

Static Var Generator

SFR-SVG Module

Overview

SFR-SVG is a new-generation product of Static Var Generator(SVG), it used the latest technology application for the reactive power compensation. When the SFR-SVG parallel in the grid, it equalized as a dynamic reactive current source. The reactive current of the SVG could be flexibly controlled and compensate the reactive power automatically .



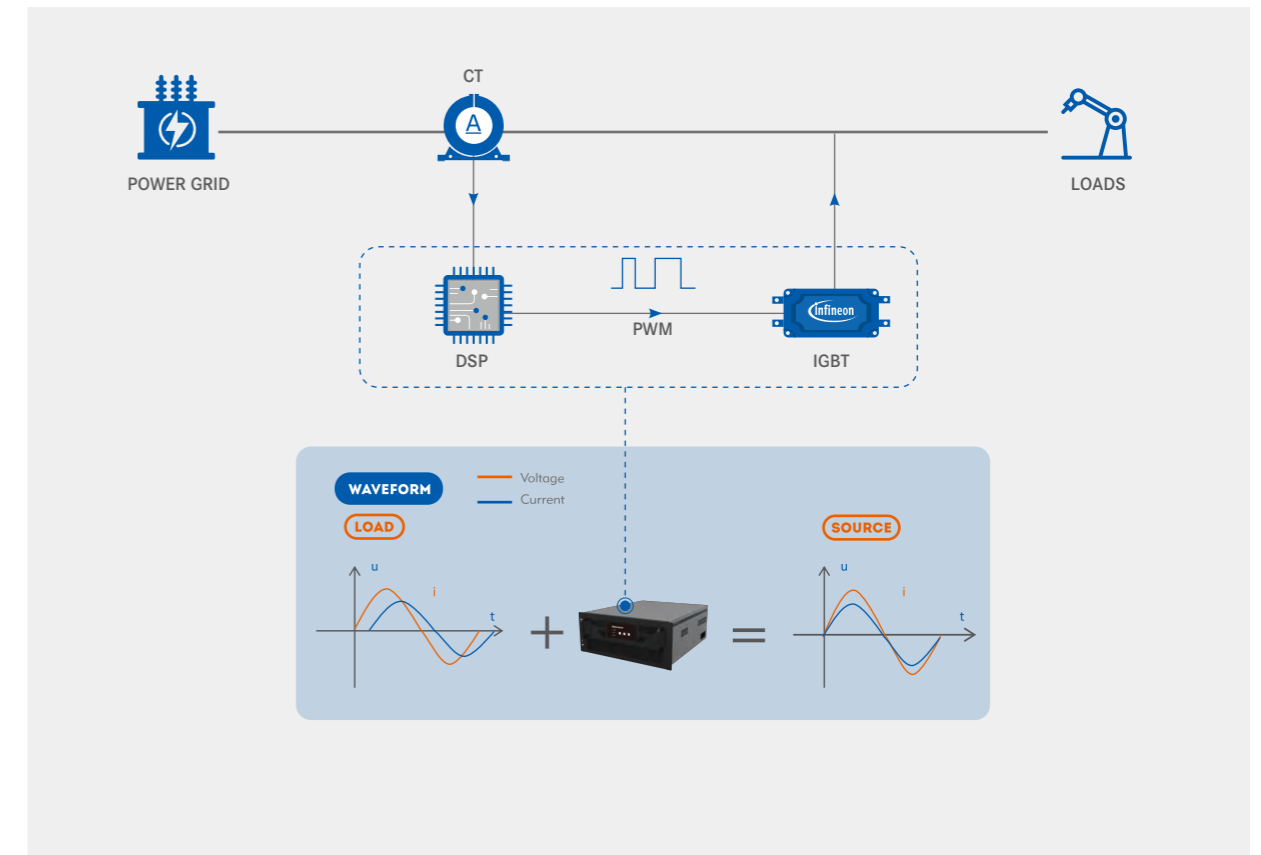
In the AC loop, the cosine value of the phase difference between the voltage vector to the current vector is the power factor (PF), represented by the sign of $\cos \phi$. Numerically, the power factor is the ratio of active power to the apparent power, that is $\cos \phi = P/S$.

- When the current vector is in same phase with the voltage vector, the circuit is resistive and $\cos\phi=1$
- When the current vector leads the voltage vector, the circuit is conductive
- When the current vector lags the voltage vector, the circuit is inductive

Because most of the electrical equipment is inductive load, the power factor is obviously less than 1 during operation, a large amount of reactive power needs to be taken from the grid. Therefore, in order to improve the power factor of the grid, it must compensate the reactive power in the grid.

Working Principle

The SVG acquires the current signal of the load by the CT, the DSP tracks the command current in quick than calculate the reactive power rate of change by intelligent algorithm as to send the data to the IGBT by PWM signal. Finally the inductive or conductive power compensation current is generated on the inverter to achieve the real-time dynamic reactive power compensation.



