https://www.rw-relay.com/

Product

Selection Manual

V1

Company Profile

Zhejiang Rockwill Energy Technology Co. Ltd. is a high-tech enterprise specializing in power system products: power quality monitoring & control, reactive power compensation, harmonic governance, high-voltage motor starters, power safety protection equipment, and power energy storage. Since its founding, we've stuck to the idea of "Energy conservation creates value, protection builds harmony", working to offer quality products and solutions to users in all fields for better power quality, optimized control, energy saving, and grid safety.

We have professional R&D, management, technical support, and marketing teams. We've passed ISO9001, ISO14000, and ISO18000 certifications, which ensure good operation and lay a solid foundation for product quality. Our products have been tested by professional institutions like the Electric Power Industry Electrical Equipment Quality Testing Center, National High-Voltage Apparatus Quality Supervision and Inspection Center, and Suzhou Electrical Appliance Science Research Institute. Now, our products are widely used in industries such as power, metallurgy, building materials, and energy, running stably with good quality and winning users' praise.

Our products focus on the power quality industry, including power quality testing services, solutions, R&D and production; motor starter product series; power energy storage product series, etc. They are applied in fields like power, coal, metallurgy, mining, cement, petroleum, chemical, municipal engineering, solar and wind power generation, and rail transit. We have an experienced, innovative R&D team that can customize products and solutions for customers in speed regulation, energy saving, intelligent control, and power quality improvement.

We always follow "Quality first, customer first". Relying on high technology, we focus on technological innovation and new product development. With a complete quality management system, we provide users with the best products and perfect after-sales service. All staff of our company welcome friends from all walks of life to visit and guide us!

A

1. Medium voltage Reactive power compensation- outdoor frame type


Technical Parameters

- Rated system voltage: 6 - 35kV
- Rated frequency: 50 - 60Hz
- Rated capacity: 150 - 10000kvar (10kV and below); 600 - 20000kvar (35kV)

Operating Conditions

- Ambient temperature: -25℃～+45℃, with the average temperature within 24 hours not exceeding +35℃.
- Altitude: Not exceeding 2000 meters; plateau - type products shall be adopted when the altitude is higher than 2000 meters.
- Humidity: The daily average value shall not be greater than 95%, and the monthly average value shall not be greater than 90%.
- Outdoor wind speed: < 35 m/s.
- Seismic resistance: Not exceeding seismic intensity of 8 degrees.
- Ground slope: Not greater than 3°.
- Solar radiation: Shall not exceed 1000 W/m².
- Installation site: Explosive hazardous medium is not permitted at the place of use; the surrounding environment shall not contain corrosive metals, gases that impair insulation, or conductive media; it shall not be filled with water vapor, and serious mold growth is not allowed.

2. Medium voltage Reactive power compensation- outdoor box type


Technical Parameters

- Rated system voltage: 6 - 10kV
- Rated frequency: 50 - 60Hz
- Number of capacitor banks: Equal - capacity or unequal - capacity switching for less than 5 banks
- Rated capacity: 100 - 10000kvar
- Maximum capacity per bank: 2000kvar
- Control voltage: AC220V or DC220V
- Sampling current: /5A
- Sampling voltage: 100V
- The compensation capacity can be configured arbitrarily according to user requirements.

Operating Conditions

- Ambient temperature: -40℃～+45℃, with the average temperature within 24 hours not exceeding +35℃.
- Altitude: Not exceeding 2000 meters; plateau - type products shall be adopted when the altitude is higher than 2000 meters.
- Humidity: The daily average value shall not be greater than 95%, and the monthly average value shall not be greater than 90%.
- Seismic resistance: Not exceeding seismic intensity of 8 degrees.
- Installation site: Explosive hazardous medium is not permitted at the place of use; the surrounding environment shall not contain gases that corrode metals or damage insulation, as well as conductive media; it shall not be filled with water vapor, and serious mold growth is not allowed.

3. Medium voltage Reactive power compensation- outdoor cabinet type

Technical Parameters

- Rated Voltage: 10 (6) 35kV
- Rated Frequency: 50Hz
- Rated Capacity: 50 - 20000kvar
- Neutral Point Grounding Method: Non-effective grounding or neutral point insulation

Operating Conditions

- Installation site: indoor/outdoor
- Ambient temperature: -40℃～+45℃
- Relative humidity: ＜90% (at 25℃)
- Altitude: ＜4500 meters
- The installation site shall be free from severe mechanical vibration, harmful gases and vapors, as well as conductive or explosive dust.

4. Medium voltage Reactive power compensation- outdoor indoor frame type

Technical Parameters

- Rated system voltage: 6 - 35kV
- Rated frequency: 50 - 60Hz
- Rated capacity: 150 - 10000kvar (for 10kV and below); 600 - 20000kvar (for 35kV)

Operating Conditions

- Ambient temperature: -25℃～+45℃, and the average temperature within 24 hours shall not exceed +35℃.
- Altitude: Not exceeding 2000 meters; plateau - type products shall be adopted when the altitude is higher than 2000 meters.
- Humidity: The daily average value shall not be greater than 95%, and the monthly average value shall not be greater than 90%.
- Outdoor wind speed: < 35m/s.
- Seismic resistance: Not exceeding seismic intensity of 8 degrees.
- Ground slope: Not greater than 3°.
- Solar radiation: Shall not exceed 1000W/m².
- Installation site: Explosive hazardous medium is not allowed at the place of use; the surrounding environment shall not contain corrosive metals, gases that damage insulation, and conductive media; water vapor accumulation and serious mold growth are prohibited.

