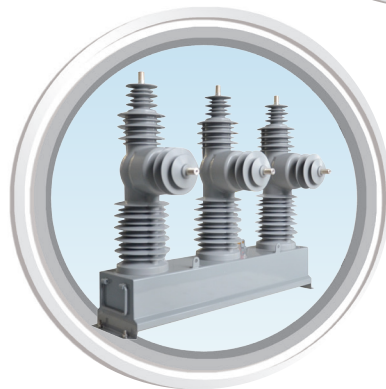
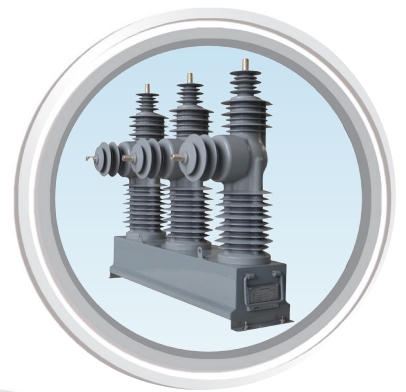
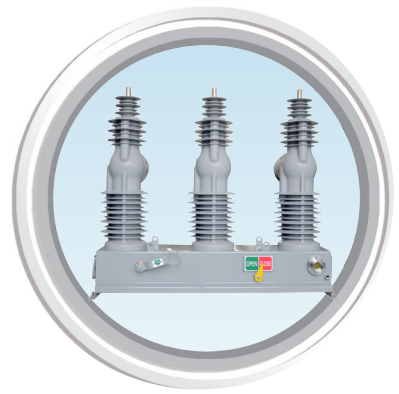
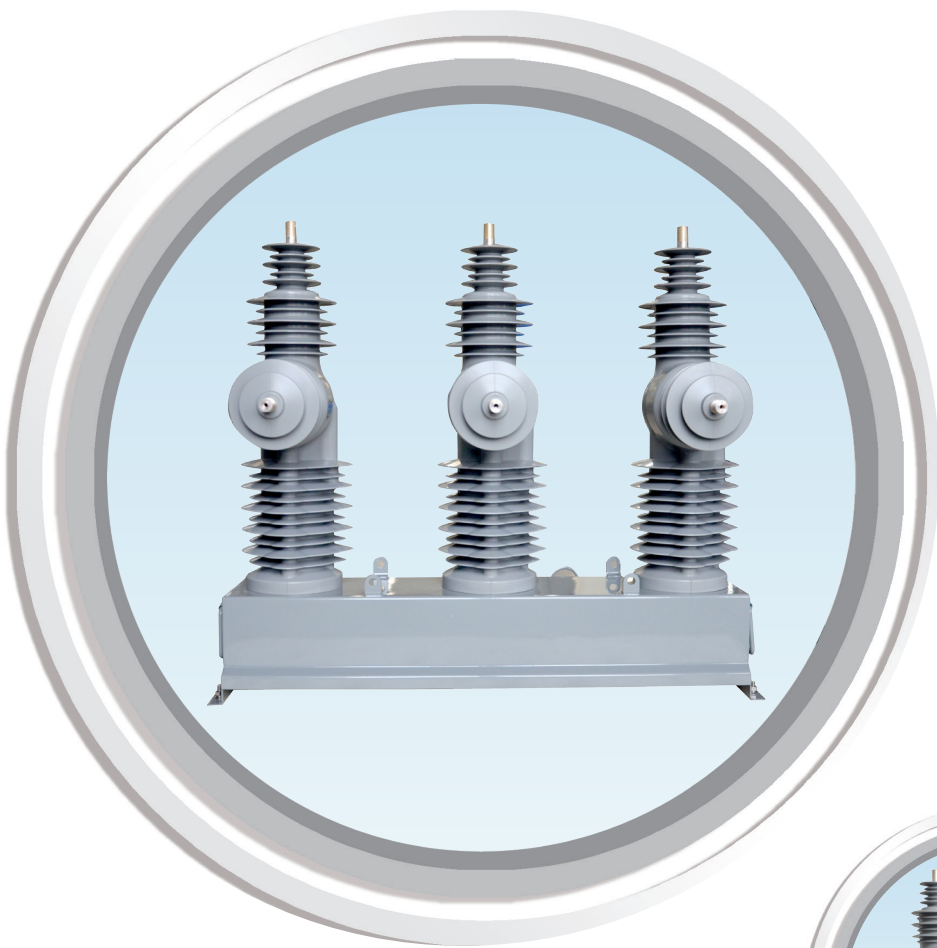


Solid Insulated Vacuum Recloser (SVR)

SVR are designed for use on overhead distribution lines as well as distribution substation applications for all voltage levels up to 27kV and 38kV



Beijing SOJO Electric Co., Ltd.

