

Modular Sine series Active Harmonic Filter (S-AHF)

Modular Sine series Static Var Generator (S-SVG)



Cabinet type



Rack mounted type



Wall mounted type

➤ Product function

Product	Function	Performance
Active Harmonic Filter (AHF)	Eliminate harmonics in 2-50 times	THDI is reduced to less than 5% Power factor is to 0.99 Three-phase unbalance is 0 Improve voltage change
Statcom Var Generator (SVG)	Eliminate reactive power, unbalanced three-phase, and harmonics in 2-13 times	Power factor is to 0.99 Three-phase unbalance is 0 Reduce harmonics in 2-13 times Improve voltage change

➤ Advantages

- Reduction of current harmonics generated by the loads, resulting in reduced energy consumption
- Total harmonic distortion of current – THDI is reduced to less than 5% by APF/AHF
- Elimination of three-phase unbalance
- Reduction of the crest factor of the current wave, extending the life time of the equipment and avoiding breakdowns
- Attenuation of micro cuts in the supply voltage generated by power converters, causing malfunctioning of computers, PLCs and other sensitive equipment
- Reduction in the consumption of active energy
- Reduction in Joule effect losses
- Less overheating in cabling and capacitors
- Reduction in transformer losses
- Reduction in the maximum power demanded
- All the above advantages will result in reduced the costs of electricity bill and maintenance
- Power factor improvement, resulting in no billing of reactive energy
- Reduction of the subscribed demand in kVA
- Additional reserved power available at the power source transformers

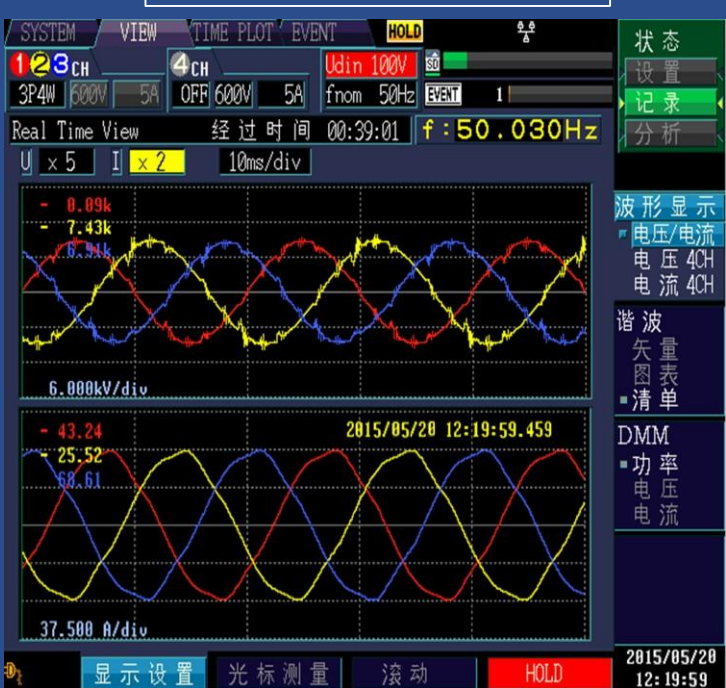
➤ Examples of complex industrial occasion-Metallurgical Industry

Before compensation



Intermediate frequency furnace load
THDi=31% ;THDv=21%; PF=0.55
Serious dust Ventilation is not good

After compensation

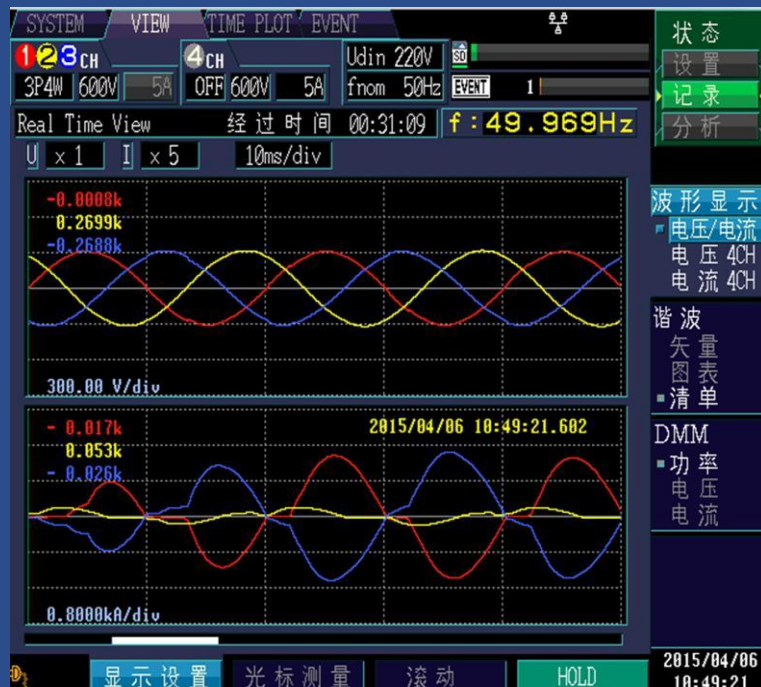


Harmonic basically disappeared
THDi=4.3%; THDv=4.5%; PF=0.98

Project background:
Reactive + harmonic + dust pollution + high TDHU + high temperature

