

PQSVG-MV



more than
the power quality.

PQSVG-MV

FOR MEDIUM VOLTAGE

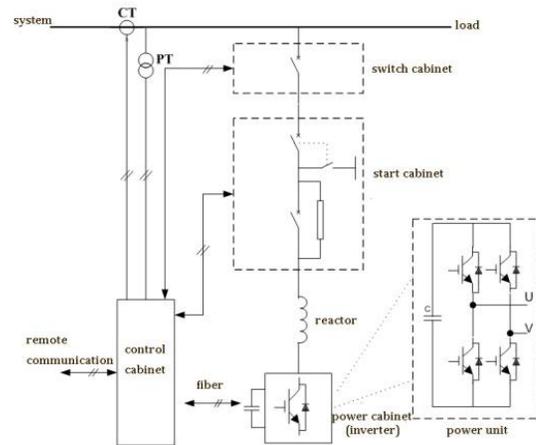
Static Var Generator

Active dynamic reactive power and harmonic compensation device for medium voltage



Product Introduction

PQSVG-MV for Medium Voltage (SVG) is a new active dynamic reactive power and harmonic compensation device with high performance. This device can do real-time tracking compensation to harmonic and reactive power which changes in both side, frequency and three phase unbalance, thus can provide fast dynamic reactive power compensation and harmonic filtering for power grid and electrical loads. It can effectively improve transit stability of power grid voltage, suppress busbar voltage flicker, compensate unbalanced loads, filter the harmonic and improve the power factor.



PQSVG-MV for medium voltage (SVG) is the most advanced reactive power device. The compensation device based on voltage source type inverter has realized a qualitative leap of reactive power compensation mode. It no longer uses large capacity of capacitance and inductance devices, but through high-frequency switch of high-power electronic device to realized conversion of reactive energy. Technically speaking, PQSVG has the following advantages compared traditional reactive power compensation device.



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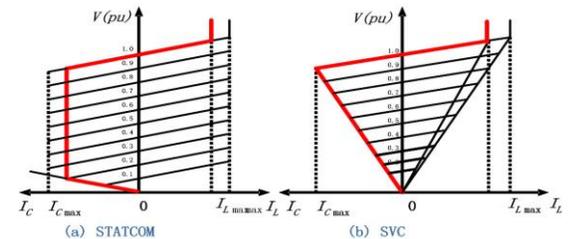
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Technical Advantages

- ✓ **Faster response speed**
SVG response time : $\leq 10\text{ms}$ Traditional SVC response time: $\geq 20\text{ms}$ (if too fast, may cause oscillation of reactor and capacitor). SVG can complete inter conversion from rated capacitive reactive power to rated inductive power within a very short time, this incomparable response speed completely can be competent to the impact load compensation.
- ✓ **Stronger voltage flicker suppress ability**
The suppress of SVC on voltage flicker can be 2:1 at most, while SVG can be 5:1 or even higher. Being subject to the **limitation of response speed**, SVC's voltage flicker ability will not increase along with the increase of compensate capacity. But as SVG has faster response speed, increasing device capacity can continuously improve its voltage flicker suppress ability.
- ✓ **Wider operating range**
The output current of SVG is not depend on the voltage, performed as the characteristics of constant current source, can work among the ranges of rated inductive to rated capacitive, has wider operating range. While the nature of SVC is impedance compensation, the output current and voltage have linear relation. So when system voltage reduces, SVG can prove greater compensation capacity compared with the same capacity SVC, the characteristic of voltage and current are as follows



- ✓ **Diversified compensation function**
PQSVG-MV not only has fast reactive power compensation functions, but also can compensate load harmonic current, negative-sequence current and other power quality problems based on user actual requirement.
- ✓ **Excellent harmonic output characteristic**
PQSVG-MV used carrier phase-shifting PWM technology and power unit cascade multilevel technology, harmonic content produced by itself is very low, no need filter at device output side. SVG can output not only reactive current approximate sine wave (no harmonic, for grid compensation), but also the setting number harmonic current (for load harmonic filtering), the output current of SVG output current is fully active and controlled, fully meet the needs of the users, while SVC generates a lot of uncontrollable harmonic current, and comes with a large number uncontrollable passive filter branch to realize self-generated harmonic current filter.
- ✓ **Small floor area**
As no need of high voltage large-capacity capacitor and reactors to save energy, the floor area of SVG is only 50% of SVC that with the same capacity.

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Performance features

Higher efficiency, lower wastage

- ✓ Multi-H bridge power unit case multilevel technology and carrier phase-shifting PWM modulation technology, output voltage, current harmonic distortion rate are low, harmonic loss is small, so is the system loss.
- ✓ Multi DSP and FPGA cooperative control, high control accuracy, fast speed.
- ✓ Can filter as many as 20 kinds of harmonic, can filter to 25th harmonic at the maximum and can also separately set each harmonic.

More functions, more modes

- ✓ Settable harmonic gradation compensation function.
- ✓ A variety of load compensation function, are "harmonic preferred", "reactive power preferred", "harmonic filter only", "reactive power compensation only" four kinds of working modes.
- ✓ A variety of system compensation function, are "voltage control", "reactive control", "power factor control" working modes.
- ✓ Balance compensation function, can balance the load current of each phases.
- ✓ RS-485, RS-232, TCP/IP port, standard MODBUS RTU communication protocol, and computer remote control function.

