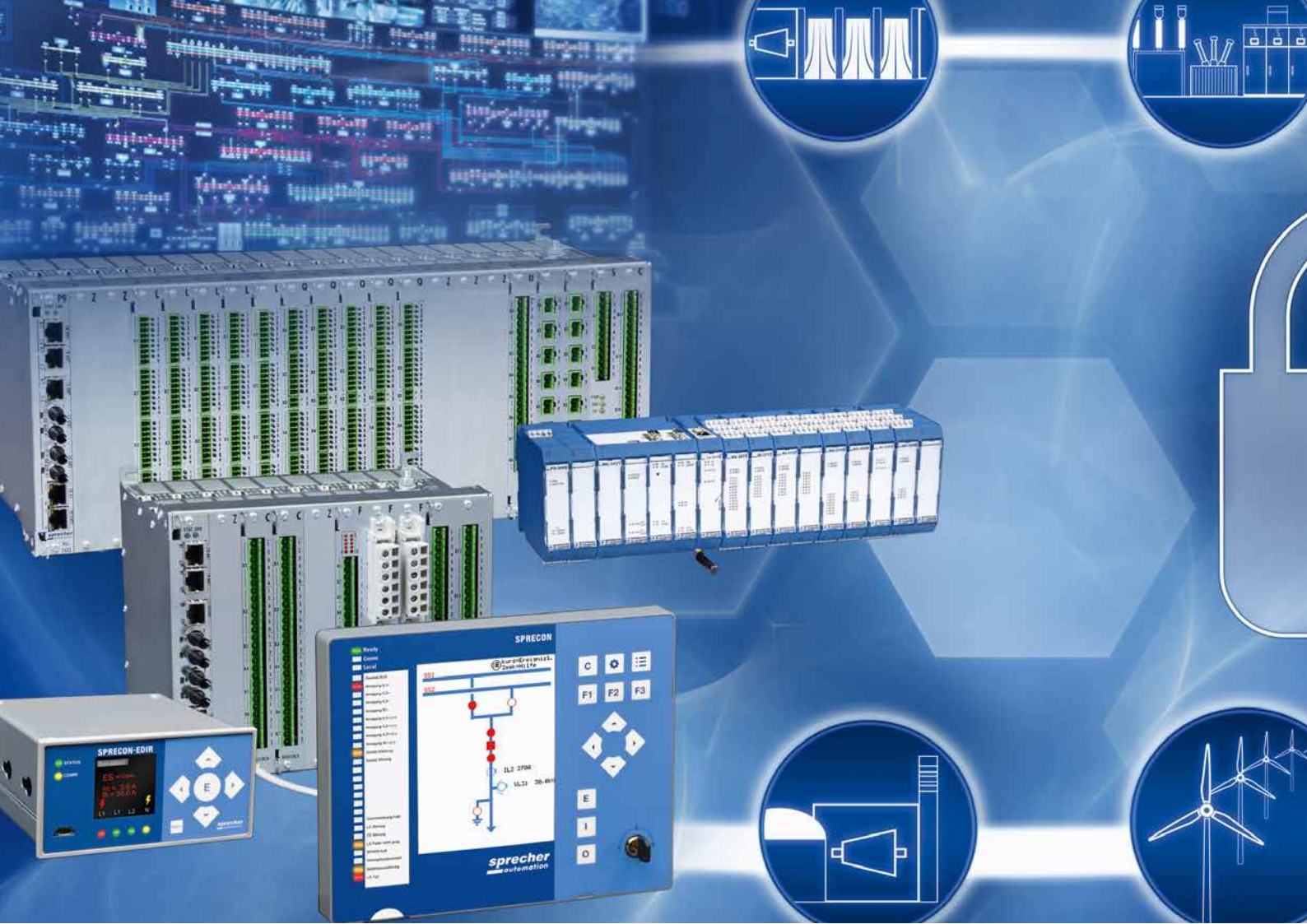


SPRECON[®]-E ENGINEERING CENTER

ENGINEERING MODULES

FOR SPRECON-E AUTOMATION SYSTEMS



SPRECON-E is the result of our long-term experience in the areas of power system engineering as well as control, protection and automation. SPRECON-E can be organised centralised or decentralised. Application-specific data transmission allow “open” system communication at the highest possible reliability level. The consequent modular hardware and software architecture acts as the basis for customer-specific applications as well as step-by-step implementations of large-scale systems.

SPRECON-E is a process-independent automation platform and therefore applicable to various power systems such as switchgears, substations and power plants. The platform allows integration of autonomous systems and devices of other manufacturers (i. e. protection and control devices) into new as well as existing plants.

SPRECON-E provides various user interfaces for easy and secure system operation ranging from traditional push buttons to state-of-the-art display systems with modern graphical user interfaces.

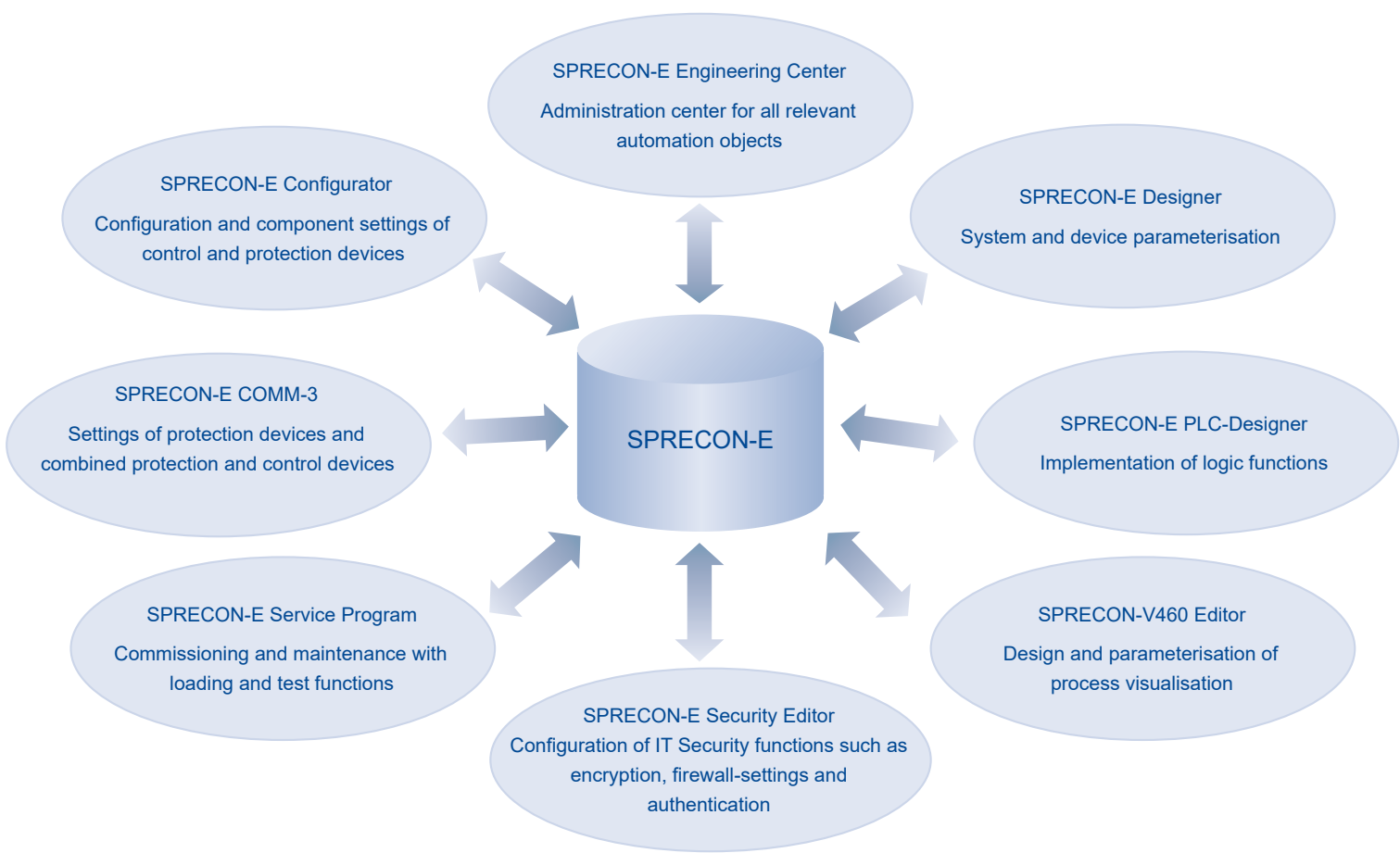
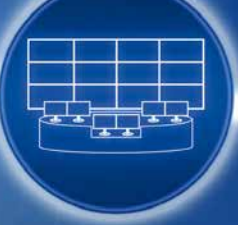
The SPRECON-E Engineering Center is a workflow-oriented software and hardware platform which consists of software and hardware modules that were specifically developed for configuration, parameterisation (application-specific), maintenance and diagnostics of SPRECON-E devices and systems. The functional range of the SPRECON-E Engineering Center can be individually adapted to specific customer requirements.