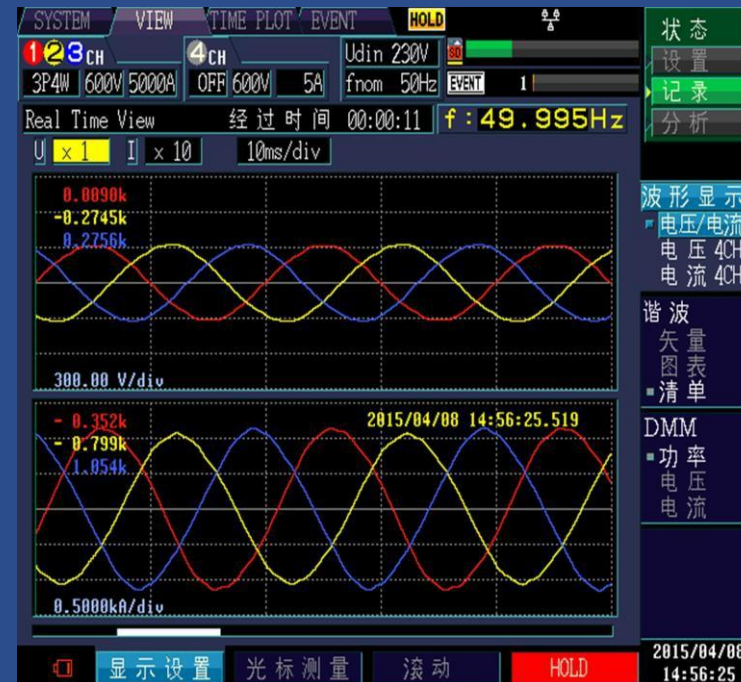
➤ Examples of complex industrial occasion -Welding industry

Before compensation



Spot welding load
 $I_a=0$; $I_b=278A$; $I_c=317A$
PF=0.52
Midline fever

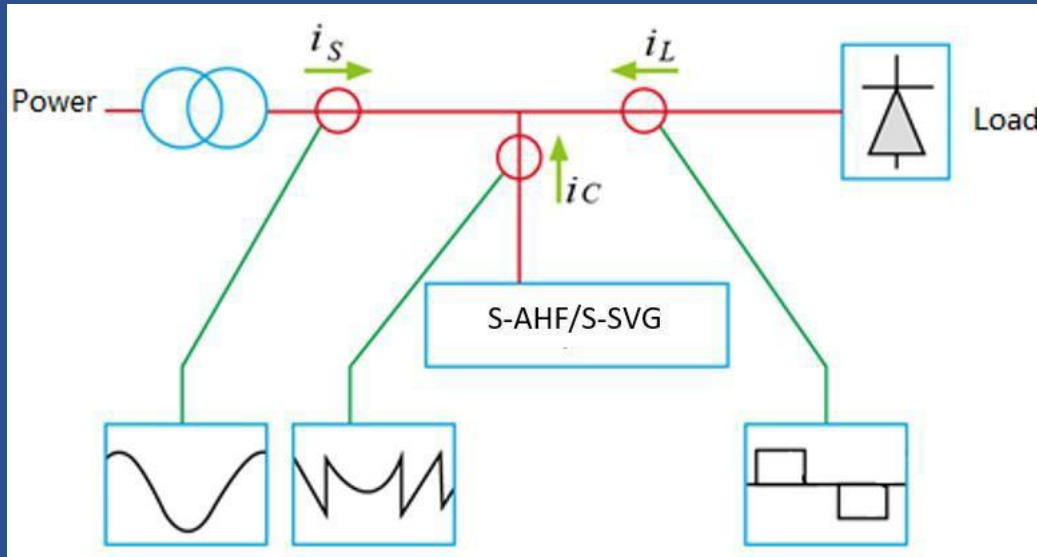
After compensation



Unbalance Completely disappeared
PF=0.98
THDI =2.7%

Project background:
Unbalance(losed one phase)+ reactive power

➤ Working principle



Detect load current, By FFT transform to extract target current. Then device send compensation current with opposite phase and same size, And target current offset each other.