5. Medium and Low Voltage On-site Reactive Power Compensation Device

Technical Parameters

- Rated Voltage: 10 - 35 kV
- Rated Frequency: 50-60 Hz

6. Medium and High Voltage Filtering and Compensation Device

Technical Parameters

- Rated Voltage：6~35kV
- Rated Frequency：50 Hz
- Material：stainless steel
- Size：Customized Size
- Warranty：1 Year
- Standard：IP40
- Ambient temperature：—25~＋45℃
- Color：Customized
- Customization：OEM/ODM

B Harmonic Control Series

1. Medium and High Voltage Dynamic Reactive Power Compensation and Filtering System

Operating Conditions

- The altitude of the installation and operation area generally does not exceed 1000m. If it exceeds 1000m, plateau - type products shall be adopted, and this shall be specified when placing an order.
- Ambient temperature in the installation and operation area: for indoor devices, it shall not exceed -5℃～+40℃; for outdoor devices, it shall not exceed -30℃～+40℃.
- There is no severe mechanical vibration, no toxic gases or vapors, and no conductive or explosive dust in the installation and operation area.

2. Medium and High Voltage Passive Filtering and Compensation Device

Applicable Conditions

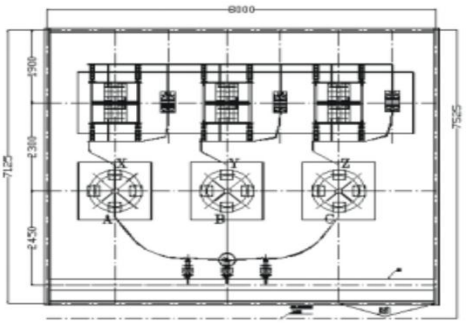
- For indoor/outdoor use, suitable for substations with stable loads.

Installation altitude: ≤1000m (specify if exceeding).

- Temperature class: -40/A～-25/B; relative humidity: 85%.
- No strongly corrosive gases/vapors to metals, no severe mechanical vibration.

Inclination from vertical: ≤5°.

- Separate design required if conditions exceed above.



Technical Parameters

- Rated voltage: 6kV – 66kV
- Fundamental frequency: 50Hz

- Harmonic frequencies: 2nd, 3rd, 4th, 5th, 7th, 11th, 13th and higher orders (designed as required)
- Operating mode: Continuous operation
- Protection class: IP20 (indoor type)
- Ensure grid voltage distortion rate and harmonic current injected into the grid are within the standard values specified in GB/T 14549 - 83 Harmonics in Public Power Supply Networks
- Ambient temperature: -25℃ – +40℃
- Relative air humidity: <90% (at ambient temperature 20℃ – 25℃)
- Altitude: ≤1000m (plateau - type for >1000m)
- Environmental conditions: Installation site shall be free of conductive dust, gases corrosive to metals and insulating materials, and other explosive substances
- Voltage fluctuation range: -10% – +10%
- Power frequency variation: <±1%
- Installation position: Inclination angle from horizontal plane during installation ≤5°
- Installation sites: For indoor and outdoor use; separate design required if applicable conditions exceed the above.

C Active Filter Compensation Series

1. Active Power Filter（APF）

Technical Parameters

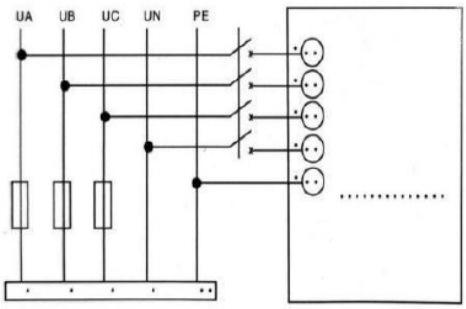
- Voltage class: 400×(-15% ~ +15%)V
- Operating frequency: 50±2Hz
- Single-unit harmonic current filtering: 50A, 75A, 100A
- Neutral harmonic capacity: 3×phase RMS current
- CT: 3 CTs required (Class 1.0 or higher), CT secondary current 5A
- THDI (current total harmonic distortion): <5%
- Module expandability: Up to 12 units
- Switching frequency: 20kHz
- Filterable harmonics: 2nd - 50th (selectable)
- Harmonic filtering degree: Individually set for each harmonic
- Compensation mode: Harmonic, reactive (configurable)
- Response time: 100μs
- Total response time: 10s
- Protection functions:undervoltage, phase error/loss, overcurrent, bus over/undervoltage, overheating, fan failure, etc.
- Display functions:

1. Phase voltage/current values, current/voltage waveform display
2. Total load current, total filter compensation current
3. Load current THD, power factor, reactive current RMS
4. Grid current THD, power factor
5. Load & grid harmonic bar graph display

