Trouble-Free Exchange of Data between Control System and Substation

COPA-DATA Expertise: DNP3 and zenon

zenon®

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Drivers and interfaces are considered an essential link between the individual components within a process control system. Without the corresponding protocols, trouble-free communication and exchange of data would be unthinkable.

At COPA-DATA, facilitating diverse ways to communicate is the most important priority. Since we developed the very first version of the zenon control system, various connections were already being developed in-house. A team of driver specialists constantly ensure that zenon users benefit from the latest powerful communication protocols, corresponding to international industrial standards, and which today number over 300.

In addition to the European IEC Standards 60870 (telecontrol) and 61850 (mainly local), DNP3 is also part of the repertoire – a standard that is often used in the USA and Australia, for example.
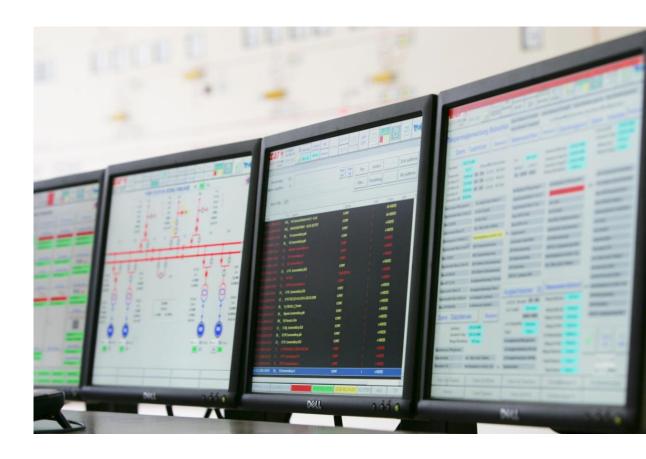
DNP3 master and DNP3 slave: zenon can be both

As a transfer protocol between control systems and substations, DNP3 is primarily used in the supply of electricity, and neighboring industries such as oil and gas or transportation are increasingly making use of it too.

zenon can be a DNP3 master using its DNP3 driver and, on the other hand, it also be a DNP3 slave using its process gateway. With its driver (master) data can be acquired from subordinate units, for example from Bay Control Units (BCUs) or from other Intelligent Electronic Devices (IEDs). With its process gateway, zenon provides data on superordinate units (such as the dispatch center, for example). This data is usually provided over very long distances which DNP3, as a telecontrol protocol, can bridge perfectly.

In addition to the operation of cyclical polling, the DNP3 driver (master) is also capable of "unsolicited operation" where data can be sent to zenon by the IED independently when a value changes. This leads to optimized data traffic and thus ensures effective communication, even with a bad connection or too little bandwidth. Furthermore, the DNP3 driver (master) supports "select and execute". This means that the IED selects a switch before carrying out a switch instruction. This switch is therefore blocked for other operators that try to access it, so that another user (for example, a second control system workstation or local HMI at the switch) can no longer select this switch. If the "select" is successfully carried out, the command is executed, which turns the desired switch on or off. A safety bonus that zenon also offers with IEC 60870.

The right driver for every requirement

zenon is equipped for the new market requirements and can ensure trouble-free exchange of data from the individual intelligent electricity meters (that form part of a smart grid) through to the dispatch center:

1. DNP3 and IEC 61850 can be optimally combined into a project using a heterogeneous configuration: whereas existing pieces of equipment are connected to the DNP3 using the DNP3 driver, new pieces of equipment are connected using the IEC 61850 driver.

2. The DNP3 standard will continue to be used in the future where it has already established itself as the benchmark in telecontrol (for example, the USA and Australia). Whether DNP3, IEC 61850 or IEC 60870: zenon enables the user to transfer data to superordinate control points using the driver and process gateway, regardless of what mix of communication standards are used.

Every System Integrator or Control System Supplier who offers zenon in the Energy sector can guarantee to end customers that all requirements for trouble-free communication between the control system and substation are met in full with just one product.

Is the use of the DNP3 standard or the IEC standard an issue in your projects? Benefit by sharing experiences with our experts: write to energy@copadata.com.