Applications of complex industrial and building occasions



Rail Traffic



Car Plant



Port



Metallurgy



Petroleum and Chemical



Drilling Platform



**Buildings: Mall, Hotel,
Hospital, Office, Apart.**



Power Grid Transmission



Data Center



Sewage Treatment Plant



Bus/Heavy Industry



Textile Mill

➤ Development process of the power quality products



Contactor switching
capacitor FC



Contactor :
Cheap price
Slow response
Limited times of switching



Thyristor switched
capacitor TSC



Thyristor :
Moderate price
Medium speed of response
Unlimited times of switching



Integrated active filter
AHF/SVG

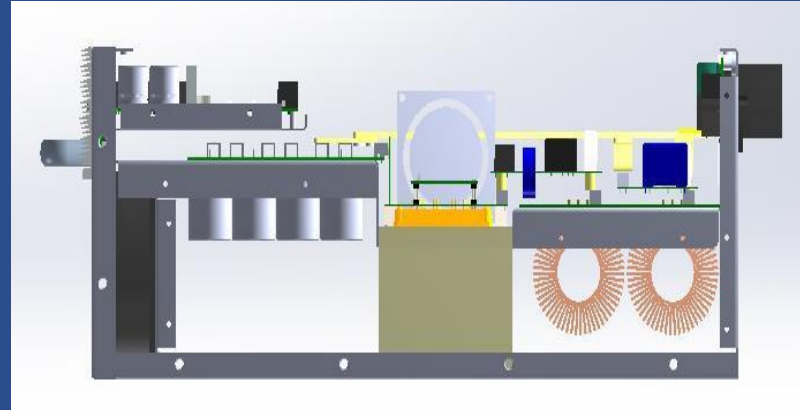
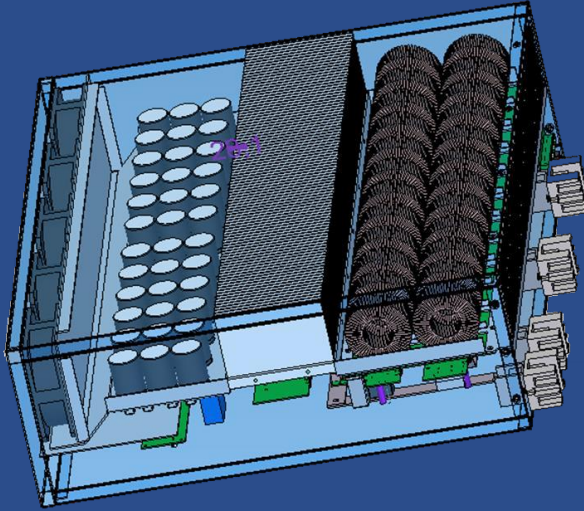


Modular active filter
AHF/SVG



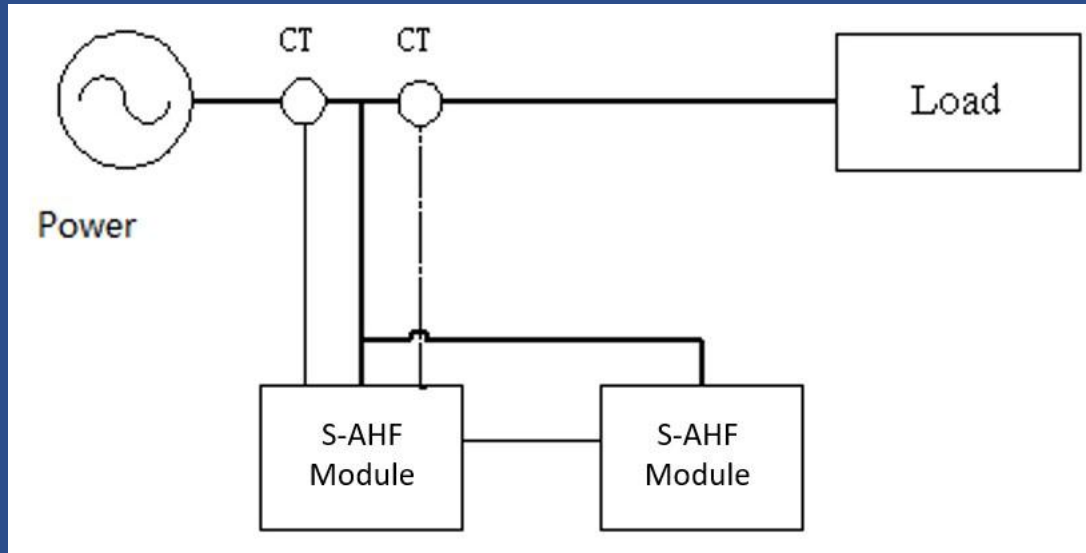
IGBT :
High price
Fast response
Unlimited times of
switching

➤ Strong anti pollution



The electronic part is sealed in the upper layer, electric power part of ventilation and heat dissipation in the lower layer ,adapt to the severe dust industrial occasions.

➤ Simple installation



CT in power side / load side sampling, can through the touch screen, A wide range of CT ratio can be set to 100~10000:5 。