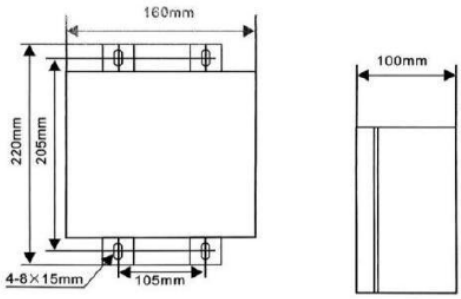
- Communication: RS485, standard MODBUS protocol
- Cooling: Intelligent air cooling
- Environment: Indoor, no conductive dust, -10℃ ~ +45℃
- Altitude: <1000m (derating for higher altitudes)
- Protection class: IP20 (higher classes customizable)
- Module dimensions (W×D×H): 446mm×223mm×680mm (other sizes customizable)
- Color: RAL7035 (other colors customizable)

2. Harmonic Protector（HPD)

Typical Wiring Diagram of RW-HPD-1000 Harmonic Protector



RW-HPD-1000 Outline Dimension Drawing



Product Parameter

Parameter	Description
Circuit Connection	Three-phase star,three-phase delta
Rated Voltage	Rated phase voltage 250V
Max Impulse Current	12000A
Clamping Voltage	For surge≤500V(1.2μs/50μs),limited below 1000V
Surge Current Withstand	For surge≤2500V(1.2μs/50μs),surge current≤ 1000A (80μs/20μs)
Protection Frequency	2kHz-10MHz
Filtering Efficiency	40dB harmonic attenuation at 100kHz;filters power supply spikes &2kHz-10MHz clutters
Leakage Current	1.527mA
Leakage Current	1.527mA
Mounting Method	DIN rail mounting or bottom screw fixing
Temperature Range	-30℃-70℃
Storage Temperature	-40℃-85℃
Relative Humidity	<85%(at 20±5℃)
Atmospheric Pressure	86-108kPa
Mounting Dimensions	130mm×90mm×75mm
Power Supply	AC 250V,50Hz/60Hz
Power Consumption	<3W
Operating Environment	No explosion,corrosive gas/dust,severe mold,violent vibration/impact;take protection if required
Insulation Resistance	>50MΩ
Withstand Voltage	HY-HPD-1000:2000V AC(conductive pats vs enclosure, 1min,no breakdown/flashover)
EMC Test	Oscillatory wave (IEC60255-22-1); Electrostatic discharge(IEC60255-22-2); RF radiation (IEC60255-22-3); EFT burst (IEC60255-22-4)

3. Active Power Filter- Cabinet Type（APF）

Technical Parameters

- Applicable voltage class: 400V, 600V
- Operating frequency: 50±2Hz
- Single-unit effective harmonic current filtering capacity: 50A, 75A, 100A, 150A, 200A, 300A
- Neutral line harmonic filtering capacity: 3×phase line RMS current
- CT requirements: 3 CTs required (accuracy Class 1.0 or above), 5VA, CT secondary current 5A
- Filtering capacity: Up to 97% harmonic filtering
- Module expansion capability: Up to 10 function modules expandable
- Switching frequency: 20kHz
- Filterable harmonic orders: 2nd - 50th (all or selected orders can be eliminated)
- Filtering degree setting: Each harmonic order can be set individually
- Compensation mode: Harmonic compensation, reactive power compensation, or simultaneous harmonic & reactive power compensation
- Response time: 40μs
- Total response time: 10ms
- Protection functions: Grid overvoltage/undervoltage, phase error/loss, overcurrent, bus overvoltage/undervoltage, overheating, and current limiting protection
- Display functions:

1. Phase current & voltage values, current & voltage waveform display;

2. Total load current value, total output current value of the filter display;

3. Operation mode setting, fault information & operation time query.

- Communication: RS485/RS232
- Cooling method: Forced air cooling
- Installation: Fixed on base plate, cable bottom entry
- Environment: Indoor installation, clean environment

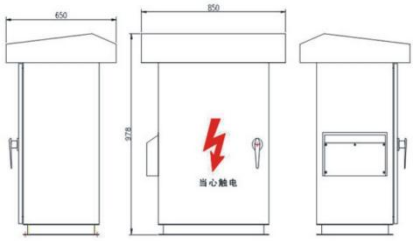
- Ambient temperature: -10℃~+45℃
- Humidity: Up to 95% (no condensation)
- Altitude: ≤1000m (derating for higher altitudes)
- Protection class: IP20 (higher protection classes customizable)
- Cabinet dimensions (W×D×H): 800×800×1700, 800×800×2200, 1200×800×2200; non-standard sizes customizable as per customer requirements
- Color: RAL7035 (other colors available as per customer requirements)

4. Medium and High Voltage Dynamic Reactive Power Compensation Device/Static Var Generator

Main Technical Parameters

- Rated Operating Voltage: 6kV, 10kV, 27.5kV, 35kV;
- Rated Capacity: ±1 ~ ±100Mvar;
- Output Reactive Power Range: Continuously variable within the range from capacitive rated reactive power to inductive rated reactive power;
- Response Time: <5ms;
- Overload Capacity: 1.2 times overload for 1min;
- Total Harmonic Distortion (THD) of Output Voltage (before grid connection): <5%;
- Total Harmonic Distortion (THD) of Output Current: <3%;
- System Voltage Unbalance Protection, Setting Range: 4% ~ 10%;
- Efficiency: ≥99.2% at rated operation;
- Operating Temperature: -20℃ ~ +40℃;
- Storage Temperature: -40℃ ~ +65℃;
- Human-Machine Interface (HMI): Equipped with Chinese color touch screen display;
- Relative Humidity: Monthly average ≤90% (at 25℃), no condensation;
- Altitude: ≤1000m (customization required for altitude >1000m);
- Seismic Intensity: <8 degrees.

