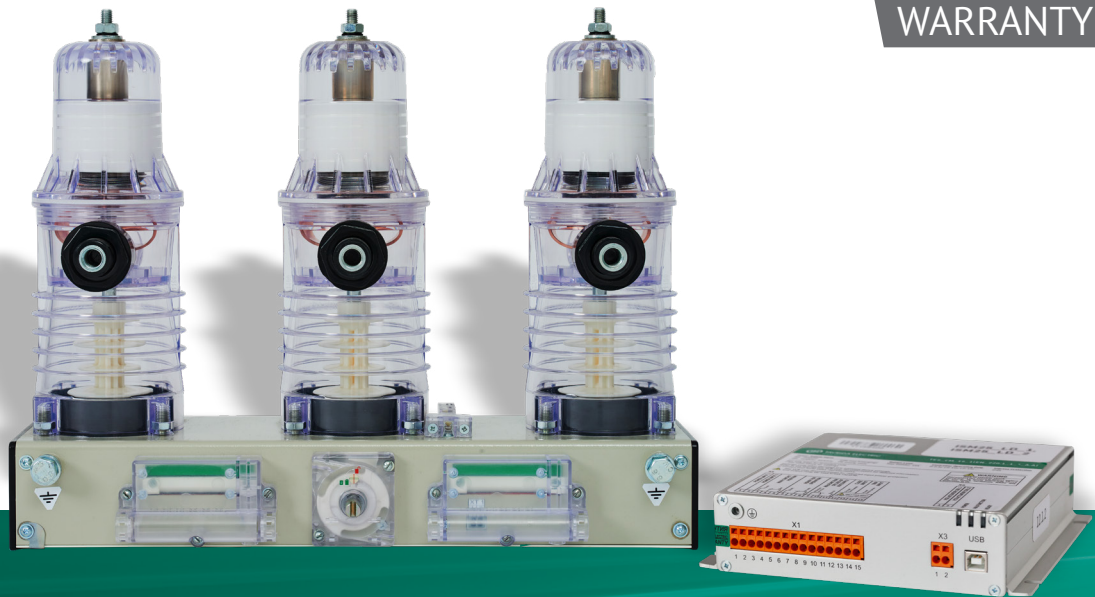


# VCB15 LD Series

Three-Phase Vacuum Circuit Breakers  
Cabine Primária Application



Tavrida Electric solutions ensure reliable power system operation in more than 80 countries.



**5 YEAR  
WARRANTY**

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

After 30 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 Tavrida Electric provided VCBs for Arena Corinthians stadium power supply in Sao Paulo at FIFA 2014.

Tavrida Electric VCBs are applicable both for metal clad and concrete type cabina primarias:

- Metal clad type



- Concrete type



### Indoor switching module (ISM)



### Control module (CM)



#### COMPACT DESIGN

The smallest in their class circuit breakers with a weight starting from 26 kg, significantly simplify the installation process and make it possible to meet all the needs for compact and reliable switchgear



#### ANY SPATIAL ORIENTATION

Outstanding mounting flexibility for the optimization of switchgear design, which allows to define how to make primary and secondary connections, saving even more space and final solution cost

#### EXCEPTIONAL RELIABILITY

An extraordinarily long mechanical and electrical lifespan more than 50 000 close-open cycles. No maintenance needed during the whole lifespan of 30 years