➤ Extremely low power loss



AHF/SVG

150A/100kVAR

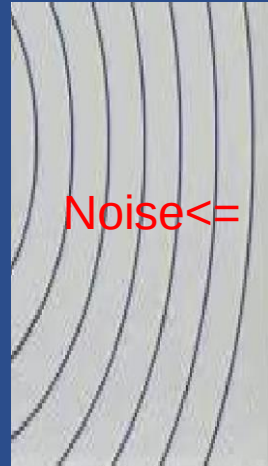


active power loss < 2.5%

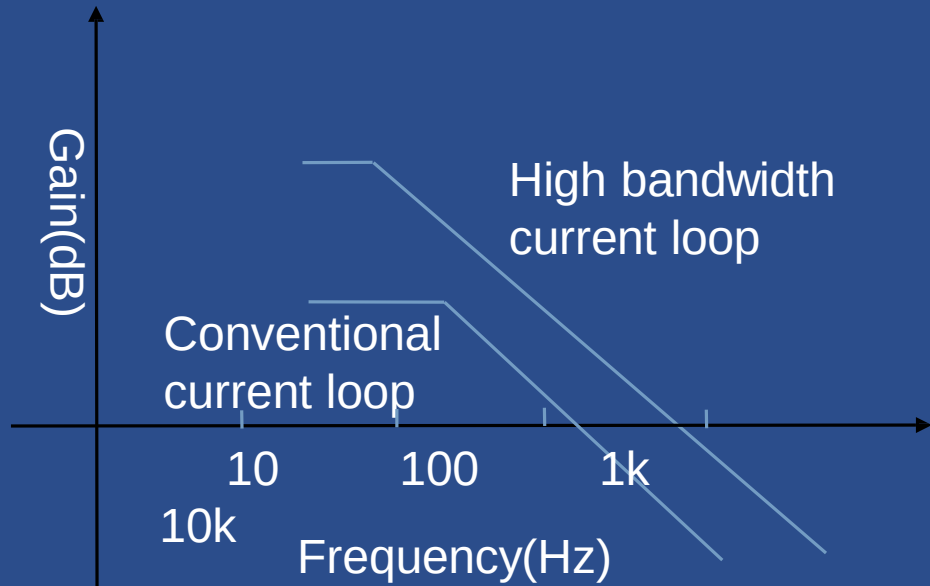
(Industry mainstream level < 3%)

➤ Extremely low noise

noise <60dB (Industry mainstream level <70dB)



➤ Extremely high current loop bandwidth



IGBT (Germany Vincotech) switching Freq is 40k Hz(50A) and 80k Hz(100A) by interleave parallel. Current loop bandwidth 4kHz, achieve faster response speed、stronger suppression of interference, to achieve a higher reliability. (Similar products up to 20kHz/2kHz)。

➤ Modular and wall mounted design of Sine series Active Harmonic Filter - SAHF



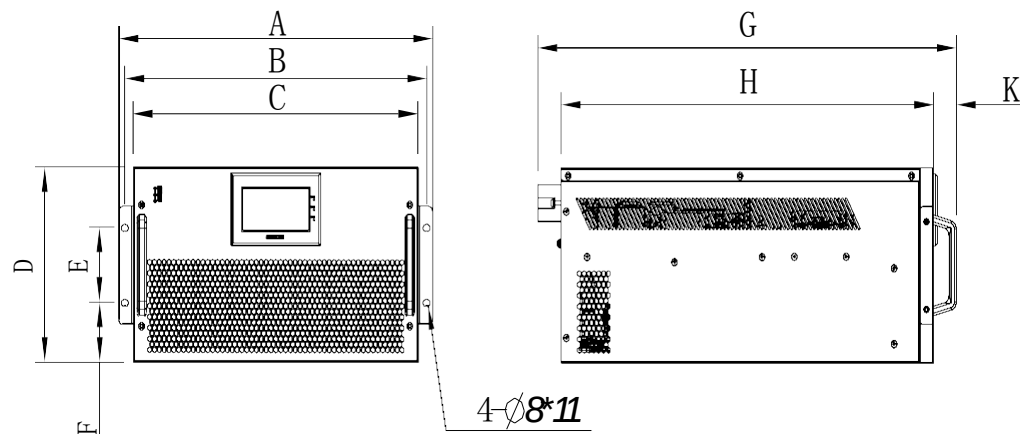
Modular rack design, used as component , easy to installed in different cabinets and occasions.
Rated voltage : 220/380/400/440/480/600/690 Vac
Rated current : 30/35/50/75/100/150/200 A
Rated frequency : 50/60 Hz
Wiring : 3P3W / 3P4W



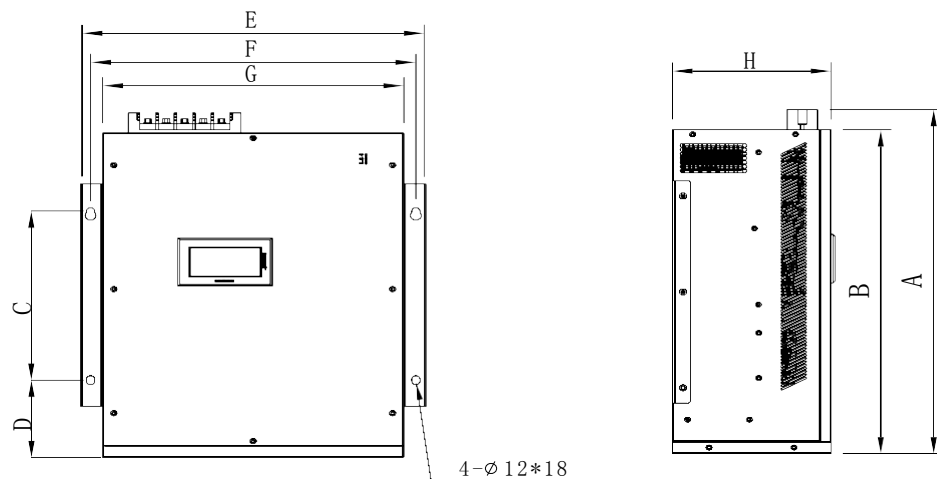
Wall mounted design, could been installed on the wall directly, don't need any cabinet.
Rated voltage : 220/380/400/440/480/600/690 Vac
Rated current : 30/35/50/75/100/150/200 A
Rated frequency : 50/60 Hz
Wiring : 3P3W / 3P4W

