



## PROFINET field bus gateways

### Easy integration – without additional software tools

With the advance of industrial Ethernet systems, the need to link PROFINET networks with traditional field buses or with other PROFINET networks in automated production environments also increases. Flexible and practicable solutions are called for here. Helmholz is defining this market trend with a new, strategic gateways portfolio that is being continuously expanded upon.

Not least due to Industry 4.0-specific requirements for performance, integration and real time-capability, industrial Ethernet systems are increasingly asserting themselves in factory automation. In 2018, they for the first time surpassed the number of traditional field buses by the number of the newly installed network nodes. This trend will continue.

At the same time, field buses continue to play an important role in areas where simplicity, manageable costs, and reliability count. And not least, older field bus components should or must continue to be used in many existing systems and control systems. Their communications PCBs could only be exchanged with a great deal of effort, or not at all, as they are part of the control system PCB. Against this backdrop, a rising demand for connecting industrial Ethernet-based automation networks to field bus networks can be seen. The technical response to this task is gateways, also known as couplers. They convert data in such a way that it can be transferred flawlessly from one industrial network to another.

Automation technology specialist Helmholz is responding to this current market trend with its new strategic

portfolio of gateways, which is gradually being expanded. The offering of solutions also encompasses application support and other services like, for example, building blocks for designing the intelligent and efficient use of devices for Helmholz customers as simply as possible.

#### Comprehensive gateway range

The core of the gateways portfolio of Helmholz is PROFINET, to date the market-defining industrial Ethernet standard. Four gateway types are currently available: the DP/PN coupler for the connection of PROFIBUS networks to PROFINET networks, the PN/ModbusTCP coupler for PROFINET ModbusTCP links, the PN/CAN gateway for the connection of CAN devices to PROFINET, and the PN/PN coupler for the connection of two autonomous PROFINET networks.

All Helmholz gateways work without additional complex software tools. The PROFINET tool already in use by the user is sufficient for parameterization, configuration, and operation. Gateways can be fully configured there using a GSD or GSDML file integrated into the hardware configurator. Other software tools for parameterization or

handling blocks for programming are not required. Gateway use is correspondingly simple, which is of major importance to many Helmholz customers. Alternatively, the web interface of the gateways also provides an overview of the status and configuration of the device, as well as the possibility to carry out a firmware update.

Another feature common to Helmholz gateways is their small size. The PROFINET-PROFINET model, for example, is only around a quarter of the size of comparable devices from other manufacturers.



PN/ModbusTCP Coupler



PN/CAN Gateways

### Tradition meets innovation

The DP/PN coupler enables easy and uncomplicated data transfer between the PROFIBUS and the PROFINET network, or more precisely, between the PROFIBUS master and the PROFINET controller. It is conceived of as a slave (device) on both the PROFIBUS and the PROFINET sides. Received input data on one of the network sides is made available as output data to the other network side. The IO data transfer takes place live and as quickly as possible, without additional handling blocks. The maximum size of the transmitted data is 244 bytes of input data and 244 bytes of output data (maximum data size on PROFIBUS-DP). Up to 16 slots for IO modules of 1 byte and up to 64 words are available.

The to date youngest member of the gateways family from Helmholz is the PN/ModbusTCP coupler for the connection of ModbusTCP components or machines with PROFINET machines.



PN/PN Coupler

The PN/CAN gateway assumes responsibility for the connection of CAN devices with PROFINET. There is a total of five types available for the various CAN protocols. On the PROFINET network, the PN/CAN gateway is a PROFINET I/O device supporting transfer rates up to 100 Mbps full duplex and up to 1 Mbps on the CAN bus. The I/O data of the CAN subscribers is transparently displayed and freely configurable on the PROFINET network and can thus be processed directly in the PLC. The features of the PN/CAN gateway are rounded out by MRP (media redundancy), as well as extensive diagnostic functions and an interface for online diagnostics. The CANopen PN/CAN gateway represents a full-fledged CANopen master. As a master, it supports gateway network management, SYNC telegrams and node guarding/heartbeat for monitoring subscribers and LSS services. Up to 16 PDOs can be configured for each CANopen slave. It is also possible to configure CANopen subscribers using SDO frames and to administer emergency messages.

An ever increasing number of PROFIBUS networks are migrating to PROFINET. The need is thus also increasing for connecting separate PROFINET networks with one another. This task is assumed by the PN/PN coupler, in that it allows data transfer between two PROFINET controllers. In the process, it operates on both sides of the PROFINET network as a PROFINET IO device. Received input data on one of the network sides is made available as output data to the other network side. The IO data transfer takes place live and as quickly as possible without additional handling blocks. The maximum size of the transmitted data is 1044 bytes of input data

and 1044 bytes of output data. Up to 16 slots for IO modules of 1 byte and up to 128 bytes are available. Parameters can be set separately on both PROFINET sides of the PN/PN Coupler.

### Summary

Although industrial Ethernet networks have in the meantime surpassed field buses for new installations, the traditional standards will remain indispensable for factory automation in future. Gateways ensure the necessary data transfer between the two worlds. The gateways from Helmholz convince with especially fast and simple configuration without additional software tools, as well as with a comprehensive service offering.

Helmholz GmbH & Co. KG  
Hannberger Weg 2  
91091 Großenseebach  
Germany

Phone: +49 9135 7380-0  
Fax: +49 9135 7380-110  
info@helmholz.de  
www.helmholz.com