

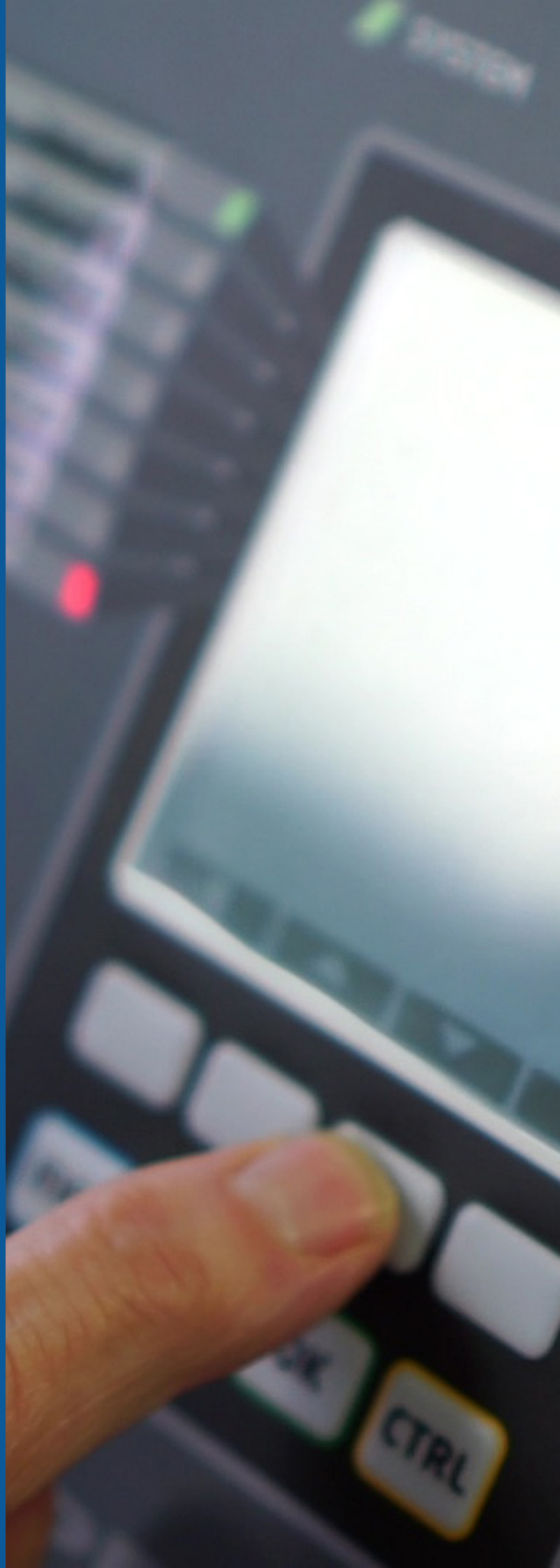
Protection made simple.

55 years of experience in power system protection,
control, monitoring, automation, and integration.



Contents

- 4 Who We Are
- 6 Our History
- 8 What We Do
- 10 Product Lines
- 14 Applications



Welcome

Protection relays are critical for network operators, electrical suppliers, and industrial firms across a wide range of industry sectors and applications. Protective relays and technologies from SEG have proven to be successful and consistently inventive for more than 50 years. Long-term customer happiness with products, services, and a relationship with genuine global players are prerequisites for success.

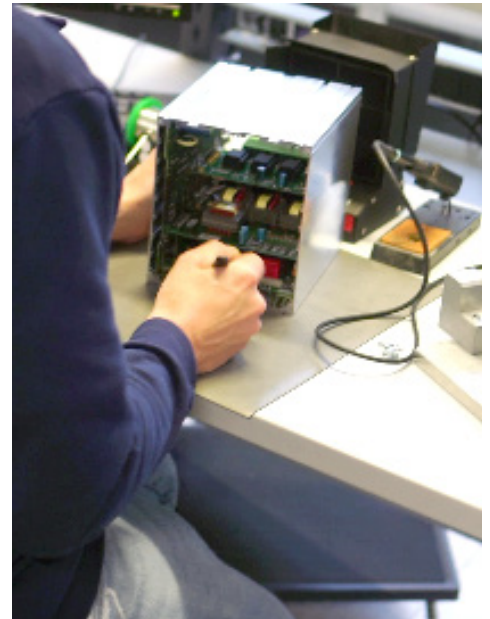
For more than 50 years, SEG Electronics GmbH has been at the forefront of electric power protection, control, and automation, creating cutting-edge solutions that enable a safe and efficient flow of power from generation through transmission and distribution. Simplicity and improvement are two values that have been with us since the beginning. They continue to influence and inspire everything we do.

