

Vacuum Circuit Breakers

VCB15/25

LD series



Maintenance free

The switching module's robust design guarantees up to 50,000 rated current and 100 full rated short circuit CO operations with no maintenance required.



Continuous self-supervision

The whole trip and close circuit supervision come in a single package with any VCB. In the event of a malfunction, it will be indicated locally with LED and remotely via relay contacts.



Most compact dimension and weight

With a weight starting from 34 kg, Tavrída Electric's circuit breakers are the lightest in their class which significantly simplifies the installation process.



Any spatial orientation

Adjustment and mounting flexibility for the optimization of switchgear design, which allows to define how to make primary and secondary connections, saving even more space.



High operational speed

Opening and closing times as low as 12 ms and 24 ms respectively, enabling the implementation of fast transfer switching, arc flash mitigation or fault current limitation.



Single phase option

The perfect match for applications like transformers or generators with neutral earthing, server rooms and point on wave switching.

Tavrída Electric is a world-class manufacturer of medium voltage switchgear such as Vacuum Circuit Breakers & Automatic Circuit Reclosers.

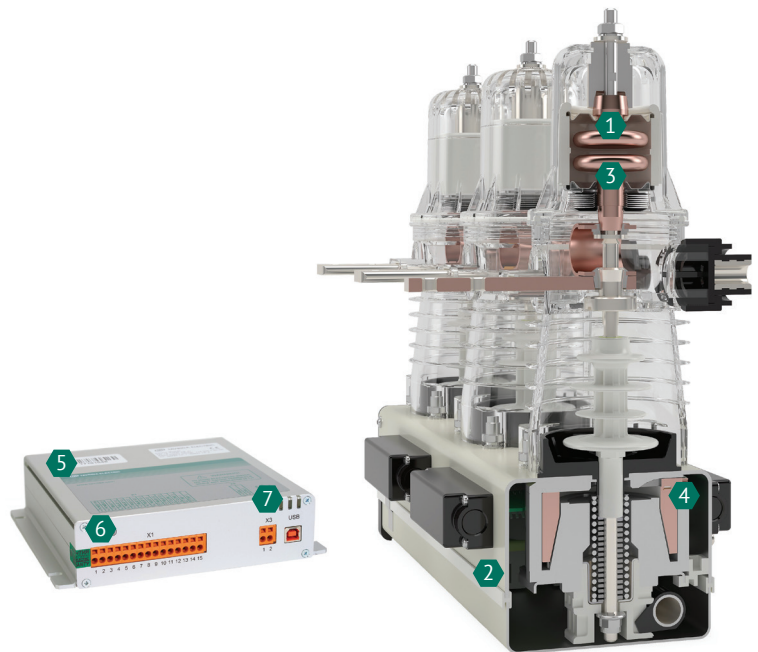
After 27 years on the market, the VCB series install base has reached 500,000 units worldwide continuing to resolve most ambitious customer problems.

Being the major supplier of circuit breakers in South America Tavrída Electric provided VCBs for Arena Corinthians stadium power supply in Sao Paulo at FIFA 2014.



Design and operation

- 1 Tavrida Electric manufactures compact vacuum interrupters with high interrupting performance and an extraordinarily long mechanical and electrical lifespan.
- 2 The patented design of the actuator allows it to be installed directly underneath each pole. The design is optimal in terms of reliability, dimensions, weight and ease of installation.
- 3 The use of robot welded steel discs as opposed to folded bellows eliminates the main failure point of conventional vacuum interrupter designs and maintains a high vacuum for its entire lifetime.
- 4 The actuator is not dependent on the auxiliary power supply quality. The actuator mechanism design enables both local and remote operation.
- 5 The energy for switching operations is stored in the CM16. This reduces the auxiliary power supply need to 1/10 of a conventional circuit breaker and enables significant savings on Substation UPS and auxiliary equipment.
- 6 Embedded intelligence - the CM's continuous self-supervision function monitors control switching modules, functional wiring and auxiliary power supply quality. In the event of a malfunction, a notification will be sent to the operator and indicated by inbuilt LEDs.



- 7 The CM can be conveniently installed at a distance from the circuit breaker and connected by means of flexible leads. It significantly simplifies the installation and allows the CM to be installed in the LV compartment.

Certificates

Tavrida Electric VCBs are designed and manufactured to strictly comply with the latest version of IEC 62271-100.

Each assembled VCB is subjected to routine testing in accordance with IEEE C37.60/IEC 62271-100 at the factory.

