

# CHARGING PILE SYSTEM SOLUTIONS



# INTRODUCTION



Hongfa (Shanghai Stock Exchange: 600885) was founded in 1984 and has established a full-range and well-equipped industrial system by upholding the company spirit of "persevere for progress; strive for excellence". Hongfa has set up three relay R&D and production bases. Hongfa products cover various types including relays, industrial electronic module (safety relay module), low-voltage and high-low voltage devices, connectors, capacitors, precision parts and automatic production equipment, which are widely used in industrial, energy, transportation, telecommunication, home appliance and medical areas.

Since entering the field of charging piles, Hongfa has always taken it as its responsibility to enhance the competitiveness and energy efficiency of the charging pile industry, focusing on the global mainstream demands of "environmental protection, technology, low-carbon, and green". With advanced intelligent manufacturing technology as the foundation, it provides customers with complete and reliable charging pile system solutions.

## CORE STRENGTHS THAT ARE HARD TO EMULATE ❖❖❖

### ● DEEPLY INTEGRATED PRODUCTION AND MANUFACTURING CHAIN

Starting from the quality control and production efficiency of the whole industrial chain, Hongfa has established core strengths that are difficult to imitate in the basic industries such as parts in the front channel and assembly equipment in the back channel, and successfully built an independent supporting industrial chain, which greatly ensures the high consistency and stability of the products.



### ● ADVANCED R&D AND INNOVATION

The First National Enterprise Technology Center in the relay industry in China, with Academician Workstation and Post-doctoral Workstation.  
The First Enterprise in the relay industry in China to preside over the development of national standards.  
The only Chinese enterprise to join the American UL Standards Organization.

### ● COMPLETE PRODUCT TESTING AND ANALYSIS

The testing capability and results of Hongfa testing and analysis laboratory are recognized by VDE (Germany), UL (USA) and CNAS (China), and the test reports are mutually recognized by ILAC.

### ● TOTAL QUALITY MANAGEMENT

Quality is our lifeline. Hongfa always insists on "winning by quality", pursues to provide customers with satisfactory products and services with perfect quality, and has established a quality management system with Hongfa's characteristics.