Using efficiency, simplicity, and creativity, we help our customers save money while keeping people safe. This commitment to our industry is intertwined with our company ethics and social responsibility. These principles represent a way of thinking about the world around us.

Our goal is to make electric power more reliable, safer, and cost-effective.



“When it comes to electric power protection challenges, there are no two ways about it: SEG is the best partner for addressing these difficulties.”



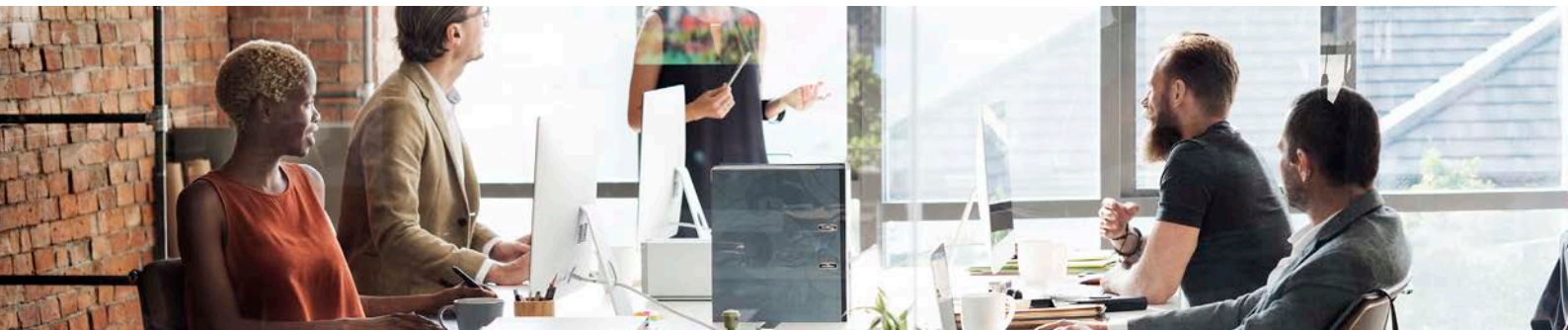
Who We Are

SEG Electronics GmbH develops and manufactures intelligent protection devices for power generation and distribution. We shape tomorrow's intelligent energy supply with our solutions and products and contribute to the energy transition.

Our portfolio of easy to operate while robust and reliable protection relays are our clients' choice for the electrical protection of generators, transformers, motors, cables, overhead lines, and busbars.

Whether standardized products or customer-specific developments, our employees' solutions have been top of the class all over the world for more than 50 years.

Protection made simple.



GREAT TECHNOLOGY

Choosing SEG protection relays is an excellent decision as over 50 years of experience, and high-quality parts are going into each of our products made in Germany. In addition, every product includes top service solutions.

Safety should be for everyone, so our products are designed for global solutions. Also, the HighPROTEC line supports the official languages of 137 countries and is designed to both ANSI and IEC standards. Our products stay on top of the constantly evolving grid standards worldwide and offer certificates as KEMA, IEC60255-1, or marine certifications for specific models.



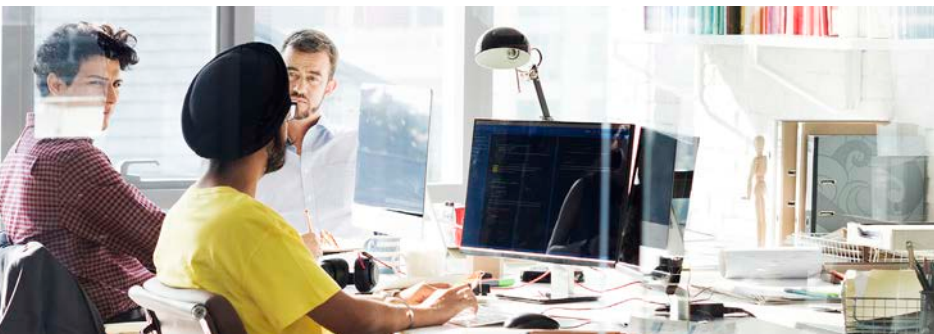
SAVE COST

SEG is an independent manufacturer which offers versatile product lines to help improve your competitiveness and productivity.