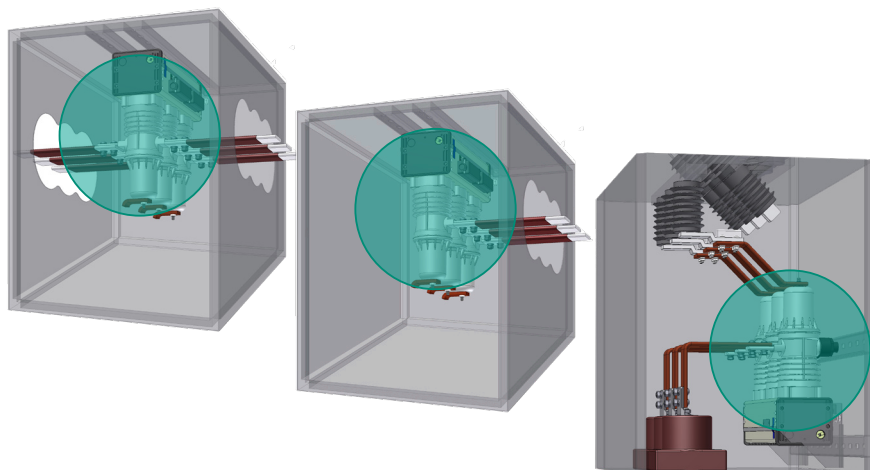
#### SAFETY AND SUPPORT 24/7

The most cost effective breaker to minimize project engineering resources and implementation costs establishing the maximum safety as per NR10 with minimum cost. Our technical and engineering support team is located in Brazil and always ready to provide the support

### EASE OF INSTALLATION

With the smallest dimensions on the market and any circuit breaker orientation, you are free to optimize your switchgear design, define how to make primary and secondary connections, and lay your secondary circuits. That means you can guarantee the optimal use of space and convenient access to the control elements.

The control modules are connected with the circuit breaker they control and supervise by means of simple arrangement of wires. This allows the CM installation to be located at any position convenient for the OEM. Very compact dimensions and low weight further simplify the installation process by persons not trained for NR11 norm.

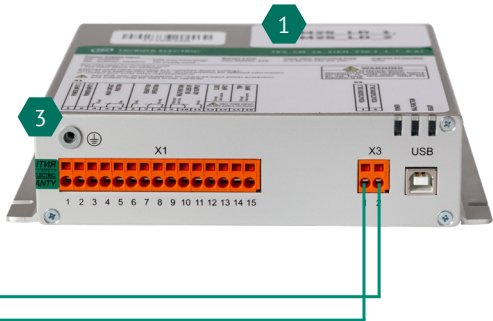
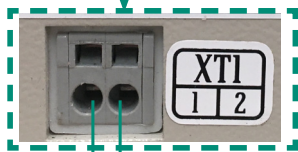
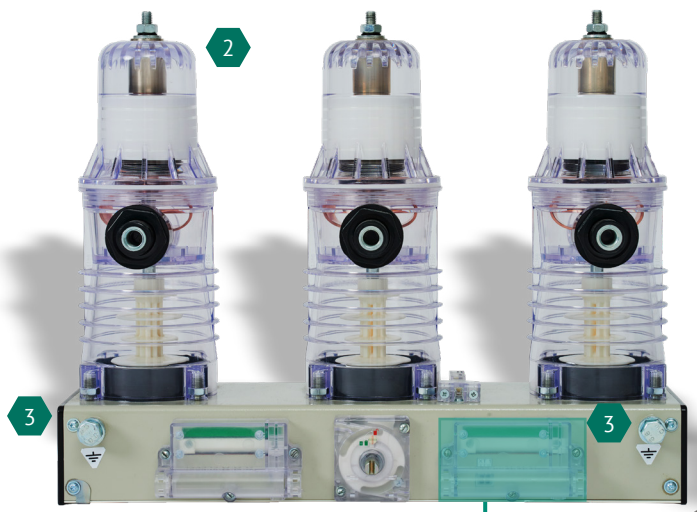


### INTERLOCKING SYSTEM

Interlocking mechanism using flexible cables provides both reliable and convenient in terms of installation and operation interlocking system. Flexible cables allow to install the handle of the interlock outside of the HV compartment providing even more personnel safety. 4 Different interlocking kits as accessories allow safe and simple operation in every particular case.







### CONTINUOUS SELF-SUPERVISION

Vacuum circuit breakers equipped with the CM control module continuously monitor and control switching modules, functional wiring and auxiliary power supply quality. The CM16 allows the user to forget about scheduled trips and close wiring inspections – as in the event of malfunction a notification will be sent to the operator using one of the inbuilt output relays and indicated by LEDs inbuilt into the control module.

The CM monitors the ISM main contacts position via the trip and close circuit by measuring actuator's inductance. Therefore, only one 2-wire shielded cable is needed to be connected to the ISM.