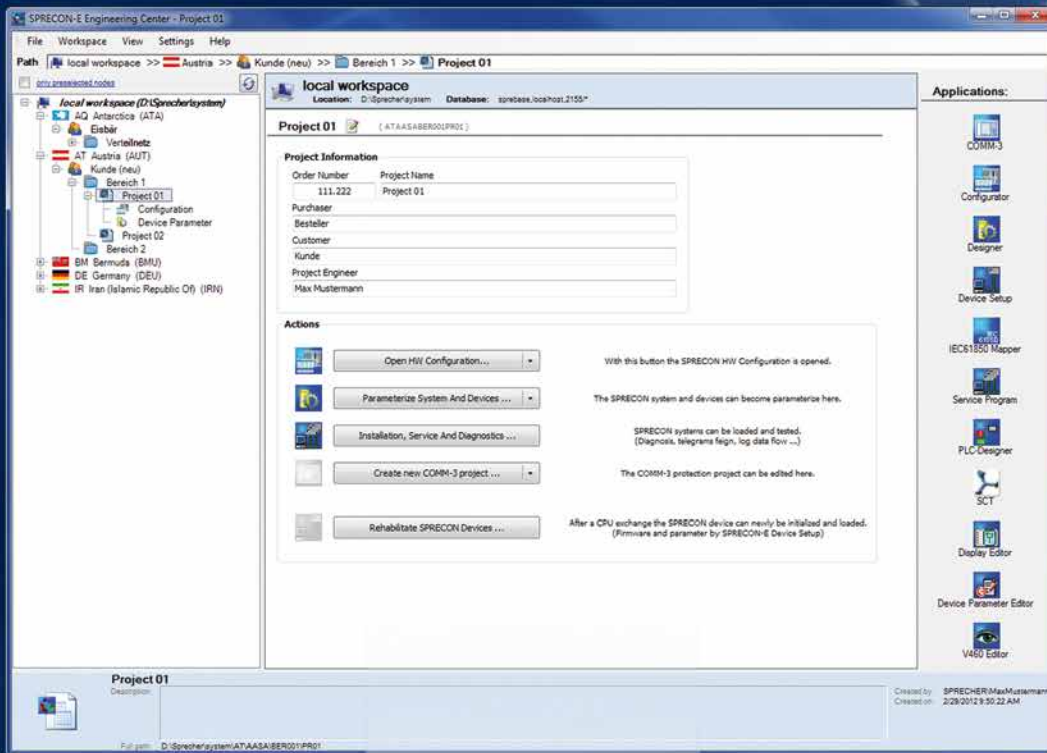
The following software modules cover the complete engineering and maintenance process and are optimised for Windows 7/10 (32/64 Bit):

- SPRECON-E Engineering Center
- SPRECON-E Configurator
- SPRECON-E Designer
- SPRECON-E PLC-Designer
- SPRECON-E COMM-3
- SPRECON-E Service Program
- SPRECON-V460 Editor
- SPRECON-E Security Editor

IT SECURITY

ACCESS CONTROL
NETWORK SECURITY
SYSTEM INTEGRITY





IN THE WORKFLOW
Workflow-orientated environment
for engineering and maintenance of
SPRECON-E automation systems

WORKFLOW

The SPRECON-E Engineering Center is the all-embracing software platform for SPRECON-E software modules regarding engineering and maintenance of SPRECON-E automation systems. All SPRECON-E software modules can be used via network. With this platform the user faces an optimal software environment that is focused on the relevant tasks.

Beside project management and the integrated programmeforeasyprogramaccess, the SPRECON-E Engineering Center also supports customised workflow for engineering and maintenance of SPRECON-E systems and devices. The status indication line shows the current project status as well as the project data and a brief project descriptions. The platform supports the standard communication protocols IEC 61850 and IEC 60870-5. In addition, various proprietary communication protocols can be used.

CLEAR PROJECT MANAGEMENT

- Integrated project explorer with tree structure for project management

- User- and role-based access right management
- Data backup with parameter status (original/read-only)
- Work environment support for central (network server) and local (local PC) methods
- Graphical separation of work areas and projects

INTEGRATED ASSISTANT

- Clear arrangement of the specific tasks for project management of SPRECON-E automation systems
- Optimised workflow for project realisation
- Version control for project data
- Mailing assistant for project data
- Integrated program menu for easy access to specific software modules regarding configuration, parameterisation, commissioning and maintenance
- Automatic adjustment of the program menu depending on the installed software modules
- Version management of the software modules as well as multi-versional support of parallel installed software modules

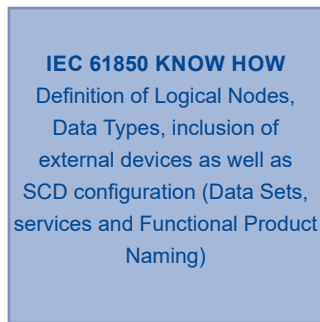
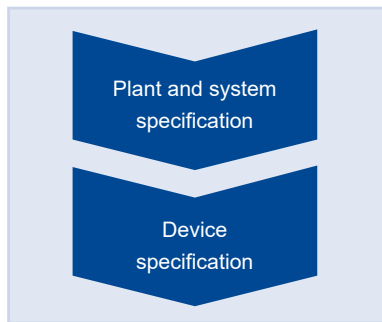