5. Outdoor Pole-mounted Three-phase Unbalance Regulation Device



Technical Parameters

- Compensation Capacity ： 30, 60, 100, 150

AC Input

- Rated Voltage：400(1±20%)V
- Operating Frequency：50(1±2%)Hz
- Wiring Mode：Three-phase Four-wire
- CT Requirements：3 CTs (accuracy Class 0.5 or above), 5VA, CT secondary current 5A

Technical Indicators

- Overall Efficiency：≥97% (when large output capacity is connected)
- Power Loss：<2% of rated capacity
- Switching Frequency：20kHz
- Unbalance Compensation：Significantly improves three-phase unbalance of the system and current unbalance after harmonic compensation; Supports selection of compensation phase system/neutral reactive compensation, and setting based on power factor
- Reactive Compensation：Achievable up to above 0.99
- Harmonic Compensation：Targets 2nd–50th harmonics

- Voltage Sag & Swell： Manages voltage sag, swell, and interruption
- Filtering Degree Setting：Independently sets full word length, variable state, neutral current, and harmonics
- Suppression Characteristics： Within 100% rated capacity range, compensation rate >95% with overcurrent alarm; Manual intervention available to limit overcurrent devices
- Response Time：≤10ms
- Cooling Method：Forced air cooling
- Noise：<65dB
- Ambient Temperature：-10℃ ~ +45℃
- Operating Humidity：≤95% (no condensation)
- Protection Class：IP54 (outdoor cabinet IP54 customizable)

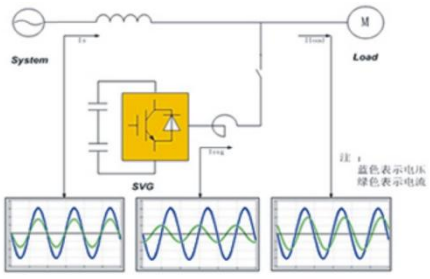
Mechanical Characteristics

- Cabinet Dimensions：494mm×682mm×1068mm (H×W×D) (other sizes customizable)
- Structural Dimensions：Stainless steel,Customizable as required
- Cable Inlet：Side cable entry

Monitoring Method

- Handheld Terminal: Wireless handheld terminal with full-color touch screen, enabling WiFi direct connection to pole-mounted devices.
- GPRS Backend: Optional GPRS communication accessory is available for monitoring devices anytime and anywhere.

6. Static Var Generator



Technical Parameters

Input

- Rated Voltage: 380V (voltage fluctuation range: -40%~+20%)
- Rated Frequency:50±2Hz
- Compensation Capacity:50kvar, 75kvar, 100kvar, 200kvar (parallel capacitor capacity expandable)

Performance Indicators

- Overall Efficiency:≥97% (overcapacity compensated by maximum capacity when exceeding

rated)

- CT Requirement:3 CTs, accuracy class 0.5 or above, secondary current 5A
- Compensation Range:Continuously adjustable for inductive reactive power and capacitive reactive power
- Switching Frequency:20kHz
- Neutral Harmonic Filtering Capacity:3×phase current
- Response Time:40μs
- Total Response Time:10ms
- Self-diagnosis Function:Automatic diagnosis, automatic switching, automatic restart
- Compensation Capacity :Full compensation within rated capacity; over-rated capacity compensated by maximum capacity for a limited time, with overcurrent protection
- Protection Functions:Overcurrent, network overvoltage/undervoltage, overheating, bus overvoltage/undervoltage, short circuit, fan failure, power failure protection, overcurrent protection, etc.
- Display, Data and Recording:

1. Parameters of each phase: voltage, current, power factor, THD, etc.
2. Grid voltage waveform, current waveform, three-phase voltage waveform
3. Three-phase GFDI value display
4. Operation mode setting, parameter setting

- Communication Interface:Rs485, Ethernet
- Communication Protocol:Modbus

Environmental Conditions

- Ambient Temperature: -10℃ ~ +45℃
- Altitude: <2km (derating for higher altitudes)
- Protection Class: IP20

Structure

- Cooling Method: Forced air cooling
- Installation Method: Wall-mounted, drawer-type, integral cabinet type
- Dimensions: See "Selection Dimensions" for details