1. The Control Module
2. The Indoor Switching Module
3. The CM and ISM earthing points
4. The electrically shielded actuator cable 2 x 1.5 mm<sup>2</sup> (or equivalent)

### ACCESSORIES AND SPARE PARTS APPLICABILITY

VCB15\_LD8

VCB15\_LD1



#### Indoor switching module and control module:

The ISM and the CM (the CM is a microprocessor based controller that provides ISM operation, protection and data logging functions) can be ordered separately as spare parts

✓

✓



#### Manual generator:

The manual generator is used to supply the circuit breaker with power in case the main auxiliary power supply is not available

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#### Interlocking kits:

The kit attaches to the ISM shaft and serves as a manual trip / lockout accessory (the push button kit serves only as a manual trip accessory)

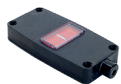
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#### Interlocking kit:

The kit attaches to the ISM shaft and serves as a manual trip / lockout accessory

•



#### Position indicator:

The position indicator is used together with indication cable to indicate the ISM main contacts state

•



#### ISM Auxiliary switches board:

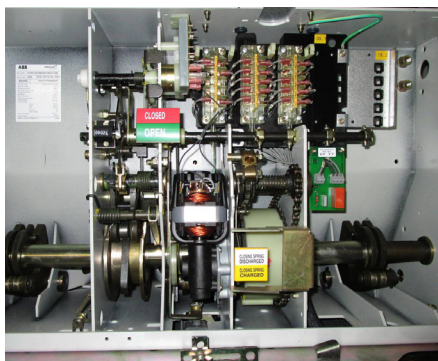
Auxiliary switches board for the ISM (VCB15\_LD8 has 2 slots for auxiliary switches boards. Each auxiliary switches board has 3NO+3NC contacts installed)

•

✓

- ✓ - Accessory or spare part is installed or included in the delivery.  
• - Accessory or spare part is applicable for the circuit breaker.

## Actuating mechanisms comparison



### Spring charge motor mechanism

Many prone to failure rotating parts

Slow opening /closing time

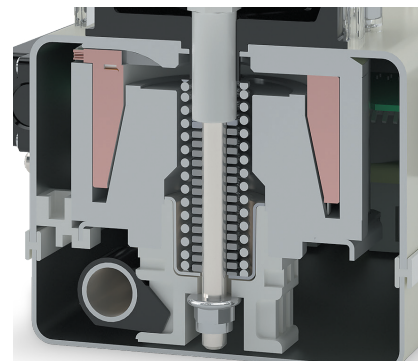
Need for several auxiliary supply circuits

High auxiliary power consumption during operation

Need for additional TCS relay for monitoring

Extensive maintenance requirements

Obsolete technology! **X**



### Linear motor

No rotating parts

Fast opening / closing time

Only one auxiliary supply circuit to control module

Low auxiliary power consumption during operation

Built in self-supervision system

No maintenance requirements

Superior technology! **✓**

## Certificates

One of the key advantages of all Tavrída Electric equipment is quality and reliability, ensured by rigorous internal testing and type tests in independent international test laboratories. The VCB15\_LD1 series has been tested in the world-renowned KEMA test-laboratories in the Netherlands and VCB15\_LD8 in Institutos Lactec 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



**Relatório**  
EAL/EM - 12812/2019

Página 1 de 34  
Emissão: 18/12/2019

**TEST REPORT**

**CESI**

**TEST REPORT**

APPROVED: B2023637

Client: AS Tavrída Electric Export

Address of the client: Vuuse 14, 11415 Tallinn - Estonia

Manufacturer: AS Tavrída Electric Export

Tested sample/items: Metal enclosed switchgear and controlgear 17,5kV-1250A-31,5kA-5000Hz type "SG15\_MLE" fitted with a three-pole medium voltage vacuum circuit-breaker in withdrawable version type "VCB15\_Switch"

Tests carried out: Dielectric tests on main circuits: - Lightning impulse voltage tests (dry) - Power-frequency voltage tests (dry) Dielectric tests on auxiliary and control circuits

Standards/specifications: IEC 62271-200 (2011-10) IEC 62271-1 (2011-08)

Tests date: from July 17, 2012 to August 1, 2012

The results reported in this document relate only to the tested sample/items. Partial reproduction of this document is permitted only with the written permission from CESI.