# APPLICATIONS

## DC Charging pile

### Relays



**HF197F-150**  
120VDC,150A

**HF197F-110**  
60VDC,133A

### Connector



**AC: HFLPR1/5/8**  
600Vac,45A~135A

**DC+Signal: HFLPR2/6/9**  
1000Vdc,60A~135A

**PDU: HFLPR3**  
1000VDC,150A

### Sensor



**HFCT-M406**  
5A/2.5mA,0.2

**HFCT-M03**  
50A/16.7mA,0.1

**HFCH-P11**  
50-600A

### Film capacitor



**HCBB62-X2T**  
AC/DC EMI

**HCDB**  
DC-Link

**HCY2**  
EMI

**HMMKP82**  
Vibration circuit

**HMKP21**  
DC filtering

**HXC1**  
EMI

### power fuse



**HPE312**  
800VDC,550A

**HPE313**  
1000VDC,630A

**HPE501**  
1000VDC,250A

**HPE504**  
1000VDC,450A

### Signal relays Reed relay



**HFD3-VI**  
1500VDC, 10mA

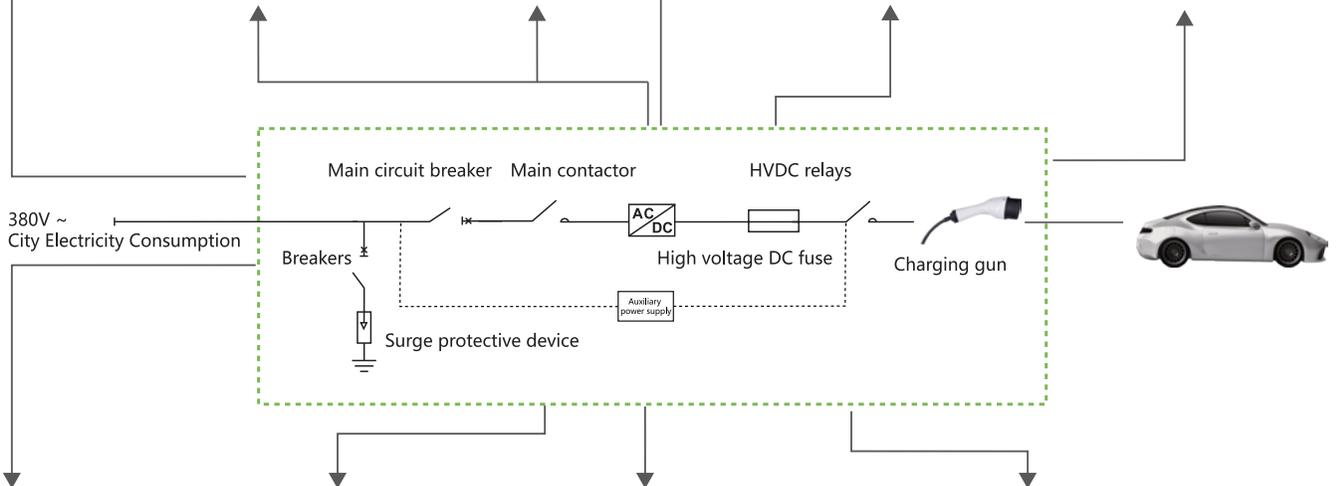
**HFD39**  
1500VDC, 10mA

**HR1-V**  
1500VDC,10mA

**HFD3-V**  
1000VDC, 10mA

**HFD4-V**  
600VDC, 10mA

**HR12-V**  
1500VDC,10mA



### Low voltage electrical appliances



**UEM5/UEM5L**  
Molded case circuit breakers  
400VAC,10-800A

**UEC1**  
Contactor  
400VAC,9-800A

**UEB3**  
Miniature circuit breakers  
400VAC,1-125A

**UES5**  
Surge protective device  
420VAC,10-100kA

### Relays



**HF165FD/ HF165F-50**  
(30-60A,1H)

**HF197F-110/150**  
(133A/150A, 1H+1A)

**HF10Series** **HFE39-40Series** **HFV17**  
(50-90A, 1H/1D/1Z) (25/40A, 2H/2D) (150A, 1H/QH)

### Relays



**HF92F**  
30A,2H

**HF116F**  
30A,2H

**HF13F**  
15A,1D 10A,2D

**HF115F**  
8A,2H

**HF30F**  
10A,2H

### HVDC relays



**HFZ16**  
900VDC,300A

**HFZ21**  
1000VDC,600A

**HFE85P**  
1000VDC,300A

**HFE88P**  
1500VDC,750A

### Pre-charge relays



**HFK15**  
1000VDC,20A

**HFE82P**  
1000VDC,20A

# AC Charging pile

## Signal relay

- HFD3-I**  
30VAC,7.5A
- HFD3**  
30VAC,5.0A
- HFD4-I**  
30VAC,3.5A

## Signal relays

- HFD3-VI**  
1500VDC,10mA
- HFD39**  
1500VDC,10mA
- HFD3-V**  
1000VDC,10mA
- HFD4-V**  
600VDC,10mA

## Reed relay

- HR1-V**  
1500VDC,10mA
- HR12-V**  
1500VDC,10mA

## Film capacitor

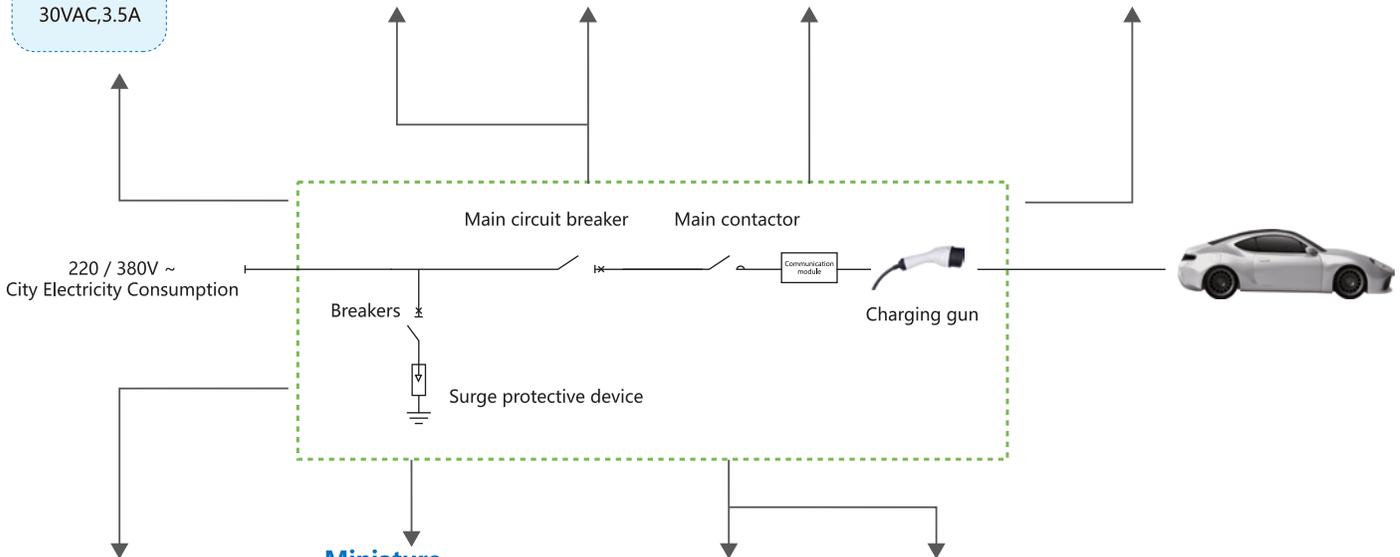
- HCBB62-X2T**  
AC/DC EMI
- HCV2**  
EMI
- HXC1**  
EMI

## Micro current transformer

- HFCT-M406**  
5A/2.5mA,0.2
- HFCT-M221**  
50A/25mA 0.2