ENGINEERING OF IEC 61850 SYSTEMS

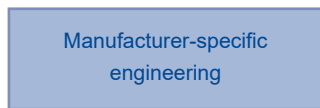
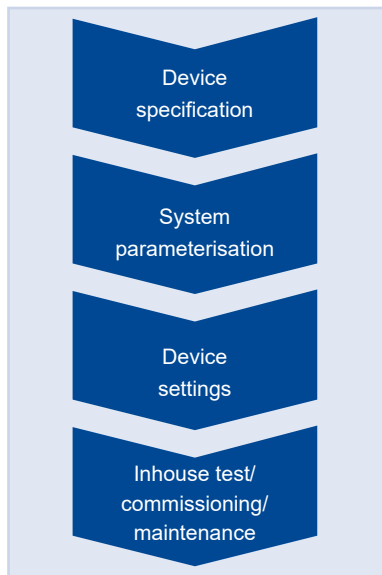
WORKFLOW TOP-DOWN APPROACH ⇨
HIGH IEC 61850 KNOW HOW NECESSARY

WORKFLOW BOTTOM-UP APPROACH ⇨
LOW IEC 61850 KNOW HOW NECESSARY

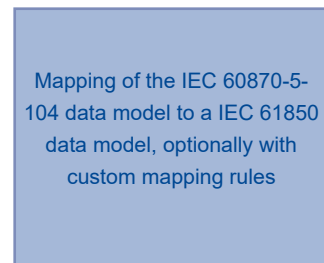
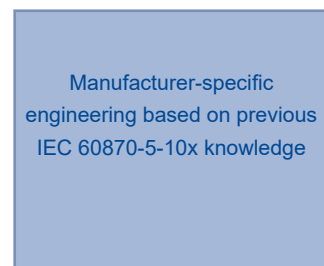
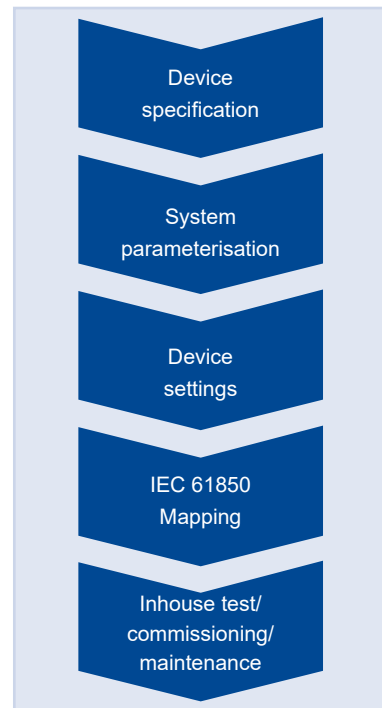
not depending on manufacturer

