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Power Quality Management

Product Manual



ZHEJIANG GEYA ELECTRICAL CO ., LTD.



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Using Our Technology to Assist Green Earth and Create a Better Future Together



ABOUT US

The company's tenet is to "be a good person" and "do good things". The company has a professional R&D and technical service team specializing in products in the field of power and electronics, and is committed to continuously providing users with more professional, better and more innovative products and services. It is a team full of wisdom, combat effectiveness, harmony and mutual help.

Zhejiang GEYA Electrical co., Ltd. is a high-tech enterprise specializing in the R&D, production and sales of power and electrical devices. The product ranges covers static var generators (SVG), Active Harmonic Filter (AHF), automatic voltage corrections (AVC), household energy storage converters (UP), household photovoltaic energy storage inverters (UPV), industrial and commercial photovoltaic storage integrated machines (PSI2), industrial and commercial energy storage converters (PCS1).

The company is mainly staffed by R&D personnel, more than 50% of whom have a bachelor's degree or above in power electronics-related majors.

The company cooperates closely with Nanjing University of Aeronautics and Astronautics in the field of power electronics to continuously improve the comprehensive competitiveness of products and has strong power quality management and photovoltaic energy storage integrated overall solution capabilities.


Static Var Generator

GY SVG

The working principle of the IGY SVG series static var generator is to connect a voltage-type inverter in parallel to the power grid through a filter.

By adjusting the amplitude and phase of the AC side output voltage of the inverter, it can dynamically control the reactive power in the power grid system for accurate compensation;

The instantaneous response time is less than 50us, and the full response time is less than 10ms, avoiding overcompensation and undercompensation. It is currently the best solution in the field of reactive power compensation.