Our products will reduce cost by providing standardized hardware and software packages that allow you to select the perfect mix of secure communication ports, digital inputs and outputs, and sensitive Earth Current measurement options. Excellent software solutions as our configuration software Smart view come at no extra cost.



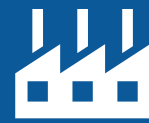
Whether standardized products or special custom-tailored developments specified by the customer are required - the products and services of the SEG rank among the top worldwide.



SAVE TIME

We want you to save time and be as efficient as possible. Product selection via ANSI code requirements, direct access to drawing and wiring diagrams via our website and easy order process are designed with our customers rare time in mind. Interconnection should be easy and quick, so we support the European and North American interconnection standards via the included software. For sure, this approach continues with our service. For quick access, all our products provide a QR-Code so that field service engineers can get direct access to any required support tools, such as quick start and troubleshooting guides as well as manuals.

We invest in our people, tools, and facilities to exceed our clients' expectations.



500K+
Devices Shipped



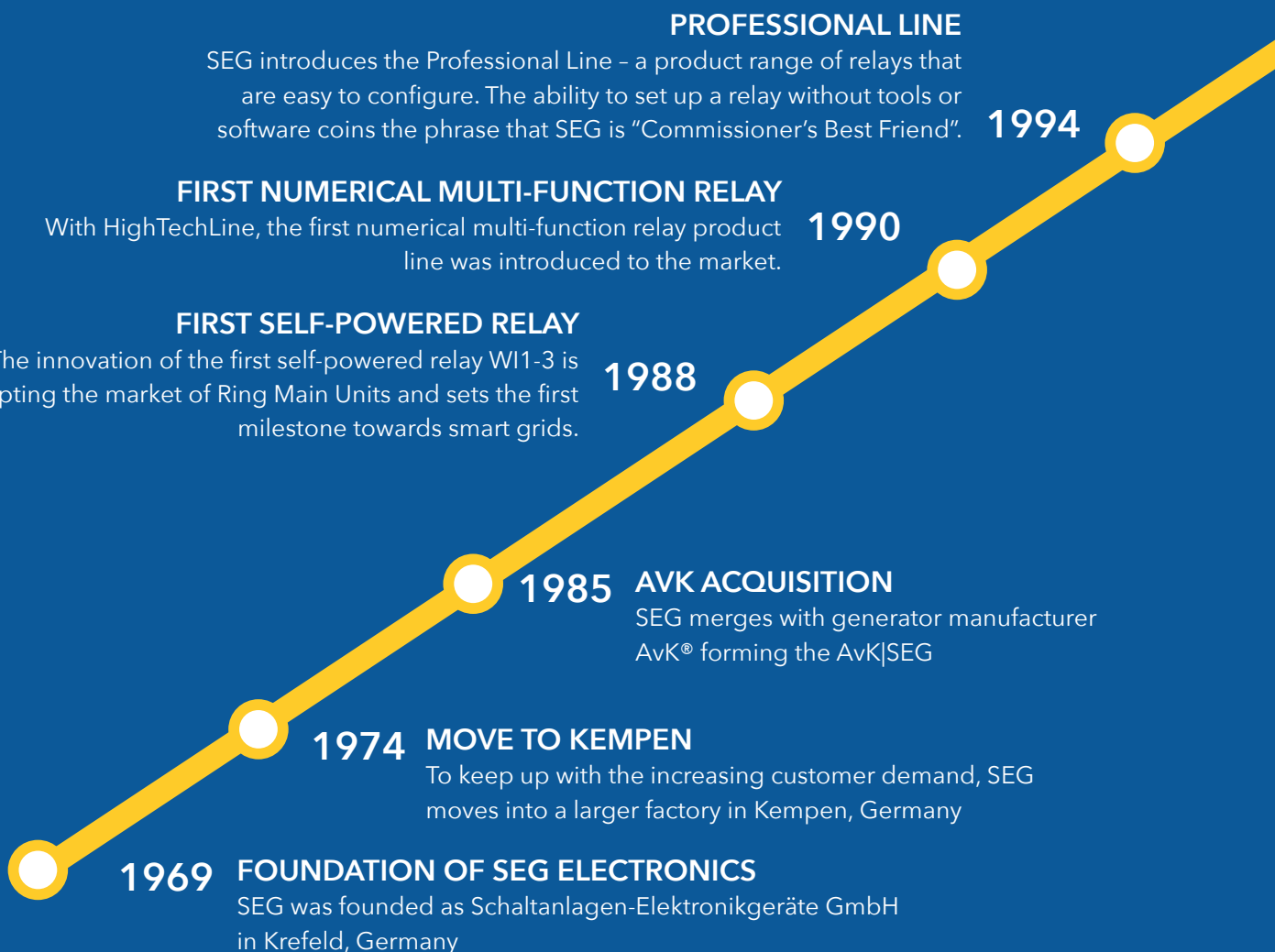
21+
Years of Staff
Seniority



50+
Countries Covered

Our History

More than 50 years ago, SEG was founded as Schaltanlagen-Elektronikgeräte GmbH in Krefeld, focusing on the design and production of protection relays. In 1974 SEG moved to Kempen where the team of engineers, designers, production staff and sales teams found their new base including a production facility. Since then, the company's products have been referred to as SEG relays, which led to the name SEG Electronics.



NEXT GENERATION SELF-POWERED RELAYS

With the introduction of the new WIC Line, SEG introduces the next generation of self-powered relays that are unbeatable in speed. With the DiggIMEC, the WICs can easily be operated on-site, as the display visualizes measuring values and allows programming of the relay.

2022

ACQUISITION BY AURELIUS