## charger module

- HF3635/C4**  
40A 2H
- HF3635**  
40A 2H



## Leakage current sensor

- HFCF-F09**  
6mA DC/30mA rms
- HFCF-F12**  
6mA DC/30mA rms
- HFCF-F15**  
0~70mA DC/0~70mA rms
- HFCF-F22**  
6mA DC/30mA rms

## Miniature circuit breaker/surge protector

- UEB3L**  
400VAC,6-63A
- UEB3**  
400VAC,1-125A
- UESS5**  
420VAC,10-100kA

## Intelligent miniature circuit breaker

- UEZ3L**  
400VAC,6-63A
- UEC3**  
400VAC,38A
- UEC1**  
400VAC,9-95A

## Relays

- HF177F**  
100A,1H1D
- HF187F**  
80A,2H1D/40A,4H1D
- HF198F**  
50A,2H1D
- HF170F-S**  
40A,2H1D
- HF177F(954)**  
40A,2H
- HF170F**  
40A,2H1D
- HF189F**  
48A,1H1D
- HF190F**  
32A,1H1D
- HF179**  
32A,1H
- HF165F**  
43/60A,1H
- HFE39-40 Series**  
25/40A,2H/2D
- HFE10 Series**  
50-90A,1H/1D/1Z
- HFE93**  
50A,2H/2D+A
- HFV17**  
150A,1H/QH
- HFK11-T**  
32A,1H/1Z
- HFK15**  
40A,2QH



### Low Voltage Device

- The insulation components such as the base, cover, and shaft of the UEM5 MCCB are made of thermosetting composite materials from USA IDI Corporation, which have high strength and high insulation performance
- The UEC1 contactor has a wider range of coil operating voltage, some of products' ultimate fluctuations voltage range can reach from 65%  $U_c$  to 110%  $U_c$ . Most of products have both VDE and UL certification
- UEB6 MCB is the adjustment free product with high delay reliability. Short internal circuit, low power consumption, energy-saving and environmentally friendly
- UEZ3L smart MCB has multiple protection functions such as overload, overvoltage, undervoltage, leakage, overpower, overtemperature, etc. The protection can be set; The leakage protection adopts dual chip protection, which can still protect the operation after the control module fails; With 5 invention patents, multiple utility model patents and appearance patents



UEM5/UEM5L



UEC1



UEB3L



UEB3



UES5



UEZ3L



UEC3

### High Voltage DC Fuse

- Fast operating under high fault current: Pre-arcing time@30kA<2ms
- Small size with low heat rise & watt loss:  $0.7I_n < 45K$
- Ultra high consistency: resistance variation rate <3%