Active Harmonic Filter – SAHF Dimensions

Dimensions of rack mounted type



Dimensions of wall mounted type



mm	Rack mounted				Wall mounted			
	35A/50A	75A	100A	150A	35A/50A	75A	100A	150A
A	359	399	484	554	521.5	545	611	621
B	341	381	466	536	500	520	575	585
C	315	355	440	510	300	360	300	300
D	200	200	232	250	120.5	85.5	137.5	142.5
E	89	89	89	89	379	419	500	570
F	55.5	55.5	71.5	80.5	350	390	475	545
G	556.5	611.5	646	656	315	355	440	510
H	500	555	575	585	200	200	232	250
K	35	35	35	35				
Weight (kg)	23	28	38	47	23	28	38	47

➤ Modular and wall mounted design of Sine series Static Var Generator - SSVG



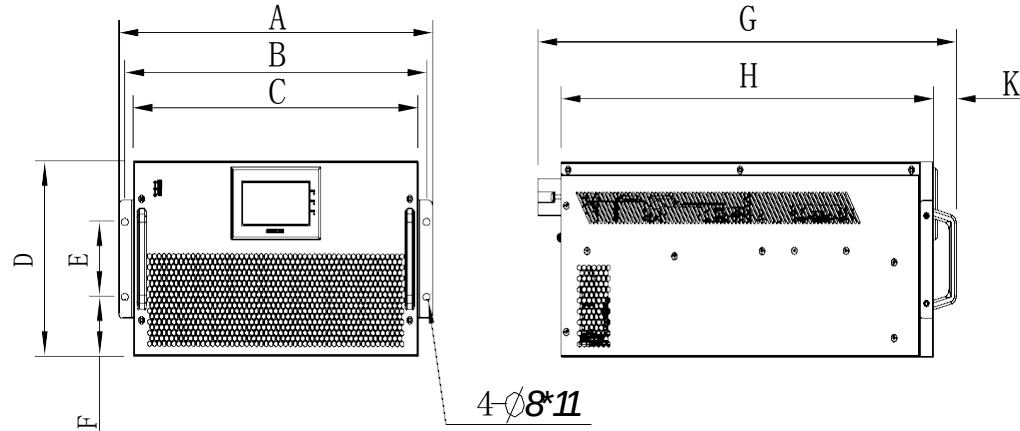
Modular rack design, used as component , easy to installed in different cabinets and occasions.
Rated voltage : 220/380/400/440/480/600/690 Vac
Rated current : 20/35/50/75/100/150 kVar
Rated frequency : 50/60 Hz
Wiring : 3P3W / 3P4W



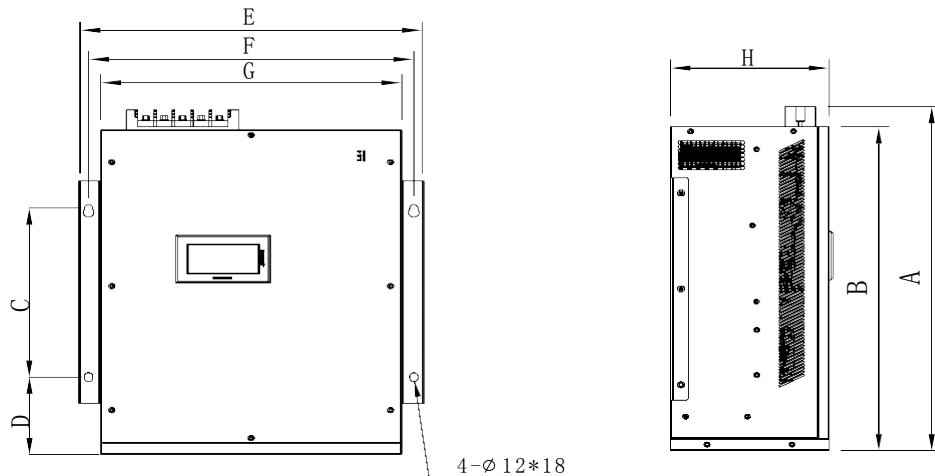
Wall mounted design, could been installed on the wall directly, don't need any cabinet.
Rated voltage : 220/380/400/440/480/600/690 Vac
Rated current : 20/35/50/75/100/150 kVar
Rated frequency : 50/60 Hz
Wiring : 3P3W / 3P4W