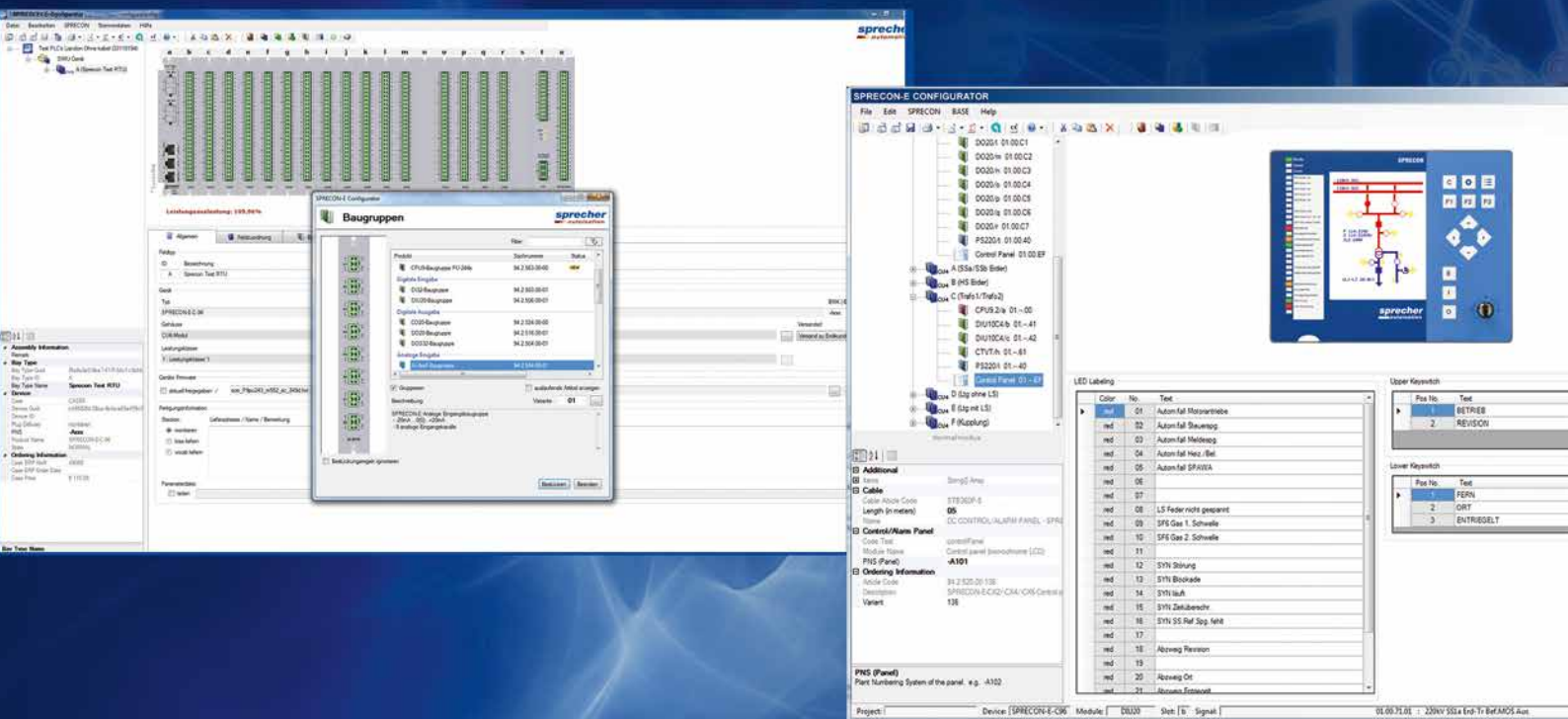


depending on manufacturer



not depending on manufacturer





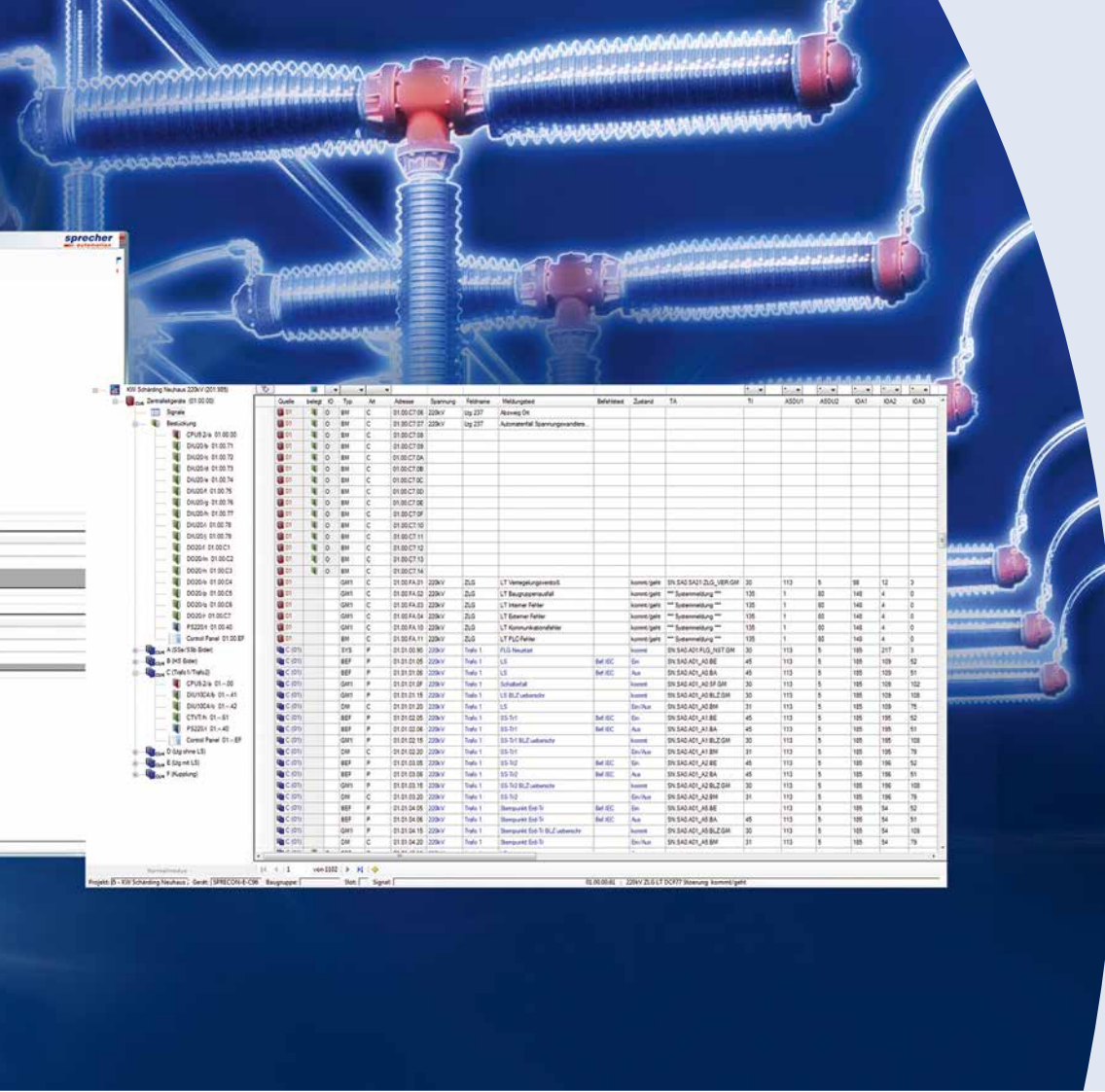
SPRECON-E CONFIGURATOR

With the SPRECON-E Configurator, all configuration and component settings which are relevant to the SPRECON-E automation system are accomplished. The data is further processed by the other software modules within the engineering and maintenance workflow.

The SPRECON-E Configurator offers the following highlights:

- Component settings of the SPRECON-E devices
- Library with Typicals for various applications
- Configuration of SPRECON-E devices
- Assignment of signal text as well as mass processing via signal lists
- Documentation of wiring/circuit diagrams with inner diagrams, terminal descriptions, addresses, long text and additional customer-specific information

- Automatic documentation and reporting:
 - Device and system documentation
 - Configuration data with object number and module description
 - Order and manufacturing lists
 - Mounting, marking pad, delivery note
- Data interface to other SPRECON-E software modules



CONFIGURATION OF THE SPRECON-E IT SECURITY FUNCTIONS

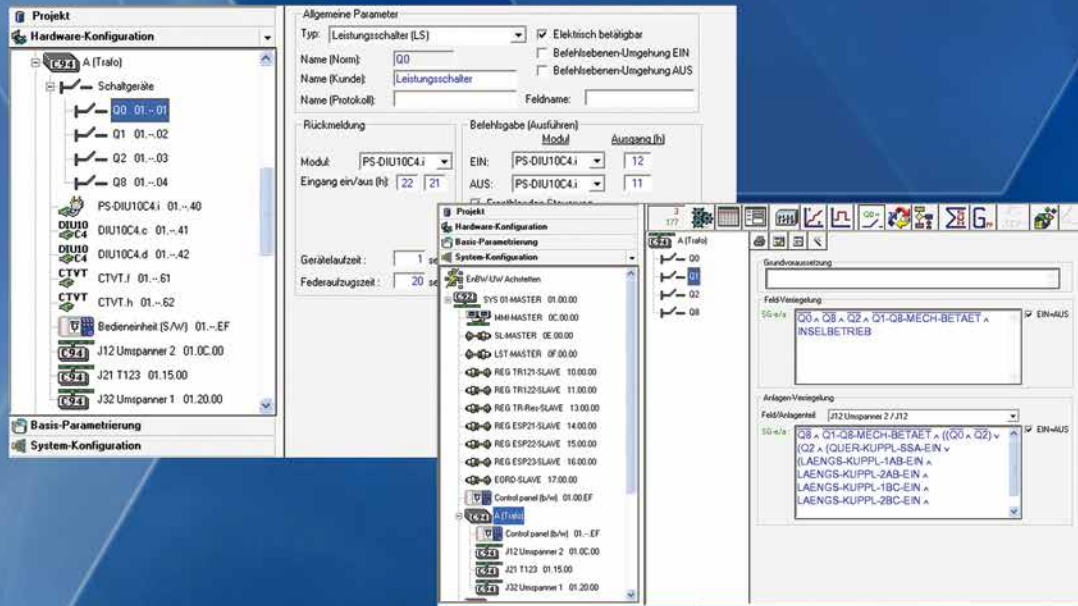


SPRECON-E Security Editor

- Configuration of the IPsec tunnel, the firewall rules and certificates

Access control in SPRECON-E Designer

- Creating local users with roles
- Configuration of radius connection(s) for central user administration
- Selective assignment to control, protection and Webserver



SPRECON-E DESIGNER & SPRECON-E DISPLAY EDITOR

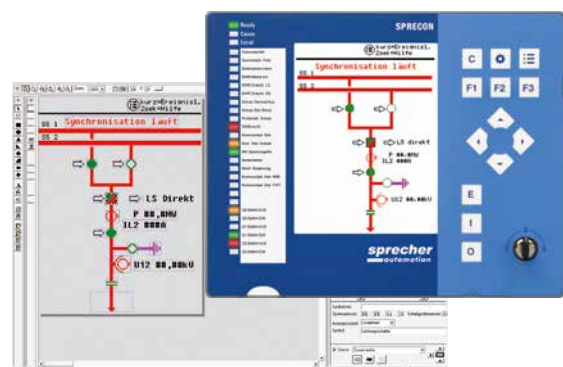
The parameterisation of a SPRECON-E automation system is accomplished with the SPRECON-E Designer. The SPRECON-E Designer uses all data generated by the SPRECON-E Configurator for further processing.