D Medium and High Voltage Motor Starting and Frequency Conversion Device

1. Medium and High Voltage Motor Starting and Frequency Conversion Device

Name: General Series High-Voltage Frequency Converter
Power Rating:
6kV/200kW - 5000kW (Two-quadrant)
10kV/200kW - 5000kW (Two-quadrant)
6kV/200kW - 2500kW (Four-quadrant)
10kV/200kW - 3250kW (Four-quadrant)
Cooling Method: Forced Air Cooling
Performance Features: Optimized for two/ four-quadrant synchronous (including permanent magnet synchronous motors) / asynchronous motors with unit symmetry design; the whole machine adopts modular full suspension, with high production efficiency.
Competitive Advantages: Modular design of control system, low harmonic, precise speed regulation; power units have good sealing performance, strong environmental adaptability.
Load Types: Fan, water pump loads; hoist, belt conveyor

Name: Integrated Series High-Voltage Frequency Converter
Power: 6kV 200-560kW; 10kV 200-1000kW
Cooling: Forced air cooling
Performance: For 2-quadrant sync (incl. PMSM)/asynchronous motors; integrated control cabinet, power unit, transformer & transfer switch, easy on-site installation.
Advantages: Compact, space-saving; easy transport & installation.
Loads: Fans, water pumps

Name: Water-cooled Series High-voltage VFD
Power: 6kV 600-1500kW; 10kV 1000-1900kW
Cooling: Water-cooled
Features: For 2-quadrant sync (incl. PMSM)/asynchronous motors; water-cooled power units, high power density, strong adaptability.

- **Advantages**: High power density, water cooling, low noise, high efficiency, better adaptability.

Loads: Boiler ID fans, blowers, crushers, water pumps, etc.

2. Medium and High Voltage Solid - State Soft Starter

Operating Conditions

- Ambient temperature: -25℃ ~ +50℃
- Operating site: Indoor, free from direct sunlight, dust, corrosive gases, flammable and explosive gases, oil mist, water vapor, and moisture condensation (against water or moisture accumulation).
- Humidity: 5% - 95% (no water condensation allowed).
- Vibration: Less than 5.9m/s² (2 = 0.6g).
- No sites with metallic dust, conductive dust, or severe vibration.
- Altitude: ≤ 1500m (derating is required if exceeding 1500m).

Technical Parameters

- Load type: Three - phase medium and high voltage squirrel - cage asynchronous and synchronous motors.
- Rated voltage: 3KV, 6KV, 10KV (±30%).
- Power frequency: 50Hz.
- Adaptable power:

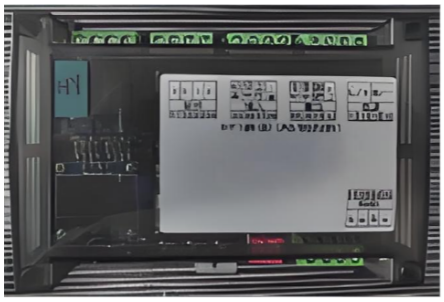
1. Rated current of motor: 15 - 9999A (adjustable).
2. Starting voltage: (20 - 100%) Ue (adjustable).
3. Starting current: (20 - 100%) Ie (adjustable).
4. Current limiting multiple: 100 - 500% Ie (adjustable).
5. Start/stop time: 0 - 120S (adjustable).

- Four types of control curves: Voltage ramp starting curve, current ramp starting curve, voltage - limited starting curve, current - limited starting curve.
- Starting voltage ramp time: 0 - 2000ms (adjustable, with 100% Ue as reference).
- Rest time: 1 - 60 minutes (the interval between two consecutive starts shall be no less than 10 minutes).
- Starting mode: Three - phase, neutral point ungrounded.

- Communication interface: RS - 485.
- Cooling method: Natural air cooling.
- Inlet and outlet wiring mode of main circuit: Bottom - in and bottom - out.
- Control mode: One - to - one control.
- Protection class: IP32.

3. Voltage and Reactive Power Integrated Control and Protection Device

HYRPC Series Controller Main Unit



HYPC-01 Capacitor Bank Control and Protection Uni

HYRPC-03 Series Economical High-Voltage Reactiv Power Compensation Controller

Functional Features

- Can automatically determine the operation mode for 1-2 transformers and two sections of busbars, and automatically select the corresponding regulation strategy.
- Can realize comprehensive voltage and reactive power control and protection for 1-5 groups (10 groups in total for two sections) of capacitors (or reactors).
- Dual-power self-adaptation: load side, generator side, and dual-power adaptive compensation.
- Three-section setting modes: equal cycle, unequal combination, and optional filtering branch switching.
- Complete protection functions: equipped with low voltage, overvoltage, open delta voltage, time-delay gradual closing, overcurrent, unbalanced current, harmonic, and other capacitor bank group protection functions.
- Unattended management: supports local and remote two-level management modes.
- Operation record query: The device has a record query function, including operation records, protection records, statistical records, etc.
- Chinese-English dual interface: The display interface can realize Chinese-English dual switching, and the standard Chinese-English bilingual data meets export requirements.
- 7-inch 800*480 true-color touch screen display: graphic interface, Chinese display, intuitively displaying various operating statuses and fault information, facilitating on-site setting, debugging, operation, and maintenance.

