

Smart Capacitor

for Power Factor Correction



Power Quality and Control Solutions
www.cbcenter.co.th

info@cbcenter.com

INTELLIGENT POWER CAPACITOR

Intelligent&Integrated solution for reactive power compensation

The reactive power compensation system based on CBC series capacitors provides users with an intelligent and integrated solution to correct system power factor, improve efficiency of electricity use, and reduce cost of electricity costs. The intelligent reactive power compensation system is more convenient to use, easier to maintain and more informative.



CBC series capacitor adopts integrated design, integrated assembly, and integrated testing, making the integrity of each component better.

Single intelligent capacitor has power capacitor, electric reactor(anti-harmonic type), zero switching on/off switch, protection components, control module and human-machine interface.

CBC series capacitors can be used individually or in parallel. It is connected to a power factor controller through communication mode to form a complete reactive power compensation system. If an intelligent capacitor is abnormal, it will automatically exit the system and give an alarm. This design will not affect operation of other intelligent capacitors in the system and ensure continued operation of reactive power compensation system.

PRODUCT FEATURES



MODULAR	HIGH QUALITY	SWITCH MODULE	PROTECT DESIGN	H&M INTERFACE
Compact structure, easy wiring, convenient maintain, individually or in parallel using, easy extend total capacity	Self-Healing type low voltage power capacitor	Intelligent capacitor built-in on/off switch. Zore-off technology No surge No over-voltage Quick response time	Power-off protection Short circuit protection Phase-lack protection Over-TEMP protection THDu protection Over-volt protection Under-volt protection Under-cur protection Ensure stable and safe operation of capacitor	Display operating parameters. Display situation of capacitor, switch and communication. Convenient for selection of switching different working modes.

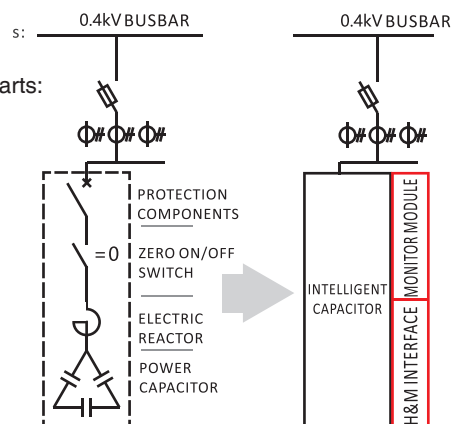
CAPACITOR COMPONENTS

Capacitor adopts integrated design, consisting of following parts:

- Power Capacitor
- Electric Reactor
- ZERO ON/OFF Switch
- Protection Components
- Monitor Module
- Human-Machine Interface

PRODUCT APPLICATION

- Integrated reactive compensation of distribution system
- Local power factor correction of motors
- Save energy system
- Construction, traffic, factory, government, medical and other industries