Add: Office 1111, Block D, Jiahua Plaza, Shangdi 3rd Street, Beijing China, 100085

Website: www.sojoline.com

Email: export@sojoline.com

Tel: +86-10-62983386

Fax: +86-10-62988464

Feature

Reliability

- 10,000 times mechanical endurance
- UV resistant solid insulation material
- 100% Factory Acceptance Testing
- Single molded design ensure longer creepage distance

Maintenance-free

- Solid insulation material enables application under high contamination environment
- Magnetic Actuator with few moving parts
- Painted Stainless steel enclosure and operation shaft guarantee maximum corrosion protection

Environmentally Friendly

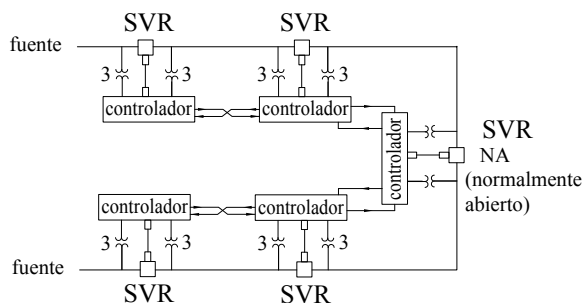
- SF6 free
- Altitude:3000m
- Operating temperature:-40 to 55°C
- Maximum solar radiation:1.1 kW/m²
- Icing thickness: 20mm
- Pollution level: IV-Very Heavy
- Seismic intensity: ≤ 8
- Wind pressure: ≤ 34 m/s
- Humidity: Daily Average $\leq 95\%$; Monthly Average $\leq 90\%$

Flexibility and Compatibility

- Compatible with controller or relays from other brands
- Various selections of cable connection interfaces

Smart Grid and Automation

- Encapsulated 3 current transformers ($\pm 0.2\%$)
- Encapsulated 6 voltages sensors maximum ($\pm 5\%$)



Type Test

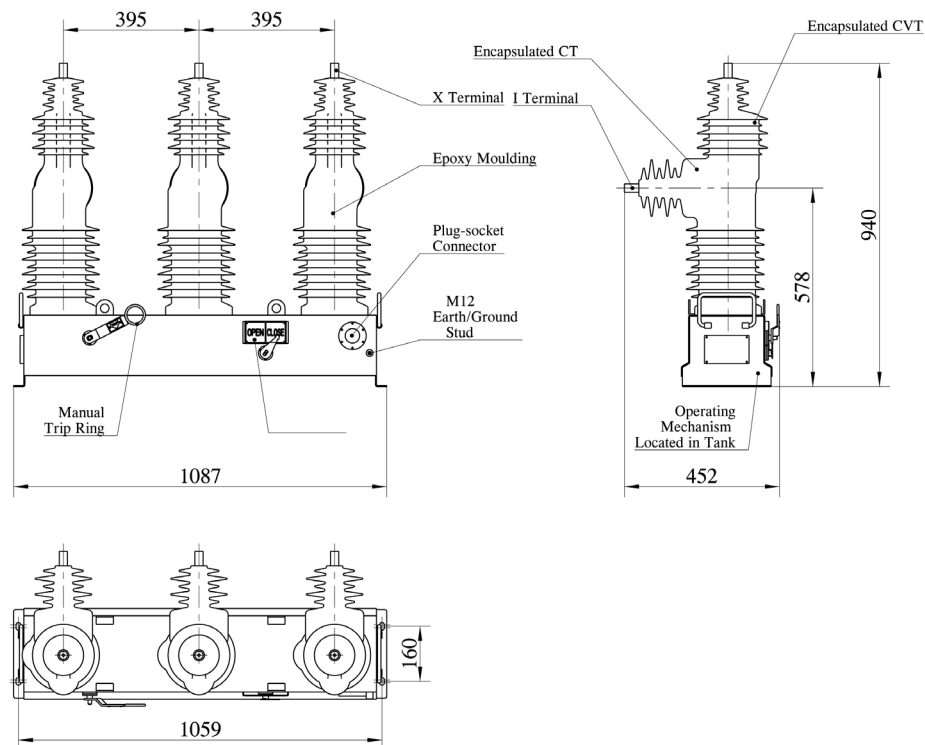
DNV·GL

KEMA

SOJO Electric SVR automatic recloser has passed the complete type tests in accordance with relevant IEC and IEEE standards and has been granted KEMA certificates.

