SPRECON®-E-C-Series
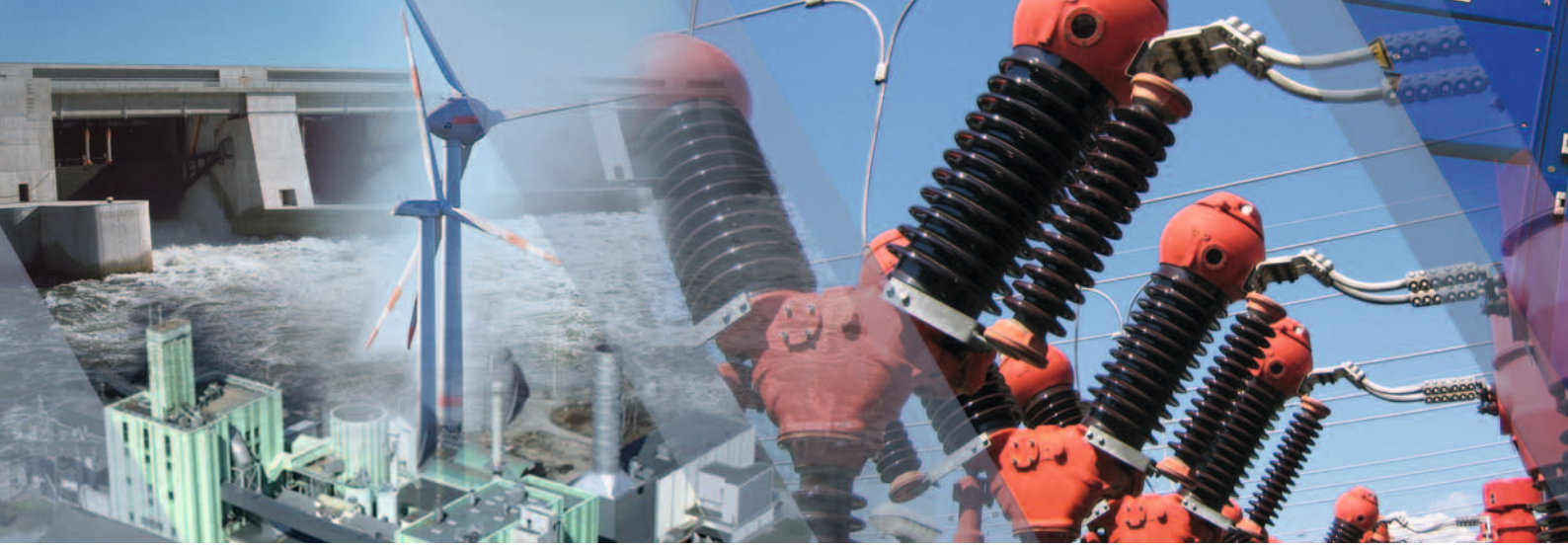
Multifunctional Devices for Automation, Control and Remote Control of Power Utilities

sprecher automation

SPRECON-E-C-Series

Modern automation, control and remote control systems have become essential for optimised and secure control and monitoring of processes regarding power distribution and industrial networks. Depending on the specific field of application, different requirements have to be met by the devices regarding:

- Various I/O quantities
- Various signal types
- Environmental conditions
- Communication and transmission technology
- Logical functions

The concept of the SPRECON-E automation, control and remote control system is based on technical and economical considerations in order to provide optimal solutions by simultaneously sustaining the overall system concept. The SPRECON-E platform consists of the following devices of the SPRECON-E product family:

- Multifunctional automation devices SPRECON-E-Cx2/-Cx4/-Cx6
- Compact RTUs SPRECON-E-T3
- Protection devices SPRECON-E-P

All devices are based on a uniform system architecture in terms of hardware, data structures, communication, logical functions as well as engineering and service tools. They are distinguished by their rack sizes as well as their application-related parameters.

SPRECON-E-C Series

Due to their high scalability, these automation, control and remote control devices can be applied to a wide range of different types of plants and utilities.

The uniform design allows various applications such as station computers, bay computers, remote control units or other automation devices.

Standard protocols like IEC 61850, IEC 60870-5-101, -103 and -104 allow easy communication and data transmission to the higher-levelled control system. The SPRECON-E system platform also features integration of various proprietary protocols. Furthermore, the series integrate communication technology like switch, media converter and GPRS-modem.