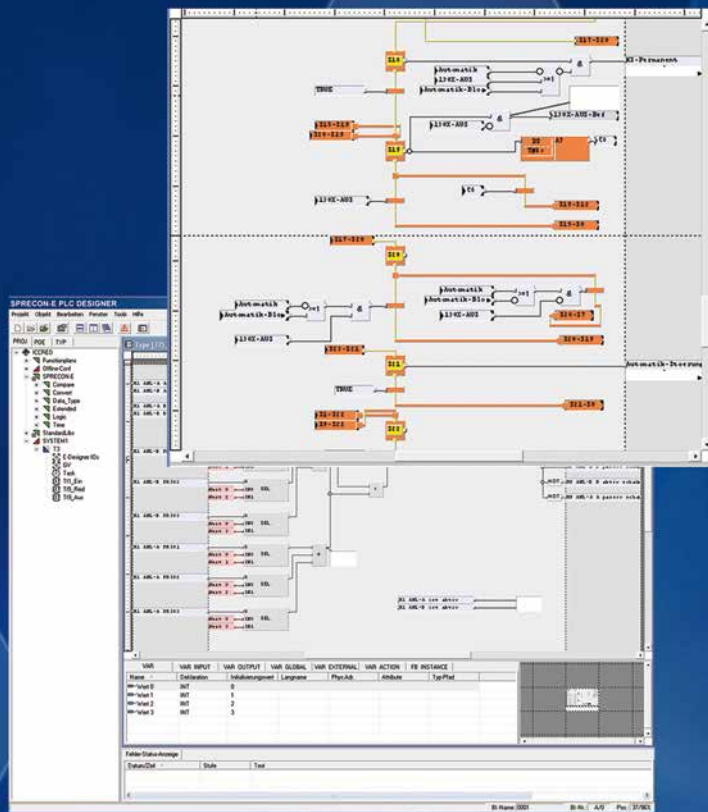
By drag & drop function, the software module offers easy and flexible adaption to system topologies, quick configuration of control functions as well as creation of data point configuration matrixes for telecontrol networks. All system-relevant display diagrams for the SPRECON-E-CP control panel can be created with the integrated Display Editor.

The SPRECON-E Designer offers the following highlights:

- Parameterisation tool for the complete SPRECON-E platform
- Stationbus via IEC 61850 and/or IEC 60870-5-104
- Easy and quick connection to control centers and other control systems via various communication protocols:
 - IEC 60870-5-104, IEC 60870-5-101
 - SAT 1703, Modbus, RP570, DNP3, etc.

- Easy integration of external devices (IEDs) via various communication protocols: IEC 61850, IEC 60870-5-103, Modbus, IEC 62056-21 (IEC 1107), etc.
- Easy and quick configuration of control functions with predefined templates and bay types
- Interactive creation of graphical objects and diagrams for control, protection, diagnostics and help pages as well as event and alarm lists for the SPRECON-E-CP control panel with the integrated fully graphical Display Editor
- Assignment of data points to graphical objects
- Administration of templates and adaptable symbol libraries
- Automatic generation of documentation





SPRECON-E PLC-DESIGNER

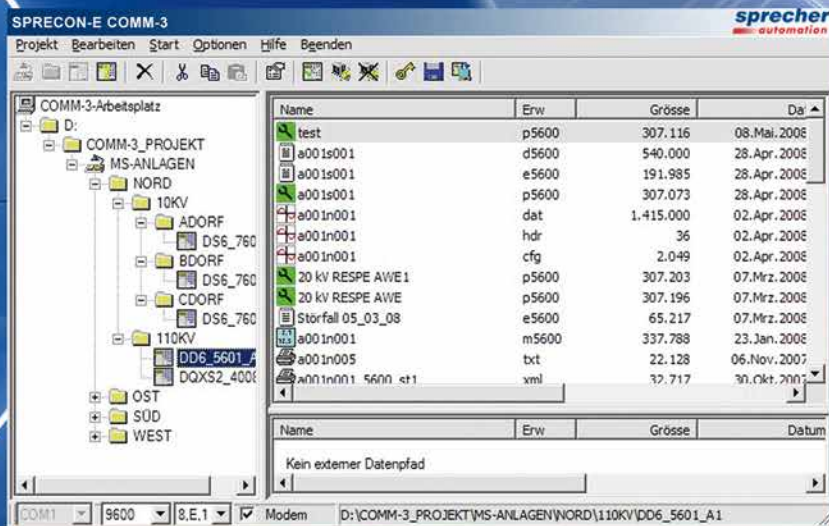
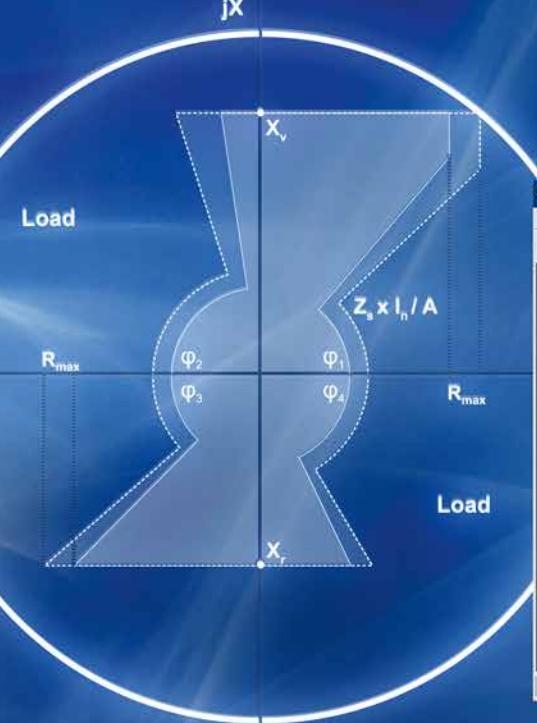
Based on the process data points of the SPRECON-E Designer, all logic functions can be defined with the SPRECON-E PLC-Designer according to IEC 61131-3. Like the SPRECON-E Designer, the PLC-Designer also offers drag & drop and context menus for intuitive operation.

The software module supports the graphical programming languages FBD (Function Block Diagram), SFC (Sequential Function Chart) and ST (Structured Text) for complex program sequences.

The SPRECON-E PLC-Designer offers the following highlights:

- Logic functions according to the international standard IEC 61131-3
- Function library with comprehensive control functionalities (i. e. automatic switching, bus bar switching, automatic transformer regulator, etc.)
- User-defined as well as predefined function blocks
- Own SPRECON SAFE data type for higher security

- Comprehensive test functions (Offline/online tests, Force Maker, oscilloscope, etc.)
- Automatic diagram and syntax checks
- Graphical and text orientated programming languages
 - Function Block Diagram (FBD)
 - Sequential Function Chart (SFC)
 - Structured Text (ST)
- Archiving of project status
- Flexible documentation
- Unlimited diagram area



SPRECON-E COMM-3

SPRECON-E COMM-3 is a complete solution for operation and settings of SPRECON-E protection devices and protection modules of combined protection and control devices (one-box solutions, OBS).

With the file manager all protection devices in the automation system can be displayed in the project tree. All data including settings can be assigned to the relevant protection device and therefore easily identified.

