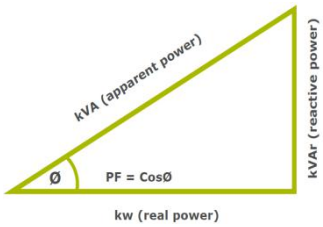
OVERVIEW

One contributing element to power quality is power factor. Power Factor Correction (PFC) aims to improve power factor, utilising capacitors to offset usually inductive loads,for example motors. PFC systems increase efficiency of power supply, delivering immediate cost savings on electricity. Power Factor is a measure of how effectively incoming power is used in your electrical system and is defined as the ratio of Real to Apparent power where:

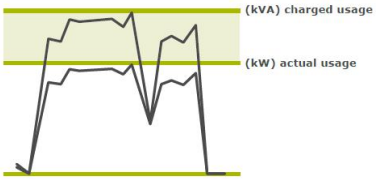


- Real Power(**P**) is the power that actually powers the equipment and performs useful, productive work.
- Reactive Power(**Q**) is required by some equipment (e.g. transformers motors and relays) to produce a magnetic field for operation; however it does not perform any real work.
- Apparent Power(**S**) is the vector sum of Real and Reactive Power and corresponds to the total power required to produce the equivalent amount of real power for the load.

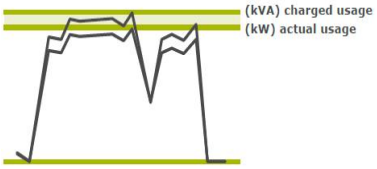
$$\vec{S}=\vec{P}+\vec{Q}=\sqrt{(P)^2+(Q)^2}$$

Power Factor Correction may be required where a system has a power factor of less than 90% (or 0.9). A poor power factor can contribute to equipment instability and failure, as well as significantly higher than necessary energy costs since it means that more current is required to perform the same amount of work. By optimizing and improving the power factor, the demand on the electricity distribution system is reduced.

Power Factor Correction equipment achieves a decrease in the total amount of electrical demand by using a bank of capacitors to offset an inductive load (or reactors if the load is capacitive).



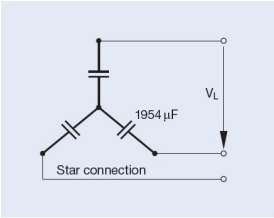
Before PFC



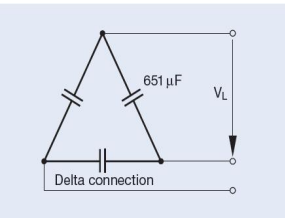
After PFC

WORKING PRINCIPLE

Automatic Power Factor Correction Panel offer feature fully intelligent and automatic operation support and helps in achieving required PF under fluctuating loads. The use of latest technology based components and high fabrication standards also make these panels flawlessly maintain the need of delivering high PF. Further, Switch (Contactor,Thyristor,Compound Switch) also ensures real-time correction of PF. The reactors can filter harmonics and improve power quality.



Star Connection



Delta Connection

KEY COMPONENTS

- Capacitors
- Switching devices
  - Contactors
  - Compound Switch
  - Thyristor
- Reactors (filter)
- Power factor controller

FEATURES AND BENEFITS

Fast return on investment through lower power costs

Power factor correction reduces the reactive power in a system.
Power consumption and thus power costs drop in proportion.

Effective use of installation

An improved power factor means that an electrical installation operates more economically (higher effective power for the same apparent power).

Improved voltage quality

Reduced voltage drops

Optimum cable design

Cable cross-sections can be reduced with improvement of power factor (less current). In existing installations for instance, extra or higher power can be transmitted.

Reduced transmission losses

The transmission and switching devices carry less current, i.e. only the effective power, meaning that the ohmic losses in the leads are reduced.