Main Features

SFR-SVG is the type of IGBT compensation device, comparing to the conventional fixed capacitor compensation, mechanical switching capacitors and the thyristor switching capacitors, it has the following advantages:

- Support anti-harmonic function to ensure system safety.
- Dynamic continuous smooth compensation.
- Current source characteristics
- Fast response, the response time of SFR-SVG $\leq 5ms$
- Adjust the imbalance problem synchronously
- It can compensate harmonic wave dynamically while compensating reactive power
- Compared with conventional reactive compensation products, the SFR-SVG can save 70% installation space.

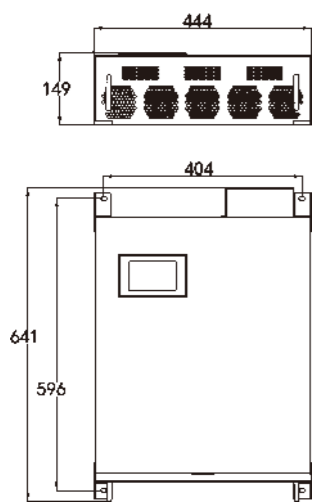
Model Description

SFR-SVG 4 - 300 /0.4 B

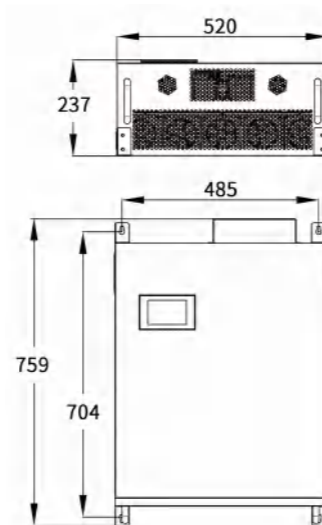
- Installation mode: M-Rack-mounted type
B-Wall-mounted type
- Voltage class(kV)
- Compensation capacity(kvar)
- Wiring mode:3-Three-phase three-wire
4-Three-phase four-wire
- Model of Company' s Product

Dimensions

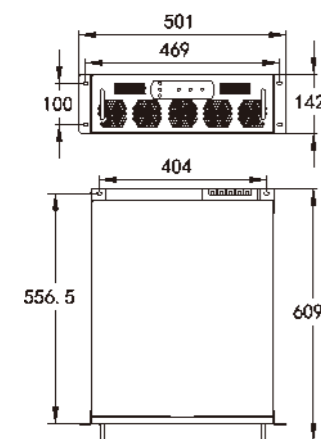
30-50kvar Wall-mounted type



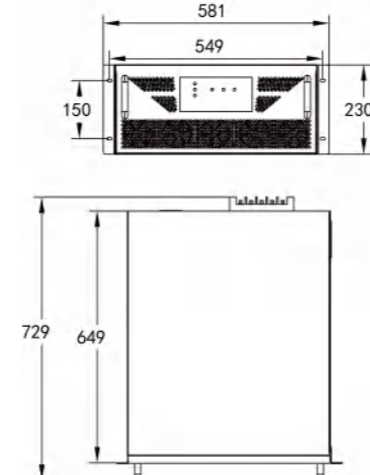
75-100kvar Wall-mounted type



30-50kvar Rack-mounted type



75-100kvar Rack-mounted type



Technical Parameter

Item		Parameter		
SFR-SVG	Grid	380,400,415V 3P3W/3P4W		690V 3P3W
	Mounting Type	Wall-mounted	Rack-mounted	Floor model
System	Rated Input	340~460V		586~793V
	Power Grid Frequency	50/60Hz ±5%		
	Parallel Operation	8 modules, customizable		
	Overall Efficiency	≥97%(laboratory data)		
	Circuit Topology	3-level		
	Performance Indicators	Rated Capacity	30kvar/ 50kvar/ 75kvar/ 100kvar	75kvar/ 100kvar
	Loss Of Active Power	<3% rated module power		
	Over-load Capability	120%		
	Mean Time Between Failures	≥100,000 hours		
	Reaction Time	<100μs		
	Response Time	5ms		
	Scope Of Reactive	Continuously adjustable from rated induced to rated capacitive		
	Adjustment	Compensation algorithm of screening vector of frequency domain possessing self-adaptation capability		
	Control Algorithm	FFT, Intelligent FFT and instantaneous reactive power		
	Control Algorithm	20kHz		
	Switching Frequency	Forced air cooling		
	Cooling Mode	≤65dB		
Communications & Display	Communications Port	RS485		
	Communications Protocol	Modbus-RTU		
	Module Display Interface	4.3in LCD	LED indicator	LED indicator
	Monitoring Alarm	Available		
	Monitoring	Independent monitoring and centralized monitoring		
Mechanical Properties	Net Weight	24.5kg/51kg		130kg
	Dimensions (W*D*H mm)	444×149×641 520×237×759	501×609×142 581×729×230	300×635×1370.5
Ambient Standards	Altitude	1,000m, for every increased 100m, the power is reduced by 1%.		
	Operating Temperature	-20°C-45°C		
	Relative Humidity	5% to 95%,non-condensing		
	Protection Class	IP20		
Related Standards	Directive	2014/30/EU 2014/35/EU		
	Standards Compliance	EN 61000-6-2:2005+AC:2005 EN 61000-6-4:2007+A1:2011 EN 50178:1997 IEEE519		