TYPE TESTS

- Dielectric tests
- Measurement of the resistance of the main circuit
- Temperature rise test
- Short-time withstand current and peak withstand current tests
- Extended mechanical operation tests
- Short-circuit current making and breaking tests
- Single and double earth fault tests
- Shortline fault tests
- EMC tests for control electronics
- Extended electrical endurance tests
- Capacitive currents switching tests

ROUTINE TESTS

- Visual check and functionality tests
- Dielectric withstand tests
- Measurement of the resistance of main circuit
- Mechanical operation tests



Technical parameters

PARAMETER	VCB15_LD	VCB25_LD	VCB25_LD
Rated data			
Rated voltage (Ur)	≤ 12 kV	≤ 17.5 kV	≤ 24 kV
Rated normal current (Ir)	≤ 800 A	≤ 800 A	≤ 800 A
Rated power frequency withstand voltage (Ud)	28 (42) kV*	50 kV	50 kV
Rated lightning impulse withstand voltage (peak) (Up)	75 kV	95 kV	125 kV
Rated short-circuit breaking current (Isc)	≤ 20 kA	≤ 16 kA	≤ 16 kA
Rated peak withstand current (Ip)	≤ 50 kA	≤ 40 kA	≤ 40 kA
Rated short-time withstand current (Ik)	≤ 20 kA	≤ 16 kA	≤ 16 kA
Rated duration of short circuit (tk)	4 s		
Rated frequency (fr)	50/60 Hz		

Switching performance

Mechanical life (CO-cycles)	50,000	30,000	30,000
Operating cycles, rated current (CO-cycles)	100	100	100
Closing time	≤ 70 ms	≤ 70 ms	≤ 70 ms
Opening time	≤ 35 ms	≤ 35 ms	≤ 35 ms
Break time	≤ 45 ms	≤ 45 ms	≤ 45 ms
Rated operating sequence	O-0.3s-CO-15s-CO		

General information

Resistance of main circuit	≤ 40 μOhm	≤ 40 μOhm	≤ 40 μOhm
Weight	34-36 kg	35-38 kg	35-38 kg
Weight of single phase ISM	13 kg	14 kg	14 kg
Temperature range	-25 °C ... +55 °C	-25 °C ... +55 °C	-25 °C ... +55 °C
Altitude above sea level	≤ 1000 m		
Relative humidity in 24 hours	≤ 95 %		
Relative humidity over 1 month	≤ 90 %		
Degree of protection according to IEC 60529	IP 40		
Type of driving mechanism	Monostable magnetic actuator		
Number of available auxiliary contacts for three-phase ISM	6 NO + 6 NC		
Number of available auxiliary contacts for single-phase ISM	2 NO + 2 NC		

Control module

Weight of CM	1 kg
Overall dimensions of CM	190x165x45 mm
Rated range of supply voltage of CM_16_1(60_x_x)	24V to 60V DC
Rated range of supply voltage of CM_16_1(220_x_x)	110V to 220V AC/DC
Operating range (80-120%) of CM_16_1(60_x_x)	19V to 72V DC
Operating range (80-120%) of CM_16_1(220_x_x)	85V to 265V AC/DC
Charging the close and trip capacitors of CM_16_1(60_x_x)	≤ 25 W
Charging the close and trip capacitors of CM_16_1(220_x_x)	≤ 42 W AC / ≤ 37 W DC
Standby power consumption of CM_16_1(60_x_x)	≤ 5 W
Standby power consumption of CM_16_1(220_x_x)	≤ 7 W AC / ≤ 5 W DC

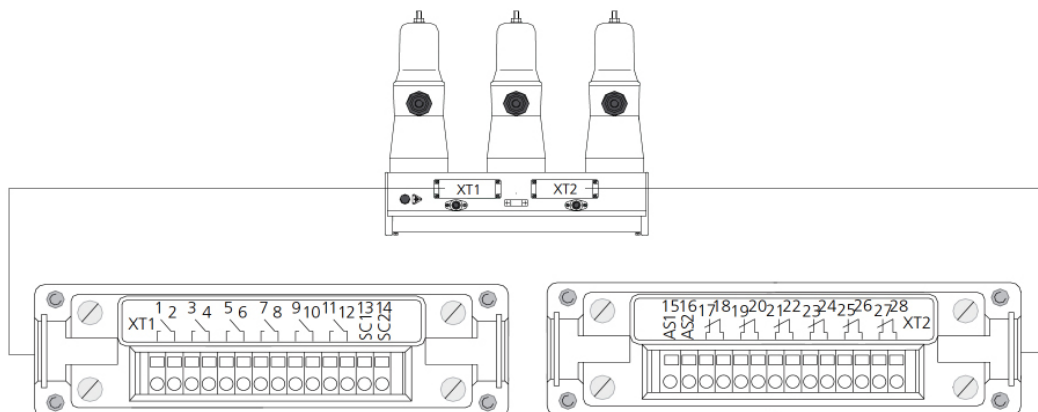
* Value in brackets - tested in accordance with GB1984-2003

