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Type SDR distribution recloser controller

15.5 kV, 27 kV and 38 kV

The SDR controller constitutes the brains of the recloser. It comprises indicators and control elements, communication interfaces and a USB port for convenient connection of a laptop computer. Access to the user level menus and data is protected by multi-level password authentication.

Along with overcurrent time protection (up to 49 preset curves and multiple user-configurable curves), it is equipped for ground fault and sensitive ground fault detection. Inrush restraint and load shedding are further protection functions that help prevent nuisance outages.

Convenience

- Fully withdrawable type 7SR control and protection relay
- Ease of maintenance
- Complete system monitoring
- Tri-color programmable LEDs
- USB port (front of controller)
- 48-hour battery UPS
- Loop automation
- Integrated current transformers (CTs) and optional resistive voltage sensors in recloser switch unit
- Single-phase, three-phase and triple-single reclosers available
- Fully programmable from front panel
- Customizable and intuitive Human Machine Interface (HMI) with programmable buttons, indicators and logic
- Optional docking station for remote programming.



Type 7SR224 control and protection relay (three-phase)



Type 7SR224 control and protection relay (triple-single)

Operation

- Relay protection
- Local/remote control
- Monitoring/SCADA of various protocols
- Power metering
- Event log
- Multiple communication protocols
- Input and output logic bits.

Controller functionality

Protection functions	
27/59	Under/overvoltage
37	Undercurrent
46BC	Broken conductor/load unbalance
46NPS	Negative phase sequence overcurrent
47	Negative phase sequence (NPS) voltage
49	Thermal overload
50	Instantaneous overcurrent
50BF	Circuit breaker failure
50G/N	Instantaneous ground fault
51	Time-delayed overcurrent
51c	Cold load pickup
51G/N	Time-delayed measured ground fault/SEF
51V	Voltage controlled overcurrent
59N	Neutral voltage displacement
60CTS	CT supervision
60VTS	VT supervision
64H	High impedance REF (restricted earth fault)
67/50	Bi-directional instantaneous overcurrent
67/50/G/N	Bi-directional instantaneous ground fault
67/51	Bi-directional time-delayed overcurrent
67/51G/N	Bi-directional time-delayed ground fault
67/51SEF	Directional time-delayed sensitive ground fault
74TC	Trip circuit supervision
79	Auto reclose
81HBL2	2nd harmonic block/inrush restraint
81	Under/overfrequency
86	Lockout
User-programmable logic via HMI	
Eight settings groups with two levels of password access (four on single-phase model)	
Self-monitoring	

Measuring functions
Primary current phase and ground
Secondary current phase and ground
Positive phase sequence (PPS) current
Negative phase sequence (NPS) current
Zero phase sequence (ZPS) current
Binary input/output status
Trip circuit healthy/failure
Time and date
Fault records
Event records
Frequency
Waveform records
Recloser trip counter
I ² t summation for contact wear
Direction
Primary line and phase voltage
Secondary voltage
Apparent power and power factor
Real and reactive power
W Hr forward and reverse
VAr Hr forward and reverse
Historical demand record
Positive phase sequence (PPS) voltage
Negative phase sequence (NPS) voltage
Zero phase sequence (ZPS) voltage

Supported protocols	Communication interfaces
IEC 60870-5-103	Front USB port
Modbus RTU	Rear RS485 port
DNP 3.0	
IEC 60870-5-101 (optional with Ethernet port)	
IEC 61850 (optional with Ethernet port)	

Additional data communication ports (optional) (three-phase and triple-single models only)
Two rear standard fiber-optic ports and IRIG-B port
Additional rear RS232 port and IRIG-B port
Additional rear RS485 port and IRIG-B port
Additional rear electrical Ethernet port RJ45 (quantity of two)
Additional rear optical Ethernet duplex (quantity of two)

Optional functions (three-phase and triple-single models only)	
Triple-single	Fault locator
25 synchronism check	Triple-single/single-phase auto-reclose
Loop automation by loss of voltage uses an additional set of resistive voltage sensors and has the added functions:	
27/59	Second under/overvoltage
60VTS	Second VT supervision

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Siemens Industry, Inc.
7000 Siemens Road
Wendell, NC 27591

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For more information, contact: +1 (800) 347-6659

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