HPE313



HPE501



HPE515



HPE504



HPE508

### HVDC relay

#### HFE Series:

- Ceramic chamber sealed structure, with fast arc extinguishing structure (magnetic blowing + gas absorbing arc)
- Up to 1500V high voltage application, high short-circuit resistance solution, high voltage safety breaking capability, high safety



HFE82P



HFE85P



HFE88P

### HVDC relay

#### HFZ Series:

Epoxy sealed structure, working temperature from  $-40^{\circ}C$  to  $85^{\circ}C$ , which is applied for charging pile, energy storage and other applications, can meet the customer customized requirements for HVDC relay solution, with high voltage, high current, high reliability, low cost and other advantages.



HFZ16



HFZ21

### Power connectors

- High conductivity material, high throughload current, low temperature rise, low loss
- High strength, high temperature resistant resin material, maximum operating temperature  $180^{\circ}C$
- Provide flexible current/signal scheme according to design requirements



AC: HFLPR1/5/8



DC+Signal: HFLPR2/6/9



PDU: HFLPR3

### Hall Effect sensor

- For the electronic measurement of currents: DC, AC, pulsed..., with galvanic separation between the primary circuit and the secondary circuit
- Low drift, high bandwidth and low insertion losses



HFCH-P11

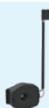
### Current transformer

Applied to energy storage battery side and energy storage PCS

- High precision and good linearity
- Fast response time and strong anti-interference ability
- Low temperature drift, wide frequency
- Strong overload capability



HFCT-M406



HFCT-M03

### Automotive Relay/Charging Module

- Provide complete product solutions with small size, and strong current carrying capacity
- Monitor the circuit connection status with auxiliary contacts
- Options to integrate current transformers and leakage transformers with high integration, which makes it easy for customers to install and use



HFV17



HFK11-T



HFK15



HF3635/C4



HF3635

### Fluxgate Sensor

- Measurement of various irregular waveform current under electrically isolated conditions
- Meet IEC 62752 on-board residual current protection module of charging pile A+6 type
- Meet IEC 62955 on-board residual current protection module of charging pile
- Meet UL 2231 on-board residual current protection module of charging pile



HFCE-F09



HFCE-F12



HFCE-F15



HFCE-F22

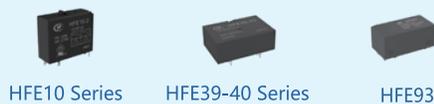
## Power Relay

- High load capacity
- High safety (with auxiliary contacts)
- Comply with UL/IEC safety certification requirements for the entire machine (electrical endurance, contact clearance, etc.)



## Latching relay

- Zero power consumption
- Better breaking and inrush current capability
- Smaller size
- Low temperature rise



## Reed relay

- High insulation: Meets 800V reinforced insulation requirements
- High voltage switching capability: 1500VDC / 1000VAC
- Combined injection molding structure with high vibration resistance



## Film Capacitor

New energy capacitor can be applied to the fields of PV, energy storage, wind power, charging piles, with the function of DC-Link, high frequency filter, braking absorption.

- Compliance with AEC-Q200 standard requirement
- Temperature Humidity Bias (THB) available
- Excellent self-healing property
- Low loss at high frequency



## Industrial relay

- With multiple contact arrangements
- Meet the load requirements of different application environments, with AC and DC optional, contact switching capacity 5A~30A
- Multiple wiring methods (screw, cage spring, push in, PCB) available, convenient for replacement



## Signal relay

- Switching capability for high-voltage & low-current, such as 1000VDC/1500VDC 10mA
- High insulation, such as dielectric strength between coil and contacts at 4000VAC 1min, surge voltage up to 6kV
- Miniaturization: size as small as to (10\*6.5\*5.65) mm
- Low coil power consumption: down to 50mW and 140mW
- SMT type available



## Partners



国家电网  
STATE GRID  
国网智能科技股份有限公司  
STATE GRID INTELLIGENCE TECHNOLOGY CO., LTD.



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Headquarter's Marketing & Sales Center  
ADD: No.566-578, Donglin Rd., Jimei North Ind. Dist., Xiamen  
E-mail: marketing@hongfa.com

SALES SERVICE HOTLINE  
**400-600-1502**

