

SIEMENS



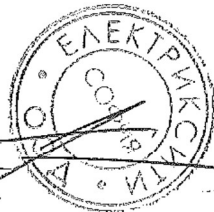
Products for modern energy grids

SIPROTEC 5

Protection, automation, and monitoring

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ВЯРНО С ОРИГИНАЛА



Integrated
Advanced
Cyber
Security



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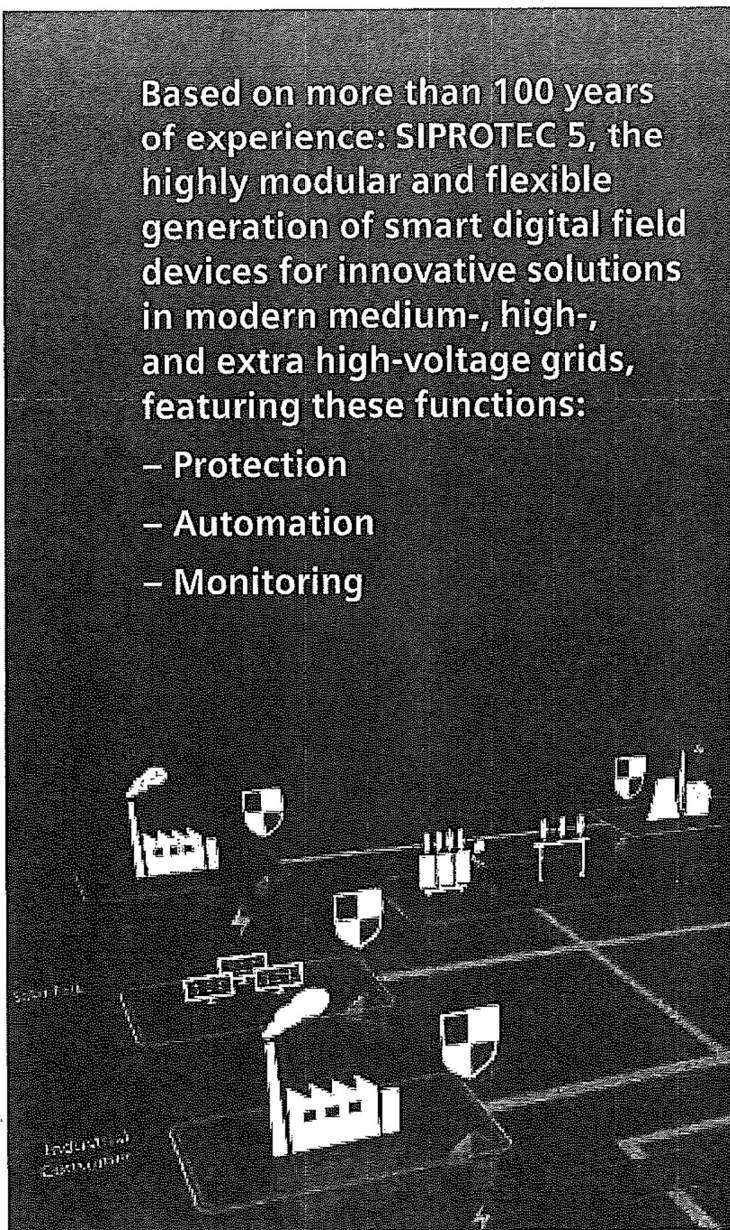
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SIPROTEC 5

Innovative, modular, and high quality

Based on more than 100 years of experience: SIPROTEC 5, the highly modular and flexible generation of smart digital field devices for innovative solutions in modern medium-, high-, and extra high-voltage grids, featuring these functions:

- Protection
- Automation
- Monitoring



Innovation focal points

Customized: Perfectly tailored fit

Individually configurable devices deliver customized and cost-efficient solutions over the entire life cycle.

Networked: Designed to communicate

With this groundbreaking system architecture, you have all your communication under control.

Integrated: Comprehensive workflow

Integrated engineering from end to end, from system design to operation facilitates system development all along the line.

Secure: Safety and security inside

Multilayered security mechanisms throughout the entire chain ensure maximum security and availability.

