following key features for machine and plant operators:

Safety

While many manufacturers have announced safety solutions, most have not actually implemented them to date. POWERLINK Safety, on the other hand, has already been certified by TÜV Rheinland and can be used in systems requiring SIL 3 protection. (Please also consult the report on POWERLINK Safety in this newsletter issue.)

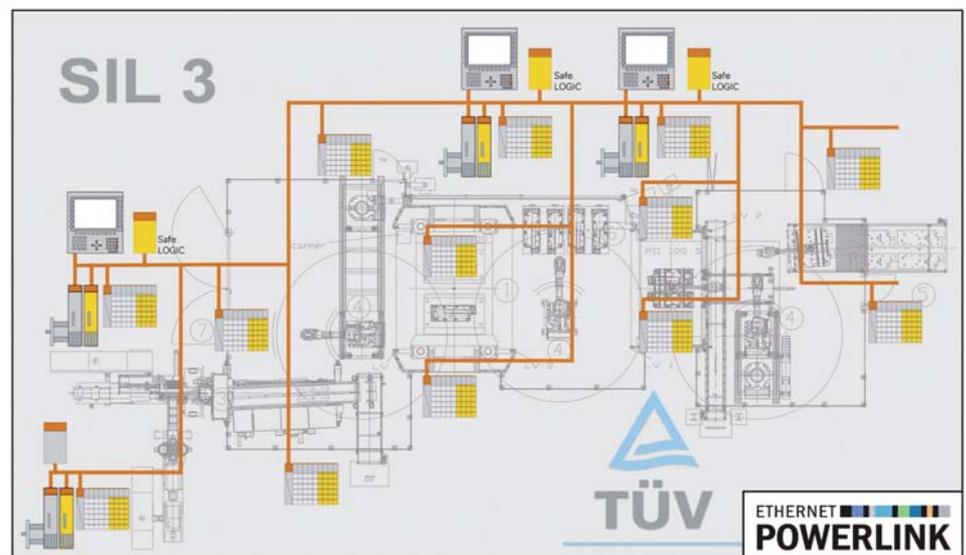


Figure: POWERLINK Safety: a dangerous condition may be caused by a bus fault only once every 115,000 years

continued on page 6 →

NEWS

Page 1

POWERLINK ideally complements CANopen**Shanghai, Lyon, Nuremberg – EPSG trade show participation**

Page 2

Sign up now for POWERLINK sales training workshop

Page 3

EPSP provides free-of-charge test kit service

Page 4

Redundant POWERLINK-based slip ring network

Page 5 - 7

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*continued:***POWERLINK's added values top top speed****Redundancy**

A redundant system requires a flexible and expandable fieldbus. The French company Alstom (see also Alstom application story in the September issue of the newsletter) has developed a redundant, POWERLINK-based fieldbus for the process industries which provides maximum availability. Combined with this fieldbus, Alstom uses redundant central control units and data cables to secure processes. Link selectors register cable breaks, report the failure location and connect the affected devices with a second signal-carrying cable.

Compatibility with CANopen

POWERLINK is an ideal extension for users who operate CANopen networks: they can increase their network speed and range without having to adapt or reconfigure applications.

Network topology of choice

Only few available real-time systems allow users to freely choose the network topology. If a ring topology is stipulated, problems may arise when users wish to expand their system. It is hardly possible (or at least requires great efforts) to constantly increase the number of machines in a plant. Thanks to its closeness to the Ethernet standard, POWERLINK allows users to freely implement system extensions.

Hot plugging

When a module is added or exchanged, hot plugging capability makes time-consuming configuration efforts unnecessary. Moreover, replacing or adding a new device to the network during operation will not halt the application. The system will continue to work while the network is being extended or nodes are replaced, and its real-time capability is not compromised. Without hot plugging support, replacing small machine parts will already result in cost-intensive empty runs and set-up times.

Cross-traffic capability

Cross-traffic means that data traffic from the devices is not routed via a master. All network nodes send their data to the network according to the broadcast principle, and all network nodes can receive all data. The encoders of all drives in syn-chronized production segments, for example, can easily be synchronized with a master encoder in this way. Cross-traffic saves time, simplifies the system layout and reduces the load on the control system, all in all permitting users to choose more cost-efficient control units for many applications.

continued on page 7 →

NEWS

Page 1

POWERLINK ideally complements CANopen**Shanghai, Lyon, Nuremberg – EPSG trade show participation**

Page 2

Sign up now for POWERLINK sales training workshop

Page 3

EPSG provides free-of-charge test kit service

Page 4

Redundant POWERLINK-based slip ring network

Page 5 - 7

POWERLINK's added values top top speed*continued:***POWERLINK's added values top top speed****Easy diagnostics**

Easy system diagnostics capability means that staff can analyze the network and check all data traffic and line functionality with no need for special tools and devices. This requires a bus system which closely adheres to the standard. POWERLINK is the only real-time Ethernet-based fieldbus available on the market which completely complies with the IEEE 802.3 Ethernet standard.

Moreover, POWERLINK provides dedicated bandwidth for diagnostic purposes by design. And unlike in other systems, this reserved bandwidth cannot be diverted from its intended use to serve some other purpose.

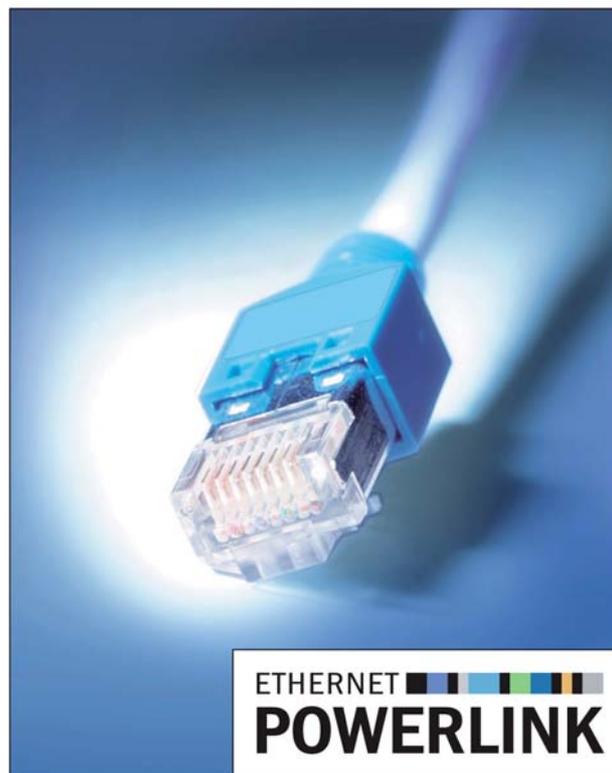


Figure:
POWERLINK fully complies with the IEEE 802.3 Ethernet standard

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