 **<50us**
The instantaneous response time

 **<10ms**
the full response time



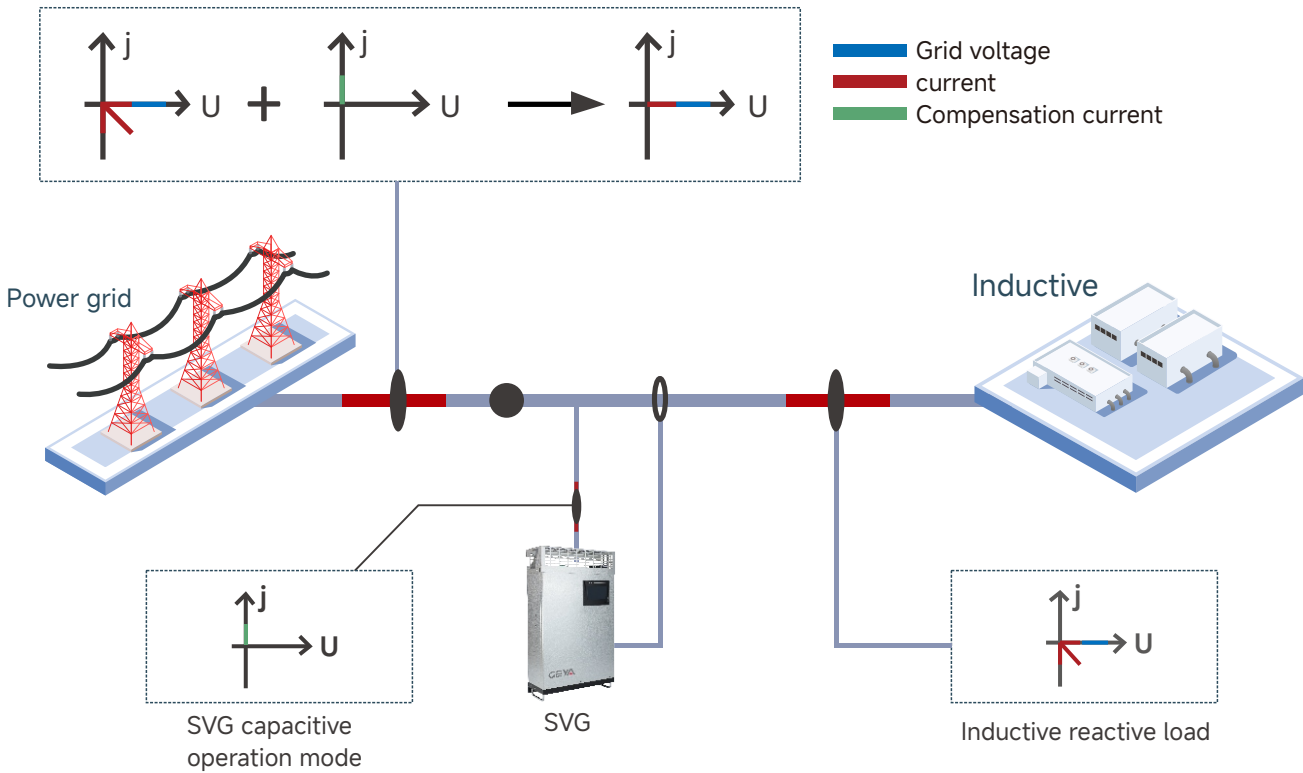
Model description

GY SVG - 0.4 - 50k / 4L - W

- W: Wall-mounted; R: Rack mount; C: Cabinet
- 2L: Single-phase; 3L: Three-phase three-wire; 4L: Three-phase four-wire
- Rated Capacity (kvar) :5/15/35/50/75/100kvar
- Voltage level:0.22: 220V; 0.4: 380V±20%; 0.5: 500V±20%; 0.69: 690V±20%
- Static var generator
- Enterprise code

Features

- Use DSP+CPLD all digital control core, three-level topology technology, advanced reactive power detection algorithm and PWM control strategy to achieve dynamic and accurate compensation of reactive power. Adopt modular design, which facilitates parallel connection of multiple modules, takes small space and is easy to maintain.
- The structural design of independent air ducts and independent warehouses ensures the stable operation of the equipment.
- Carry out full-range dynamic compensation for inductive reactive power and capacitive reactive power, and solve the three-phase unbalance problem at the same time.
- The dynamic response speed to the load is at the millisecond level, which can achieve dynamic and accurate compensation for the reactive power of impact loads.



Static Var Generator

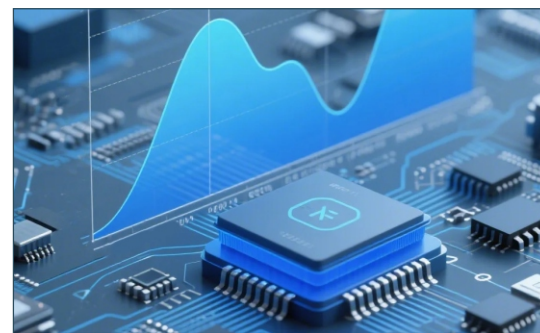
Main advantage

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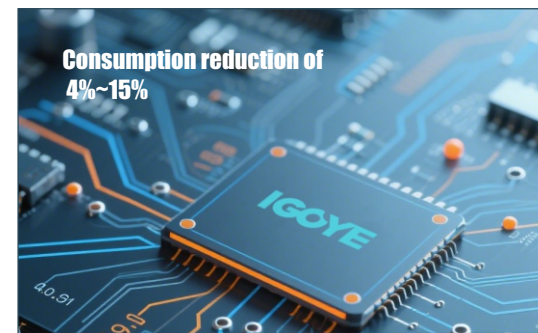
01 Advanced

Adopting the latest international control theory and first-class high-quality components;



02 Nimble

Bidirectional dynamic seamless reactive power regulation from inductive to capacitive, with adjustable harmonic filtering mode.



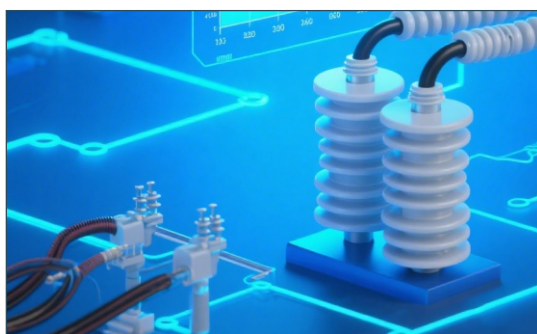
05 Energy conservation

The power-saving effect is obvious, with energy consumption reduction ranging from 4% to 15%, and the economic benefits are remarkable.