Selection Table

Model	Embedded	Group Protection	Single-section / Double-section	Reactive Power Configuration	Protection Unit Quantity
HYRPC-L15	Yes	5 groups	Single-section (5 groups)	According to group number	According to group number
HYRPC-L25	Yes	10 groups	Single-section (5 groups), Double-section (10 groups)	According to group number	According to group number
HYRPC-03H	Yes	None	Single-section (3 groups)	Latching output, control relay	-
HYRPC-03P	Yes	None	Single-section (3 groups)	Control circuit breaker, latching output	-
HYRPC-06H	Yes	None	Single-section (6 groups)	Latching output, control relay	-

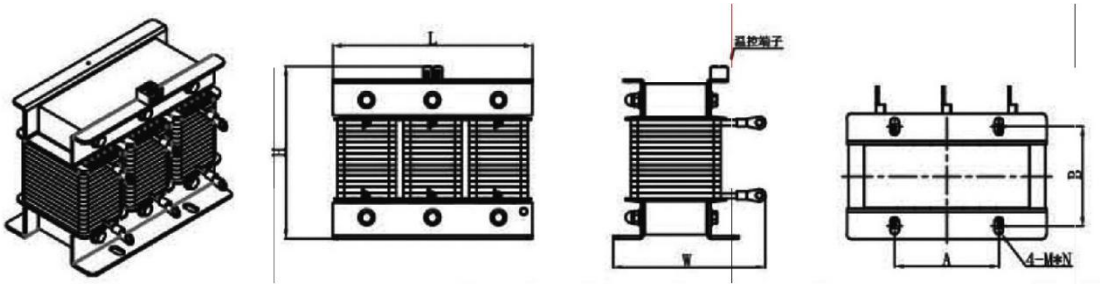
Power Quality Component

1. Series Reactor

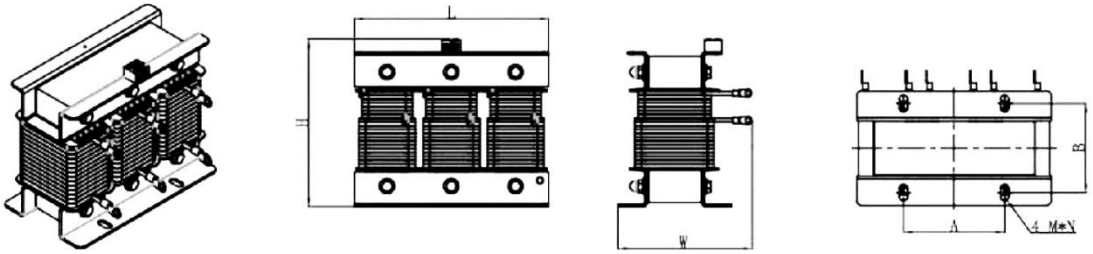
Product Parameters：

- Rated Voltage： 230V to 690V
- Rated Frequency： 50Hz
- Withstand Voltage Test： 50Hz, 3KV, 60s
- Cooling Method:Natural Air Cooling
- Ambient Temperature:-10° C to +40° C
- Protection Class:IP00 (for indoor installation)
- Inductance Tolerance:0/±5%
- Altitude:<2000m a.s.l. (above sea level)
- Relevant Standards:EN 60076 - 6, EN 61558 - 2 - 20
- Insulation Class:Class F, Class H
- Design Type:Single - phase or Three - phase
- Maximum Humidity:95%
- Tuning Coefficient:5.67%, 6%, 7%, 14%
- Noise Level:<65dB
- Linearity:1.35 In for long - term operation
- Terminal Material:Tinned copper busbar

Special product parameters can be customized according to customer requirements.



Top and bottom outlets



Top and middle outlets

480V 50Hz Tunable Reactor Selection Table

Reactor Model	Material	Number of Turns	Rated Capacity (kVAR)	Rated Current (A)	Voltage Drop (V)	Rated Inductance (mH)	Insulation Class	Dimensions (+5mm)	Installation Hole (mm)
								L	W
CKSG-2.8/0.48-7%	Aluminum	1.2	2.8	48.11	19.4	1.284	H	230	195
CKSG-3.5/0.48-7%		1.2	3.5	60.14	19.4	1.027	H	268	205
CKSG-4.2/0.48-7%	Copper	1.2	4.2	72.17	19.4	0.856	H	276	220
CKSG-1.2/0.48-12%		1.2	1.2	12.03	33.3	8.81	H	210	155
CKSG-3.0/0.48-12%		1.2	3.0	30.07	33.3	3.52	H	268	195
CKSG-3.5/0.48-14%		1.2	3.5	30.07	38.8	4.11	H	268	195
CKSG-4.2/0.48-14%		1.2	4.2	36.1	38.8	3.42	H	240	220
CKSG-5.6/0.48-14%		1.2	5.6	48.1	38.8	2.57	H	276	210
CKSG-7.0/0.48-14%		1.2	7.0	60.14	38.8	2.05	H		

Applicable Environment

- Altitude: not exceeding 2000m;

- Ambient temperature: -25° C to +45° C, relative humidity: not exceeding 90%;
- No corrosive gases or flammable and explosive substances in the surrounding area;
- There should be good ventilation conditions around. If the filter reactor is installed in a cabinet, ventilation equipment should be additionally installed.