All advantages at a glance

- Safety for employees and equipment
- Cost savings on initial investment, spare part inventory, maintenance, and expansion
- Efficient functioning with optimized operating concepts using the unique DIGSI 5 engineering tool for all applications and devices
- Reliable, high-performance communication solutions
- User-friendly thanks to new system solutions and ergonomic operating concepts
- Flexibility thanks to modular functionality and hardware

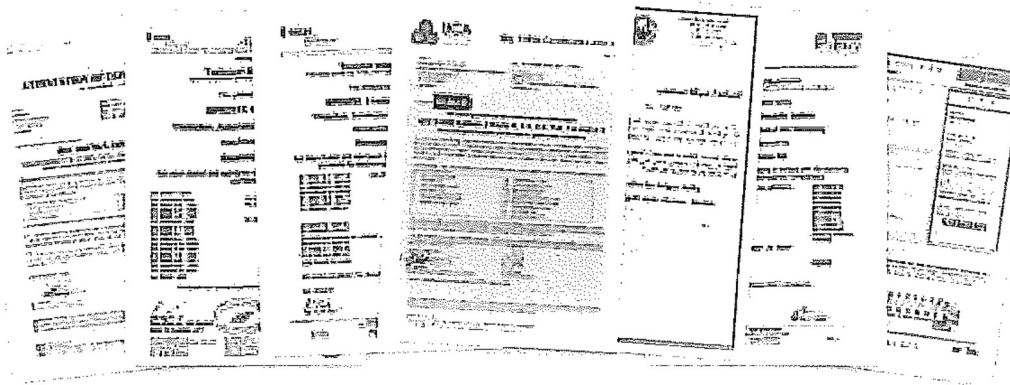


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SIPROTEC 5

Secure, reliable, and interoperable

Certified quality and conformity – confirmed by independent test laboratories worldwide



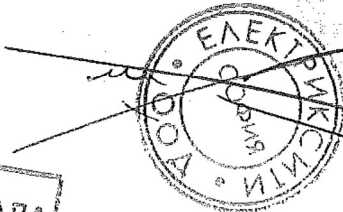
The SIPROTEC 5 portfolio – suitable for every application

Main function	Device types
Overcurrent protection	
Overcurrent protection and control	7SJ82, 7SJ85
Line protection	
Distance protection and control	7SA82, 7SA86, 7SA87
Line differential protection and control	7SD82, 7SD86, 7SD87
Combined line differential and distance protection and control	7SL82, 7SL86, 7SL87
Breaker management and control	7VK87
Overcurrent protection as backup for lines	7SJ86

Main function	Device types
Transformer differential protection	
Transformer differential protection, control and monitoring	7UT82, 7UT85, 7UT86, 7UT87
Motor protection	
Motor protection and control	7SK82, 7SK85
Generator protection	
Generator protection and control	7UM85
Busbar protection	
Centralized busbar protection	7SS85
Bay controller	
Bay controller with control/interlocking functions and monitoring, optionally with protection functions	6MD85, 6MD86
Fault recorder and power quality recorder	
Fault recorder with PMU	7KE85

Devices are flexibly expandable with system functions like PMU and arc protection. All devices 7XX85, 86, and 87 can be enhanced with expansion modules.

