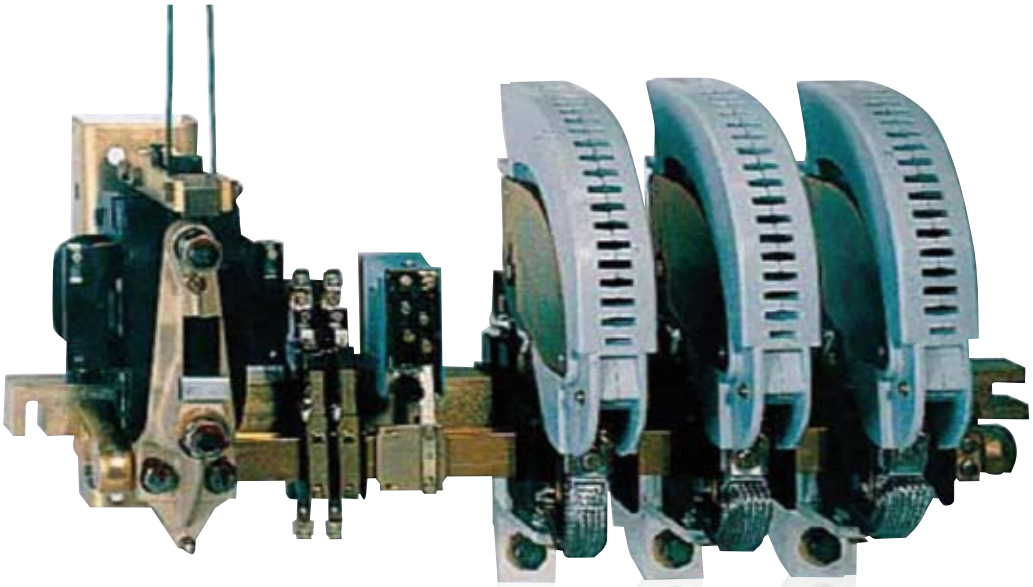
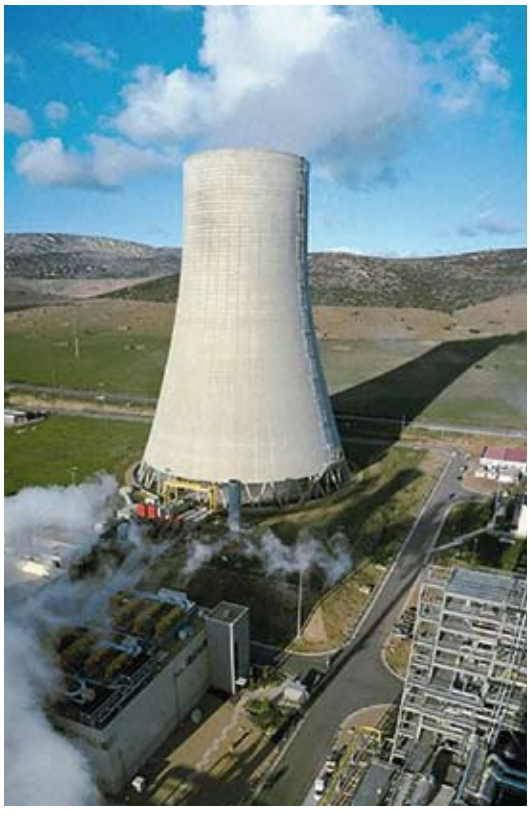
TeSys B bar-mounted contactors

Controlling generator excitation circuits



Schneider Electric

Controlling the excitation circuit of synchronous machines of up to 850 V DC and 2750 A



Synchronous generators

Synchronous generators must have their inductor circuit powered in DC to be able to generate an output voltage.

This power supply is provided by a rectifier bridge itself powered by the generator.

Synchronous generators are used for power production in electric power stations.

Typical installation of the inductor's power supply circuit

TeSys B bar-mounted contactors allow the inductor to be energized and de-energized in complete safety. Energizing and de-energizing is sequential.

Start-up phase

At power up of the excitation circuit (unloaded), the excitation contacts **(1)** are closed and the discharge contact **(5)** is open.

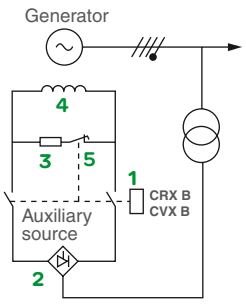
These contacts are interlocked and overlap one another. An adjustable auxiliary source generates current in the excitation winding and allows the generator to build up power.