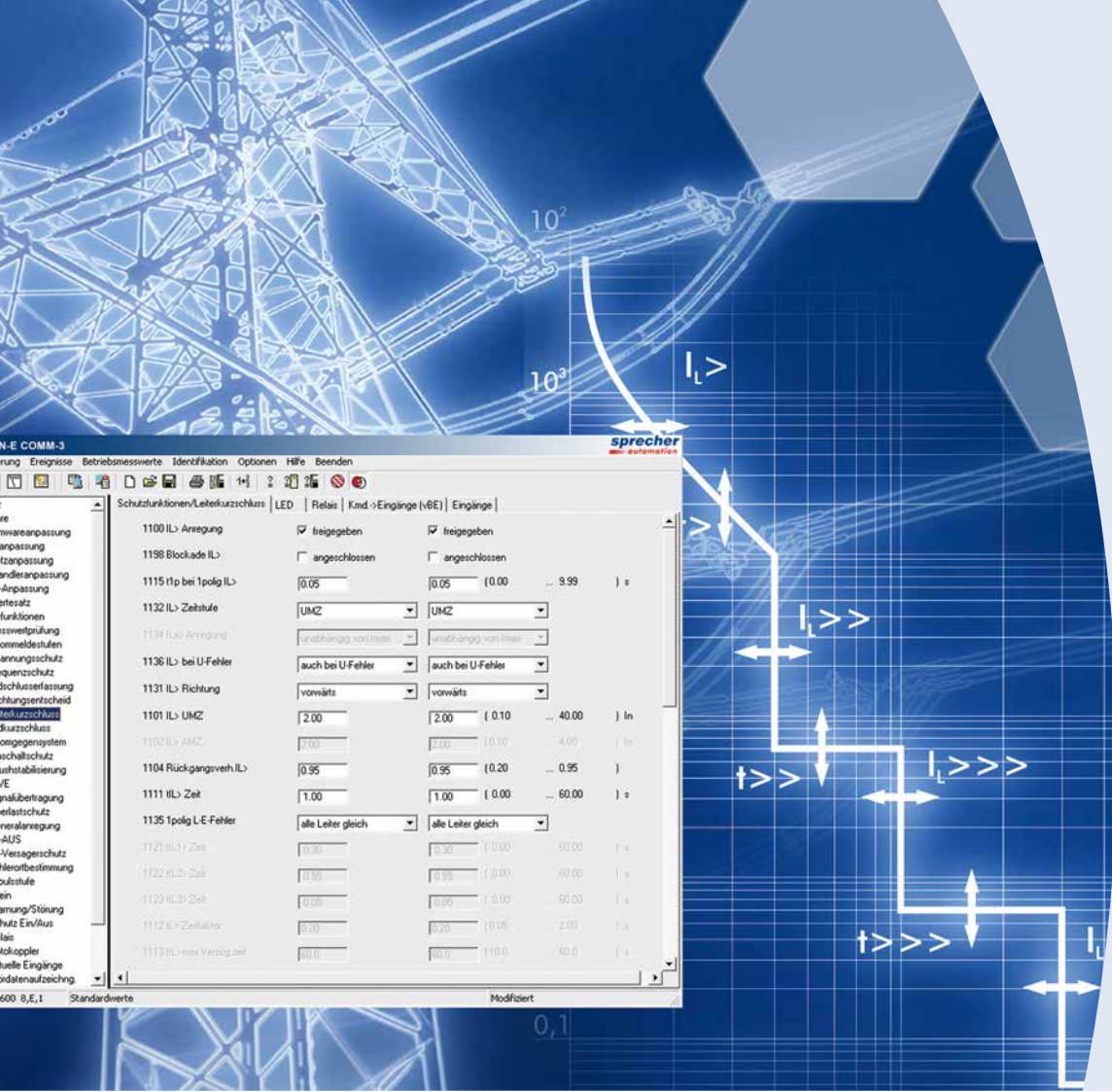
Via the explorer of the COMM-3 management program, the device-specific COMM-3 software modules (device programs) can be accessed for all relevant protection-related tasks, whereas both local and remote control are supported.

- Complete parameterisation of SPRECON-E-P protection devices
- Read-out and archiving of protection events and data

- Generation of COMTRADE files from read-out protection data
- Read-out of current operational measuring values as well as cyclical logging
- Indication of current input and output status

SPRECON-E COMM-3 offers the following highlights:

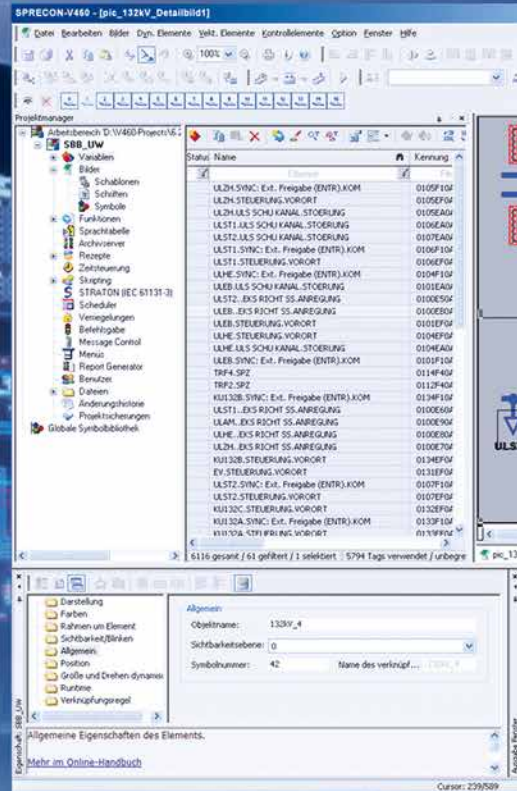
- Flexible presentation of the system structure
- Complete read-out of parameters, events and protection data by a push of a button
- Categorisation and grouping of parameters
- Clear indication of parameters of the relevant protection function
- Comparison of parameter sets and copy function for value sets
- Parameter-dependent access rights



- Saving of parameters, events and measured values in XML format
- Data transfer to testing devices (XRIO)
- Subsequent time-shifting of events for comparison with other event recordings
- Protection data analyses by optional COMTRADE programs (interfaced)
- Integrated device manual

- Future-proof concept for device programs with full compatibility to 1995 releases (SPRECON-E one-box solutions and EAW protection devices) – automatic conversion of settings to a new device structure included





