

SIEMENS



SIPROTEC 5 Compact Jump Start for Smart Engineering

APN – C.002

SIPROTEC 5 Compact Application

Jump Start for Smart Engineering

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APN-C.002, Edition 1

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1 Jump Start for Smart Engineering

1.1 Introduction

DIGSI 5 is the universal engineering tool for the parameterization, commissioning, and operation of all SIPROTEC 5 devices. Its innovative user interface contains context-sensitive operating instructions. Easy connection to the device via USB allows you to work easily and efficiently with a device.

DIGSI 5 offers superior usability and is optimized for your workflows. Only the information you need to complete your tasks is displayed. Advanced filtering mechanisms can further reduce these.

This application describes how easy it is to protect a line branch with a few steps using the universal protection device 7SX800. This example shows the capabilities of DIGSI 5 and therefore goes less into the details of setting protection parameters of the device.

The project view guides you through the entire workflow.

1.2 Create a project with a universal protection device

As a first step, a new project is opened in DIGSI 5 and a new device of type 7SX800 with the desired functionality is created by means of "Add new device". On the left side of the user interface, the project structure of the device appears and reflects the steps required for parameterizing the protection device. For this purpose, only the order number of the device (MLFB) is necessary. Since all device properties are clearly determined by the MLFB, the engineering work starts with DIGSI 5 on a consistent basis without the need to re-enter the device properties.

The next step is to assign the appropriate application template to the device. This gives you a device that has the correct functionality and is almost ready to use. In our case, we select the application template "Directed U/AMZ - grounded mesh". Functional adjustments are possible at any time after selecting the application template. The powerful copying functions with consistency checks enable rapid plant configuration. This is followed by system configuration (ranking, CFC) and parameterization.

1.3 Routing and assignment of signals

The routing matrix is one of the most important functions, divided into two editors: information matrix and communication assignment. In the matrix, all signals are displayed sorted by functions and function groups, sources and targets are displayed as columns. This includes, for example, the alarm and trigger signals, which must be linked to binary outputs in order to control the circuit breaker via them. It also makes sense to rank the selected messages for stimulation on LEDs. With pre- or self-defined filters, you reduce the displayed information to a minimum. As in Excel, you can choose what information to display for each column.