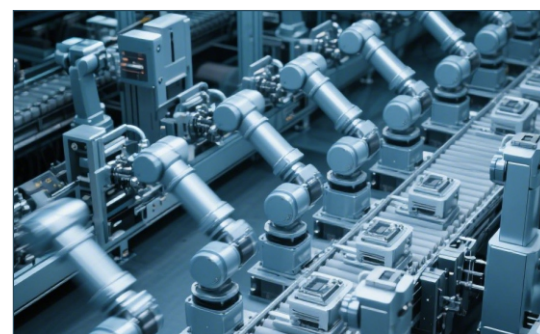
06 Protection

It features functions such as system overvoltage and undervoltage protection, output overcurrent and overheat protection, and comprehensive control protection.



03 Efficient

Single-phase and three-phase regulation can achieve a power factor improvement to approximately 1.0.



04 Fast

Fast response speed. Dynamic response time is less than 10ms.



07 Stabilize

Suppress voltage fluctuations, flicker and system oscillations, stabilize system voltage, and make the system operation more stable; single-phase dynamic regulation, balance the three-phase active power output of the system, and suppress the negative sequence component of the power grid.



08 Secure

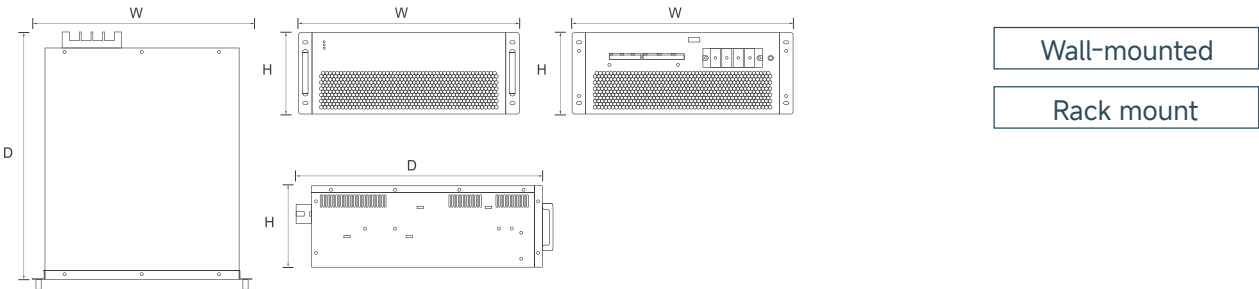
When SVG is controlled as a current source, it will not resonate with the system impedance, thus offering higher safety.

| | 220V series | 380V series | 500V series | 690V series |
|---------------------------------------|--|---|--------------------|-------------|
| Altitude | <2000m, above 2000m, derate according to GB/T3859.2 | | | |
| ambient temperature | -20~+50℃ | | | |
| Relative humidity | ≤90%, no condensation on the surface when the monthly minimum temperature is 25℃ | | | |
| pollution level | Level III below | | | |
| Operating Voltage | AC220V±20% | AC380V±20% | AC500V±20% | AC690V±20% |
| working frequency | 50Hz±5% | | | |
| Rated compensation capacity | 5kvar | 15/35/50/75/100kvar | 90kvar | 120kvar |
| Grid structure | L/N | 3P3W/3P4W | 3P3W/3P4W | 3P3W/3P4W |
| Number of units connected in parallel | Ulimited | | | |
| Overall machine efficiency | ≥97% | | | |
| On-off frequency | 32kHz | 16kHz | 12.8kHz | 12.8kHz |
| Function selection | Reactive power | Reactive power、Reactive power+imbalance | | |
| Reactive power compensation rate | ≥99% | >95% | >95% | >95% |
| full response time | <10ms | | | |
| noise | ≤60dB | ≤60dB | ≤65dB | ≤65dB |
| control method | 2-way RS485 interface (supports GPRS/WIFI) | | | |
| Protection | Overload, software/hardware overcurrent, grid overvoltage and undervoltage, power failure, overtemperature, frequency abnormality protection, etc. | Overload, software/hardware overcurrent, grid overvoltage and undervoltage, grid voltage imbalance, power failure, overtemperature, frequency abnormality, short circuit protection, etc. | | |
| Installation method | Rack/wall-mounted | | Rack | |
| Incoming line | Back incoming (rack type) 、upper incoming (wall-mounted) | | Back incoming line | |
| Protection level | IP20 | | | |