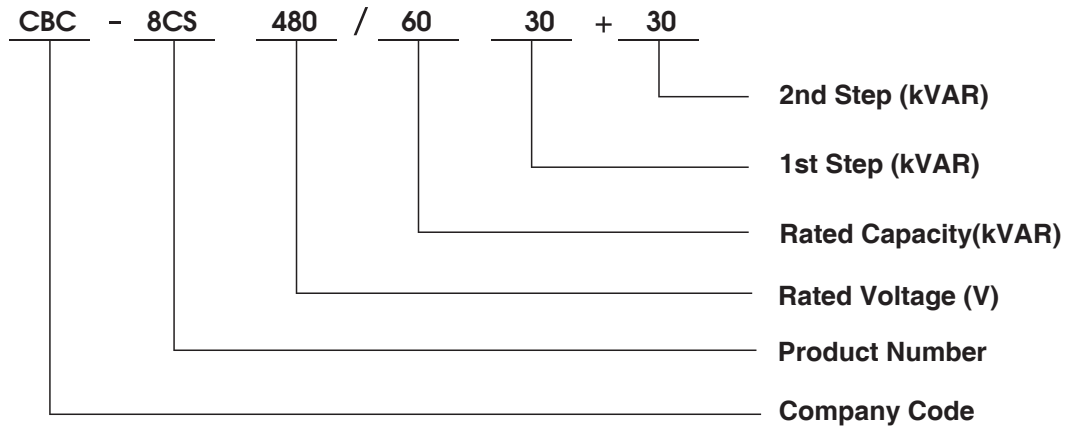


TECHNICAL PARAMETERS

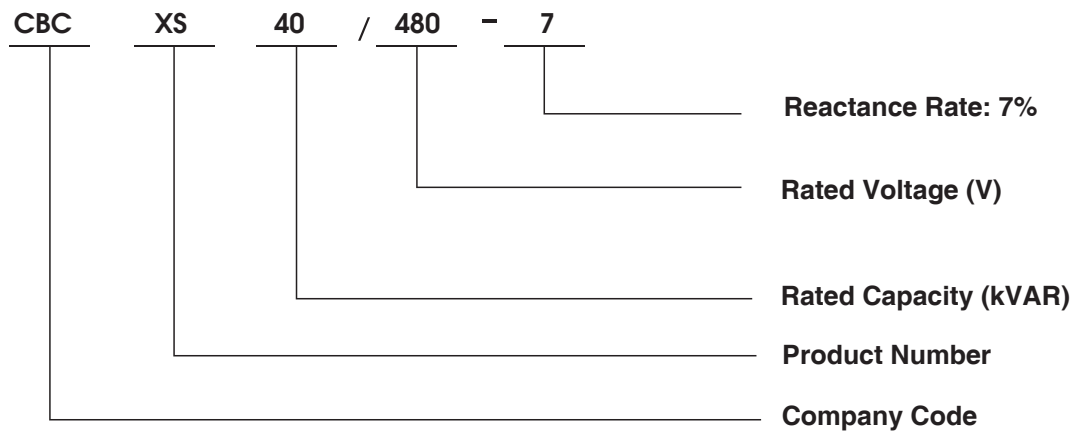
SPECIFICATION	
3-Phase	5kVAR-100kVAR
1-Phase	5kVAR-60kVAR
1+1-Phase	10kvar-40kVAR
POWER SUPPLY	
Rated Volt	AC230V or AC400V or AC 690V
Allow Deviation	± 20%(ating)
Volt Waveform	Anti-Harmonic support THDu ≤ 10%, Ordinary Type ≤ 3% ;
SAFETY PROTECTION	
ON/OFF Switch	Adopt sync switch or SCR switch
Zero-Off Switching	Reduce current surge, length switch service life
Protection Function	Over-TEMP, under-volt, under-cur, harmonic, under-volt and other protection functions
Breaker	Breaking Capacity ≤ 15KA
SAMPLING DEVIATION	
Voltage	≤ 0.5%
Current	≤ 1.0%
Time	± 0.01s
Power Factor	≤ 1.5%
REACTIVE COMPENSATION PARAMETER	
Reactive Error	≤ 10% of capacitor capacity minimum
Switching Interval	Dynamic ≤ 10ms, Static 5-180ms
On-Line Number	≤ 30 Pcs
SERIAL REACTOR	
Reactance Selection	5th and more mainly, 7%; 3rd and more mainly, 14%
Isolation	H Degree
Phase Error	L<±3%
Standard	VDE 0570 IEC 96/104/CD
Isolation Degree	3KV
TEMP Degree	CLASS C 220 C
DRY-TYPE POWER CAPACITOR	
Filler	New type epoxy resin, no leakage, no pollution, anti-explode, anti- flaming
Standard	GB 12747
TEMP Range	-40 C~60 C
Allow Contin O-V	8 hours/day, >110% of rated voltage
Allow Contin O-L	>150%~200%
Capacity Error	-5%~+10%
Discharge Loss	<0.4W/kvar
Discharge Time	After 3 minutes of switching capacitor off, residual voltage will be less than 50V
ZERO ON/OFF SWITCH PARAMETER	
Switching Surge	≤ 1.8 Ie
Allow Switching Time	2,000,000 times switch on/off
Switch Power Loss	<1W