No. of pages: 21 No. of pages annexed: 2

Issue date: October 26, 2012

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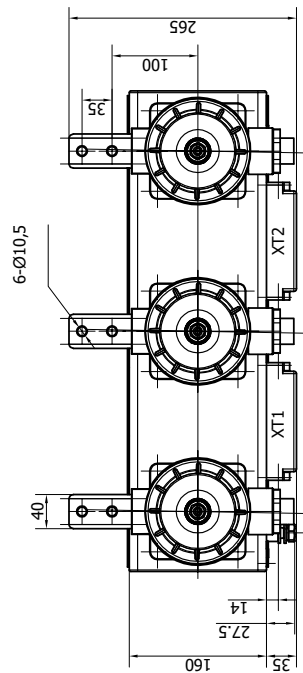
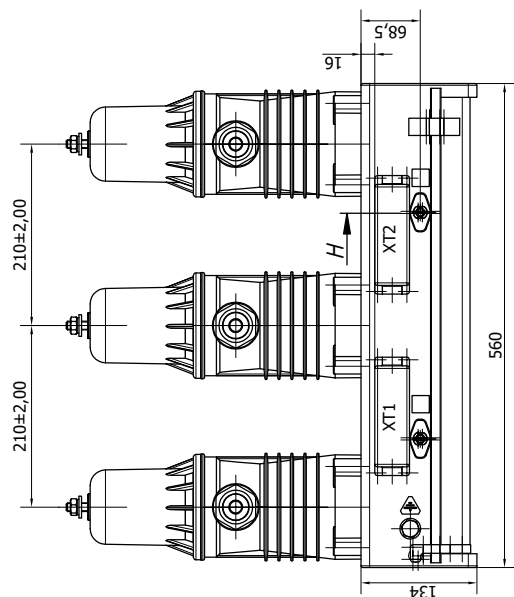
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Capital registered in the Italian Register of Companies  
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R.I. 018/0180000  
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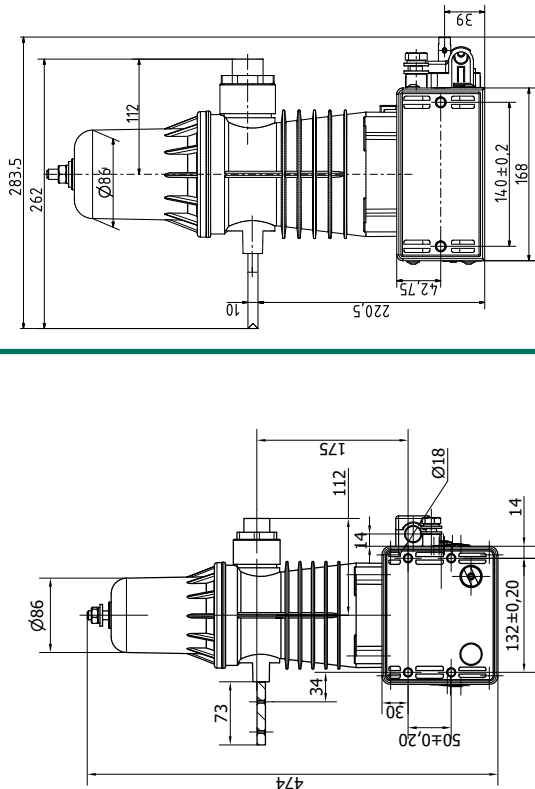
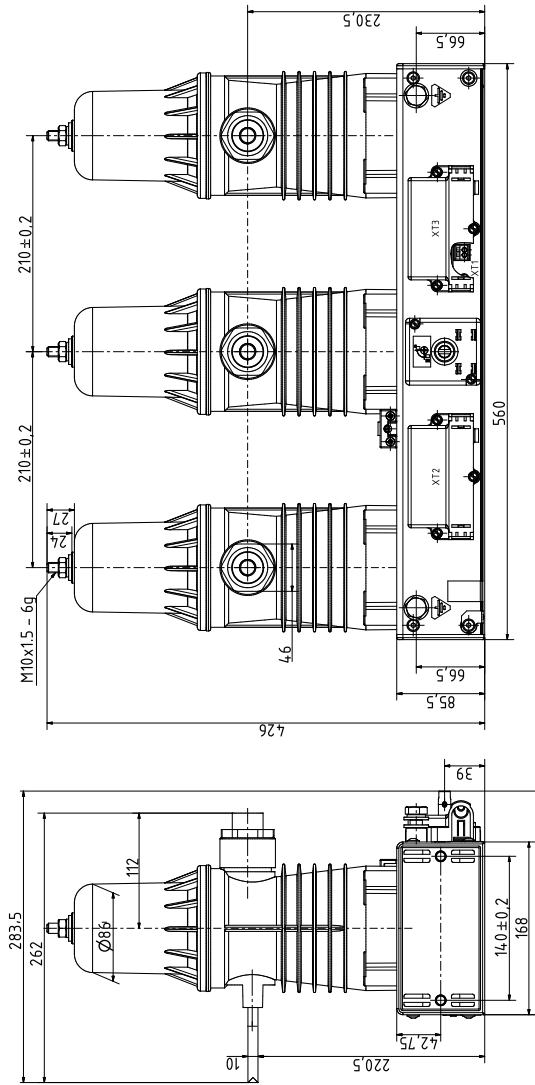
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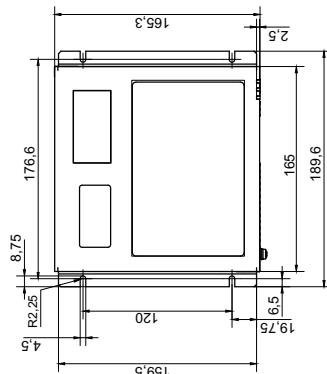
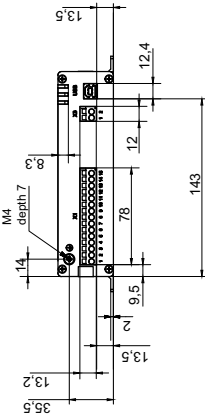
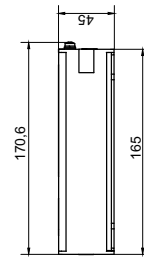
VCB15\_LD1