Areas of Application

The SPRECON-E-C Series is especially qualified for the following application areas:

- Electric power supply
  - High and medium voltage switchgears, distribution systems
  - Caloric power plants, hydroelectric power plants and wind power stations, photovoltaic power plants
  - Traction power supply
  - Industrial networks
  - Smart Grid

- Municipal utilities
  - Water supply and sewage systems
  - Gas and oil supply, district heating

Configuration

Each SPRECON-E-C device consists of a basic frame (rack, power supply, CPU, I/O modules) and, if required, a detachable HMI control panel. By combination of different pluggable modules, the devices can be individually assembled in order to meet particular requirements.
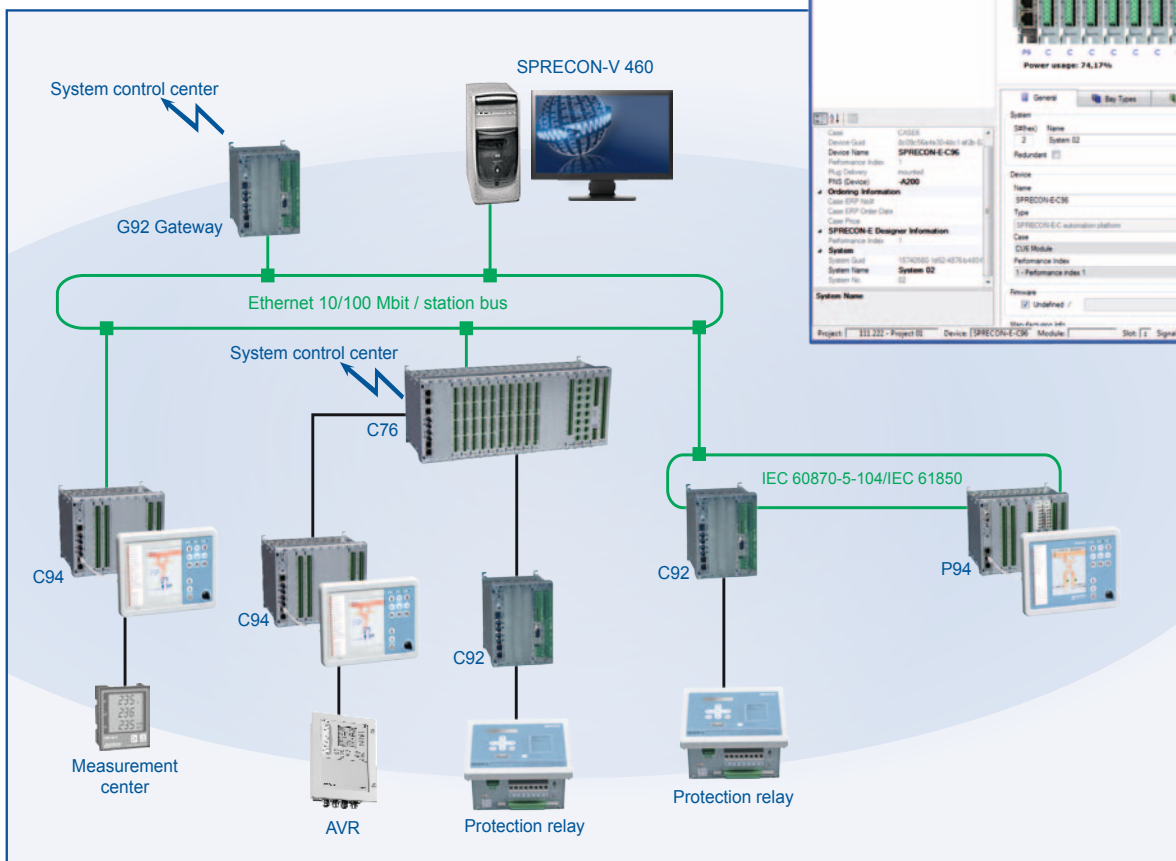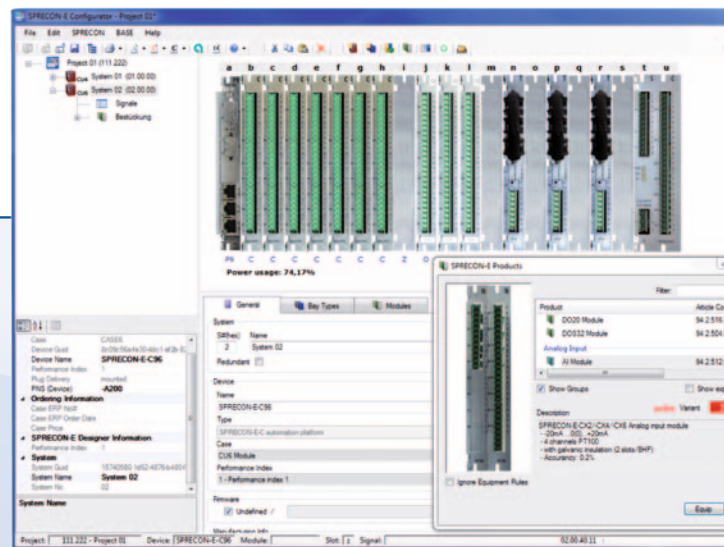
All functions can be separately configured whereas system parameterisation is distinguished from device-specific settings.