** Special configuration available with opening times of 12 ms and closing times of 24 ms

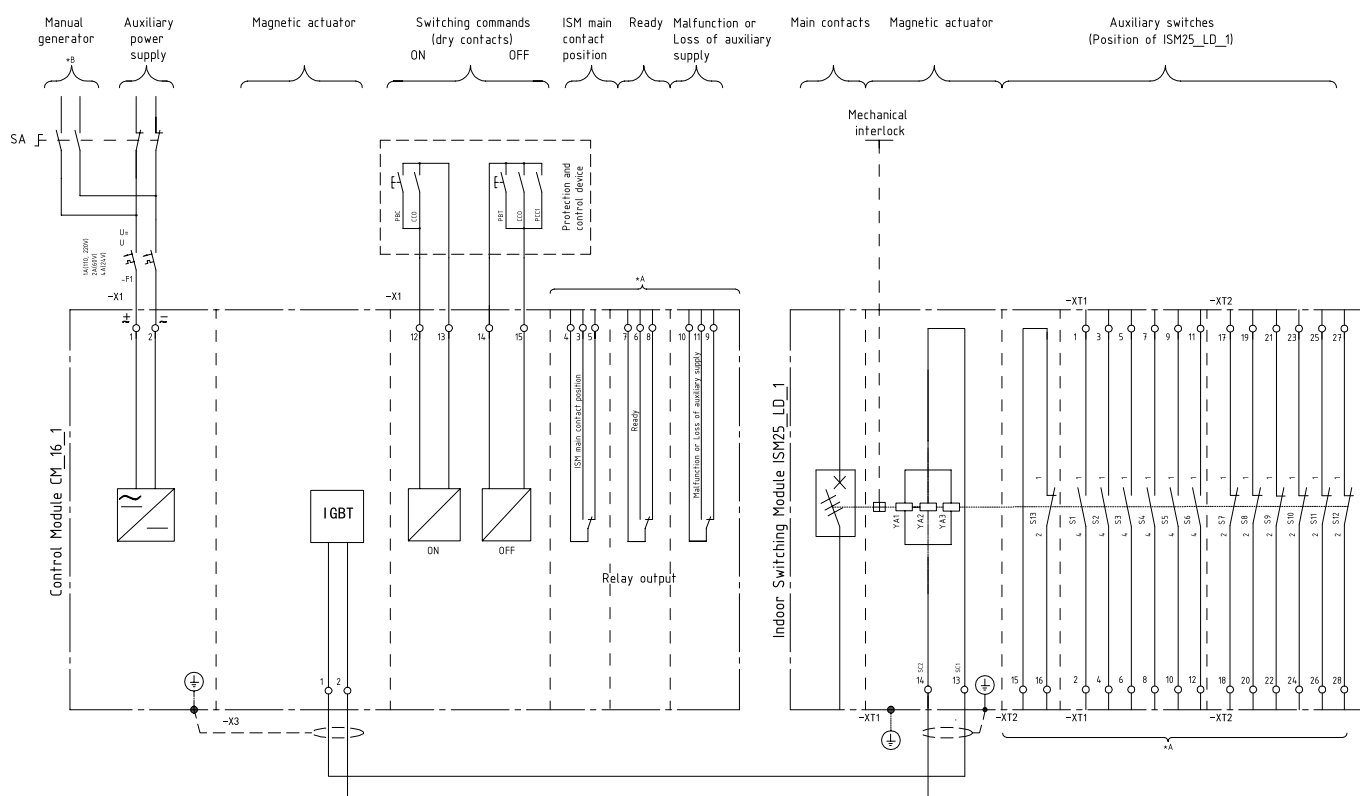


- The CM monitors the ISM main contacts position via the trip and close circuit by measuring actuator's inductance. Therefore, only one 2-wire cable is needed to be connected to the ISM. The CM has TCS (Trip and close circuit supervision) and self-supervision function.

All three-phase ISMs have secondary connectors as shown below.



VCB25_LD1_16F
Standard circuit breaker application (CB)



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