As a member of the Aurelius Group, SEG has become an independent brand again, being more agile to react to the increasing dynamics in the energy market.

2020

HIGHPROTEC PRODUCT LINE

The HighPROTEC product line enables customers to comply with more complex protection requirements while simplifying the configuration and operation of the relay.

2008

ACQUISITION BY WOODWARD

SEG becomes a member of energy specialist Woodward Inc., gaining access to a worldwide sales network and a large energy OEM customer base.

2006

ACQUISITION BY CUMMINS

AvK|SEG and NEWAGE merging into one large protection devices, converter & generator manufacturer under the ownership of CUMMINS.

2001



What We Do

SEG Electronics GmbH develops, manufactures, and distributes robust and reliable protection relays / IEDs (Intelligent Electronic Devices) for Power Generation and distribution applications.

We are protecting the relevant components of electrical energy generation and energy distribution: generators, transformers, motors, cables, overhead lines, as well as busbars.

We are experts in interconnecting Distributed Energy Resources (DER) to the public grid. Safety and compliance with the corresponding grid codes and worldwide interconnection standards are essential aspects of our products. Our products are used in all types of applications: from conventional power plants to wind farms, solar parks, and hydroelectric power plants. They are also used in distributed generation systems such as CHP (combined heat and power) plants, data centers, and hospitals.

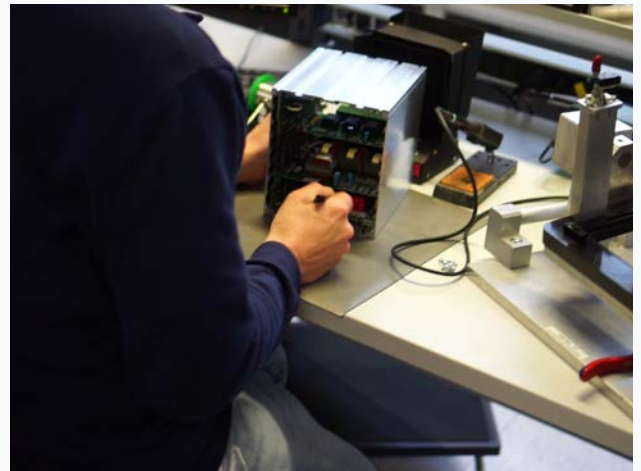
Our products are characterized by their high quality, reliability, and long service life.



Manufacturing

SEG Electronics GmbH is one of the leading manufacturers of protection devices for the high, medium, and low-voltage switching and protection of generators, transformers, power plants, substations, distribution high-voltage systems, switchyards, and lines.

We manufacture protection relays, making the best use of our in-house tooling and production facilities and our experienced engineering personnel. This, along with our commitment to providing the highest customer service and quality performance, has enabled us to develop a reputation for sound engineering and dependable product delivery.