SPRECON-V460 EDITOR

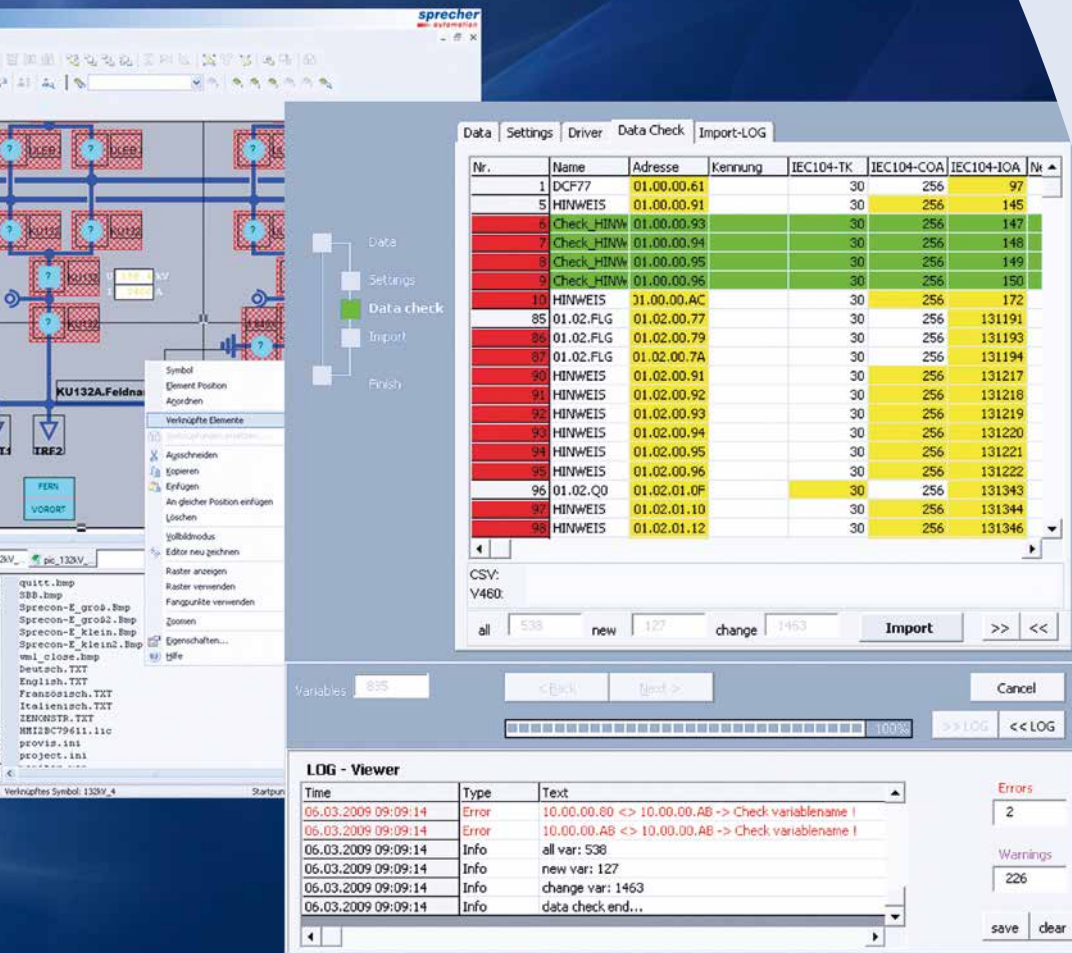
SPRECON-V460 meets all demands of modern control center systems concerning monitoring and evaluation of processes in the area of power generation and distribution. The system provides a multitude of functions and allows a wide range of application due to consistent integration of international standards and technologies.

By the full continuity of SPRECON-V460 at all process levels, Sprecher Automation introduces a new standard to the SCADA world. The SPRECON-V460 Editor allows comfortable creation and maintenance of all visualisation projects regardless of process levels. As a result, the users benefit from the true continuity of the system.

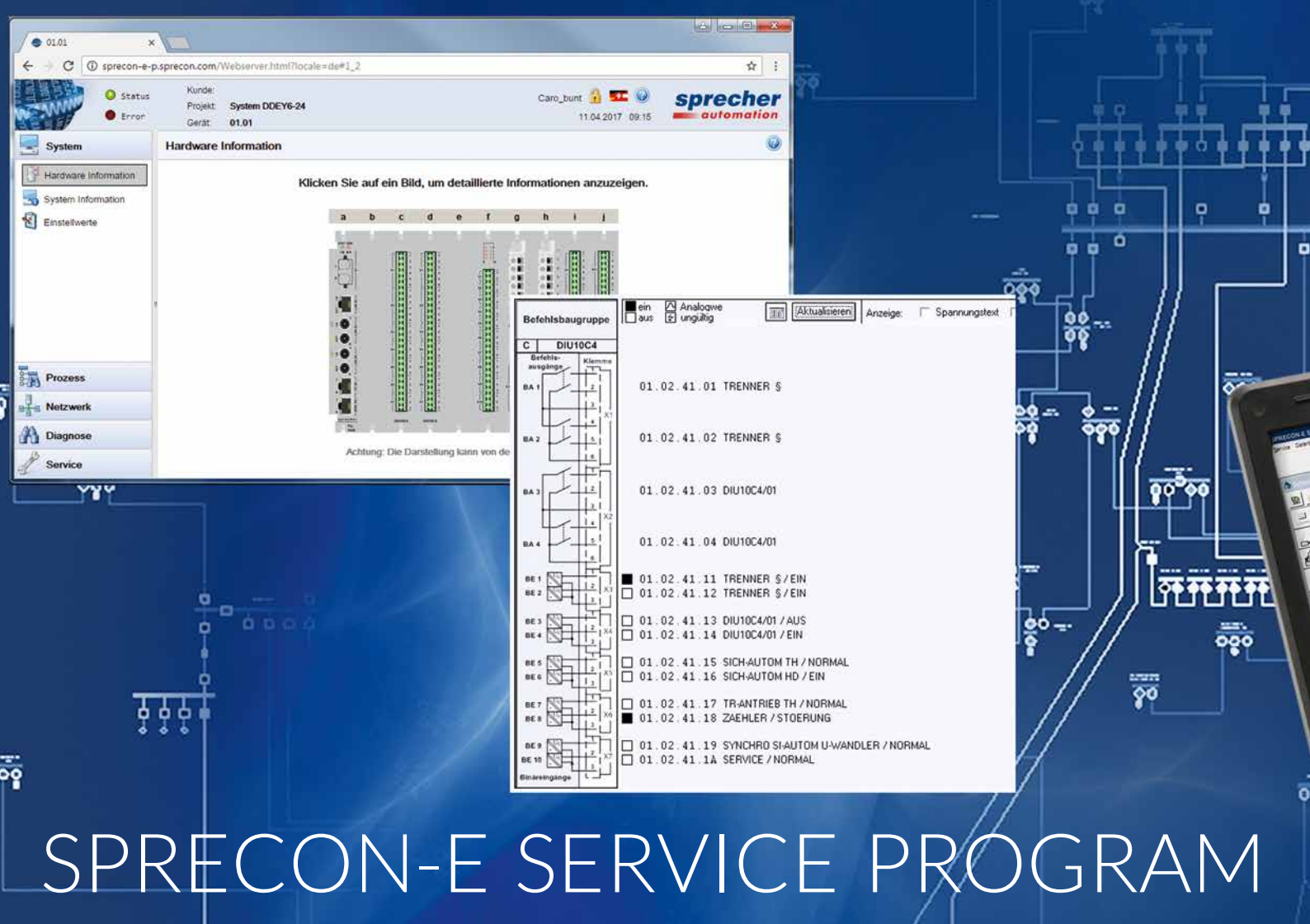
The various functions and modern tools are defining benchmarks for modern parameterisation. Additionally, the system also provides VSTA/VBA Wizards for automatic parameterisation.