The SPRECON-E ENGINEERING CENTER offers specific software modules for local, network-supported or remote engineering and maintenance.

OPERATION

Beside remote control via standard or customer-specific SCADA protocols, comfortable and clear operation is guaranteed by the detachable HMI control panel with a full-graphical display. Also the devices are equipped with interfaces for connection to a local HMI workstation as well as to a SCADA (SPRECON-V460).

Configuration example and component setting with the SPRECON-E CONFIGURATOR

SPRECON-V 460

System control center

G92 Gateway

Ethernet 10/100 Mbit / station bus

System control center

C76

IEC 60870-5-104/IEC 61850

C94

C94

C92

C92

P94

Measurement center

AVR

Protection relay

Protection relay

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Cases (WxHxD)

- Cx2/24HP 8 (3 free slots):
  131 x 176 x 170mm
- Cx4/40HP (7 free slots):
  212 x 176 x 170mm
- Cx6/84HP (18 free slots):
  436 x 176 x 170mm

flush and surface-mounted,
individually connectable

Performance characteristics

- Max. number of inputs/outputs per slot
  - Up to 20 digital inputs
    24 to 220V DC and
    110 to 230V AC/50/60Hz
  - Up to 20 digital outputs 250V AC/DC
  - Up to 10 digital control outputs
    250V AC/DC
  - Up to 8 analog inputs or 4 outputs
    0 to ±20mA
  - Up to 8 PT100 inputs for
    2-wire or 4-wire circuit
  - Up to 8 measurement inputs
    - 1A/2A/5A
    - 100V/220V
    - 16,7Hz/50Hz
  - Up to 32 binary inputs 24/48/60V DC
  - Up to 32 signalling outputs
    24 up to 48V DC (short-circuit-proof)
- Power supply
  - 24 to 60V DC or 110 to 250V DC
    and 110 to 230V AC/50/60Hz

Communication protocols

- IEC 61850
- IEC 60870-5-101/-103/-104
- Modbus, Courier, DNP3.0
- Extensive library of proprietary protocols

Communication interfaces

- LAN
  - 1 x Ethernet 10/100Mbit/s (RJ45) or
  - Ethernet switch for optical ring
    2 x opt. (BFOC) and 1/3 electr. (RJ45)
- RS232
- RS422/485
- Fibre-optic
- Star coupler
- GPRS-modem

Tests

Acc. EN 55022, IEC 60255 , IEC 60255-22,
IEC 60870-2, IEC 61000-4, IEC 61000-6-5,
CE designation

Environmental conditions

- Recommended temp. -5 to +55°C
- Limits: -25 to +70°C (on request)

Functions

- Control and monitoring of switching devices
  and process elements
- Single and double commands with 1-, 1½-,
  2-pole control
- Power output with high making/breaking
  capacity for direct motor control via switching
  device
- Control of transformers and Petersen coils
- Automatic functions for switching sequences
- Programmable logics (IEC 61131)
- Switching authority and command levels
- Station and bay interlocking
- Measured-value capturing with direct con-
  nectivity to current and voltage transformers
- Switching device blocking
- Substitution of switching device status
- Event recording
- SMS notification
- Group-assigned indication and measured-
  value blocking
- Limit value monitoring
- Max/min demand value calculation
- Average value calculation
- Configurable transmission mode for
  measured-values
- Metered-value capturing
- Elapsed-hour meter, operations counter
- Remote maintenance and configuration
- Time synchronisation with DCF77, GPS,
  SCADA protocol, NTP
- Continuous self-monitoring
- Synchrocheck, parallel connection
- AVR, protection (SPRECON-E-P)
- Web server for diagnosis and system
  analysis
- Open interfaces for connection to intelligent
  electronic devices (IEC)
- Support of common standards and propri-
  etary protocols
- Highest communication performance with
  max. number of 18 independent interfaces
  concurrently

HMI control panel

- Mountable attached or detached
- Full-graphical colour display (high resolution)
- 25 individually configurable LEDs
- Expandable with two alarm panels

Alarm panel

- 100 individually configurable LEDs
- Expandable with an additional alarm panel

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