

A STEVO Electric product

# DC CURRENT GENERATOR

## BALTO 3.000A - 30.000A

30.000 A

**BALTO**



**STEVO** Electric bvba

International patent pending

Photographic archive: Tommy Ravache - [www.I2527.be](http://www.I2527.be)

## Challenge

The problems emerging during the tests of DC high speed circuit-breakers frequently worry the services of maintenance of the owners of railway networks, especially when it comes to carry out controls or adjustments of threshold Ids and to compare the results of the tests obtained with the adjustments and graphs established by the manufacturers.

STEVO Electric brings the solution to all this concern. After having acquired experience with its system BALTO 6.000A - available on the worldwide market since 2003, STEVO Electric developed an innovative mobile BALTO system useable up to 30.000A which helps the manufacturers and users of DC high speed circuit-breakers.

## General information



The BALTO System was developed to generate very high and precise DC test currents in order to carry out functional tests on DC high speed circuit-breakers. These very high currents are injected in the main circuit of DC high speed circuit-breakers. Moreover, the whole circuit can be controlled, namely the current converters, the elements of measurement and the protection relays.

## Construction

To fulfill the requirements of current market trends, the innovative system BALTO was subject to specifications worked out on the basis of requests from DC high speed circuit-breakers' manufacturers and from various railway networks managers and users. The BALTO system consists:

- Control Unit – Operator Terminal
- Power Unit(s): 3.000A each
- Cart supporting batteries, ultra-caps and batteries charger.
- Connection, by cable or for specific implementations by a system of suitable set of bars

The system is modular and extensible; a full BALTO system supports up to 15.000A

Under a Master/Slave configuration 30.000A can be reached.

All the modules are portable, as for the carriage of support it is transportable. Concerning the assembly of system BALTO, connections as well as settings are realized quickly and are autodidactic.

Non cumbersome and easy transport.

Moreover, in order to be able to test DC high speed circuit-breakers on rolling stock with more convenience, a specific downsized version will be available in the near future. This reduced version has the same characteristics, but is limited to 3.000A.

## Innovations

- Ergonomic handling.
- Source from batteries, buffer thru ultra-caps
- Power units: DC/DC current converters
- Current rising slope according to IEC norms
- Parameters of the break current adjustable.

## Communication

- USB Interface
- Ethernet RJ45 Interface

## Options

- BALTO Win –Communication software for PC serie CX5000 BECKHOFF Remote control, test reports. Ethernet Communication



- Ease: portable with trolley.
- Possibility of specific connection study for all kind of high speed circuit breakers, either pluggable or not

## Safety

During the development of the BALTO system a particular care was taken to the aspects of safety, health and the environment. Automated monitoring of the system and guard of the temperature of the ultra-caps.

## Remark

Special executions could be realized according to the technical possibilities upon request.

## BALTO system features

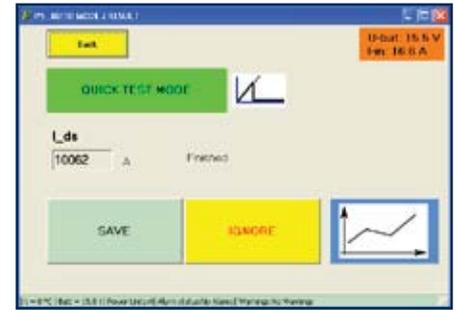
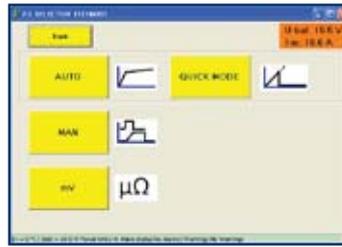
- Automatic recognition of the Power units
- Auto diagnostic – Control and calibrate of current measurement per Power unit.
- Current increase management.
- Accurate display of measurements. .



## Test Modes

- Automatic mode with quick test.
- Manual mode.
- Voltage drop measure.

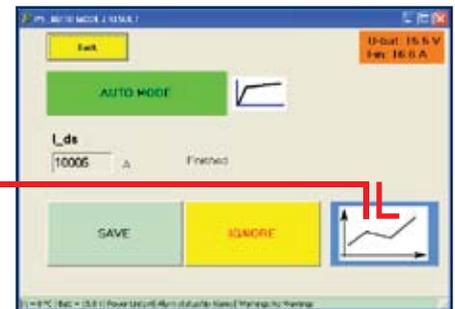
Selection test modes ➤



## Quick test/ automatic mode

- Quick test to determine  $I_{ds}$ .
- Automatic test with current increase slope according to IEC norms

Graphical display of measurement results ➤



## Manual Mode

- Measure of the DC high speed circuit-breakers opening time.
- Test of the DC protection
- Calibration of the measure circuit



## Voltage drop measure

- Voltage drop measure according to the DC high speed circuit-breakers manufacturer's procedure.



## Applications

The BALTO System was developed for specific applications in the railway field, namely:

- Tests of DC high speed circuit-breakers for sub-stations and their protections.
- Tests of DC high speed circuit-breakers in locomotives, train sets, subways, undergrounds and tramways.
- Tests of electromagnetic contactors (control and main) in tramways and trolleybuses.

Moreover the BALTO system can be used for other applications where very high currents are required.

## DC CURRENT GENERATOR BALTO 3.000A up to 30.000A

### TECHNICAL DATA

<b>Power supply BALTO</b>	Auxiliary supply - mains 220VAC – 240VAC
<b>Power supply voltage</b>	Batteries & ULTRA-caps 12VDC – 15,7VDC
<b>Available ranges</b>	System 3.000A - 15.000A per 3.000A unit System master/slave 18.000A - 30.000A per 3.000A unit
<b>Control Unit</b>	Offers the following features: <ul style="list-style-type: none"> <li>➤ Operator Terminal – Operation, control and management</li> <li>➤ Communication interfaces</li> <li>➤ Auxiliary supplies</li> </ul> Weight: 16,4Kg Dimensions: 50x48x23
<b>Power units</b>	Current Converter DC/DC 3.000A Weight per unit: 24,5Kg Dimension: 70x43x16
<b>Cart</b>	For each system up to 15.000A Equipment for <ul style="list-style-type: none"> <li>➤ Control unit</li> <li>➤ Power units 3.000A – 15.000A</li> <li>➤ Batteries &amp; charger - disposition according the power range</li> <li>➤ Ultra-caps - disposition according the power range</li> </ul> Weight: 55Kg – 110Kg - Depending on the disposition in according the used power Dimensions: 110x70x75
<b>Downsized version 3.000A</b>	To be determined
<b>Output characteristics</b>	Output voltage: 3,6VDC – 4,71VDC Output current: 3.000A – 15.000A
<b>Measures characteristics</b>	Measure of the effective trip current $I_{ds}$ Measure of the opening time Measure of the voltage drop
<b>Connections</b>	Power supply cable: standard Output connections: <ul style="list-style-type: none"> <li>➤ Up to 9.000A: 240mm<sup>2</sup> flex cables – 2m two cables per unit.</li> <li>➤ From 12.000A to 30.000A - Option: with busbar set or with cable set.</li> </ul> Remark: special fixture upon request as option. Earth cable: 16 mm <sup>2</sup>
<b>Applications</b>	Traction substation, workshops: locomotives, train sets, subways, undergrounds, tramways and trolleybuses.
<b>Working temperature</b>	0C° ... +55C°
<b>Stock temperature</b>	-25C° ... +65C°
<b>Humidity</b>	95% non condensing
<b>Protection</b>	IP22