The SPRECON-V460 Editor offers the following highlights:

- Overall project engineering (users, fonts, templates, language tables, graphics, multimedia files)
- Centralised project engineering (templates, response matrixes, functions, VBA macros)
- Object-oriented parameterisation (variables, data types, symbol management)
- Parameterisation instead of programming
- Automation of sequences according to IEC 61131-3
- Indexed diagram addressing (substitution)
- Import interface for variables through
 - SPRECON-V460 Import Wizard (i. e. data transfer from SPRECON-E Designer)
 - VSTA/VBA script, XML, dBase, CSV
 - Online import via communication drivers



- Import of vectors
- Support of standard protocols (IEC 61850, IEC 60870-5)
- Import and export as XML
- Integration of audio, video and HTML
- Remote transmission of created projects to runtime systems
- Reload of project data during runtime
- Automatic project documentation with Wizard including screen shots and cross reference lists
- Intelligent Wizards for automatic project engineering
 - Predefined Wizards
 - Configurable and adjustable VSTA/ VBA Wizards
- Central SQL project-database
- Comprehensive online help
- Language tables
- Simple redundancy project planning
- Central management of distributed control centers
- One editor for Windows 7 and Windows 10 projects

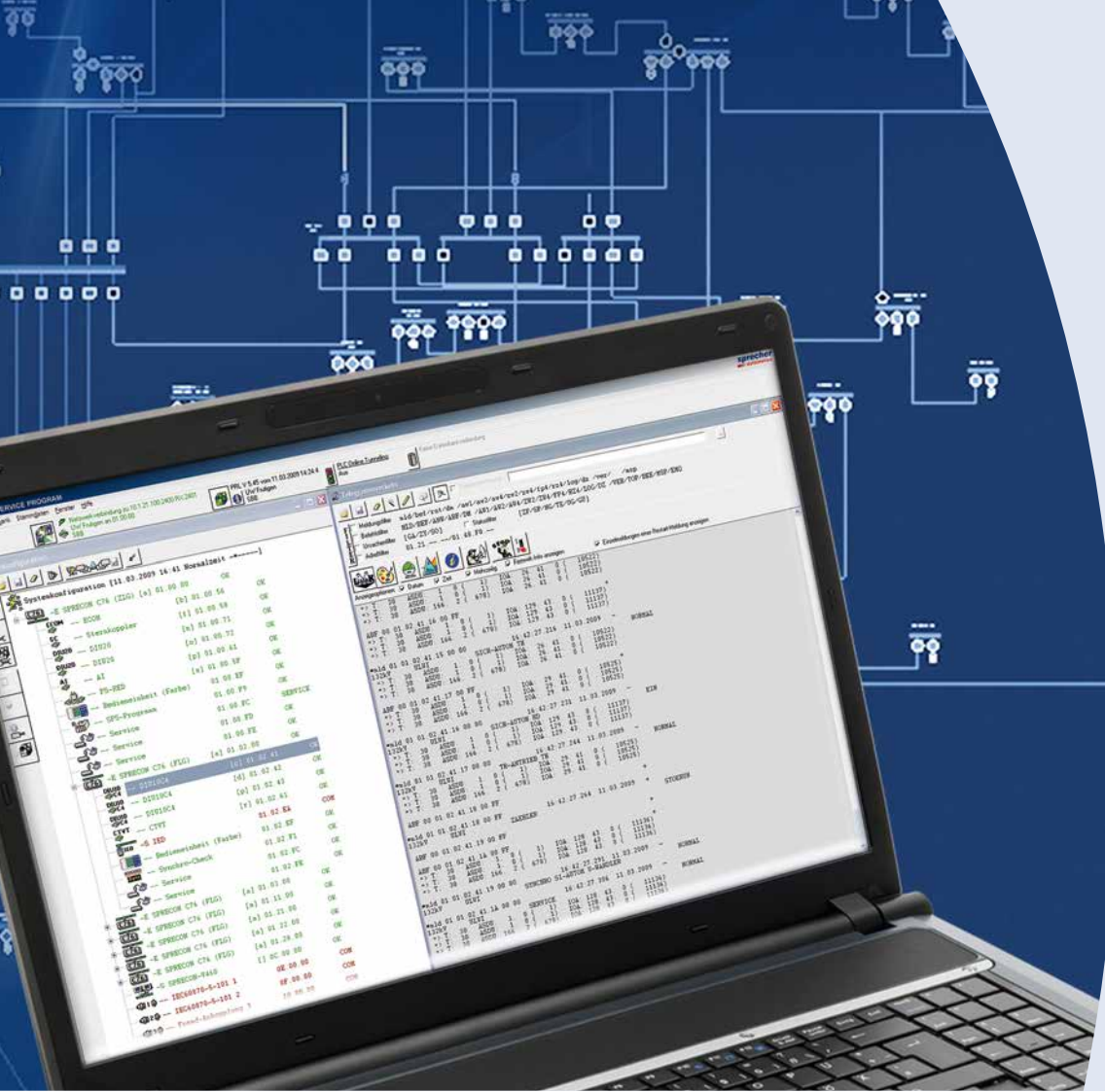


SPRECON-E SERVICE PROGRAM

The SPRECON-E Service Program offers sophisticated functions for secure commissioning and maintenance of SPRECON-E automation systems.

The SPRECON-E Service Program offers the following highlights:

- Determination of system and device configuration and the according operating status
- Hierarchical indication and continuous updating of device status
- Clear presentation of the automation network with communication and module status
- Comfortable commissioning functionalities
 - Device configuration
 - Transfer of firmware, parameter sets and device configuration
 - Device-specific change recognition with simple refresh function
- Comprehensive diagnostics functionalities
 - Message indication with log text and remote control data
 - Logging and evaluation of messages
 - Effective filtering and trigger functions
 - Detailed data point information
 - Graphical display of analog and digital inputs and outputs
 - Log recording and analyses of connected communication interfaces
- Comprehensive test functions
 - Data point check (end-to-end bit test)
 - Automatic system tests (i. e. interlocking tests)
 - Message simulation



- Read-out of disturbance data at the HMI
- Comprehensive documentation
 - Firmware and parameter status
 - Storage of current system data and status
- Master data management (i. e. connections)
- Authentication with user roles

WEBSERVER

The web server provides all relevant system and offers all necessary functions for simple service tasks – no tool installation needed!

- IT security with an integrated user- and role concept and secured access via HTTPS
- Display of SPRECON alarm- and event list (incl. acknowledgement), process pictures and report LED. Optional control function in the process pictures

- Retrieval of information concerning network, NTP server, GPRS modem, firewall, IPsec and the overall system condition
- Service and diagnostic functions
 - Display and editing of user-specific parameters
 - Display of process data with condition and status (IEC 61850)
 - Download of system, archive and service data as well as fault records
 - Status indication for switchgear locking and cyclic equations
 - Display of all locks and cyclic calculations
- Station localising e.g. for the roll-out of smart secondary substations. The main station parameters can be entered directly via the webserver.



HEADQUARTERS

Sprecher Automation GmbH

Franckstrasse 51
4020 Linz
Austria
T: +43 732 6908-0
F: +43 732 6908-278

info@sprecher-automation.com

LOCATIONS

AUSTRIA

Sprecher Automation GmbH
(Linz, Wien)

GERMANY

Sprecher Automation Deutschland GmbH
(Berlin, Erfurt, Dortmund, München)

THE NETHERLANDS

Sprecher Automation Nederland B.V.
(Oud Gastel)

POLAND

Sprecher Automation Polska Sp z o.o.
(Świdnica)

SLOVAKIA

Sprecher Automation spol. s r.o.
(Bratislava)

SWITZERLAND

Sprecher Automation Schweiz AG
(Aarau)

UNITED ARAB EMIRATES

Sprecher Automation Middle East FZCO
(Dubai)

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