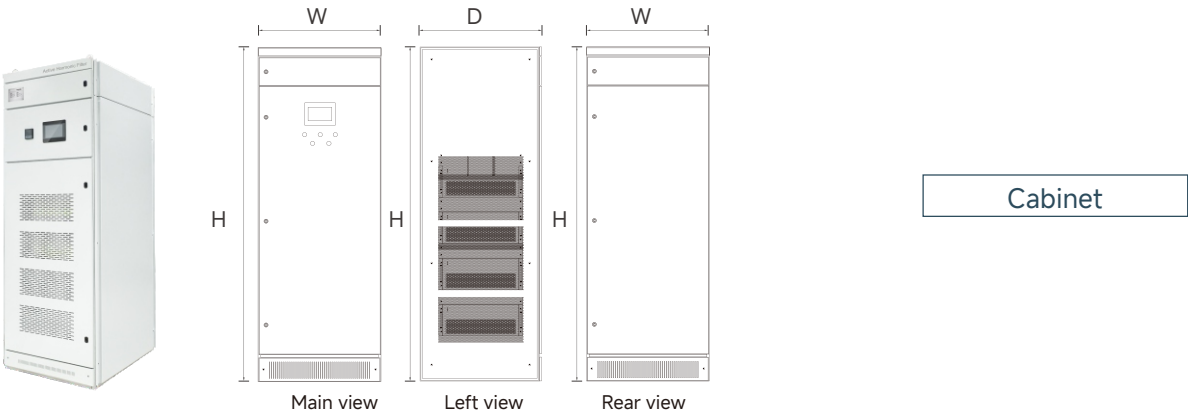
Application

Residential power distribution system, drainage and sewage treatment industry, distributed photovoltaic industry, chemical industry, chemical fiber and petroleum industry, metallurgy, foundry and cement industry, coal and mining industry, automobile manufacturing industry, etc.

Product size



| Model Number | Compensation capacity (kvar) | System voltage (V) | Dimensions (D*W*H) | Cooling method |
|--------------------|------------------------------|--------------------|--------------------|--------------------|
| GY SVG-220-19k/4L | 19 | 220 | 554*488(440)*140 | Forced air cooling |
| GY SVG-220-27k/4L | 27 | 220 | 554*488(440)*140 | |
| GY SVG-220-41k/4L | 41 | 220 | 668*488(440)*140 | |
| GY SVG-220-55k/4L | 55 | 220 | 739*560(500)*230 | |
| GY SVG-400-35k/3L | 35 | 380±20% | 554*488(440)*140 | |
| GY SVG-400-50k/3L | 50 | 380±20% | 554*488(440)*140 | |
| GY SVG-400-75k/3L | 75 | 380±20% | 668*488(440)*140 | |
| GY SVG-400-100k/3L | 100 | 380±20% | 739*560(500)*230 | |
| GY SVG-400-35k/4L | 35 | 380±20% | 554*488(440)*140 | |
| GY SVG-400-50k/4L | 50 | 380±20% | 554*488(440)*140 | |
| GY SVG-400-75k/4L | 75 | 380±20% | 668*488(440)*140 | |
| GY SVG-400-100k/4L | 100 | 380±20% | 739*560(500)*230 | |
| GY SVG-500-90k/4L | 90 | 500±20% | 712*540(500)*302 | |
| GY SVG-690-120k/4L | 120 | 690±20% | 712*540(500)*302 | |



| Cabinet device model | | | | |
|-----------------------|------------------------------|--------------------|--------------------|--------------------|
| Model Number | Compensation capacity (kvar) | System voltage (V) | Dimensions (D*W*H) | Cooling method |
| GY SVG-0.4-200k/4L-C | 200 | 380±20% | 800*1000*2200mm | Forced air cooling |
| GY SVG-0.4-250k/4L-C | 250 | 380±20% | 800*1000*2200mm | |
| GY SVG-0.4-300k/4L-C | 300 | 380±20% | 800*1000*2200mm | |
| GY SVG-0.4-400k/4L-C | 400 | 380±20% | 800*1000*2200mm | |
| GY SVG-0.5-270k/4L-C | 270 | 500±20% | 800*1000*2200mm | |
| GY SVG-0.69-360k/4L-C | 360 | 690±20% | 800*1000*2200mm | |