ВАРНО С ОРИГИНАЛА



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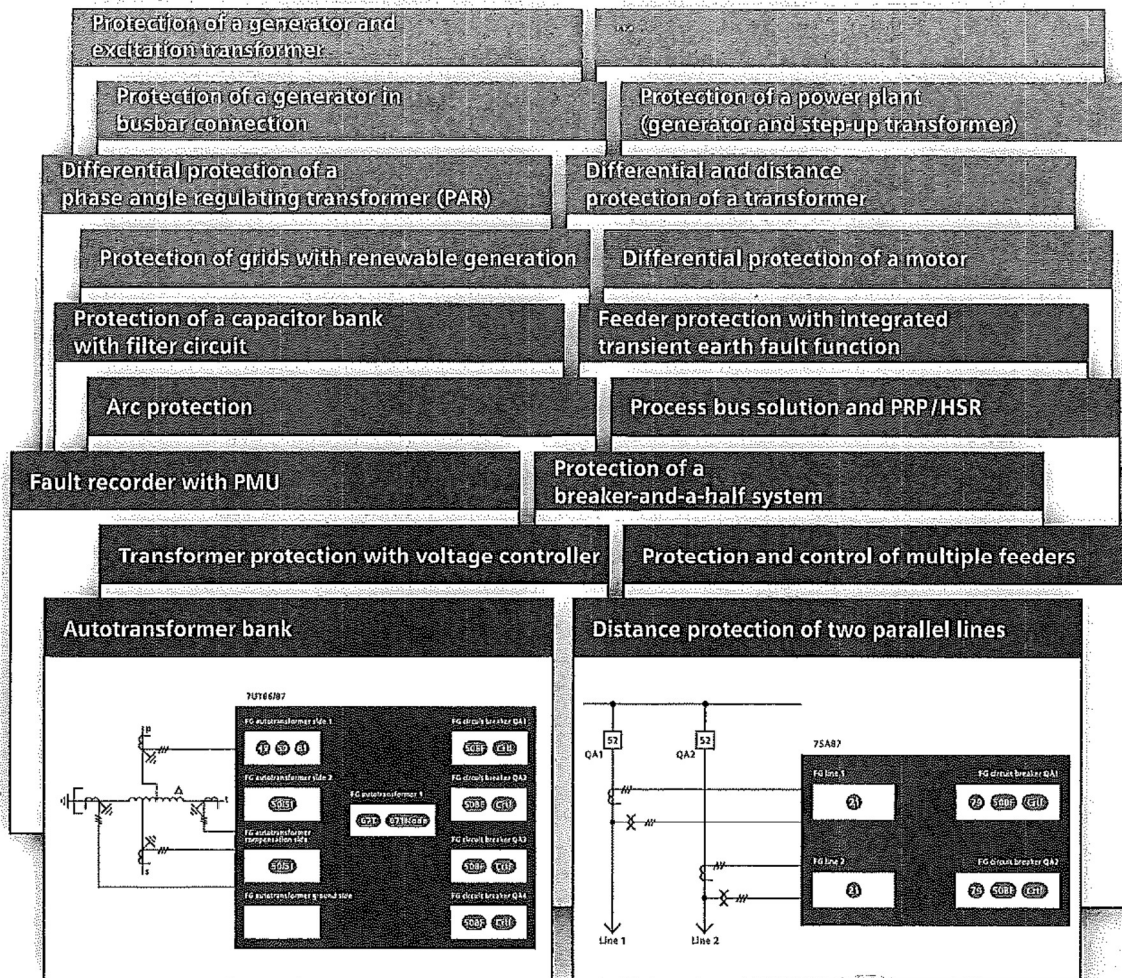
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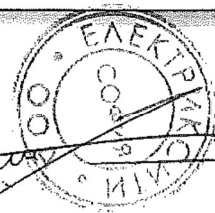
Applications

Flexible, versatile, and integrative

Discover these and many other application options with SIPROTEC 5 – thanks to the DIGSI 5 function library.



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System solutions

Consistent, individual, and configurable

Perfectly tailored fit

- Completely tailored to your needs – thanks to a modular system design in hardware, functionality, and communication
- Functional integration of diverse applications – including protection, control, measurement, monitoring, power quality, and fault recording
- Identical expansion and communication modules – for all devices
- Straightforward installation and interchangeability plus optimal reliability – with innovative terminal block technology
- Lower training costs, higher security – thanks to identical functions across the entire system family

Holistic workflow

- Integrated end-to-end system and device engineering – from the single line of the plant to device parameterization
- Simple and intuitive – graphical linking of primary and secondary technologies
- Adaptable application templates – convenient for most common applications
- Open interfaces such as XML – for seamless integration into the processing world
- Integrated tools – for reliable testing during the engineering and start-up phases and for simulation of operating scenarios
- Highest interoperability, efficient replacement and expansion concepts – guaranteed by flexible IEC 61850 object modeling
- Comprehensive – one IEC 61850 system configurator for all IEC 61850 devices in your plant

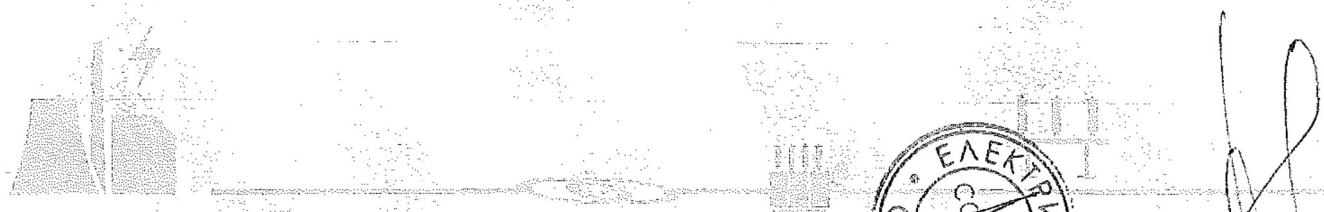
Your immediate advantage:

Save money on your initial investment and spare part inventory with individually configurable devices.

Your immediate advantage:

Make the most of your substantial time savings and high level of data security and transparency throughout the entire life cycle of your system using the unique DIGSI 5 engineering tool for all applications and devices.

