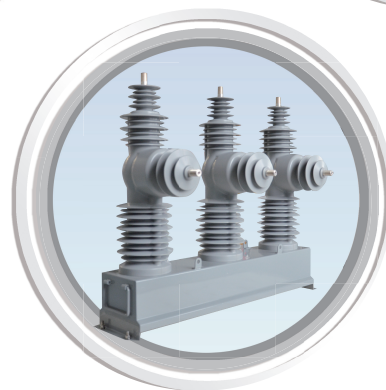
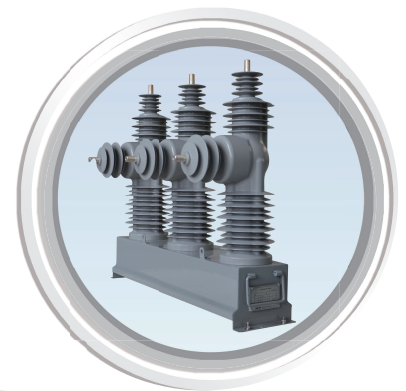
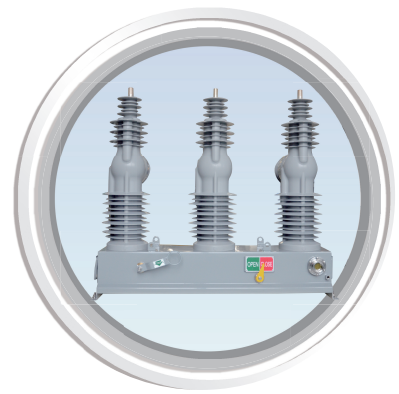
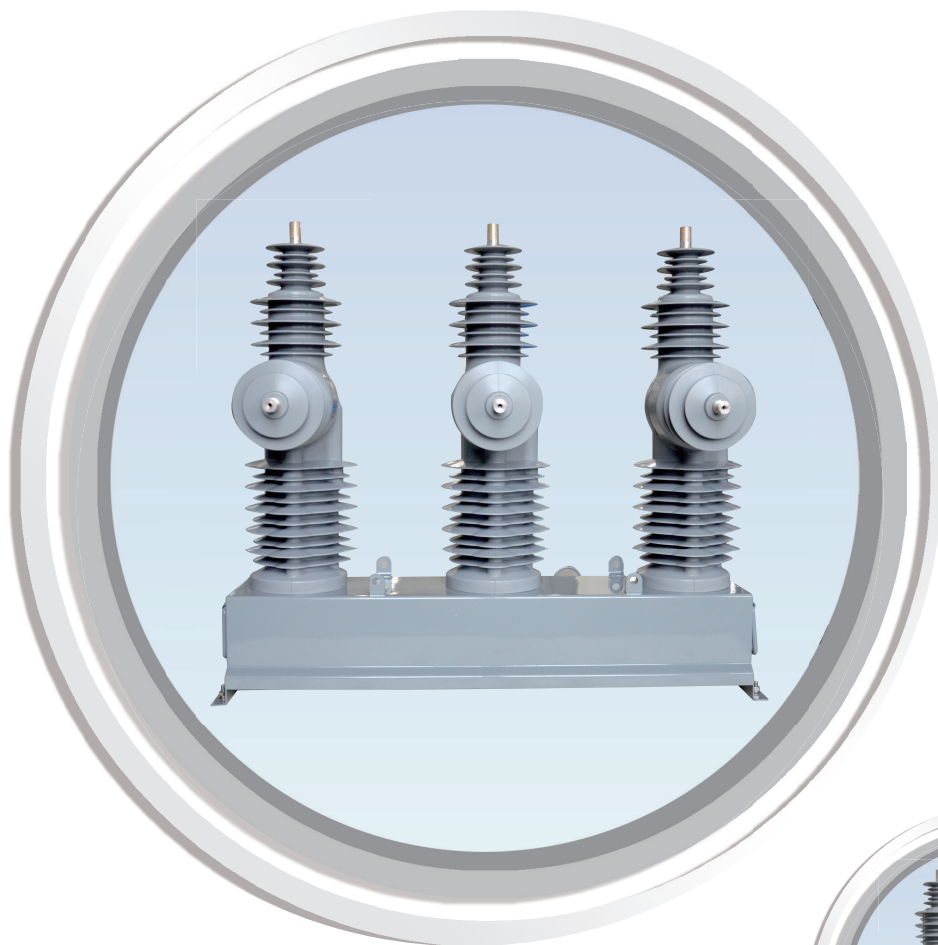