Active Harmonic Filter

GY AHF

The working principle of the IGY AHF series active power filter is to detect the load current in real time, separate the harmonic currents one by one based on the specified harmonic current detection algorithm, and generate control signals according to the set filtering percentage to drive the IGBT output and the load harmonic current amplitude, compensation currents with the same value and opposite phase achieve the purpose of harmonic cancellation.



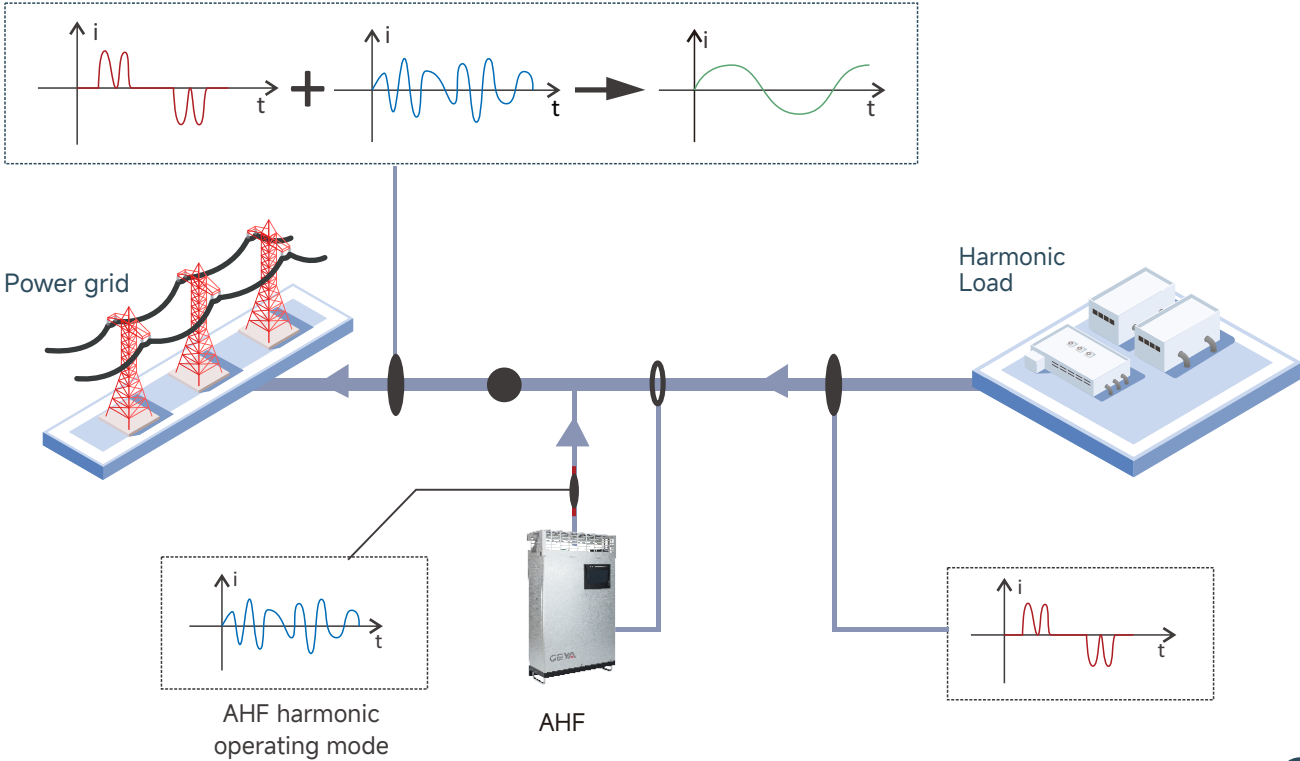
Model description

GY AHF - 0.4 - 50A / 4L - W

- W: Wall-mounted; R: Rack mount; C: Cabinet
- 2L: Single-phase; 3L: Three-phase three-wire; 4L: Three-phase four-wire
- Rated Capacity (kvar) :25/50/75/100/150A
- Voltage level:0.22: 220V; 0.4: 380V±20%; 0.5: 500V±20%; 0.69: 690V±20%
- Active Harmonic Filter
- Enterprise code