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Communication

Comprehensive, interoperable, and secure

Designed to communicate

- Straightforward adaptation to existing communication structures
- Scalable redundancy according to requirements – in hardware and software
- Seamless – redundancy protocols PRP, HSR and RSTP
- Several parallel communication channels – for integrated solutions
- Always matching communication modules – plug-in, retrofittable
- Two independent serial protocols – on one module
- Process bus interfaces – conforming to standards IEC 61850-9-2 and IEEE 1588
- Comprehensive test routines – integrated

Safety and security inside

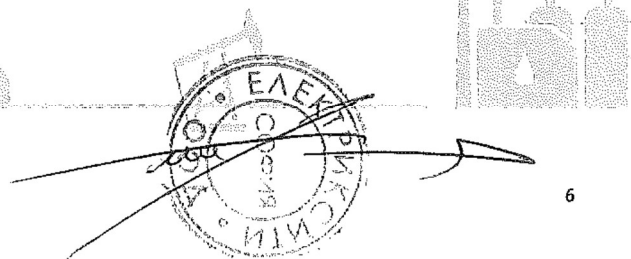
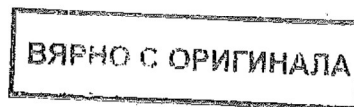
- Maximum protection of personnel and equipment – with proven functions
- Highest strength in terms of voltage, EMC, and climatic and mechanical stress – thanks to durable and ruggedized hardware and an ingenious layout of the entire electronics
- High availability – the result of sophisticated self-monitoring routines
- Compliant to the strict cyber security requirements – according to the BDEW Whitepaper and NERC CIP
- Security through encryption – on the entire communication chain between DIGSI and device
- Automatic logging – for safety-critical actions and attempts to access devices and systems

Your immediate advantage:

With innovative communication as a central component in your system architecture, you will take advantage of the essential flexibility and security that is required within the highly networked system landscape of the future.

Your immediate advantage:

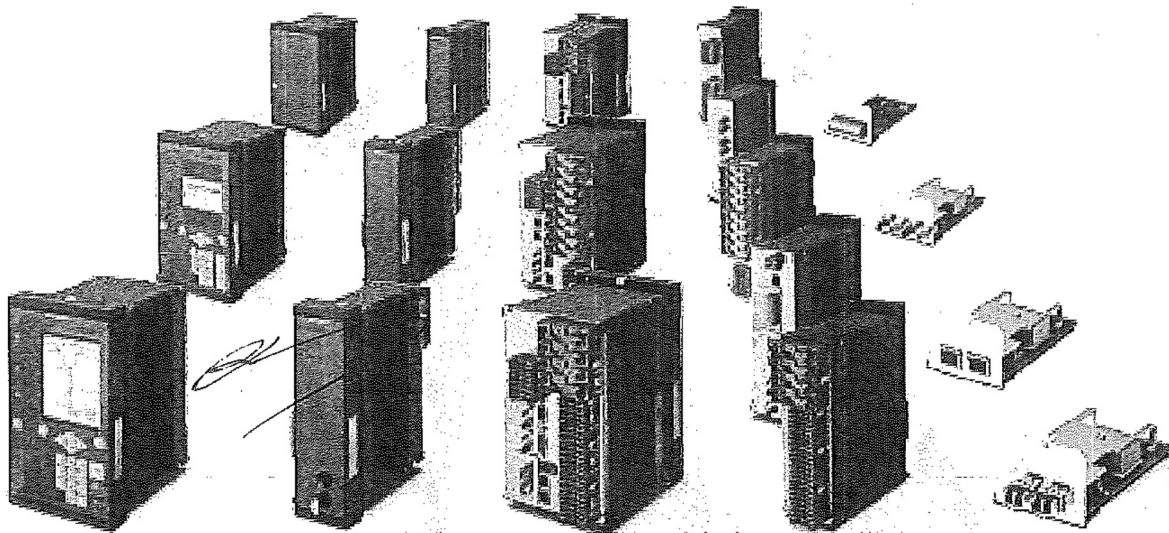
Enjoy an exceptionally high level of system security and reliability with our multilayered integrated security and safety mechanisms.



Hardware

Modular, robust, and innovative

- Precise adaptation of the hardware to your needs and application
- High availability thanks to dust-tight, sealed, and temperature-optimized housing
- Simple installation and interchangeability with maximum safety through innovative terminal technology
- Retrofittable and exchangeable plug-in modules
- Simple stocking of spare parts thanks to identical expansion and communication modules for all devices



On-site operation panels for base modules

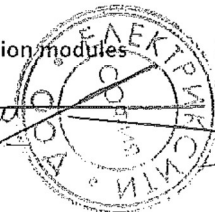
On-site operation panels for expansion modules

Base modules

Expansion modules

Plug-in modules

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Subject to changes and errors.