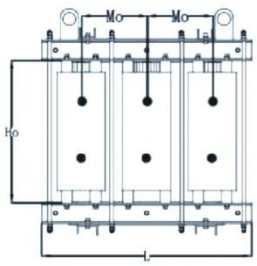
Technical Parameters

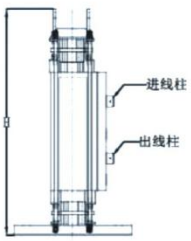
- Insulation structure: Dry-type reactor;
- Core type: Iron-core reactor;
- Rated current: 1–1000 A;
- System rated voltage: 280V, 400V, 525V, 690V, 1140V;
- Rated capacity of matched capacitor: 1–1000 kVAR;
- Insulation class: Class F or above.

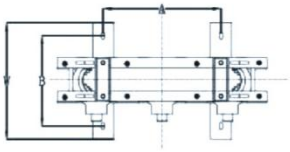
2. CKSC High-Voltage Iron-Core Series Reactor

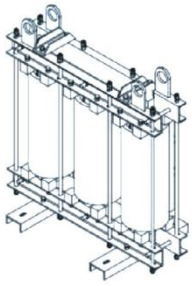
Operating Conditions

- Altitude shall not exceed 2000 meters.
- Ambient temperature: -25° C to +45° C, relative humidity shall not exceed 90%.
- No corrosive gases or flammable and explosive substances in the surrounding environment.
- The surrounding environment shall have good ventilation conditions.









Product Advantages

- Uniform iron core with low loss: Cold-rolled oriented silicon steel sheets are adopted. After multiple punching processes, they feature small burrs and neat sheet stacking, ensuring the low-loss and low-noise performance of the reactor during operation.
- Strong short-circuit withstand capacity: The winding adopts epoxy resin vacuum casting technology, which has excellent insulation and mechanical properties, and can withstand large short-circuit currents inside and outside the power grid. The winding does not loosen, and the withstand voltage level is high.

- Epoxy resin casting is waterproof, with extremely low moisture absorption rate: It can operate safely under humid environmental conditions.
- The upper and lower parts of the coil are equipped with new-type springs and rubber shock absorbers: Effectively reduce the vibration of the coil during operation.

Technical Parameter Table of CKSC Series Dry-type Iron-core Series Reactor

Model/Specification	Rated Capacity (kVA)	One-phase short-circuit impedance (%)	No-load loss (W)	Load loss (W)	No-load current (%)	Short-circuit impedance (%)	Weight (kg)	Overall dimensions L × W × H (mm)	Tapping pitch (mm)
CKSC-91/10-6	100	4.13	270	1505	1.0	6	1240	2360×1280×2450	600-900
CKSC-114/10-6	125	4.13	320	1780	1.0	6	1240	2360×1280×2450	600-900
CKSC-144/10-6	160	4.13	390	2130	1.0	6	1240	2360×1280×2450	600-900
CKSC-182/10-6	200	4.13	460	2530	0.9	6	1240	2360×1280×2450	600-900
CKSC-241/10-6	250	4.13	540	2880	0.9	6	1240	2360×1280×2450	600-900
CKSC-303/10-6	315	4.13	650	3400	0.9	6	1240	2360×1280×2450	600-900
CKSC-363/10-6	400	4.13	780	4080	0.8	6	1240	2360×1280×2450	600-900
CKSC-484/10-6	500	4.13	920	4880	0.8	6	1240	2360×1280×2450	600-900
CKSC-606/10-6	630	4.13	1100	5830	0.7	6	1240	2360×1280×2450	600-900
CKSC-727/10-6	800	4.13	1320	6960	0.7	6	1240	2360×1280×2450	600-900
CKSC-909/10-6	1000	4.13	1560	8700	0.7	6	1240	2360×1280×2450	600-900
CKSC-1081/10-6	1250	4.13	1850	10320	0.6	6	1240	2360×1280×2450	600-900
CKSC-1212/10-6	1400	4.13	2080	11610	0.6	6	1240	2360×1280×2450	600-900
CKSC-1455/10-6	1600	4.13	2370	13170	0.6	6	1240	2360×1280×2450	600-900
CKSC-1818/10-6	2000	4.13	2830	16440	0.6	6	1240	2360×1280×2450	600-900

Parameters to be Provided by Users When Placing an Order

- Rated capacity of the reactor
- Rated voltage of the reactor
- Rated current or rated power of the reactor
- Maximum operating voltage of the reactor
- Rated current and maximum continuous current
- Short-time thermal withstand current and its duration
- Other special requirements

F Arc Extinction and Grounding Protection Series

1. RWXHX Series Intelligent Arc Extinction Device

Scope of Application of the Device

- This device is applicable to 3~35kV medium-voltage power systems;
- This device is applicable to power systems with ungrounded neutral points, neutral points grounded via arc suppression coils, or neutral points grounded via high-resistance;
- This device is applicable to power grids dominated by cable lines, hybrid power grids of cable and overhead lines, as well as power grids dominated by overhead lines;