Features

- Use DSP+CPLD all digital control core, three-level topology technology, advanced harmonic detection algorithm and PWM control strategy to achieve accurate compensation of harmonic current.
- Adopt modular design, which facilitates parallel connection of multiple modules, takes up little space and is easy to maintain.
- The structural design of independent air ducts and independent warehouses ensures the stable operation of the equipment.
- It can filter harmonics in a wide range of harmonics, from 2 to 50 harmonics, and solve the problem of three-phase unbalance at the same time.
- The harmonic filtering rate is high. If the capacity allows, the harmonic current filtering rate can be as high as 95%.
- Set 100% current limiting output to ensure long-term stable operation of the equipment.



Active Harmonic Filter

Main advantage

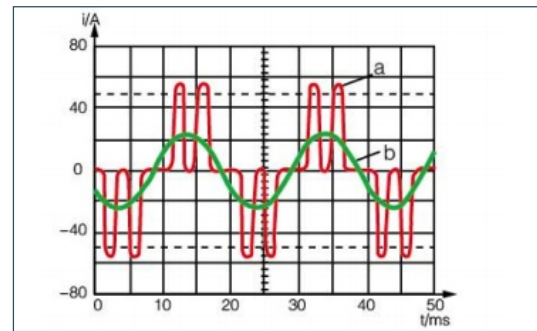
AHF

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**01**

Wide frequency range

A wide range of harmonic frequencies can be filtered.
Filter 2-71 harmonics

**02**

High harmonic filtering rate

High harmonic filtering rate. Under the rated power, the filtering rate of harmonic current can be as high as 97%;

**05**

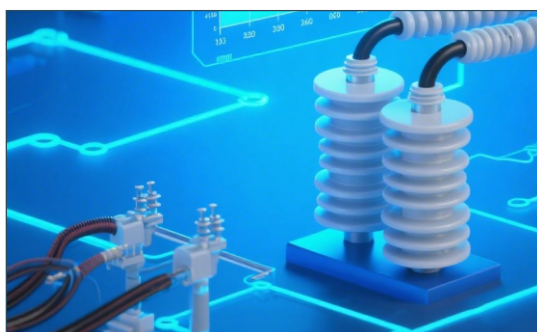
Whole series

From 25A module to 150A module, covering the full range of active power filter products;

**06**

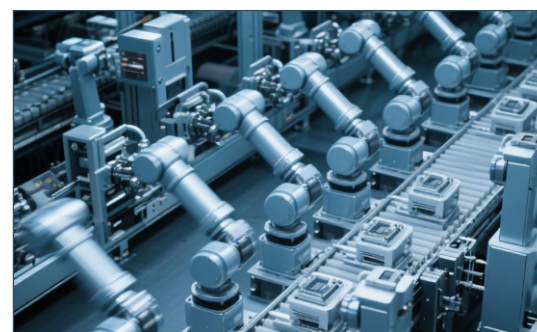
Convenient and fast

Design and selection is simple, installation, operation and maintenance is simple. Easy to expand and redundant design, multiple parallel operation;

**03**

Stabilize

Single-phase dynamic injection of compensation current to improve the system three-phase imbalance, automatic suppression of system resonance, no resonance with the system, to ensure the safe operation of equipment and systems;

**04**

Fast

Fast response time. The full response time of harmonic compensation current is less than 10ms

**07**

Advanced

Fully functional intelligent control system; Adopt the latest intelligent control unit, friendly interface, simple and convenient operation: can display voltage, current, load harmonics and equipment output harmonics waveform, amplitude and spectrum and other parameters; Real-time fault record and event record;

**08**

Reliable

Can be set or maximum 100% current limiting output. Ensure the long-term stable operation of the device, no equipment overload worry. With system overvoltage, undervoltage protection; Output overcurrent, overheat protection; Control voltage system fault protection.