Services

On-Site Services

- Training
- Commissioning
- Assembly Supervision
- Maintenance
- Retrofit & Replacement
- Modification
- Inspection
- Repair

Remote Services

- Training
- Protection Engineering
- Software Engineering
- Remote Troubleshooting
- Remote Relay Settings Support



Our Range of Product Lines



• BASIC LINE

• PROFESSIONAL LINE

• HIGHECH LINE

• WI LINE

• HIGHPROTEC LINE



SCAN ME



High**PROTEC**

Protection made simple



KEMA Labs



- Full protection package with differential and step-up transformer protection
- Intuitive configuration tools reduce commissioning effort
- Plausibility verification intelligence
- Optimized functional overview by hiding unused functions, parameter and assignments
- On-board testing without removing the wiring
- Menu languages supported: English, German, Spanish, Portuguese, French, Russian, Polish, Romanian

WIC 2nd Generation

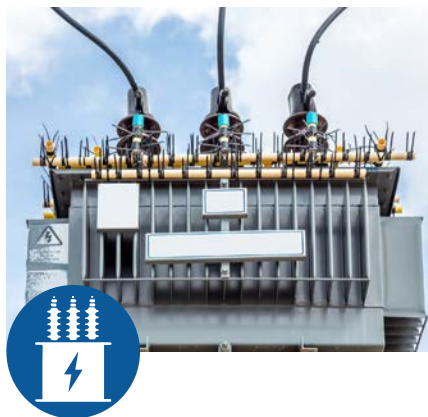
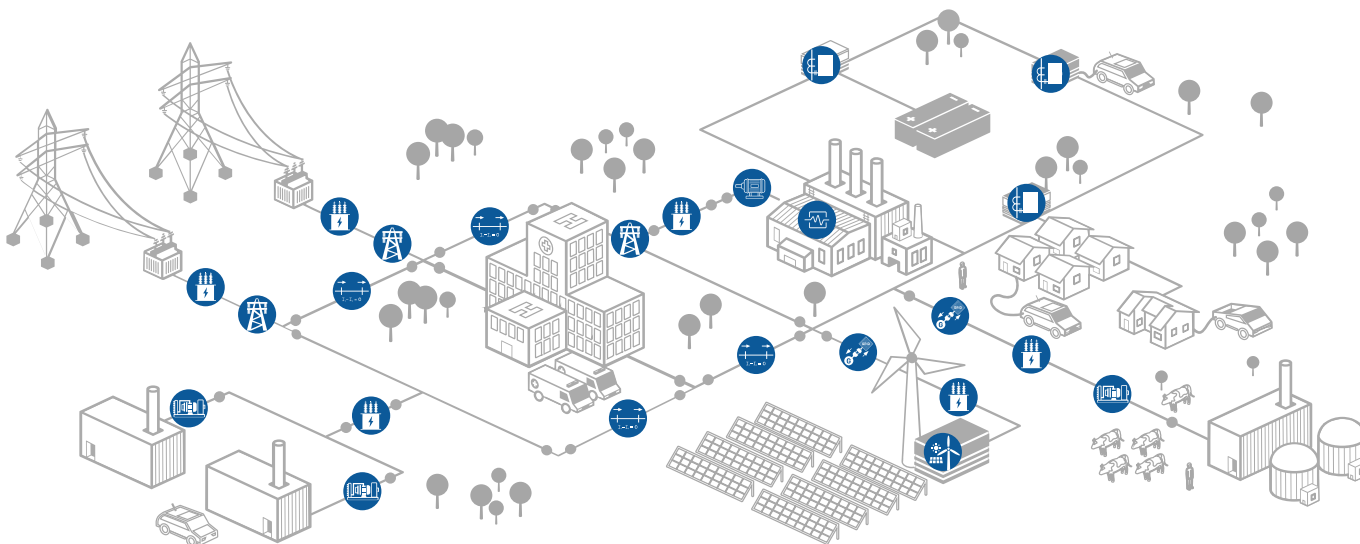
Faster than your airbag



- Configurable Inrush Protection
- ANSI 50/51, 50N/G, 51N/G, 46, 49, 74TC, 50BF, ExTP, SOTF, PVOC
- Compact formfactor (same as before), no battery inside
- Super fast mounting
- Super fast setting
- Early wake up currents
- Super fast Peak Value Overcurrent (including boot up time)
- Best in class SOTF (Switching onto Fault)

* UL Certification is ongoing

Areas of Applications



TRANSFORMER PROTECTION

Transformer protection and maintenance is essential for a reliable energy supply. The intelligent electronic devices from SEG Electronics with perceptive algorithms protect your electrical equipment against damages that are costly and difficult to replace.



