

DC High Current Circuit Breaker Tester



- New Portable DC High Current Circuit Breaker
 Tester for testing DC High Speed Circuit Breakers
- Ergonomic compact design
- Power source from batteries, buffer through ultracaps
- Current Generator: DC/DC current converters
- Current rising slope according to IEC 61992-2 (Traction Power Substations) & IEC 60077-2 (Rolling Stock)
- Adjustable parameters of the Circuit Breaker Trip Current
- USB & Ethernet RJ45 Interfaces
- BALTO Win Communication software for PC
- Test Reports
- Bespoke connection for high speed circuit breakers
- Registered International Patents

DESCRIPTION

Railway operators involved in the service and maintenance of the railway network are challenged with testing DC high speed circuit breakers and in particular when it comes to the control and the adjustment of the threshold circuit breaker trip current, known as lds, and when comparing results to the circuit breaker OEM specification.

The solution is the Megger Balto Compact. Designed with the user in mind this innovative mobile Megger Balto system is useable for up to 4000A which meets the challenges of the manufacturers and users of DC high speed circuitbreakers.

The Megger Balto DC High Current Circuit Breaker Tester 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 and allow control of the entire circuit including the measurement elements, current converters and protection relays.

FEATURES

To meet the needs of the market, Megger provides the innovative Megger Balto Compact system based on the requirements of the DC high speed circuit-breakers' manufacturers and from various railway networks managers and users.

Special attention was given to the weight and size of this compact version which resulted in an ergonomic design and permits usage in small spaces.

The Megger Balto Compact is based on the Megger BALTO MODULAR which is scalable up to 40000A. However, it is not expandable and limited to a test current of max. 4000A Each Megger Balto Compact system consists of a....

- Control Unit
 - Operator terminal
 - Power supply batteries boosted by ultra-caps and a charger
- Current Generator the power source or power unit –
 1 unit only and limited to 4000A
- Cable Set Connection to the test piece

User safety is paramount and the Megger Balto Compact system provides the automated monitoring of the system and temperature guarding of the ultra-caps.

In addition the system also provides....

- Auto diagnostic Control and calibration of current measurement
- Current increase management
- Accurate display of measurements

www.megger.com 1



DC High Current Circuit Breaker Tester

The Megger Balto Compact system provides a number of Standard Test Modes....

Standard Test Modes

Automatic mode with quick test

- Quick test to determine approximate Circuit Breaker
 Trip Current Ids.
- Automatic test with current increase slope according to IEC 61992-2 (Traction Power Substations) & IEC 60077-2 (Rolling Stock) for accurate testing of Ids.
- Graphical display of measurement results.

Manual mode

- Measurement of the DC high speed circuit-breakers opening time
- Test of the DC protection
- Calibration of external devices

Voltage drop measurement

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

APPLICATIONS

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

- Tests of DC high speed circuit-breakers for substations 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.

The Megger Balto system can also be used for other applications where very high currents are required e.g. mining, steel factories, marine and solar.

SPECIFICATIONS

Power supply

Mains input: 120VAC 60Hz

230VAC 50Hz

Power consumption 120VAC 60Hz - 7.20A

230VAC 50Hz - 3.50A

Power supply voltage Batteries & ULTRA-caps 12VDC

- 15.7VDC

Power cord CEE 7/7 Plug to IEC 60320

C13, 2m, 10A, 250VAC

Dimensions 700 x 730 x 510mm (30" x

24.7" x 20")

Weight 76.0kg (168lbs)

Max. No. of Current Generators 1 (not extensible.)

Max Current 4000A Duration of injection 2-5 sec

Accuracy of results 0.2%.....0.5%

Main Unit

Energy compartments

- Batteries and Ultra caps
- Charger: 1 20A/DC

Max. energy

- Approx. 1.5 kWh
- Output voltage
 - 15.7VDC

Control unit

Functionality

HMI (Human machine Interface) and CPU

Screen Type

TFT touchscreen
 Diagonal 14.5cm (5.7")

 Resolution 640 x 480 pixels

Software

Primary injection testing and calibration.

Optional

Secondary injection testing.

On-screen keyboard

QWERTY, AZERTY

Reporting

• PDF (standard), CVS (standard), XLS (optional).

Communication

Ethernet 100 base-Tx and USB 2.0

www.megger.com



DC High Current Circuit Breaker Tester

Emergency stop

Stops all injections immediately.

Interfaces languages

 English, French, Dutch, German, Spanish, Italian, Chinese, Czech.

Dimensions

• 700 x 660 x 270mm (30" x 26" x 10.6")

Weight

48.0kg (106lbs)

Optional

Module for secondary injection.