Main Features of the Device

- The device features fast operation speed and can act rapidly within 30~40ms, greatly reducing the duration of single-phase ground arcs.
- After the device operates, the arc can be extinguished instantly, and the arc grounding overvoltage can be effectively restricted within the line voltage range.
- After the device operates, it allows the system capacitive current to pass continuously for at least 2 hours, and users can handle the fault line after completing load-transfer switching operations.
- The protection function of the device is not affected by the scale and operation mode of the power grid.
- The device has a high performance-to-price ratio; among them, the voltage transformer can provide voltage signals for metering and protection and can replace conventional PTs (Potential Transformers).
- The device is equipped with a small current earth fault selection device, which utilizes the characteristic of sudden changes in capacitive current before and after arc extinction to greatly improve the accuracy of fault selection.
- The device adopts a combination of an anti-ferroresonance voltage transformer and a special large-capacity arc eliminator, which can fundamentally suppress ferroresonance and effectively protect PTs.
- The device has the function of arc grounding fault waveform recording, providing data for users to analyze faults.

2. Damping Resistor Box

Product Overview

- It is researched and designed to prevent the increase of the neutral point unbalanced voltage in the power grid system caused by the input and measurement of the arc suppression coil when the arc suppression coil with pre-adjustment compensation mode operates in the normal state of the power grid. During the normal operation of the power grid, the inductive reactance of the arc suppression coil is adjusted to a suitable position in advance. However, at this time, the inductive reactance and capacitive reactance are approximately equal, which will make the power grid in a state close to resonance and cause the neutral point voltage to rise. In order to prevent this phenomenon, a damping resistor device is added to the arc suppression coil compensation device with the pre-adjustment mode, so as to suppress the displacement voltage of the neutral point to the required appropriate position and ensure the normal operation of the power supply network.

3. Parallel-Connected Medium-Resistance Device

Product Overview

- The parallel medium-resistance device is a set of resistance cabinet integrated line selection device installed at the neutral point of the system and connected in parallel with the arc suppression coil. Its main function is to select the fault line more effectively and accurately through the parallel medium-resistance integrated line selection device when a single-phase grounding fault occurs in the power grid system. In the arc suppression coil system, the parallel medium-resistance integrated line selection device can achieve a fault line selection accuracy of 100%.
- The parallel medium-resistance device, also known as the parallel medium-resistance cabinet, is composed of a grounding resistor, a high-voltage vacuum contactor, a current transformer, a current signal acquisition and conversion system, a resistance switching control system, and a dedicated matching line selection system.

4. Grounding Resistance Cabinet

- The design and selection of resistance cabinets can also refer to DL/T780-2001 Neutral Point Grounding Resistor in Distribution Systems.
- Neutral point grounding is a comprehensive issue involving line/equipment insulation, communication interference, relay protection, and grid safety. For a long time, China's urban power grids and large industrial power supply systems adopted neutral point ungrounded or arc suppression coil grounding modes. In recent years, with the development of power systems and the growth of electricity consumption, resistance
- grounding has been vigorously promoted by some provincial and municipal power grids.

Product Overview

- With the rapid development of urban and rural power grids, the grid structure has changed significantly, and cable-dominated distribution networks have emerged, causing a sharp increase in capacitive current to ground. When single-phase grounding faults occur, recoverable faults are decreasing. Resistance grounding not only meets China's power grid development requirements but also reduces the insulation level of electrical equipment by 1–2 grades, lowering capital investment. It can quickly clear faults during single-phase grounding, suppress neutral point overvoltage, and enhance power system safety and reliability.
- Previously, neutral point resistance grounding was incorporated into electric power industry specifications. DL/T620-1997 *Overvoltage Protection and Insulation Coordination for AC Electrical Equipment* stipulates: For 6–35kV distribution systems mainly composed of cable lines with large single-phase grounding capacitive current, low-resistance grounding can be adopted (considering impacts on equipment, communication, power supply reliability, and operating experience). Article 3.1.5 states: For 6kV/10kV distribution systems and power plant auxiliary systems with small single-phase grounding fault current, high-resistance grounding can be used to prevent resonance and damage from intermittent arc grounding. overvoltage.

5. Neutral Grounding Resistor (NGR)

Product Overview

- The HY-FNR type generator neutral point grounding resistor is installed between the neutral point of the generator and the ground. Single-phase grounding is the most common fault during generator operation. When arc grounding occurs at the fault point, it will further aggravate the insulation damage of the generator stator winding and even cause the iron core to burn. Internationally, for single-phase grounding faults in generator systems, the neutral point high-resistance grounding method is widely adopted to limit the grounding current and prevent various overvoltage hazards. Neutral point high-resistance grounding can limit the fault current to an appropriate value, improve the sensitivity of relay protection to enable reliable operation; meanwhile, it only causes slight local damage at the fault point, restricts the temporary overvoltage to 2.6 times the normal line voltage relative to the neutral point, and prevents the arc from reigniting to damage main equipment due to insulation gap breakdown; at the same time, it can effectively prevent ferroresonance overvoltage, thereby ensuring the safe operation of the generator. There are many structural modes for generator neutral point resistors.
- The most common ones are the following two:

(1) The scheme where the generator neutral point is directly grounded through a resistor.

(2) The scheme where the generator neutral point is combined with a single-phase grounding transformer and a resistor cabinet.