Product Dimension

27/38kV



Technical Data

No.	Item		Unit	Data	
				27kV	38kV
1	Rated Voltage		kV	27	38
2	Rated Frequency		Hz	50/60	50/60
3	Rated Current		A	800	630/800
4	Rated Short Circuit Breaking Current		kA	12.5/16	12.5
5	Rated Peak Withstand Current		kA	31.5/41.5	31.5
6	Rated Short Time Withstand Current / Duration		kA/s	12.5/3 16/3	12.5/3
7	Rated Short-circuit Making Current (peak)		kA	31.5/41.5	31.5
8	Rated cable-charging current switching		A	5/5	
9	Rated line-charging current switching		A	40/25	
10	Mechanism Duration		Ops	10000	
11	1 min Power Frequency Withstand Voltage	Wet	kV	50	70
		DRY	kV	60	70 (80) ¹
12	Rated lightning impulse withstand voltage (BIL)		kV	150	170 (200) ¹
13	Rated operating sequence			O-0.2s-CO-2s-CO-2s-CO	
14	Number of max. tripping operations		n	4	
15	Actuator type			Magnetic1	
16	Standards			IEC 62271-111:2019 IEEE C37-60:2018	
17	Pollution level as defined in IEC 60815			IV - Very Heavy	
18	Protection degree			IP67	
19	Ambient air temperature range		°C	-40 to +55	
20	Current sensing technology per phase			current transformer	
21	Voltage sensing technology per phase			voltage sensor	
22	Controller(IED)			INGEPAC DA PT (also compatible with other brands)	

¹ 80 kV dielectric and spring mechanism products available by special order. Please contact Beijing SOJO Electric Co., Ltd. for further information.

SJFD2000 Microprocessor Recloser Controller

SJFD2000 multifunctional devices offer a comprehensive solution for protecting and controlling distribution feeders or reclosers. Optionally they can provide loop automation. Besides the main protection functions, they include monitoring and operation features as well as logic programming, and events and fault reporting providing comprehensive switchgear (circuit breaker, recloser or LBS) management local and remote capabilities.

SJFD2000 is a cost-effective solution for protection and control systems for which IEC 61850 standard compliance is required, including access in other protocols and web services as well.

Main Features

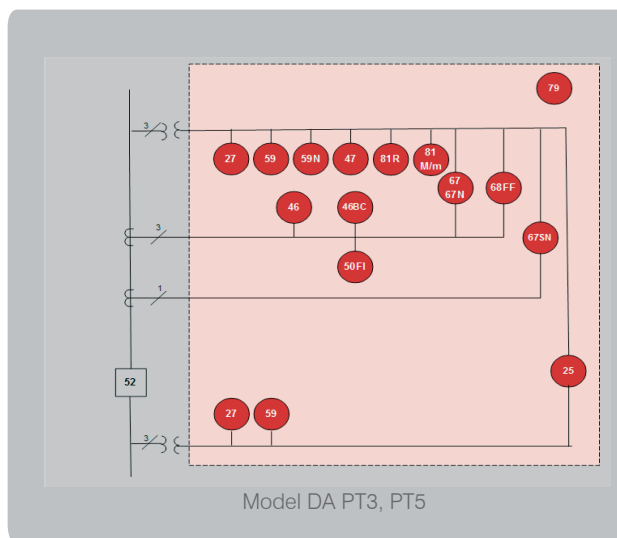
- Protection for Medium Voltage feeders
- Overhead switchgear control
- Local operation and setting by means of a graphic display, and remotely through serial and Ethernet protocols
- User-friendly configuration and supervision software. The device data model is integrated automatically to the software when connected, not needing any previous configuration work configuration
- All the main communication protocols used in electrical substations environment are available in all the devices of the INGEPAC DA range
- Wide range current inputs allowing the same device to be connected to 1A and 5A CT secondary
- Sensor voltage inputs or conventional transformers
- User logic signals according to the IEC 61131-3 standard
- Different options for programmable digital inputs and outputs number
- Local signalling through programmable LED indicators
- Circuit breaker and operation monitor
- Fault location
- Faults and events recording
- Automatic reclosing function, for application in overhead lines
- Synchronisation by IRIG-B or through communications

Options

- With display, for flush mounting or without display, for back plate surface mounting
- Supply voltage: 24/48 Vdc or 125/220 Vdc
- Voltage inputs from Voltage transformers or from sensors / resistive or capacitive dividers
- Loop Automation function
- Full boards configurations with up to 45 digital inputs and 21 digital outputs, or 36 digital inputs and 26 digital outputs
- Optic arc-flash protection for MV switchgear, together with INGEPAC-AFD optic sensors
- Serial and Ethernet communication both copper or fibre optic