More stable more reliable

- ✓ Optical drive, safe, reliable, high anti-interference ability.
- ✓ Multi protection function, strict thermal design, guarantee safe and reliable system running.
- ✓ Advanced control algorithm, adapt all kinds of complicated field and stable operation, and operate in parallel with capacitor compensation bank.
- ✓ Digital control, English LCD display.
- ✓ Fault self-diagnose function.
- ✓ History event record function.

Higher power density, easier installation and maintenance

- ✓ Control system, power unit use modular design, higher power density, easier installation and maintenance.
- ✓ Can parallel operation, meet all kinds of compensation capacity requirements.
- ✓ Automatically limit current if output capacity is full, no need to worry about over load.
- ✓ Can choose either source current and load current detection mode, convenient site installation.

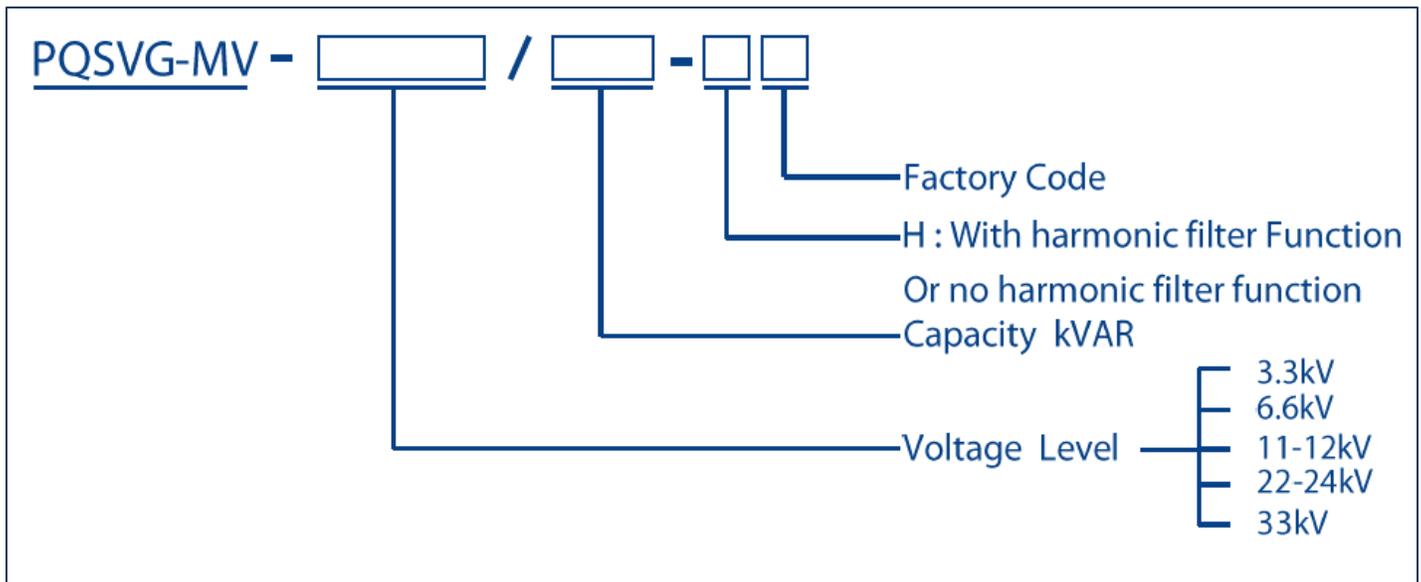
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Naming method



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Technical parameters

Model	PQSVG-MV-□/□-□□
Features	
	Apply to three phase three wire system, filter connect among three phases of grid, can filter no-zero order harmonic, and compensate reactive power and unbalanced three phase.
Unit compensate current	1MVA~20MVA
Input	
Working voltage	6kV/10kV/27kV/35kV
Work frequency	50/60Hz ±5%
Performance index	
Start mode	Self-excited start, small start shock current
Control power supply	380V±20%, include free maintenance UPS power supply
Reactive power output range	Rated inductive to rated capacitive reactive, continuous adjustment
Reactive power output characteristics	Current source output, still output rated capacitive reactive current when system voltage reduced to 20%
Compensate control mode	System compensation or load compensation
System compensation function	Voltage regulation, reactive power regulation, transient stability control, damped control
Load compensation function	Power factor compensation, voltage flicker suppress, harmonic compensation, load unbalanced compensation
Filter cap	2~25 th harmonic
Filter number set	Can separately set to each harmonic
Effective response time	Transient response<0.1mS, complete response≤10mS
Specific technical	Chained multilevel technology, effectively reduce current ripple
Overload protection	Automatically limit at 100% rated output
Efficiency	More than 97% when full load
CT requirement	3, 0.2 level and above, 5A at secondary side
Current detection mode	Field programmable source current detection or load current detection mode

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Language	English
Model	10 or 15inch touch screen.
Communication port	RS-232, RS-485, TCP/IP
Communication protocol	MODBUS-RTU
Digital I/O	4 digital input, 2 digital output
Product configuration	
Unit operation	Allow
Multiple operation	5 sets in parallel at most
Protection level	IP3X (please contact manufacturer for higher protection level)
Standard color	RAL7035, can be custom made
Device dimension	Up to detailed model
Ambient condition	
Ambient	Indoor installation, clean ambient
Ambient temperature	- 10°C ~ 40°C
Storage temperature	- 25°C ~ 70°C
Relative humidity	Max 95%RH (no condensation)
Altitude	Not higher than 1000m (can be higher altitude by reducing capacity)

