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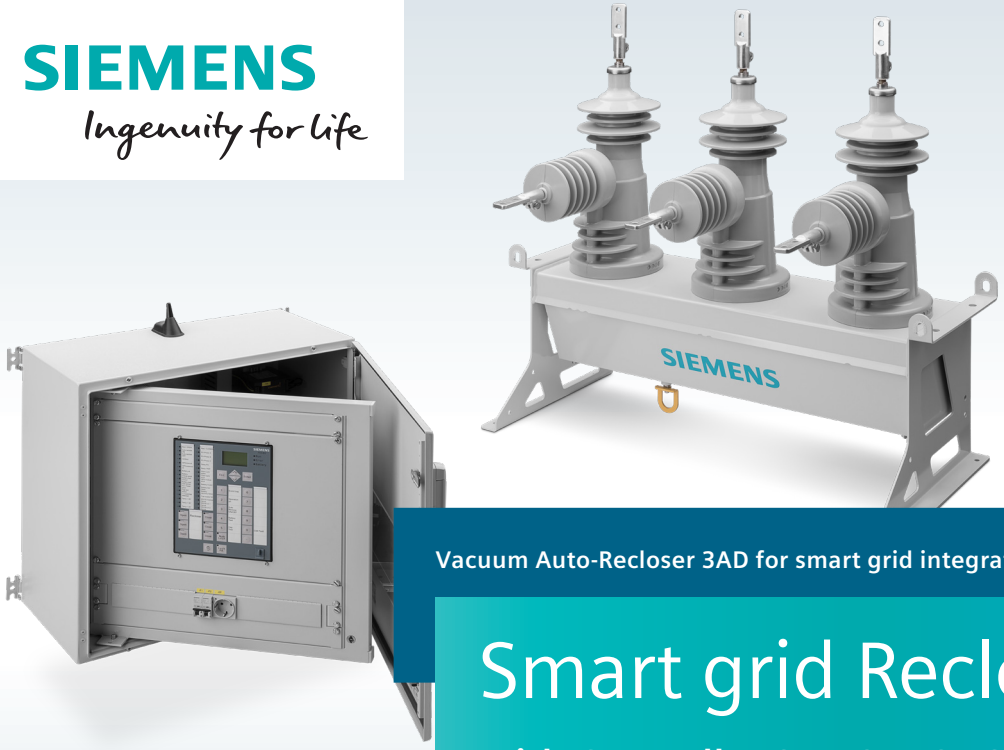


Vacuum Auto-Recloser 3AD for smart grid integration

Smart grid Recloser

With Controller SIPROTEC 7SC80

siemens.com/recloser

Reclosers are switching devices used in medium-voltage overhead lines and in substations to avoid longer network interruptions in case of temporary faults. Like circuit-breakers they are capable to switch normal and fault currents, and can trip and reclose up to four times. The recloser, installed in Smart Grid networks, plays an increasingly important role. Reducing outages for the customers and recovering whole parts of a medium-voltage network requires more and more high-speed network communication structures.

The high-quality Siemens vacuum switch unit and a well adapted control cubicle at ground level provide recent innovations and most user-friendly operation in recloser technology. This offers a flexible solution for automatic protection and remote operation, and fulfills the needs of intelligent networks.

Siemens provides in its new family of reclosers network protocols like IEC 61850, IEC 60870-5-104 or DNP3.0 over TCP/IP, so that reclosers-GOOSE can communicate between each other and exchange data very fast to re-energize distribution networks quickly in case of failure.

Benefits

- Proven vacuum switching technology for current interruption with high number of operating cycles
- Flexible communication options, e.g. for radio transmission used specifically in feeder automation
- Data transmission over distances of up to 24 km with a single-mode cable and up to 4 km with a multi-mode cable
- Advanced self-healing solution, automatic and rapid fault analysis, easy to configure and maintain
- Large number of protection, metering and monitoring functions including loop automation
- Fast automatic source transfer within 6 cycles
- Fast fault isolation possible < 500 ms
- Current jump detector for fast and selective fault detection and location

The control package for the SIPROTEC 7SC80 can be tailored to suit any recloser application – from highly sophisticated protection functions for maximum selectivity to monitoring, remote control and advanced self-healing for overhead line networks.

Recloser controller specifications

- Inputs for 4 current transformers and inputs for 1, 4 or 6 voltage transformers
- 20 binary inputs, 8 binary outputs, 1 life contact
- Integrated GPS module for time synchronization and coordination via GPS
- 16 parameter groups, including recloser curves

Technical data and ratings

Rated voltage up to 27 kV	• Rated short-circuit breaking current up to 16 kA • Rated lightning impulse withstand voltage up to 125 kV (150 kV on request) • Rated normal current up to 800 A
Rated voltage 38 kV	• Rated short-circuit breaking current up to 16 kA • Rated lightning impulse withstand voltage up to 170 kV (190 kV on request) • Rated normal current up to 800 A
Recloser sequence*)	O – 0.2 s...14400 s – CO – 1 s...14400 s – CO – 1 s...14400 s – CO – lockout
Opening time	< 35 ms
Closing time	< 60 ms
No. of operating cycles	30,000 maintenance-free
No. of phases	Three-phase, single-phase, triple-single
Standards	IEEE C37.60/IEC 62271-111; IEC 60068; IEC 61109; IEC 60529

*) Optional up to 9 cycles possible

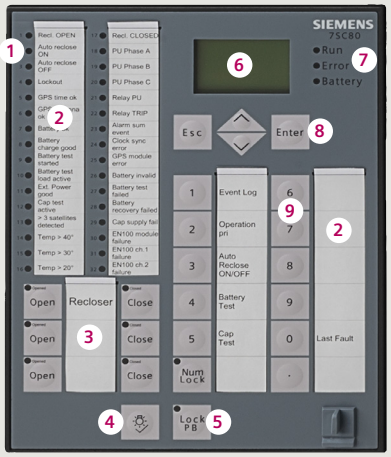
Read the QR code for further information.

Protection degree IP66

Human-machine interface functions

- Large display with 14 function and arrow keys
- 6 rows 20 characters each
- 32 LED and 9 freely programmable function keys
- Multiple languages available
- Web-Access via Internet for remote operation and indication

Human-machine interface (local and/or web-based) – configuration example



1 Assignable system status indications
2 Automatic labeling display (web only)
3 Recloser open/close pushbuttons
4 Acknowledge pushbutton
5 Lock pushbutton to prevent accidental operations
6 Display
7 Relay status indications
8 Control pushbuttons
9 Assignable control pushbuttons

Communication ports and protocols

- Electrical and optical Ethernet
- IEC 61850 Edition 1 and 2
- DNP3 TCP, IEC 60870-5-104, Profinet
- Ethernet redundancy protocols RSTP, PRP and HSR
- USB front interface for DIGSI 4 configuration

Monitoring functions

- Measured and metered values U, I, f, Wp, Wq
- 8 fault records
- Battery and capacitor monitoring

Power supply / battery charger

- Power supply: AC and DC
- Battery: 12 Ah sealed lead acid
- Expected battery standby time: 72 hours

Control cubicle

- Material: steel, painted with RAL 7035, IP66
- Dimensions: 600 x 600 x 350 (W x H x D) mm

Siemens AG
Smart Infrastructure
Distribution Systems
Mozartstraße 31c
91052 Erlangen
Germany

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