

# High Voltage Capacitor



## TBBS Substation type Auto-switched High-voltage Shunt Capacitor Installation

### 1. General Description

TBBS substation type auto-switched high-voltage shunt capacitor installation is usually installed besides 10kV or 6kV system of the substation. The equipment can effectively increase the power factor, reduce circuit losses, improve voltage quality and compensate reactive power.

The equipment is divided to several capacitor banks, according to the load of system, with auto-switching of SF6 switch & controlling of micro-controller, we can realize auto compensating of the reactive power. Meanwhile, some protection, such as open-delta unbalance voltage, single capacitor error, short circuit, over current, over voltage, under voltage etc, are set up to make system stable and reliable.

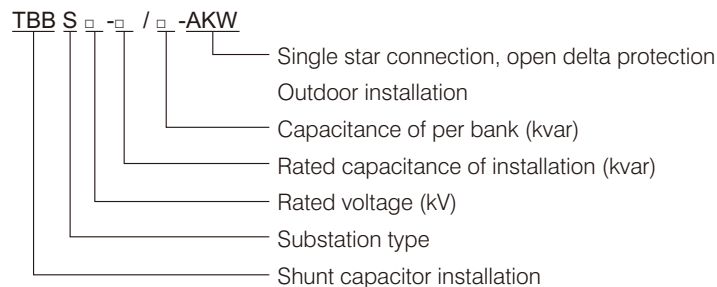
### 2. Executing Standards

- GB50227-2008
- JB/T7111-1993
- DL/T604-2009

### 3. Application Ambient Conditions

- 3.1 temperature range:  $-40^{\circ}\text{C} \sim +45^{\circ}\text{C}$ .
- 3.2 altitude:  $\leq 2000\text{m}$ .
- 3.3 sunlight: extent(max)  $0.1\text{W}/\text{cm}^2$ .
- 3.4 wind speed:  $\leq 35\text{m}/\text{s}$ .
- 3.5 earthquake:  $\leq 8$  degree.
- 3.6 No causticity gas, vapor, no inflammable gas, no blaze, no explosion risk, no frequent violent shake.  
(Consult us if the environment condition is special.)

### 4. Type meaning and specification



### 5. Main Technical Parameters

- 5.1 rated voltage: 6KV or 10kv;
- 5.2 rated frequency: 50Hz;
- 5.3 equipment capacitance (max): 20000kvar;
- 5.4 single bank capacitance (max): 3000kvar;
- 5.5 rated reactance ratio: selected from 0.1%~1%, 4.5%~6%, 12%~13%.

# High Voltage Capacitor

## 5.6 Insulate level

Rated voltage of the installation	The patience voltage in frequency for 1min in primary circuit (RMS value)	The impact patience voltage [(1.2~5)/50 μ s peak value) in primary circuit	The patience voltage in frequency for 1min in secondary circuit (RMS value)
6	32	60	2
10	42	75	

## 5.7 Steady state over-voltage.

Over-voltage in power frequency	Most persist time	Explain
1.10	Long time	The most value of over-voltage isn't exceed 1.1 Un for long time.
1.15	30 min each 24 h	Adjust and fluctuate of system voltage.
1.20	5min	When light load, the voltage raise.
1.30	1min	

## 6. Primary principle drawing

	0	1	2	...	N	
Main circuit drawing				...		
	Name	Enter line	1#capacitor bank	2#capacitor bank	...	N#capacitor bank
Capability		Kvar	Kvar	...	Kvar	
Main organ	Insulate switch	1			...	
	Current transformer		2(switch inside)	2(switch inside)	...	2(switch inside)
	Load switch		1	1	...	1
	Arrester		3	3	...	3
	Fuse		According to single unit to deploy			
	Discharge coil		3	3	...	3
	Shunt capacitor		According to grouping capacitance or demand user.			
Series reactor		1	1	...	1	

Remark: The primary principle drawing is belong to a model of project and manufacturer can change from user demand.

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## 7. Fixing drawing