ORDER SPECIFICATION

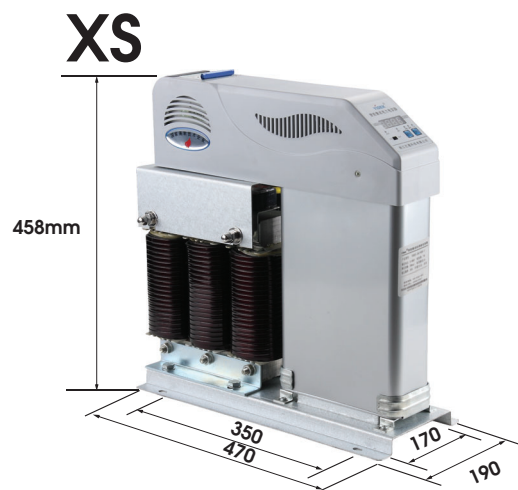
CBC Series Intelligent Capacitor Models are as following:



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Product shape and installation size (mm)








REACTIVE POWER COMPENSATION CONTROLLER (MATCH WITH INTELLIGENT CAPACITOR)

Matching with CBC series intelligent capacitors, form a reactive compensation system by mode of communication.

This controller and capacitor are used together to form a complete intelligent reactive power compensation system. The controller adopts a 32-bit ARM chip design, comprehensively considering voltage, current, power factor and reactive power. It adopts the latest reactive power trend judgment algorithm, which is especially suitable for occasions with large power factor variation.

CBC Reactive Power Compensation Controllers: Reliable and Efficient Power Factor Correction

Optimize your power system and reduce energy costs with CBC's advanced reactive power compensation controllers. Our controllers provide precise, automatic, and adaptive power factor correction for increased efficiency, reduced energy waste, and improved system stability. Choose the model that best fits your needs:

Feature	CBC-9CK-Z1	CBC-9CK-Z2	CBC-9CKZ-100	CBC-9CKH-100	9CK-EC
					
Communication	RS-485 communication for seamless integration with intelligent integrated power capacitors				
Operation Mode	Split and conjunct compensation modes				Y, Delta, and Y+Delta mixed compensation modes
Protection	Harmonic protection, over/under voltage protection, open-phase protection, and more.				Self-check, automatic reset, undervoltage, overvoltage, undercurrent, and harmonic overlimit protection
User Interface	LED display with touch key control		LCD display with touch key control		128x64 LCD display with touch key control
Networking	Control up to 30 DELTA Smart capacitors for 1 step	Control up to 40 DELTA+30 STAR Smart capacitors 2 step + 3 step	Control up to 30 DELTA Smart capacitors	Control up to 20 DELTA+10 STAR Smart capacitors	Control up to 1: 38 DELTA 2: 25 STAR 3: 40 (DELTA+STAR) Smart capacitors
Other Features					Automatic detection of capacitor number and capacity

Key Benefits Across All Models:

- Improved Power Factor : Reduces reactive power consumption, lowering electricity costs.
- Increased System Efficiency : Minimizes energy waste and improves the utilization of electrical infrastructure.
- Enhanced Equipment Lifespan : Reduces stress on electrical equipment, extending its operational life.
- Improved Grid Stability : Contributes to a more stable and reliable power grid.

Contact CBC today to discuss your specific power factor correction needs and find the perfect solution for your facility!

TECHNICAL PARAMETERS

Measurement Accuracy

Voltage	± 0.5%
Current	± 1%
Power Factor	± 1.5%
Reactive Power	± 2%
Temperature	± 1C

Power Supply

Rated Volt	400V±20% Can be customized
Power Loss	≤3W

Communication Mode

Control	RS485 Communication, work with intelligent capacitor
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Environment Condition

Relative Humidity	20% - 90% no condensation
Environment TEMP	-25 C - 70 C
Altitude	≤ 2000m
Others	Installation place not allow explosive media. Surrounding medium should not contain gases and conductive media that corrode metals or damage insulation. It is not allowed to be filled with water vapor and severe molds appear. Installation place shall have facilities to protect against rain, snow, wind, sand and ash.

