

NETWORK TECHNOLOGY

PROFINET IO

PROFINET IO is the industrial Ethernet solution that consequently meets all requirements of real-time communication and allows at the same time the unrestricted parallel use of IT functions. Due to the open network structure and the seamless integration of a wide base of existing field bus applications all over the world, PROFINET IO becomes the international market standard.

PROFINET IO provides three communication channels that are adjusted to the requirements of different device classes and can be implemented in parallel within the same network or device: Standard channel (TCP/IP, UDP/IP), real time channel RT and real time channel IRT (Isochronous Real Time).

PROFINET IO uses open standards of the communication and information technology. Since a standard Ethernet frame is transmitted, even devices, that do not support the PROFINET IO protocol, can be integrated into the system in the known way. Diagnosis is made using defined PROFINET IO services and the network management protocol SNMP.

Whereas the connection establishment between components is done via UDP/IP and DCP, the device identification is realized using device names. Time synchronization corresponds to the international standard IEC 61588.

THE ROAD TO A PROFINET INTERFACE

KW-Software supports device manufacturers and solution providers with the easy integration of a PROFINET IO interface by a special portfolio of products and services. Together, we make your automation solution a global player with PROFINET IO, the world-wide open market standard for industrial real time Ethernet.

PROFINET IO CONTROLLER STACK

Since 2004, the PROFINET IO Controller Stack is proving itself in demanding automation projects. It is continuously and systematically further developed. The functionality of the PROFINET IO Controller Stack is verified by regular and extensive system tests in PROFINET networks containing up to 100 PROFINET IO devices.

Among other things, the PROFINET IO Controller Stack provides a comfortable context management of communication connections (Application Relations, ARs) as well as extensive diagnosis functionality.

ARs are automatically established and monitored according to the network planning. The status of all ARs is always available in a transparent way as "life list". On request of the application process, additionally the diagnostic state of individual PROFINET IO devices is polled and provided to the application. Furthermore, the PROFINET IO Controller Stack enables already today the device exchange during operation without the use of a configuration tool or pluggable storage media. The device, that is newly inserted into the network, is automatically parameterized without the participation of the application process and the communication connection is reestablished.

The scalable direct access to the status of input/output data gives you full control on the automation process at any time.

The code of the PROFINET IO Controller Stack has been optimized several times in order to achieve highest performance as a result of short software execution times. A hardware support for IRT is currently in preparation, the user interface of the stack will be still compatible.

PROFINET IO DEVICE STACK

The PROFINET IO Device Stack serves as supplement of the PROFINET IO Controller Stack enabling the fast communication between PROFINET IO controllers. The application accesses process data via a common API with the PROFINET IO Controller Stack. A hardware support for IRT is currently in preparation, the user interface of the stack will be still compatible.

PROFINET IO DEVICE CHIP

The PROFINET IO Device Chip reduces the time and cost efforts for porting to a minimum and provides a fast, easy and cost-saving integration of a PROFINET IO device interface to device manufacturers. It supports the PROFINET Conformance Classes A, B, and C, and can thus be used for PROFINET IO devices of all performance classes. You get a flexible high-performance PROFINET IO interface as single-chip solution at the price of a field bus interface.

The PROFINET IO Device Chip demonstrates its performance especially in the field of compact I/O devices. Here, the integrated CPU processes the complete PROFINET IO functionality. This enables you to keep the existing hardware and software platform of your application. Flexible and configurable interfaces for the connection of application CPUs or for the direct connection of input/output signals allow the easy realization of a large number of various application cases.

The internal structure of the PROFINET IO Device Chip, optimized for the requirements of IRT, provides an extremely low bridge delay and a very good time stamp resolution. By providing special clock-synchronous I/O signals, also sophisticated synchronization demands can be met.

The PROFINET IO Device Chip provides two external Ethernet interfaces to support line structures in the PROFINET network. In combination with the integrated PHYs, the integrated IRT switch ensures a high-performance network connection. All PROFINET protocols including PTCP (Precision Transparent Clock Protocol) time synchronization are supported by hardware. They neither influence the performance of the internal CPU nor of the application processor.

If fiber optic cables are used as transmission medium, the direct connection of special Digital Diagnostic Fiber Optic Transceivers for PROFINET is possible. The PROFINET IO Device Chip provides the corresponding diagnosis interfaces for monitoring the signal quality on the fiber optic transmission lines.

PROFINET IO CONFIGURATOR

For configuring the topology and behavior of your PROFINET IO network, KW-Software will offer a corresponding engineering tool. The graphical representation of the network enables the necessary survey. PROFINET IO devices are inserted into the network view from a device catalog and configured via device-specific menus. New devices can be simply imported into the device catalog via the standardized GSD format. Furthermore, the support of open interface standards such as FDT/DTM is planned.

The PROFINET IO Configurator exports the completed project into an XML file. The PROFINET IO Controller Stack uses these data for the parameterization and start-up of the PROFINET IO network.

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PROFINET INTEGRATION SERVICES

KW-Software supports you in integrating your PROFINET interface during all project phases by

- consulting and common concept development in the run-up
- porting of software to your specific platform
- integration tests
- documentation of hardware and software components including complete application diagrams
- support and maintenance
- updates and upgrades

YOUR BENEFITS AS USER

Performance / functionality

- You are using high-performance technology components that are practically approved in demanding automation projects since many years.

Future-proof

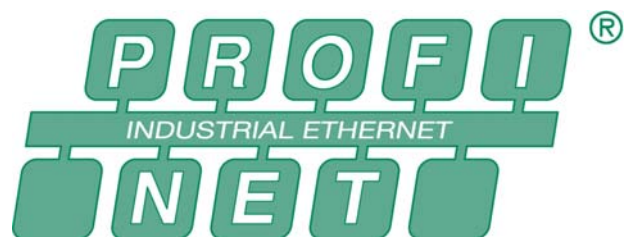
- You benefit from the continuous further development of leading PROFINET technology. Thus, your solution can keep up with the latest technical standards and features in the future.

Flexibility

- You can combine your PROFINET solution with further technology components by KW-Software, for example from the field of IEC 61131 programming or safety technology. This way, the combination of our technology and your application know leads to an automation solution that is individually adjusted to your requirements.

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