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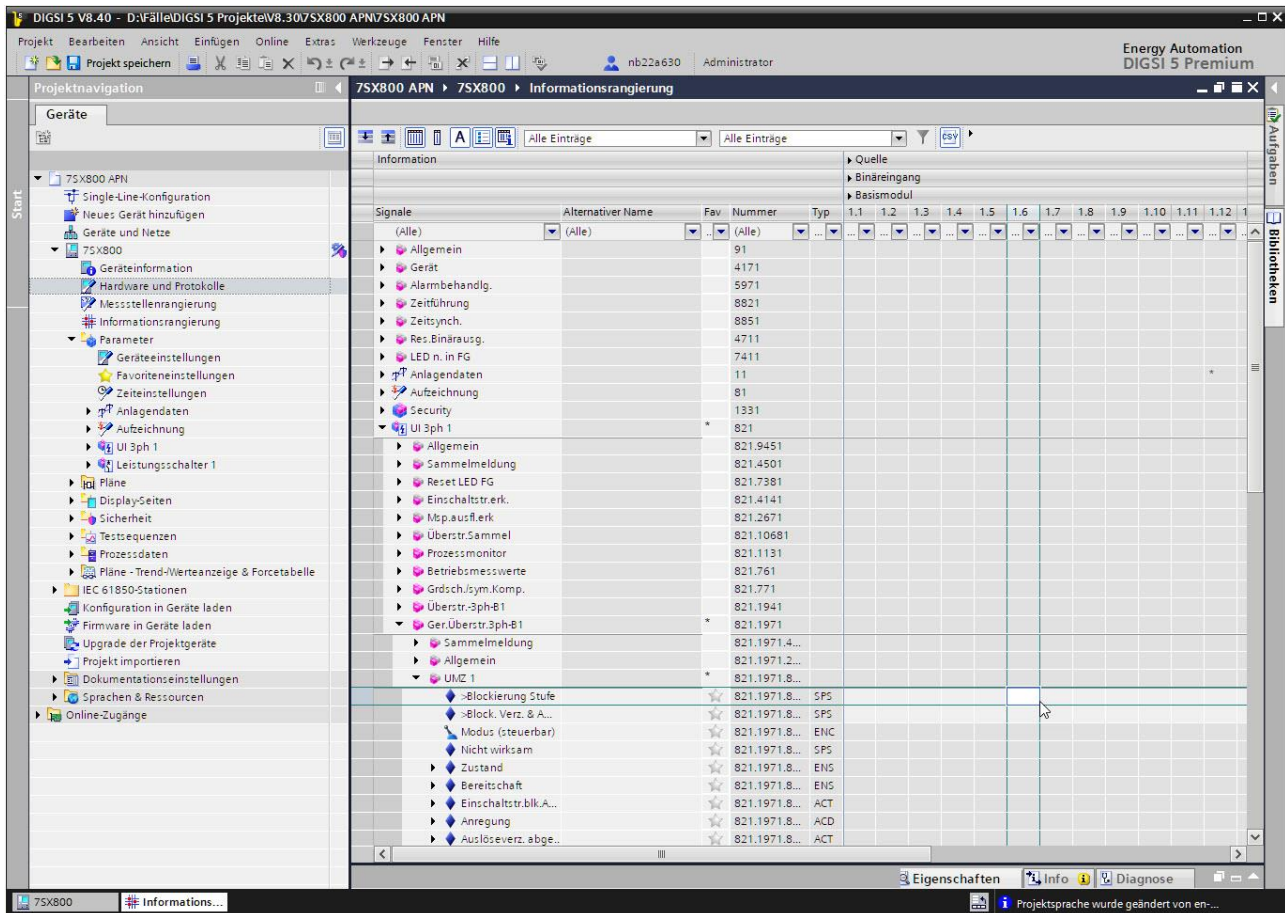


Bild 1: Routing of signals of sources and targets

1.4 Setting the parameters of the device

DIGSI 5 allows you to enter protection parameters quickly and clearly in the parameter editor and at the same time checks them for consistency. Inconsistencies are immediately displayed.

Frequently used parameters can be marked as favorites. These favorites are displayed in a clear favorite view, so that you can keep an eye on everything essentials at any time.