MOTOR PROTECTION

To ensure day-to-day electrical induction motors keep processes running, and to maximize the motor's operating life, SEG Electronics offers a variety of highly-adaptable Intelligent Electronic Devices to protect them against inadmissible electrical, thermal, or mechanical stress.



LINE DIFFERENTIAL PROTECTION

SEG Electronics offers line differential protection with fiber optic communication, because it is the best way to protect an overheadline or cable. Speed is important for differential protection because it is the most selective protection. Since communication between the devices occurs via fiber optic connections, data transmission is extremely safe.



GENERATOR PROTECTION

The Generator Protection Relays from SEG Electronics covers the full range of protective elements for medium and large generators, including differential, pole slip, inadvertent generation, phase backup distance protection, and furthermore elements.



INTERCONNECTION / MAINS DECOUPLING

During mains failures, DER (Distributed Energy Resources) should stay operated and connected to the grid to support decreasing mains voltage, by feeding reactive power. SEG Electronics has developed various Intelligent Electronic Devices in compliance with international grid requirement.



POWER DISTRIBUTION

CT Powered Distribution Protection: These relays take their energy from the current transformers. No auxiliary power supply needs to be provided. Their potted electronics are well suited for the protection of RMU transformers even in the harshest environments.



RENEWABLE ENERGY

SEG has developed CT-powered protection relays for the protection of solar and wind step-up transformers. In addition to that SEG offers protection relays for the interconnection point (PCC) meeting local interconnection standards.



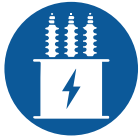
FEEDER PROTECTION

From the generation via transmission and distribution down to the load, the feeder protection relays from SEG Electronics protect the entire power chain throughout different voltage levels. SEG Electronics work safely and precisely, and are well-proven in the fields of utilities, industrial, and other power systems.



EQUIPMENT SUPERVISION

SEG Electronics supervision relays for low voltage applications are equipped with a precise micro-controller and designed for DIN-rail mounting. They are easy to operate and simplify commissioning. This is advance technology at a low price.



