Fastron
Electronics

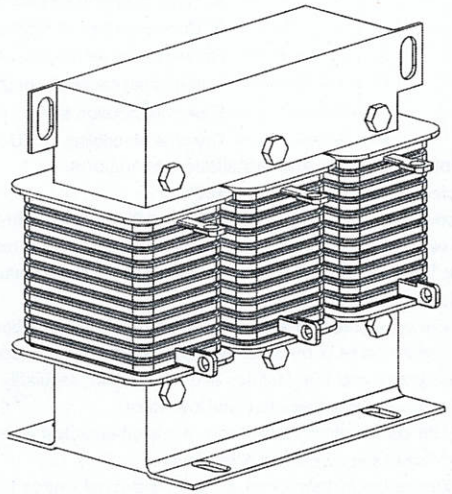
HF121 Series

Product certificate

This product is approved to leave the factory after inspection.

Inspectors: Inspector 02

Production Date: See product label



HF121 Series

Three-phase series filter electric reactor

user's manual

Fastron
Electronics

- **Power Semiconductors**
- **Electrical Measurement**
- **Process Control**

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Three-phase series filter electric reactor

1 General

When HF121 series three-phase series filter electric reactor is making capacitive reactive power, it is always affected by harmonic current, switching-on, inrush current and switching overvoltage, causing damage to capacitance and decreasing power factor. Therefore, a three-phase filter electric reactor should be added on the front end of the capacitor to suppress and absorb harmonic wave, protect capacitor, avoid the influence caused by harmonic voltage and current and impulse voltage and current, improve power quality and increase system power factor and prolong capacitor life span.

2 Types and meanings

HF121 □ - □ - 7% P K(T)

- K：With temperature protection switch; No Mark: without
- P: Connector bar; B: Connection lug
- Rated reactance ratio XL / Xc(%)
- Rated capacitance of adopted capacitor (kvar)
- Power distribution system voltage (kV)
- Dry-type air cooling CKDG：Single phase

3 Normal working and installation conditions

Ambient temperature：-25℃ ~ +50℃

Relative humidity：40℃ ≤ 20%；20℃ ≤ 90%　Altitude：≤ 2500m　Environmental conditions: no noxious gas and vapour; no conductivity or explosive dust; no violent mechnical vibration.

note: The inlet and outlet wiring terminals of the reactor must be fixed and reliable

4 Main structural features

3.1 The iron-cored and air-immersed products are classified as three phase and single phase.

3.2 The iron core is made of high-quality cold rolled silicon steel plate, which is punched and sheared with high-speed punch and has features like minute burr, regularity and eveness, and neat stacks, ensuring the capacitor run with low temperature rise and low noise.

3.3 The coil employs high-quality insulated wire and is wound with a special machine, featuring advantages as good flatness and beautiful appearance.

3.4 During the installation of electric reactor, all fixures have been anti-corrosion treated, with some key fixtures made of non-magnetic material, and experienced the Pre-dry → Vacuum impregnation → Heat curing process, which integrates the coil and iron core solidly, greatly reduces the running temperature rise and noise, and effectively increase the quality factor of electric reactor and the effect of harmonic wave reducing.

3.5 The dimensions of electric reactor are designed referring to standard cabinet dimensions, with features like small body, simple connection, and much lesser investment on the cabinet.

5 Specifications and technical data

5.1 Suitable capacitance and voltage are:：0.4 kV、0.45 kV、0.48 kV、0.525 kV、0.66kV、0.69 kV；

5.2 Reactance ratio: 0.1%、0.3%、0.5%、1%，Mainly used in restricting switching-on inrush current:4.5%、5%、6%、7%Used in restricting switching-on inrush current and suppressing five or more harmonic waves；12%、14%，Used in restricting switching-on inrush current and suppressing three or more harmonic waves

5.3 Pressure levels are:5kV/min；Insulation class: B, F, H; noise≤ 30dB; continuous operation when overload capacity≤ 1.35In;

5.4 The system voltage increases after three-phase filter electric reactor is added. The formula is:

$$Ug=\left(\frac{N}{N^2-1}\right)\times Un$$

Working voltage of capacitor groups: Ug; rated system working voltage: Un; tuning frequency of electric reactor: N.

5.5The conversion formula among reactor capacity, capacitance, reactance ratio, and inductance value is:

$$U_L=Uc\times\frac{X_L}{Xc}\qquad L=\frac{U_L}{I\times 0.314}\qquad Qw=Qc\times\frac{X_L}{Xc}\qquad \text{Reactance ratio}=\frac{X_L}{Xc}$$

Capacitance: Qc;　electric reactor-end voltage: UL;　electric reactor current: I;　inductive reactance: XL.
Reactor capacity: Qw;　inductance value: L;　capacitor phase voltage: Uc;　capactive reactance: Xc.

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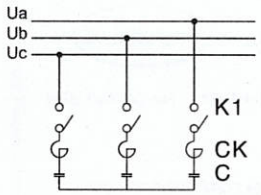
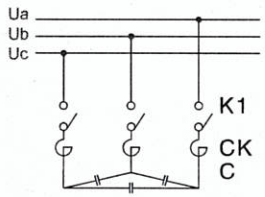
6 Exterior and mounting size

Product types	specifications	Dimensions L × W × H(mm)	Mounting size L × W(mm)
7% Copper-wired electric reactor	5~8 kvar	210 × 150 × 170	110 × 85
	10~25 kvar	210 × 155 × 175	110 × 85
	30~50 kvar	240 × 160 × 215	135 × 110
7% Aluminium-wired electric reactor	5~8 kvar	210 × 150 × 170	110 × 85
	10~15 kvar	210 × 150 × 170	110 × 85
	20~25 kvar	240 × 155 × 195	135 × 110
	30~35 kvar	240 × 155 × 215	135 × 110
	40~50 kvar	262 × 180 × 215	150 × 110
14% Copper-wired electric reactor	25~30 kvar	240 × 160 × 200	135 × 110
14% Aluminium-wired electric reactor	25~30 kvar	270 × 190 × 215	150 × 120
14% Copper-and-aluminium-wired electric reactor	40~50 kvar	290 × 190 × 240	180 × 120

7 Connection diagram

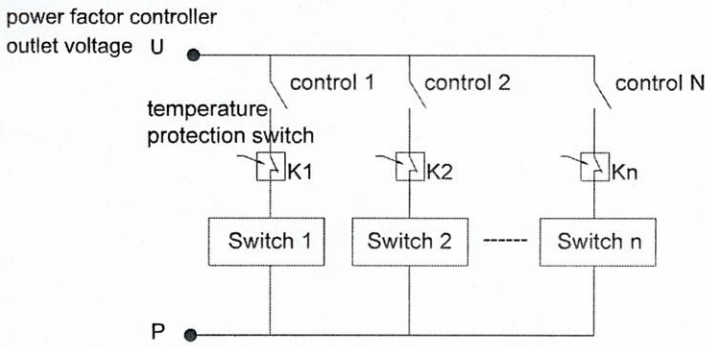


Connection with split-Phase compensation



Connection with 3-Phase compensation

8 With temperature protection switch type secondary wiring diagram



note: when outlet voltage of power factor controller is -12VDC, ponit P should connect common terminal 12VDC

When outlet voltage of power factor controller is 220VAC, point P should connect N phase

when outlet voltage of power factor controller is 380VAC,point P should connect phase B or phase C