Static Var Generator - SVG Dimensions

Dimensions of rack mounted type



Dimensions of wall mounted type



mm	Rack mounted				Wall mounted			
	20/35kVar	50kVar	75kVar	100kVar	20/35kVar	50kVar	75kVar	100kVar
A	359	399	484	554	521.5	545	611	621
B	341	381	466	536	500	520	575	585
C	315	355	440	510	300	360	300	300
D	200	200	232	250	120.5	85.5	137.5	142.5
E	89	89	89	89	379	419	500	570
F	55.5	55.5	71.5	80.5	350	390	475	545
G	556.5	611.5	646	656	315	355	440	510
H	500	555	575	585	200	200	232	250
K	35	35	35	35				
Weight (kg)	23	28	38	47	23	28	38	47

➤ **Extremely high power density in one cabinet**

One cabinet could install 6 150A S-AHF modules or 6 100kvar S-SVG modules , module power quality industry leader



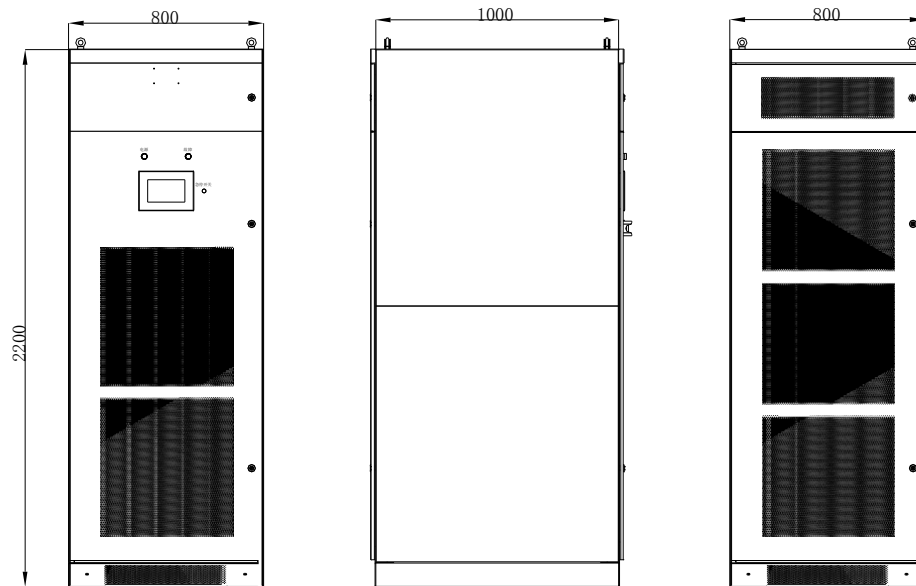
standard	maximum power (AHF/SVG)
Single module/Wall hanging	150A/100kVAR
600wide*600deep	150A/100kVAR
800wide*600deep	300A/200kVAR
600wide*800deep	450A/300kVAR
800wide*800deep	900A/600kVAR

(Industry mainstream level: 600A/400kvar)

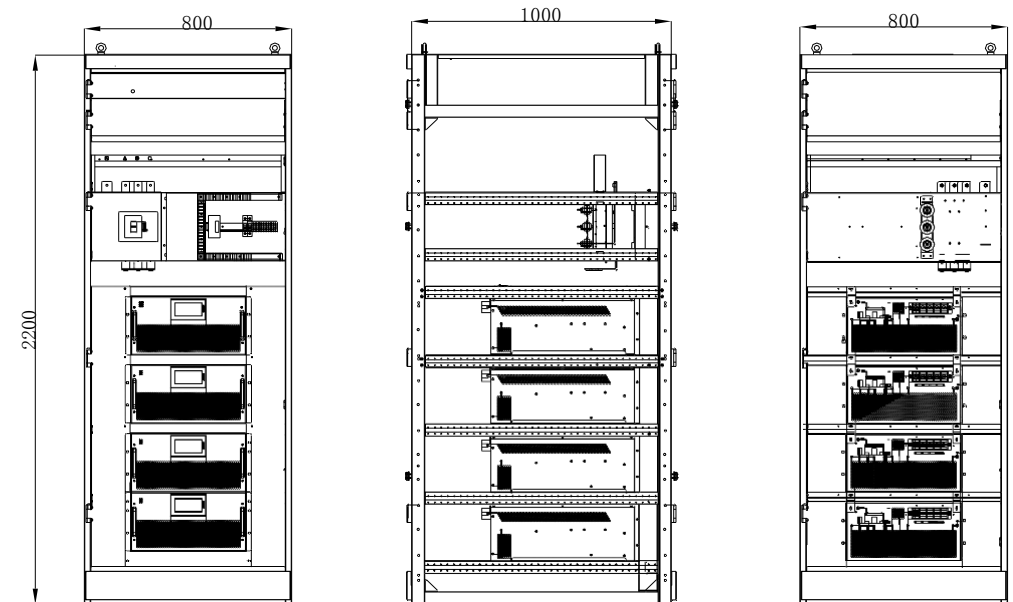
➤ Size of Active Harmonic Filter - AHF Cabinets

Active harmonic filter cabinet standard cabinet is: 800*1000*2200(mm)(wide*deep*high), in addition, there are 600*800*2200;800*800*2200. other cabinet dimensions need to be customized. 800*1000*2200(mm) Detailed outline mounting dimensions are shown in Figure 2-1. the cabinet layout diagram is shown in figure 2-1. (Take the standard cabinet of four AHF machines as an example)