When the voltage supplied by the generator is sufficient to power the excitation winding via a thyristor bridge **(2)**, the auxiliary source is switched off.

Stoppage phase

When a stoppage order is given, the discharge contact **(5)** closes first, then the excitation contacts **(1)** open.

This allows de-excitation of the inductor **(4)**. The energy stored in the inductor is then dissipated in a discharge resistor **(3)** which facilitates circuit breaking by the excitation contacts.



1- Excitation contact
2- Thyristor bridge
3- Discharge resistor Rd
4- Excitation winding
5- Discharge breaker contact

Our range of dedicated contactors

The dedicated contactors are proposed with electromagnets havin
reduction (contactor CVX B)

Specific feature of the induction circuit

Interrupting a highly inductive direct current

The inductor circuit consisting of a coil stores energy which it will be hard to dissipate without a discharge circuit.

TeSys B CRX and CVX bar-mounted contactors are specifically adapted mechanically to synchronize closing of the discharge circuit (discharge resistor not supplied) and opening of the main circuit.

How to size contactors

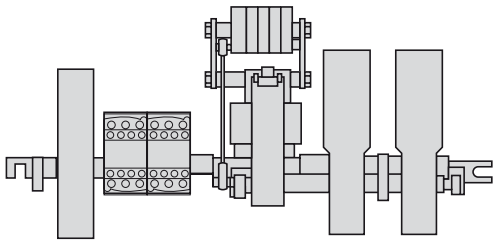
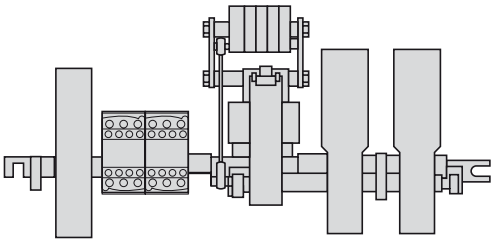
For each type of device, calculation is performed according to the information gathered

Device	Inductor circuit	Calculation to be performed
Main excitation contacts	Rated DC current	Check: • In ≤ 2750 A • Un < 850 V DC
Discharge breaker contact	DC current of breaker pole	• Ui = 1000 V • Ie = 1400 A DC • Making capacity: 43 kA peak

for inductor circuits

g either magnetic latching (contactor CRX B), or consumption

TeSys B range of bar-mounted contactors

Type of breaker-pole contactors	Operating voltage	Characteristics
CRX B 	≤ 850 V DC	3-pole contactor with magnetic latching electromagnet: • 2 NO main contacts from 80 A to 2750 A • 1 discharge NC breaker contact.
CVX B 	≤ 850 V DC	3-pole contactor with consumption reduction electromagnet: • 2 NO main contacts from 80 A to 2750 A • 1 discharge NC breaker contact.

Note:
For voltages ≥ 850 Vdc and In > 2750 A, please consult us.
The devices are designed to operate in an ambient temperature of 40°C; foresee current derating for higher temperatures.

Product range

Characteristics										
Ratings of CRX B and CVX B contactors			**F**	**G**	**H**	**J**	**K**	**L**	**M**	**P**	**R**
NO pole											
Rated current	Θ ≤ 40 °C	**A**	80	170	250	470	630	800	1 250	2 000	2 750
Maximum operating voltage Direct current		**V**	850								
Rated insulation voltage As per IEC 60664-1	Direct current	**V**	1 000								
Making capacity	Direct current	**A**	1 400	2 900	3 500	5 200	6 500	14 000	14 000	21 000	25 000
Breaking capacity	Direct current L/R = 15 ms	**A**	500	1 000	1 200	1 200	1 500	3 200	4 400	7 200	10 000
Bridging time with NC pole		**ms**	2								
NC pole											
Rated current	Θ ≤ 40°C	**A**	80	200	300	470	630	630	630	630	630
Making capacity	Direct current	**A**	1 600	3 200	4 000	5 200	6 500	6 500	6 500	6 500	6 500
Breaking capacity	Direct current L/R = 15 ms	**A**	0								
Permissible current	During 10 seconds	**A**	480	960	1 400	2 700	3 600	3 600	3 600	3 600	3 600

To find out more about TeSys B contactors

General documentation:

> Refer to the variable-composition contactor catalogue and the other data sheets on TeSys B contactors.

> Download the "Soft-CustomerB" software.

www.schneider-electric.com

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