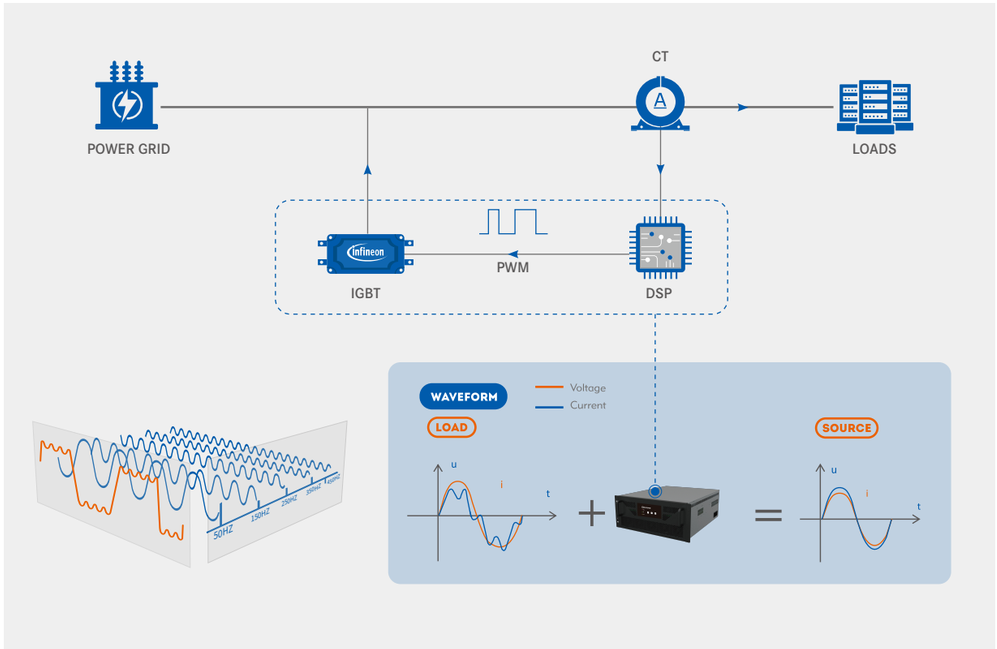
# Active Harmonic Filter
## SFR-APF Module

### Overview

SFR-APF active harmonic filter is a new type of power quality improvement production for dynamically filtering harmonics and compensating reactive power. It can filtering and compensate harmonic (variable in orders and frequency) and dynamic reactive power in real time. It is used to overcome the shortcomings of conventional harmonic suppression and reactive power compensation methods such as passive harmonic filters, and achieve the harmonic filtering function and reactive power compensation function of the system. SFR-APF is widely used in power, metallurgy, petroleum, port, chemical industry and industrial and mining enterprises.

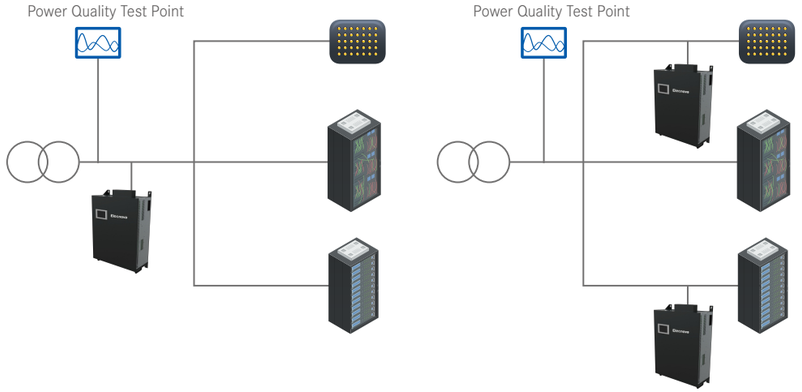
### Working Principle

The increase in power energy productivity has improved living standards, and most of the electrical loads used in the intelligent power consumption are nonlinear nowadays. Harmonic current is generated by these nonlinear loads, and is formed by the superposition of countless sinusoidal currents whose frequencies are integer multiples of the fundamental current. When all the waveforms are superimposed, they will become distorted waveform.