Profile and Dimensions of Active Harmonic Filter Cabinet



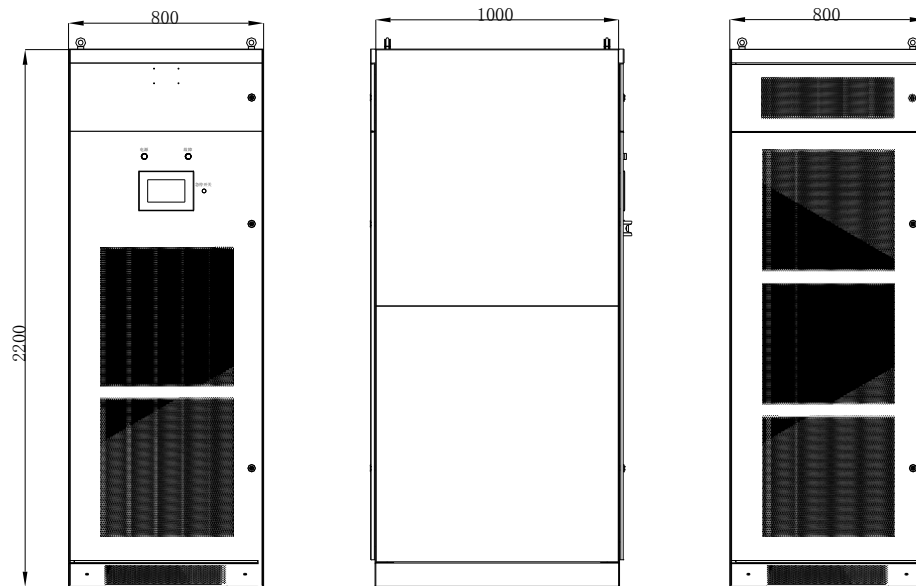
Active Harmonic Filter Cabinet Layout



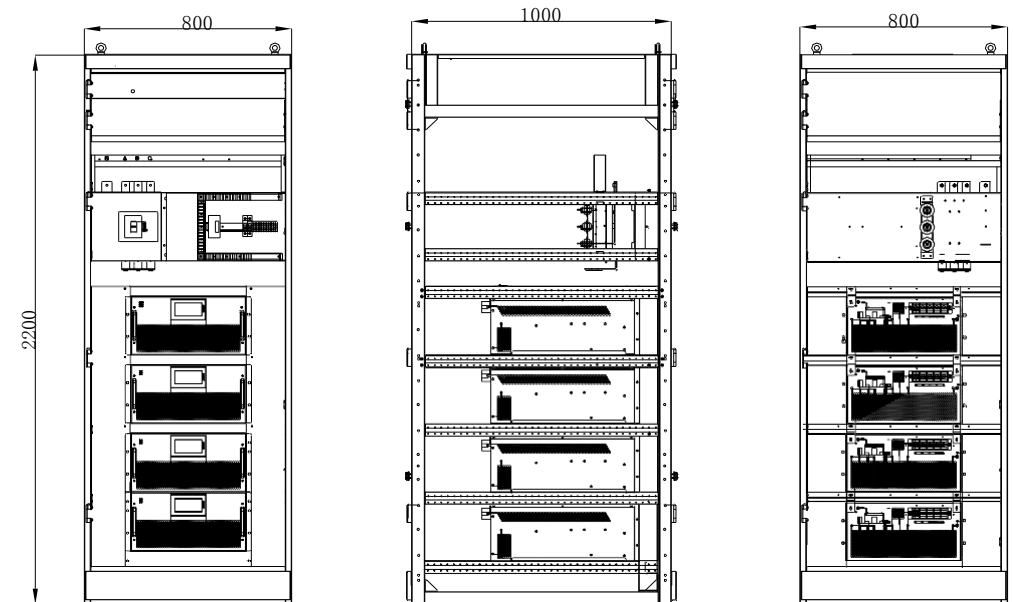
➤ Size of Static Var Generator - SVG Cabinets

Static Var Generator cabinet standard cabinet is: 800*1000*2200(mm)(wide*deep*high), in addition, there are 600*800*2200;800*800*2200. other cabinet dimensions need to be customized. 800*1000*2200(mm) Detailed outline mounting dimensions are shown in Figure 2-1. the cabinet layout diagram is shown in figure 2-1. (Take the standard cabinet of four SVG machines as an example)