*Subject to actual supply goods.

SOLUTION DESIGN

When design reactive power compensation solution of intelligent capacitors, need to pay attention to followings:

- *Calculate the total capacity of reactive power compensation
- *According to total capacity, select intelligent capacitor specification and quantity
- *Intelligent capacitors with different capacities can be mixed.
- *A single intelligent capacitor is equivalent to a reactive power compensation branch, which already contains capacitor, reactor, switching switches and protection components.
- *Intelligent capacitors must be used with matched controller, ordinary controllers cannot be used with intelligent capacitors.
- *Intelligent capacitors and the controller are connected via communication. Communication wires are sent with the goods.

Reference Solution: 400V system, 3-phase compensation, 7% reactance rate(resist 5th and more order harmonics)

ORDER SPECIFICATION

This kind power factor controller only can be used with CBC series intelligent capacitors

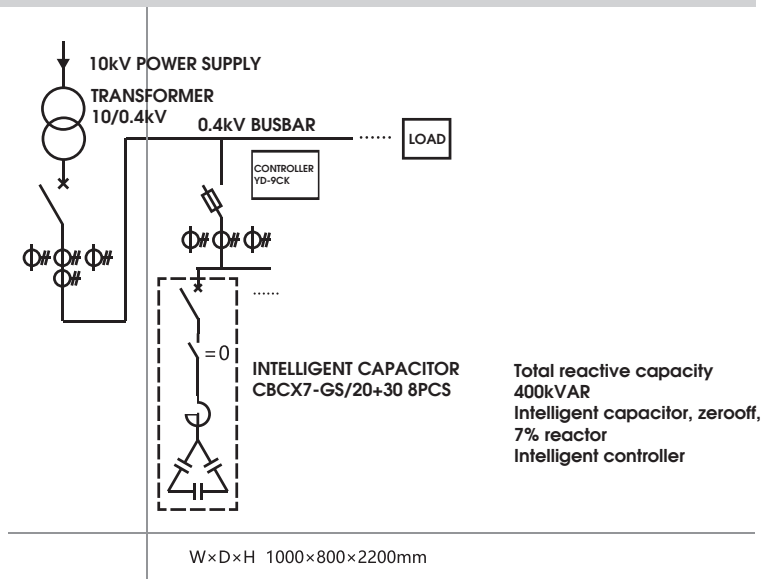
MODEL	SPECIFICATION
CBC-9CKZ	≤30 pcs 3-phase intelligent capacitors
CBC-9CKH	≤ 10 pcs split intelligent capacitors, Total number ≤30 pcs

TIPS: Please ask CBC for more controller models.



Transformer 1000kVA, Compensate 300kVAR	Transformer 2000kVA, Compensate 600kVAR	
	Main cabinet 300kVAR	Auxiliary cabinet 300kVAR
<p>Total reactive capacity 300kVAR Intelligent capacitor, zero-off, 7% reactor Intelligent controller</p>	<p>Total reactive capacity 600kVAR Intelligent capacitor, zero-off, 7% reactor Intelligent controller</p>	<p>Total reactive capacity 600kVAR Intelligent capacitor, zero-off, 7% reactor Intelligent controller</p>
W×D×H 1000×800×2200mm	W×D×H 1000×800×2200mm	W×D×H 1000×800×2200mm

Transformer 1250kVA, Compensate 400kVAR



CBC International Limited.

56 /12-15 Soi Prayasuren 45
Samwathawantok, Klongsamwa
Bangkok 10510 Thailand
T. +66 2902 6106-8
Fax. +66 2914 3009
E-mail : info@cbcinter.com
www.cbcinter.co.th / cbcintert.com