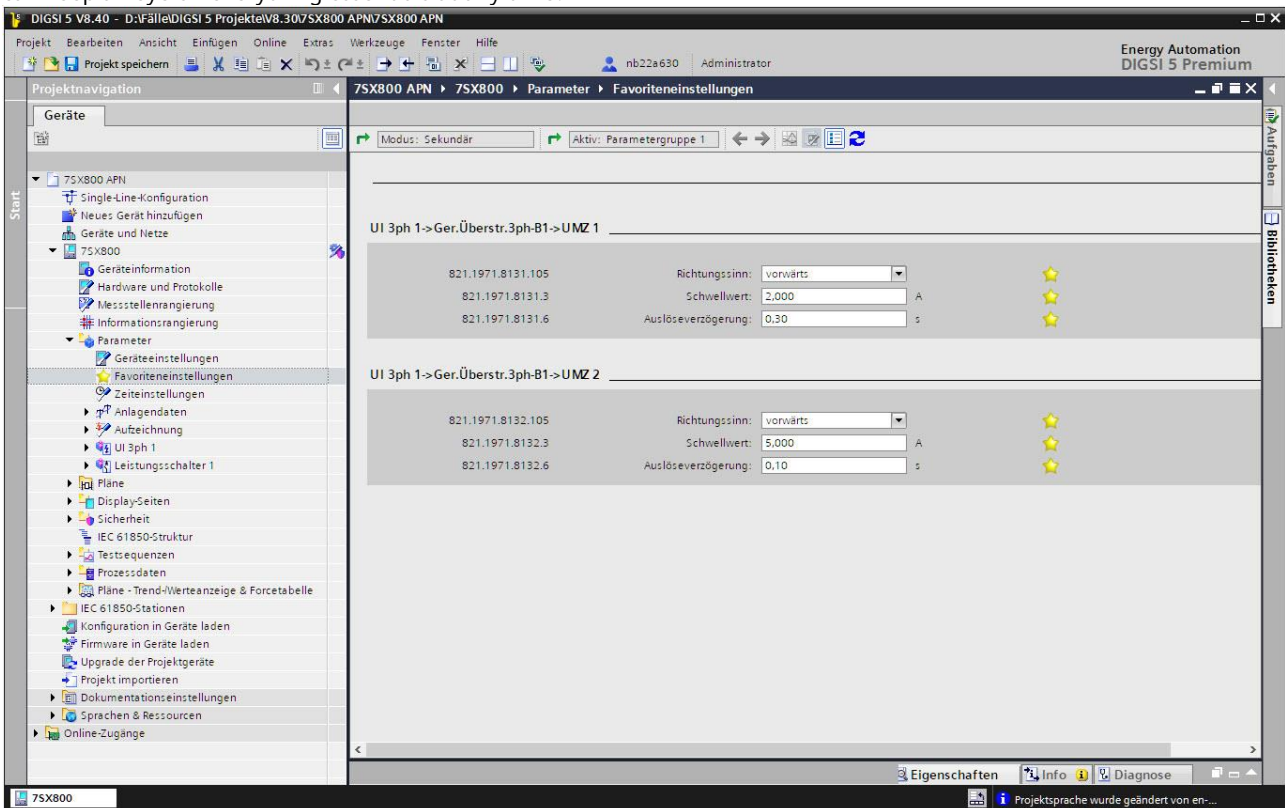


Figure 2: DIGSI 5 allows the easy creation of the relevant parameters as favorites

1.5 Communication

The protection devices should also be able to communicate securely and reliably to a station control system, control center, network monitoring systems or cloud systems in accordance with the current cyber security guidelines, for which the 7SX800 is equipped with a redundant Ethernet interface. In the "Hardware and Protocols" editor, you can set the communication parameters.

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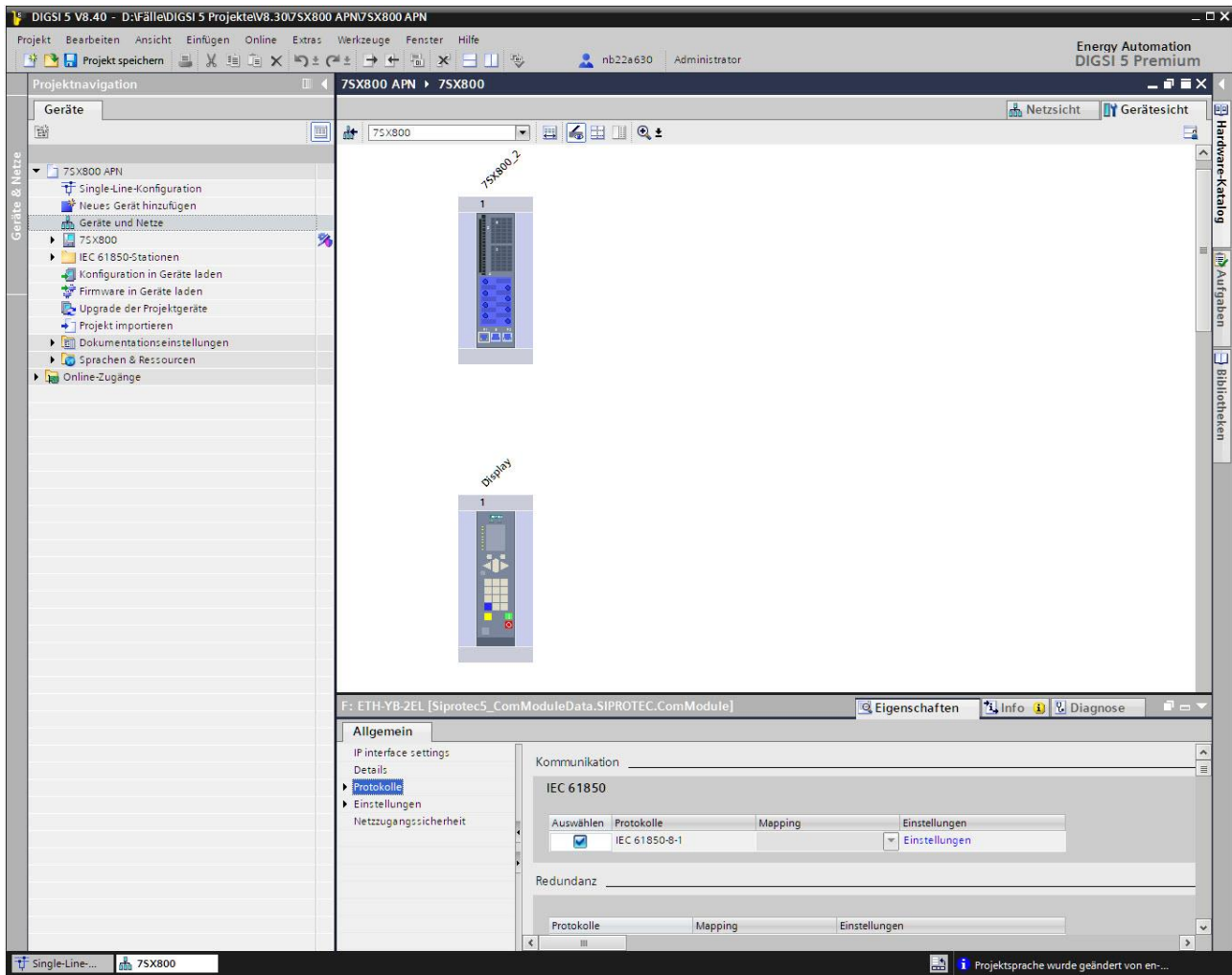