Transformer Protection



MCDTV4
Enhanced Transformer
Differential Protection



MRDT4
Transformer Differential
Protection



IRI1-ER
Restricted Earth Fault
Protection Relay



Motor Protection



MRMV4
Motor Protection Relay



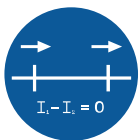
MRM4
Motor Protection Relay



MRM3-2IE
Motor Protection Relay



XM1
Motor Protection Relay



Line Differential Protection



MCDLV4
Line Differential Protection



Generator Protection



MCDGV4
Generator Protection Device



MRG3
Generator Protection Device



MRG3-I
Generator Protection Device



MRP2-3IU
Power and Reverse Power Protection Device



MRP2-R3IU
Power and Reverse Power Protection Device



MRQ1
Field Failure Protection Relay



MRR1
Rotor Earth Fault Protection Relay



MRS1
Negative Sequence Protection Relay



XD1-G
Differential Protection Relay



XE2
Current Relay for Loss of Excitation Protection



XG2
Generator-Mains Protection Relay



XP2-R
Power and Reverse Power Protection Relay



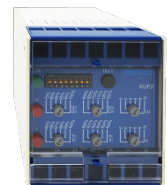
XR1
Rotor Earth Fault Relay



XS2
Current Unbalance Protection Relay



XUA1
AC Voltage Protection Device



XUF2
Voltage and Frequency Protection Relay



Interconnection / Mains Decoupling



MCA4
Directional Feeder
Protection Relay



MRU4
Voltage Protection Device



MRA4
Directional Feeder
Protection Device



MCDTV4
Enhanced Transformer
Differential Protection



MCDGV4
Generator Protection
Device



MRU3-2
Voltage Protection Relay



MRU3-1
Voltage Protection Relay



MRN3-3
Mains Decoupling
Protection Device



MRN3-2
Mains Decoupling
Protection Device



MRN3-1
Mains Decoupling
Protection Device



MRF3
Frequency Protection Relay



XRW1-4
Mains Decoupling
Protection Device



XRN2-2
Mains Decoupling
Protection Device



XRN2-1
Mains Decoupling
Protection Device



XUA1
AC Voltage Protection
Device



XU2
AC Voltage Protection
Device



XN2-2
Mains Decoupling
Protection Device



XN2-1
Mains Decoupling
Protection Device



XF2
Frequency Protection Relay



XUF2
Voltage and Frequency
Protection Relay



Power Distribution & Renewable Energy



WIB12FE
CT Powered Time
Fixed Terminals Overcurrent
and Earth Current Relay



WIB12PE
CT Powered Time Pluggable
Terminals Overcurrent and
Earth Current Relay



WIC1-1
CT Powered Time
Overcurrent and Earth
Current Relay



WIC1-2
CT Powered Time
Overcurrent and Earth
Current Relay



WIC1-3
CT Powered Time
Overcurrent and Earth
Current Relay



WIC1-4
CT Powered Time
Overcurrent and Earth
Current Relay



WIC1-1 2ndGen
CT Powered Time
Overcurrent and Earth
Current Relay



WIC1-2 2ndGen
CT Powered Time
Overcurrent and Earth
Current Relay
With DIP Switches



WIC1-3
CT Powered Time
Overcurrent and Earth
Current Relay
With HEX Switches



WIC1-4 2ndGen
CT Powered Time
Overcurrent and Earth
Current Relay



DigiMEC
Nano HMI And Flag
Indicators For The Second
Generation Of WIC1 (WIC1
G2)



WIP1A-CT...
CT Powered Time
Overcurrent and Earth
Current Relay



Feeder Protection



MCA4
Directional Feeder Protection



MRI4
Feeder Protection Relay



MRA4
Directional Feeder Protection Relay



MRIK3-ICE
Time Overcurrent/Earth Fault Current Relay with Auto Reclosing and Control Function



MRIK3-IE
Time Overcurrent/Earth Fault Current Relay with Auto Reclosing and Control Function



MRI3-ITER
Time Overcurrent/Earth Fault Current Relay with Thermal Replica



MRI3-ICE
Time Overcurrent-/Earth Fault Current Relay With Control Function



MRI3-IXR
Time Overcurrent Protection Device Multicharacteristic



MRI3-IX
Time Overcurrent Protection Device Multicharacteristic



MRI3-IRER
Time Overcurrent Protection Device Multicharacteristic



MRI3-IRE
Time Overcurrent Protection Device Multicharacteristic



MRI3-IER
Time Overcurrent Protection Device Multicharacteristic



MRI3-IE
Time Overcurrent Protection Device Multicharacteristic



MRI3-E
Time Overcurrent Protection Device Multicharacteristic



MRI1-IU
Voltage controlled time overcurrent relay



MRI1-IE
Time overcurrent relay with Multi-Characteristic



MRI3-IHE

Time Overcurrent/Earth Fault Current Relay with Harmonic Stabilizing



MRIK3-ICER

Time Overcurrent/Earth Fault Current Relay with Auto Reclosing and Control Function Grids