APFC :THYRISTOR	400V
Model	ZD-DWT
Rated Voltage	400 V
Connection type	Three-phase 3 wire, Three phase 4 wire
Rated Frequency	50/60HZ
Response time	20ms
Step capacity	10~40kVAr
Rated Capacity/panel	400kVAr
Power Factor	0.95
Switch	Tryristor
Capacitance Tolerance	-5%, +10%
Reactance ratio(%)	5,5.5,5.67,6,7,8,12.5,14
Rated Impulse Withstand Voltage (Uimp)	8 Kv
Storage temperature	-40~85 °C
Working temperature	-25~55 °C
Humidity	≤95%,non-condensate
Dimension (mm)	800*800*2200
Installation	Indoor,free standing
Altitude	<2000m without de-rating
Certification	CCC,Type Test Report

APFC :COMPOUND SWITCH	400V
Model	ZD-DWM
Rated Voltage	400 V
Connection type	Three-phase 3 wire, Three phase 4 wire
Rated Frequency	50/60HZ
Response time	60ms
Step capacity	10~40kVAr
Rated Capacity/panel	400kVAr
Power Factor	0.95
Switch	Compound switch
Capacitance Tolerance	-5%, +10%
Reactance ratio(%)	5,5.5,5.67,6,7,8,12.5,14
Rated Impulse Withstand Voltage (Uimp)	8 Kv
Storage temperature	-40~85 °C
Working temperature	-25~55 °C
Humidity	≤95%,non-condensate
Dimension (mm)	800*800*2200
Installation	Indoor,free standing
Altitude	<2000m without de-rating
Certification	CCC,Type Test Report

ZDDQ Auto Power factor correction panels

APFC :COMPOUND SWITCH	400V
Model	ZD-DW
Rated Voltage	400 V
Connection type	Three-phase 3 wire, Three phase 4 wire
Rated Frequency	50/60HZ
Response time	60ms
Step capacity	10~40kVAr
Rated Capacity/panel	400kVAr
Power Factor	0.95
Switch	Compound switch
Capacitance Tolerance	-5%, +10%
Reactance ratio(%)	No reactors
Rated Impulse Withstand Voltage (Uimp)	8 Kv
Storage temperature	-40~85 °C
Working temperature	-25~55 °C
Humidity	≤95%,non-condensate
Dimension (mm)	800*800*2200
Installation	Indoor,free standing
Altitude	<2000m without de-rating
Certification	CCC,Type Test Report

APFC :CONTACTOR	400V
Model	ZD-DWJ
Rated Voltage	400 V
Connection type	Three-phase 3 wire, Three phase 4 wire
Rated Frequency	50/60HZ
Response time	100ms
Step capacity	10~40kVAr
Rated Capacity/panel	400kVAr
Power Factor	0.95
Switch	Contactor
Capacitance Tolerance	-5%, +10%
Reactance ratio(%)(Optional)	5,5.5,5.67,6,7,8,12.5,14
Rated Impulse Withstand Voltage (Uimp)	8 Kv
Storage temperature	-40~85 °C
Working temperature	-25~55 °C
Humidity	≤95%,non-condensate
Dimension (mm)	800*800*2200
Installation	Indoor,free standing
Altitude	< 2000m without de-rating
Certification	CCC,Type Test Report

APFC :CONTACTOR 3kv 6.3kv 10kv 35kv

Model	ZD-GWJ
Rated Voltage	10KV
Connection type	Three-phase 3 wire, Three phase 4 wire
Rated Frequency	50/60HZ
Response time	100ms
Step capacity	100,200,300kVAr
Rated Capacity/panel	1200kVAr
Power Factor	0.9
Switch	Contactor
Capacitance Tolerance	-5%, +10%
Reactance ratio	6% 12%
Switching	Automatic switching
Storage temperature	-40~85 °C
Working temperature	-25~55 °C
Humidity	≤95%,non-condensate
Dimension (mm)	800*800*2200
Installation	Indoor,free standing
Altitude	<1500m without de-rating
Certification	CCC,Type Test Report