## Solid Insulated Vacuum Recloser (SVR)

SVR are designed for use on overhead distribution lines as well as distribution substation applications for all voltage levels up to 15.5kV, 27kV and 38kV



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## 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

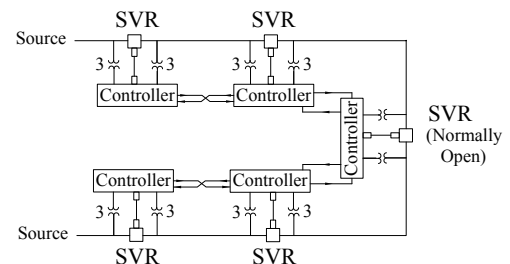
- SF6 free
- Altitude:3000m
- Operating temperature:-40 to 55°C
- Maximum solar radiation:1.1 kW/m<sup>2</sup>
- Icing thickness: 20mm
- Pollution level: IV-Very Heavy
- Seismic intensity: ≤8
- Wind pressure: ≤34 m/s
- Humidity: Daily Average ≤95%; Monthly Average ≤90%

### 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(±0.2%)
- Encapsulated 6 voltages sensors maximum(±5%)

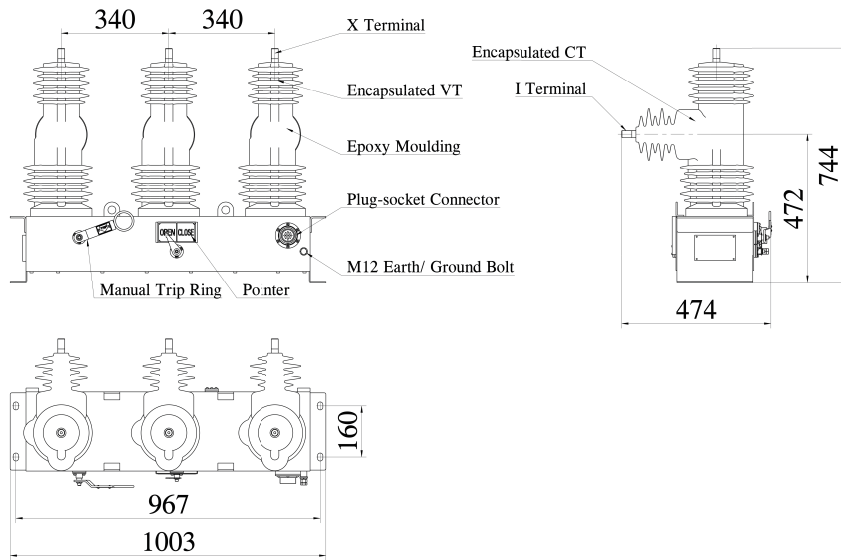


## Type Test

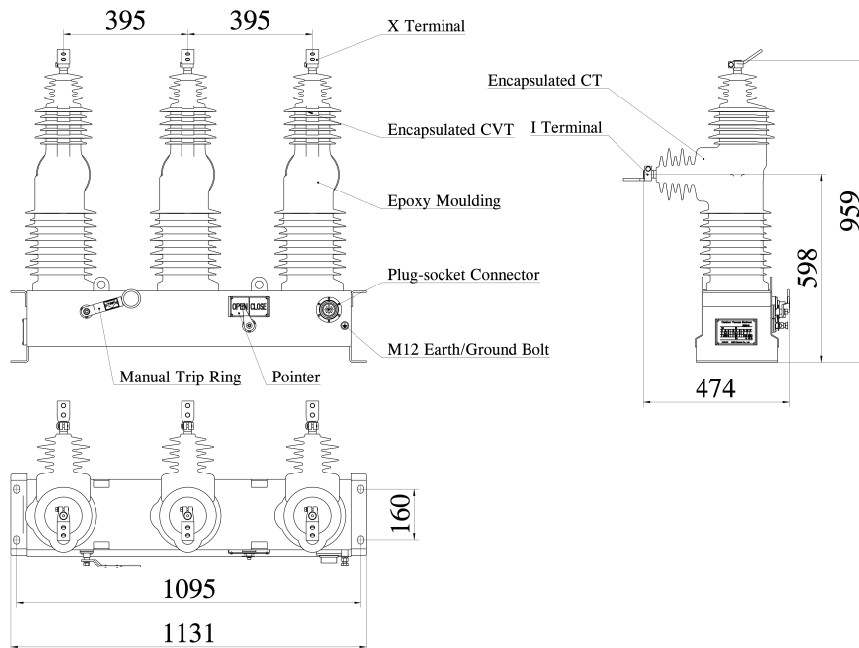
SOJO Electric SVR automatic recloser has passed the complete type tests in accordance with relevant IEC and IEEE standards and has been granted KEMA certificates