MRI3-IRXR

Time Overcurrent Protection Device Multicharacteristic



XRI1-I-R

Directional Overcurrent and Short-Circuit Protection Relay



XRI1-I-E

Phase and Earth Overcurrent Relay for Compensated or Isolated Grids



XRI1-E-R

Directional Earth Overcurrent Protection Relay



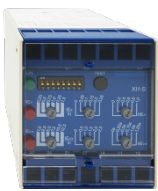
XU1-E

Earth Fault Voltage Protection Relay



XI1-S-R

Earth Overcurrent Relay for Solidly or Resistance Grounded Grids



XI1-S

Earth Overcurrent Relay for Solidly or Resistance Grounded Grids



XI1-I

Overcurrent and Short-Circuit Protection Relay



XI1-E-R

Earth Overcurrent Relay for Compensated or Isolated Grids



XI1-E

Earth Overcurrent Relay for Compensated or Isolated Grids



Equipment Supervision



BF1
Frequency Relay



BN1
Mains Decoupling Relay



BU1AC
Voltage Protection Relay



BU1DC2
DC Voltage Protection Relay



BUA1
Voltage and Voltage Balance Relay

Accessories



MRT1
Test Unit



XRS1
Interface Adapter RS485



WIC1-TU
Monitoring unit for WIC1 relays



WIC1W2AS1
WIC1W3AS1, WIC1W4AS1
WIC1W5AS1
Current Transformer



WI1-SZ4
Mechanical Flag Indicator



WI1-SZ5
Mechanical Flag Indicator with 2 Output Relays



WIC1-CT2A
WIC1-CT3A, WIC1-CT4A
WIC1-CT5A
Current Transformer



One Software For All SEG Devices

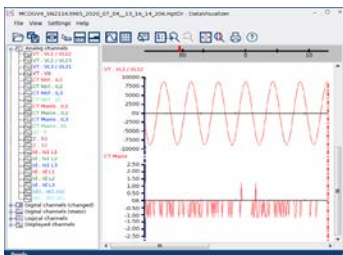
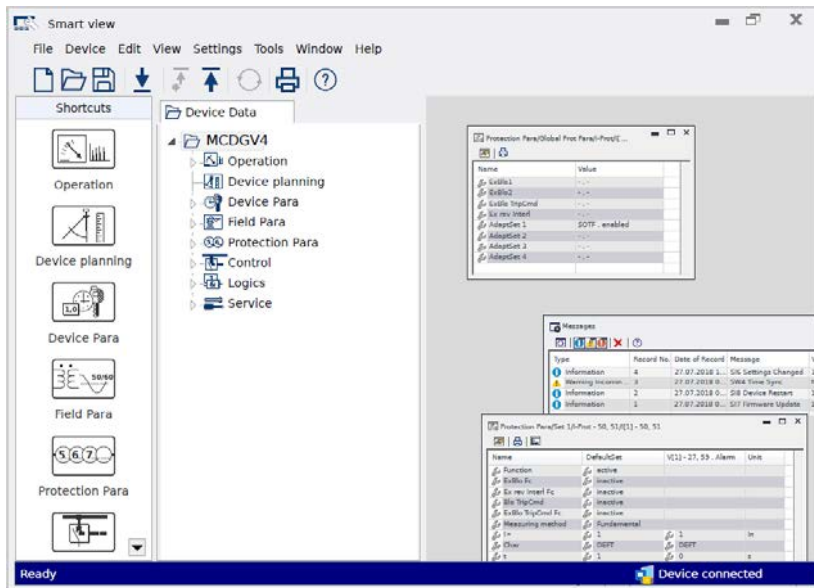
Smart view is our parameter setting and evaluation software. It is intended to be connected with our protection devices, so that these can be set up using a Windows PC.

The full feature set, as available with e. g. HighPROTEC devices, comprises:

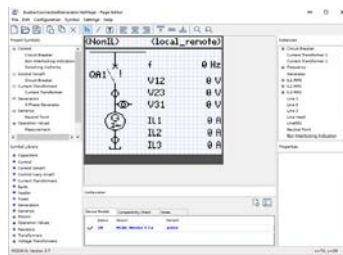
- Menu-controlled parameter setting incl. validity checks
- Offline configuration of all relay types
- Reading and evaluating of statistical data and measuring values
- Setting into operation assistance
- Display of the device status
- Fault analysis via event and fault recorder



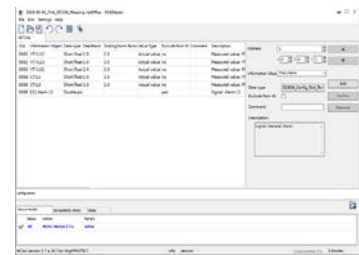
SMART VIEW



DATA VISUALIZER
Evaluation Tool For
Disturbance Records



PAGE EDITOR
Editing Software For
Control Pages



SCADAPTER
Scada Protocol
Configuration Tool

SEG Electronics GmbH

Krefelder Weg 47
47906 Kempen
Germany
Tel: +49 (0) 21 52 145 1
Email: info@segelectronics.de
www.segelectronics.de

Sales

Tel: +49 (0) 21 52 145 331
Fax: +49 (0) 21 52 145 354
Email: sales@segelectronics.de

Service

Tel: +49 (0) 21 52 145 614
Fax: +49 (0) 21 52 145 354
Email: support@segelectronics.de