Secondary injection

Outputs

voltage outputs : -60mV/+60mV...-10V/+10V

current outputs: -20mA...+20mA and +4mA...+20mA

Inputs

Trip contact DC protection Relay

Trip contact (spare)

Curves

Standard

User defined

Emergency Stop Device

■ Disconnects power units from energy compartment

Current Generator

■ Maximum output voltage

4.7VDC

Maximum current

4000A

Dimensions

• 700 x 660 x 145mm (30" x 26" x 5.7")

Weight

28.0kg (62lbs)

Measures characteristics

Measure of the effective trip current Ids

Measure of the mechanical reaction time - opening time

Measure of the voltage drop

Environment

Application area: This test equipment is destined for applications in substations, electrical areas and industrial environments.

According harmonized document EC directive 2006/42/EEC

LVD: EN-IEC 61010-1:2010

EMC: 2004/108/EEC (EC EN61326-

1:2013)

Connections

Power supply cable: Standard

Output connections:

 High current flex cables, BALTO Compact Cable Set 1 - Power Supply Cables 4000A; Power supply cable set - 240 mm²; Length 2m Flex Conn Single

• Earth cable: 16 mm2

Operating temperature $0 \text{ C}^{\circ} \dots +55 \text{ C}^{\circ} / 32 \text{ F}^{\circ} \dots +131 \text{ F}^{\circ}$ Storage temperature $-20 \text{ C}^{\circ} \dots +65 \text{ C}^{\circ} / -13 \text{ F}^{\circ} \dots +149 \text{ F}^{\circ}$ Humidity5% - 95% non-condensing

Railway Standards/Railway applications/Fixed installations - DC switchgear

IEC 61992-1 Ed.2 - Part 1 IEC 61992-2 Ed.2 - Part 2

Railway applications/Electric equipment for rolling stock

IEC 60077-1 Part 1 IEC 60077-2 Part 2

Ingress Protection Rating IP20

Altitude 2000m

Communication Ethernet 100 base-TX and

USB 2.0

Emergency stop Stops all injections immediately

Interfaces languages English, French, Dutch,

German, Spanish, Italian,

Chinese, Czech

Optional: Module for secondary injection

- Protective Relay Test

www.megger.com 3

DC High Current Circuit Breaker Tester

Megger Balto Compact 4000

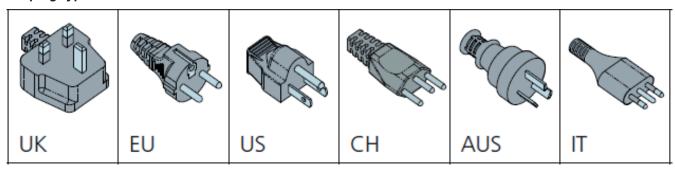
(Includes - Megger Balto Compact & 2m cables - excl. BALTO Win):

ORDERING INFORMATION

BALTO Compact 4000 1013-636

BALTO COMPACT 4000 - BALTO Controller, BALTO Battery Pack 4000A, BALTO Compact Cable Set 1 – Standard Cable; Length 2m Flex Conn Single, Protection Relay Test available with Licence Key (purchased separately) - excl. BALTO Win

Important - Select Region for country specific power cord – All Balto Compact products include the EU plug type as standard.



Region	Description	Part Number
UK	Power Cords with UK Plug BS1363	25970-028
US	Power Cords with US Plug NEMA 15-5P	25970-002
СН	Power Cords with Switzerland Plug SEV1011	2005-700
CN/AUS	Power Cords with China/Australia Plug AS3112	25970-031
IT	Power Cords with Italy Plug CEI23-16	2005-809

Accessories:

BALTO Protection Relay Test Software License	1013-658
Licence Key to activate the Protection Relay Test Software	

BALTO Compact Cable set 1 - Standard Cable	
BALTO Compact Cable Set 1 - Power Supply Cables 4000A; Power supply cable set - 240 mm²; Length 2m Flex Conn Single	

BALTO Extension cable set 1

BALTO Modular and Compact Extension Cable Set 1 - Power Supply Cables 4000A; Power supply cable set - 2 x 240 mm²; Length 1m

Important note: the maximum current a BALTO Compact Current Generator can generate may decrease when extending the standard 2m cables

Description	Part number
BALTO Win Software	1013-654
BALTO Breaker Clamp	1013-655
BALTO Calibration tool	1013-656
BALTO 1 year extra warranty	1013-657

SALES OFFICE

Megger Limited Archcliffe Road Dover CT17 9EN England T +44 (0) 1304 502101 E UKsales@megger.com BALTO COMPACT 4000_DS_en_V01

www.megger.com
ISO 9001