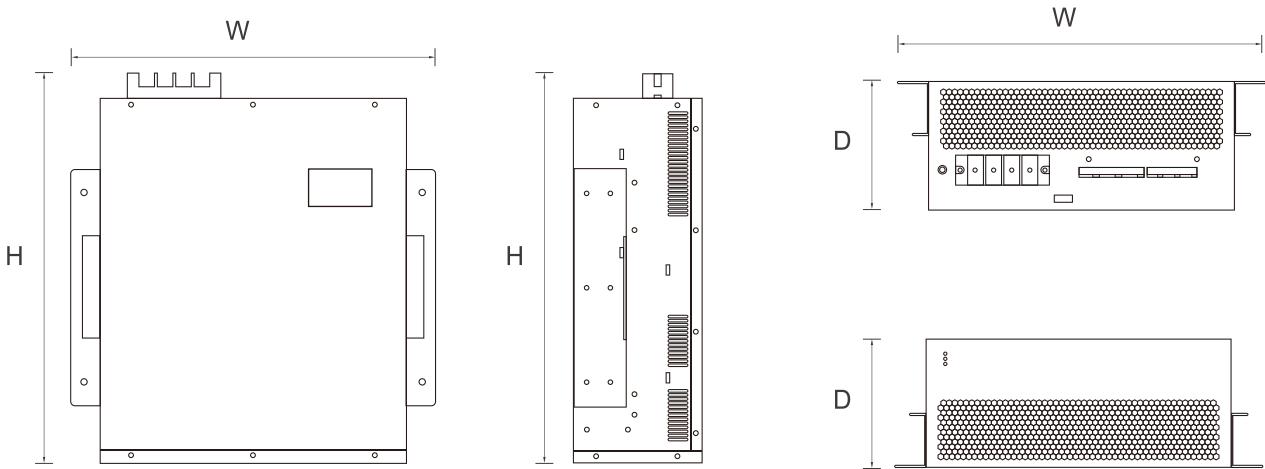
| | 220V series | 380V series | 500V series | 690V series |
|---------------------------------------|--|---|--------------------|-------------|
| Altitude | <2000m, above 2000m, derate according to GB/T3859.2 | | | |
| ambient temperature | -20~+50℃ | | | |
| Relative humidity | ≤90%, no condensation on the surface when the monthly minimum temperature is 25℃ | | | |
| pollution level | Level III below | | | |
| Operating Voltage | AC220V±20% | AC380V±20% | AC500V±20% | AC690V±20% |
| working frequency | 50Hz±5% | | | |
| Compensation current | 25A | 25/50/75/100/150A | 100A | 100A |
| Grid structure | L/N | 3P3W/3P4W | 3P3W/3P4W | 3P3W/3P4W |
| Number of units connected in parallel | Ulimited | | | |
| Overall machine efficiency | ≥97% | | | |
| Grid structure | 32kHz | 16kHz | 12.8kHz | 12.8kHz |
| Compensation range | 2~50times, single compensation rate is adjustable | | | |
| Function selection | Reactive power | Reactive power, reactive power + asymmetry | | |
| Reactive power compensation rate | ≥95% | >92% | | |
| Neutral filtering capability | | Neutral line filtering capability is 3 times that of phase filtering capability | | |
| full response time | <10ms | <40ms | <40ms | <40ms |
| noise | ≤60dB | ≤60dB | ≤65dB | ≤65dB |
| control method | 2-way RS485 interface (supports GPRS/WIFI) | | | |
| Protection | Overload, software/hardware overcurrent, grid overvoltage and undervoltage, power failure, overtemperature, frequency abnormality protection, etc. | Overload, software/hardware overcurrent, grid overvoltage and undervoltage, grid voltage imbalance, power failure, overtemperature, frequency abnormality, short circuit protection, etc. | | |
| Installation method | Rack/wall-mounted | | Rack | |
| Incoming line | Back incoming (rack type) 、upper incoming (wall-mounted) | | Back incoming line | |
| Protection level | IP20 | | | |

Application

Data centers, hospitals, petrochemical industry, pharmaceutical manufacturing, steel industry, semiconductor manufacturing, light industry and textile industry, etc.