The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.

For all products using security features of OpenSSL, the following shall apply:

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (www.openssl.org).

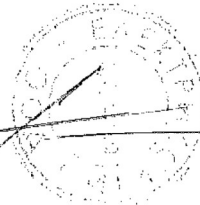
This product includes cryptographic software written by Eric Young (ey@cryptosoft.com).

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ВЯРННО С ОРМТУВАНА



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SIPROTEC 5

Introduction

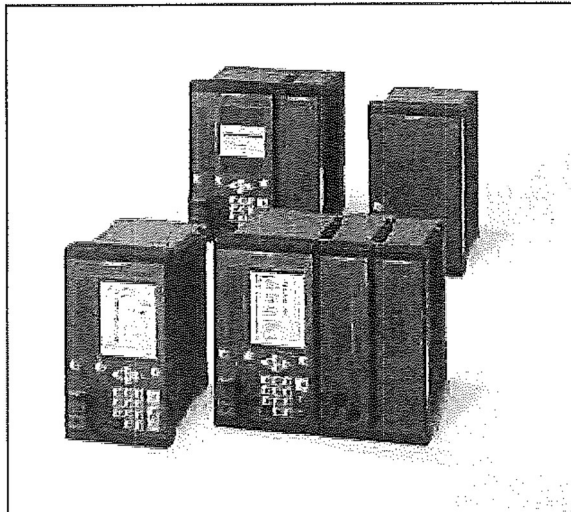
The Benchmark for Protection, Automation, and Monitoring

The SIPROTEC 5 series is based on the long-term field experience of the SIPROTEC device series and has specifically been designed for the new requirements of modern power systems. For this purpose, SIPROTEC 5 is equipped with extensive functionalities and device types. With the integrated and consistent DIGSI 5 engineering tool, a solution has also been provided for increasingly complex processes, from design through to the engineering phase, up to testing and operation.

Thanks to the high degree of hardware and software modularity, the functionality of the device types can be tailored to the requested application and adjusted to the ever-changing requirements throughout the entire lifecycle.

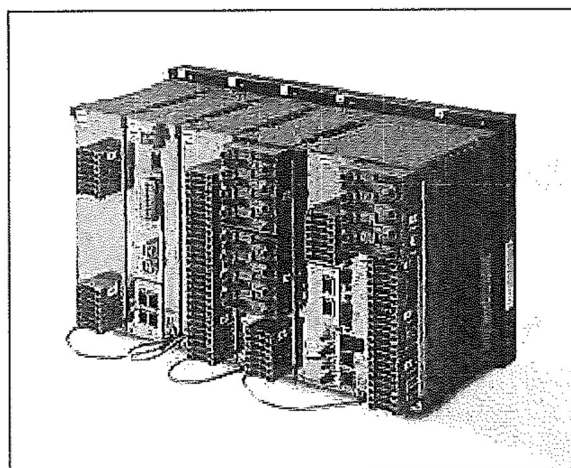
In addition to the reliable and selective protection and the complete automation function, SIPROTEC 5 offers an extensive database for operating and monitoring modern power systems. Synchrophasors (PMU), power-quality data, and extensive equipment data are included in the functionality.

- Powerful protection functions ensure the safety of equipment and staff
- Individually configurable devices save money on the initial investment and on spare-parts storage, maintenance, extension, and adaptation of your plant
- Arc protection, transient ground-fault detection, transformer control, and process bus can easily be integrated and retro-fitted
- Purposeful and easy handling of devices and software thanks to a user-friendly design
- Increased reliability and quality of the engineering process
- High operational safety due to the consistent safety implementations
- Highest availability even under extreme environmental conditions due to the coating on the electronic modules
- Integrated switch for low-cost and redundant optical and electrical Ethernet rings
- Redundancy protocols RSTP, PRP, and HSR for maximum availability
- Efficient operating concepts due to flexible engineering of IEC 61850 Edition 2
- Comprehensive database for monitoring modern power systems, also with IoT cloud connection
- Optimal smart automation platform for your power systems based on integrated Phasor Measurement Unit (PMU) and power-quality functions.



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Figure 1.1/1 SIPROTEC 5 – Modular Hardware



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Figure 1.1/2 SIPROTEC 5 – Modular Process Connection

ВЕРНО С ОРИГИНАЛОМ

ЭЛЕКТРИКАТИ

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