VCB15\_LD8



Control module CM16



Basic Operating Parameters

PARAMETER	VCB15_LD8	VCB15_LD1
Rated voltage (Ur)	17.5 kV	17.5 kV
Rated normal current (Ir)	800 A	800 A
Rated power frequency withstand voltage (Ud)	38 (42) kV*	38 (42) kV*
Rated lightning impulse withstand voltage (peak) (Up)	95 kV	95 kV
Rated short-circuit breaking current (Isc)	20 kA	20 kA
Resistance of main circuit	≤ 40 μOhm	≤ 40 μOhm
Rated frequency (fr)	60 Hz	60 Hz
Mechanical life (CO-cycles)	> 50,000	30,000
Operating cycles, rated breaking current (CO-cycles)	100	100
Closing time	≤ 70 ms**	≤ 70 ms
Opening time	≤ 35 ms**	≤ 35 ms
Break time	≤ 45 ms**	≤ 45 ms
Closing/Opening time accuracy	+/- 1.5 ms	+/- 1.5 ms
Weight	26 kg	36 kg
Temperature range	-25 °C ... +55 °C	-25 °C ... +55 °C
Number of available auxiliary contacts	1-3 bistable configurable by software or 3 NO + 3 NC or 6 NO + 6 NC	1-3 bistable configurable by software or 1 NO + 1 NC or 6 NO + 6 NC
Rated auxiliary supply voltage	24V to 60V DC or 110V to 220V AC/DC	

\* Value in brackets - tested in accordance with GB1984-2003  
\*\* Special configuration available with opening times of 13 ms, closing times of 35 ms and breaking time of 23 ms.

All three-phase ISMs have secondary connectors as shown below on the example of the ISM15\_LD\_8, only one 2-wire cable is needed to be connected to the ISM.