Product size

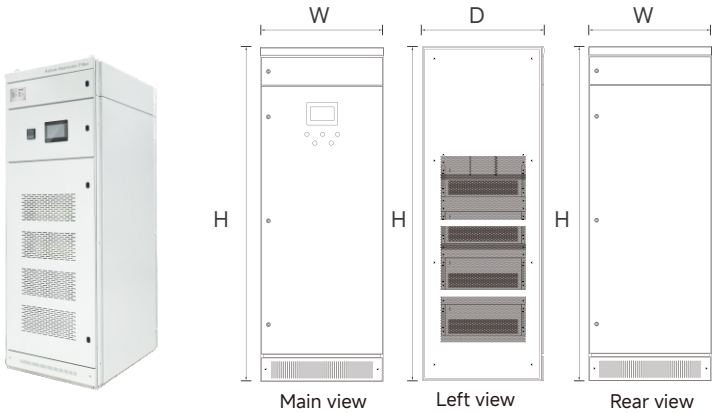
- Wall-mounted
- Rack mount



| Models | | | | |
|--------------------|------------------------------|--------------------|--------------------|--------------------|
| Model Number | Compensation capacity (kvar) | System voltage (V) | Dimensions (D*W*H) | Cooling method |
| GY AHF-220-15A/4L | 15 | 220 | 537*398(350)*100 | Forced air cooling |
| GY AHF-220-25A/4L | 25 | 220 | 541*398(350)*140 | |
| GY AHF-220-50A/4L | 50 | 220 | 554*488(440)*140 | |
| GY AHF-220-100A/4L | 100 | 220 | 668*488(440)*140 | |
| GY AHF-220-150A/4L | 15 | 220 | 739*560(500)*230 | |
| GY AHF-400-15A/3L | 15 | 380±20% | 537*398(350)*100 | |
| GY AHF-400-25A/3L | 25 | 380±20% | 541*398(350)*140 | |
| GY AHF-400-50A/3L | 50 | 380±20% | 554*488(440)*140 | |
| GY AHF-400-100A/3L | 100 | 380±20% | 668*488(440)*140 | |
| GY AHF-400-150A/3L | 150 | 380±20% | 739*560(500)*230 | |
| GY AHF-400-15A/4L | 15 | 380±20% | 537*398(350)*100 | |
| GY AHF-400-25A/4L | 25 | 380±20% | 541*398(350)*140 | |
| GY AHF-400-50A/4L | 50 | 380±20% | 554*488(440)*140 | |
| GY AHF-400-100A/4L | 100 | 380±20% | 668*488(440)*140 | |
| GY AHF-400-150A/4L | 150 | 380±20% | 739*560(500)*230 | |
| GY AHF-500-100A/4L | 100 | 500±20% | 712*540(500)*302 | |
| GY AHF-690-100A/4L | 100 | 690±20% | 712*540(500)*302 | |

Product size

Cabinet



| Cabinet device model | | | | |
|-----------------------|------------------------------|--------------------|--------------------|--------------------|
| Model Number | Compensation capacity (kvar) | System voltage (V) | Dimensions (D*W*H) | Cooling method |
| GY AHF-0.4-100A/4L-C | 100 | 380±20% | 800*1000*2200mm | Forced air cooling |
| GY AHF-0.4-150A/4L-C | 150 | 380±20% | 800*1000*2200mm | |
| GY AHF-0.4-200A/4L-C | 200 | 380±20% | 800*1000*2200mm | |
| GY AHF-0.4-250A/4L-C | 250 | 380±20% | 800*1000*2200mm | |
| GY AHF-0.4-300A/4L-C | 300 | 380±20% | 800*1000*2200mm | |
| GY AHF-0.4-400A/4L-C | 400 | 380±20% | 800*1000*2200mm | |
| GY AHF-0.5-300A/4L-C | 300 | 500±20% | 800*1000*2200mm | |
| GY AHF-0.69-300A/4L-C | 300 | 690±20% | 800*1000*2200mm | |