Functions



Protection Functions

50/51 (67)
 50N/51N (67N)
 50SN/51SN (67SN) SEF Sensitive
 Earth Fault
 67IN Isolated neutral directional /
 compensated neutral
 46TOC (67Q), 46IOC(67Q)
 46BC Broken conductor
 2nd harmonic restraint
 27
 59
 59N Neutral overvoltage
 47 V2 overvoltage
 81M/m
 81R Rate Of Change Of Frequency
 (ROCOF)
 27 (B Side)
 59 (B Side)

HCL High current locking
 CLP Cold load pickup
 HLT Hot Line Tag
 Function 86
 50BF Breaker failure

Optic arc-flash protection for MV switchgear

Fault locator

Monitoring Units

68FF Fuse failure
 Breaker Monitoring
 k12 per pole
 Closing and trip circuit monitoring
 Excessive number of trips
 Breaker status logic

Automation

25 Synchrocheck
 79 Auto-reclose
 Sequence coordination
 Loop Automation (PT3 and PT5)
 Auto-sectioning (PT4 and PT5)

Communications

Front port: Ethernet RJ45
 Rear ports: 1 serial RS232/485
 and 2 Ethernet
 Protocols: IEC 61850 Ed.2,
 DNP3.0, IEC60870-5-103,
 IEC60870-5-104
 Modbus RTU Master protocol for
 other devices integration
 Web and FTP server

Data Acquisition Functions

Phase and neutral current
 Side A and B voltage
 Active and reactive power
 Active and reactive energy
 counters, both directions
 Event recording and fault reports
 Oscillography
 Measurements historical data
 record

Synchronisation

SNTP and IRIG-B input

Local Interface

Keyboard and operational buttons
 (optional)
 Graphic display (optional)

Applications

- Main protection & control in feeders
- Reclosers management
- Load Break Switches management
- Backup protection in high-voltage lines, transformers and generators.

Standards and Tests

Electromagnetic and Insulation Tests

Measurements of conducted radioelectric disturbances	EN55022
Measurements of radiated disturbance field strength	EN55022
Insulation resistance measurement	IEC60255-5
Dielectric withstand	IEC60255-5
Impulse voltage	IEC60255-5
Electrostatic discharge immunity	IEC61000-4-2
Radiated radiofrequency electromagnetic field immunity	EN 61000-4-3
Electrical fast transient/burst immunity	IEC61000-4-4
Surge immunity	IEC61000-4-5
Immunity to conducted disturbances, induced by radio-frequency fields	IEC61000-4-6
Power frequency magnetic field immunity test	IEC61000-4-8
Impulse magnetic field immunity	IEC61000-4-9
Damped oscillatory magnetic field immunity	IEC61000-4-10

Ripple on dc input power port	IEC61000-4-17
Damped oscillatory wave immunity	IIEC61000-4-18
Voltage dips, short interruptions and voltage variations immunity	IEC61000-4-29
Power frequency immunity	IEC60255-22-7
Withstand to radiated electromagnetic interference from transceivers	IEEE C37.90.2

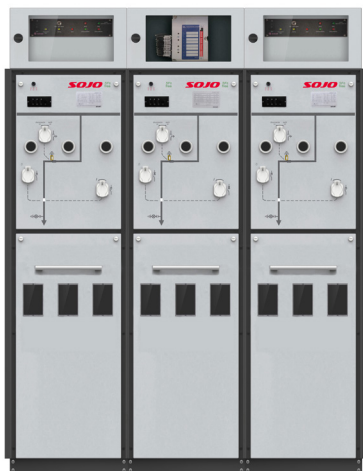
Climatic

Cold	IEC 60068-2-1
Dry heat	IEC 60068-2-2
Change of temperature	IEC 60068-2-14
Damp heat, cyclic	IEC 60068-2-30
Damp heat, steady	IEC 60068-2-78

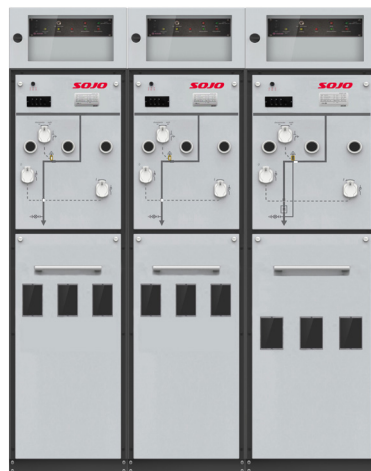
Mechanical

Vibration	IEC 60255-21-1/ EN 60068-2-6
Shock and bump	IEC 60255-21-2/ EN 60068-2-27
Seismic	EN 60255-21-3
Random vibrations	IEC 60068-2-64

SOJO also offers Solid Dielectric Switchgear including:



SVI-12kV-20kA/25kA



SVI-24kV-20kA



SVI-36kV-31.5kA

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