Profile and Dimensions of Static Var Generator Cabinet

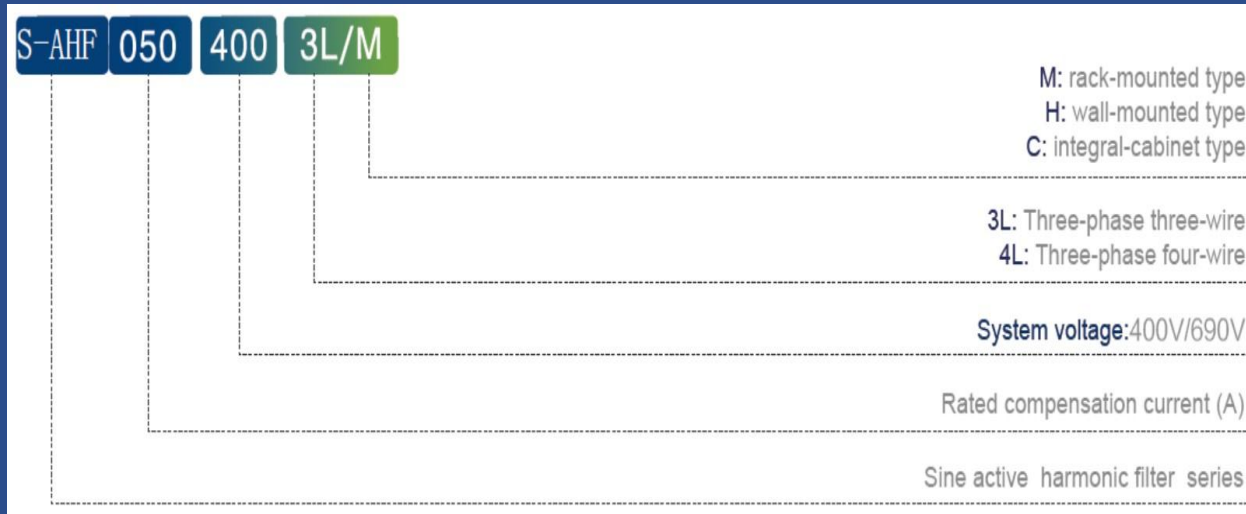


Static Var Generator Cabinet Layout



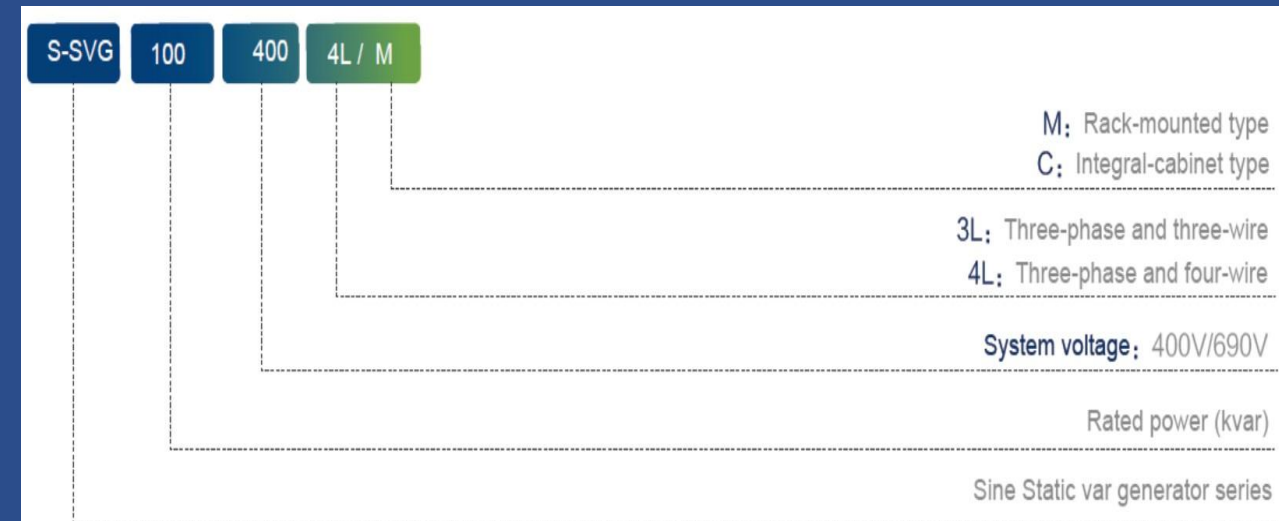
Specifications	S-SVG	S-AHF
Module power	30~100kVAR	30~150A
Parallel number	15	
Maximum capacity of 800 wide single cabinet	600kVAR	900A
working voltage	400V/690V (-20% ~ +15%)	
Current transformer	100: 5 — 10000: 5	
Compensating harmonic	2-13times	2-50times
Reactive power compensation	[-1, +1] Can be set	
Harmonic filtering rate	>97%	
Reactive power compensation	-1~+1	
Three phase unbalance compensation	100%Unbalance compensation	
Total response time	<10ms	
active power loss	<2.5%	
machine noise	<60dB	
CT installation location	Load side / source side can be optional	

➤ Model description for order

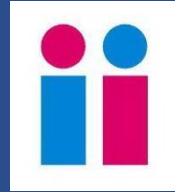


Sine series Active harmonic filter

Sine series static var generator(Stacom)



Authorized Distributor in Indonesia :



PT. INTRACO INDONESIA

Email : info@intracoindonesia.co.id
Website : www.intracoindonesia.co.id
Telephone : +62 21 64717528 / 64717529
Facsimile : +62 21 64717530
Mobile phone : +62 811 8697 999

Address :
Ruko Mahkota Ancol Blok C / 50
Jl. R.E. Martadinata
Jakarta Utara 14420
INDONESIA