## Product Dimensions

15.5kV/27kV



27kV/38kV



## Technical Data

No.	Item		Unit	Data		
				15.5kV	27kV	38kV
1	Rated Voltage		kV	15.5	27	38
2	Rated Frequency		Hz	50/60	50/60	50/60
3	Rated Current		A	630/800	630/800	630/800
4	Rated Short Circuit Breaking Current		kA	16	12.5/16	12.5
5	Rated Peak Withstand Current		kA	41.5/32.5	41.5/32.5	32.5
6	Rated Short Time Withstand Current / Duration		kA/s	16/3	12.5/3 16/3	12.5/3
7	Rated Short-circuit Making Current (peak)		kA	32.5/41.5	32.5/41.5	32.5
8	Rated cable-charging current switching		A	10	25	40
9	Rated line-charging current switching		A	2	5	5
10	Mechanism Duration		Ops	10000		
11	1 min Power Frequency Withstand Voltage	DRY	kV	50	60/70	70 (80) <sup>1</sup>
12	Rated lightning impulse withstand voltage (BIL)		kV	125	125/150	170 (200) <sup>1</sup>
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			IEC62271-111 - 2019 IEEE C37-60		
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)			SJFD2000 (also compatible with other brands)		
23	Weight		kg	90	130	

<sup>1</sup> 80 kV dielectric and springmechanism products available by special order. Please contact Beijing SOJO Electric Co., Ltd.for further information.

## SJFD2000 Microprocessor 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

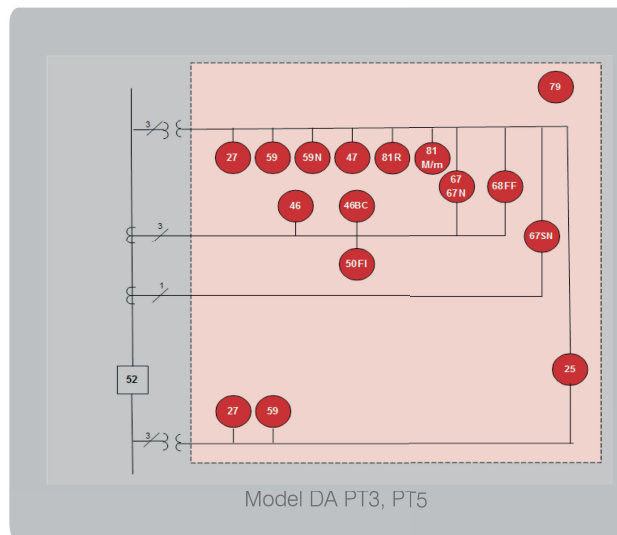
- Protection for Medium Voltage feeders
- Overhead switchgear control
- Local operation and setting by means of a graphic display, and remotely through serial and Ethernet protocols
- User-friendly configuration and supervision software. The device data model is integrated automatically to the software 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 re closing function, for application in over headlines
- 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 (ROC OF)  
 27 (B Side)  
 59 (B Side)

HCL High current locking  
 CLP Cold load pickup  
 HLT HotLine 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 Synchro check  
 79 Auto-reclose  
 Sequence coordination  
 Loop Automation (PT3 and PT5)  
 Auto-sectional izing (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	EN61000-4-3
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	IEC61000-4-19
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

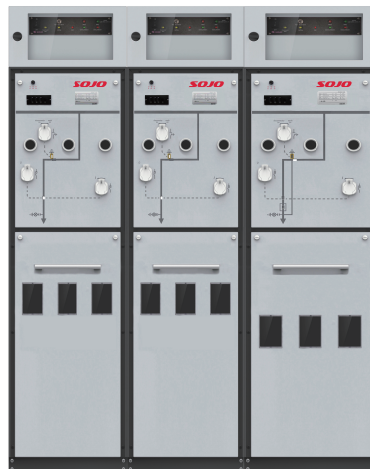
### Mechanical

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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