Figure 3: In the hardware configuration, the communication parameters are set

1.6 Cybersecurity – safe by standard configuration

By default, only the connection of DIGSI 5 is unlocked in the device. All other Ethernet services and their ports are disabled in the device by default and can be unlocked with DIGSI 5. If e.g. only the ring redundancy protocol RSTP is used, then as a user, unlock this with DIGSI 5. the default secure configuration does not provide open interfaces to a potential attacker and only real-use services are enabled on a network.

1.7 Loading the parameterization into the protection devices

Once all settings have been made and all signals are linked, all that remains is the loading of the parameter sets into the protection devices. You can connect the devices to the DIGSI 5 engineering computer via USB or address them via Ethernet. In the latter case, you only need to have the devices supplied with their IP addresses. When charging over Ethernet, you can update all connected devices at once.

1.8 Comprehensive test support during commissioning and operation

The test and diagnostic functions support you in the commissioning phase. You can use it to quickly and easily check the wiring or observe the effect of a message transmitted over the system interface in the parent station. The error messages that are recorded in the event of a disturbance of the protective object in the relay are listed in DIGSI 5 and can be displayed, stored and printed for documentation purposes.

1.9 Openness through import and export

DIGSI 5 offers a wide range of exchange formats. These include both the standard formats of the IEC 61850 and the uniform data exchange format TEA-X of the Siemens Tools. This XML-based format is the basis for all import-export scenarios and ensures efficient workflows in the engineering process. Because the data only needs to be entered once, the engineering effort is reduced, and you benefit from consistent data quality at all levels of automation.

In addition to efficient data exchange for the levels of energy automation, the XML data format also supports easy data exchange with other applications.

1.10 Reuse is only just beginning...

If you need other identical devices with the same functionality, e.g. to protect other branches, simply copy a pre-configured device and insert copies into the project. Any settings or function enhancements that have already been made are easily applied in this way.

1.11 Conclusion

DIGSI 5 is fully aligned with your workflow and supports you optimally in your work. The consistent possibility of reuse is just one of countless means that allow you to configure protective devices, test them and put them into operation quickly and efficiently. But the support of DIGSI 5 goes even further, because the engineering tool is designed to support their workflows holistically. Use DIGSI 5 and learn for yourself how efficiently DIGSI 5 supports you in other tasks, such as testing and commissioning.

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