The APF acquires the current signal of the load by the CT, separating the harmonic by the intelligent FFT(Fast Fourier Transform) by the DSP than send to the internal IGBT by the PWM signal. The APF will generate the compensation current with the same value but opposite phase as the system harmonic in order to achieve the real-time dynamic filtering function.

### Application




### Structure and Characteristics




- Various Application
- Excellent filtering performance
- Excellent protection for equipment and system
- User-friendly HMI

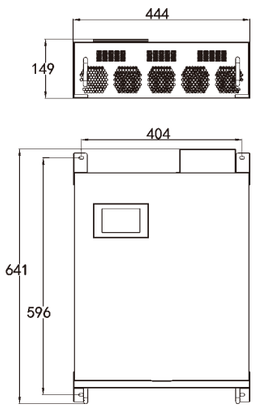
## Model Description

SFR-APF 4 - 300 /0.4 B

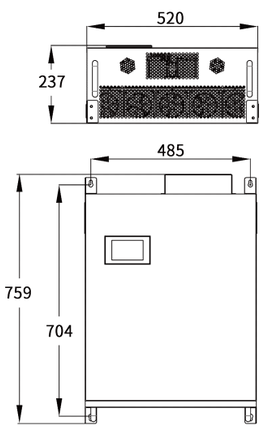
- Installation mode: M-Rack-mounted type / B-Wall-mounted type
- Voltage class(kV)
- Compensation capacity(A)
- Wiring mode:3-Three-phase three-wire / 4-Three-phase four-wire
- Model of Company' s Product

## Dimensions

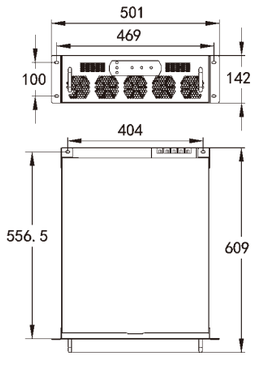
30-75A Wall-mounted



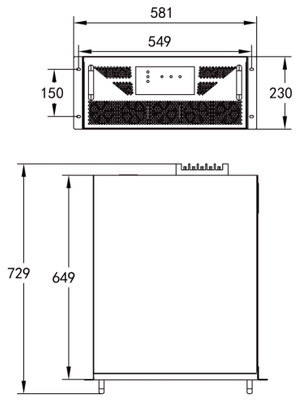

100-150A Wall-mounted




30-75A Rack-mounted




100-150A Rack-mounted




## Technical Parameter

| Item | | Parameter | | |
|---|---|---|---|---|
| SFR-APF | 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 | 30A/ 50A/ 75A/ 100A/ 150A | | 100A/125A/150A |
| | Compensation Mode | Harmonic, reactive power, unbalance | | |
| | Filtering Range | 2 to 51 orders | | |
| | Filtering Order | Selectable from 2 to 51 | | |
| | Filtering Degree | Adjustable from 2 to 51 | | |
| | Reaction Time | <100μs | | |
| | Response Time | <5ms | | |
| | Target Power Factor | Adjustable from -1 to +1 | | |
| | Control Algorithm | FFT, Intelligent FFT and instantaneous reactive power | | |
| | Switching Frequency | 20kHz | | |
| | Cooling Mode | Forced air cooling | | |
| | Noise Level | ≤65dB | | |
| Communications & Display | Communications Port | RS485 | | |
| | Communications Protocol | Modbus-RTU | | |
| | Module Display Interface | 4.3in LCD | LED indicator | LED indicator |
| | Protection Function | Automatic current limit protection for power grid over-voltage and under-voltage,power gridoxer-frequency and under-frequency,inverted sequence of input voltage, over-current,over-heating and over-load, and busbar short-circuit. | | |
| | 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<br>520×237×759 | 501×609×142<br>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℃-45℃ | | |
| | 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<br>EN 50178:1997 IEEE519 | | |