BATTERY SIMULATOR

CBX

USER'S MANUAL

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1. INTRODUCTION

Before starting to use your CBX Battery Simulator, please take the time to read these instructions carefully.

The owner's manual is an important part of the equipment. It's recommended to keep it in good condition for the lifetime of the equipment. It should be kept in a dry and clean place, always available to the users.

To indicate important instructions, the following pictures are used:

"Caution: " ***This operation can be dangerous for the user.***

"Attention: " ***This operation is important for the good working of the equipment.***

Inside the equipment, this picture is placed near devices under main supply.

The equipment is marked with a technical label, reporting the following data:

- **CE mark;**
- **Model;**
- **Serial number;**
- **Weight;**
- **Input voltage;**
- **Maximum input current (A);**
- **Maximum input voltage (V);**

RESPONSIBILITY DISCLAIMER

The manufacturer of the BDX battery discharger/analyzer will not be responsible for damages and/or injuries caused by the equipment in these situations:

- **The equipment is not used properly by a qualified electrician;**
- **Maintenance operations are not done by a qualified electrician;**
- **The equipment is not used according to the instructions included in this manual;**
- **The equipment is not connected to the correct input supply (see data label on the box);**
- **The battery is damaged during the test;**
- **The equipment has been modified without the authorization of the manufacturer;**
- **Non-original spare parts are used in the equipment;**
- **Wrong spare parts are used in the equipment.**

2. SAFETY INSTRUCTIONS AND WARNINGS

Before starting to use your BDX battery discharger/analyzer, please take the time to read these instructions carefully.

GENERAL

Battery discharging units like the BDX can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.
Safe practices must be learned through study and training before using this equipment.
Only qualified personnel should install, use, or service this equipment.

SHOCK PREVENTION

Bare conductors, or terminals in the circuit, or ungrounded, electrically-live equipments can fatally shock a person. To protect against shock, have competent electrician verify that the equipment is adequately grounded and learn what terminals and parts are electrically HOT.

The body's electrical resistance is decreased when wet, permitting dangerous current to flow through the body. Do not work in damp area without being extremely careful. Stand on dry rubber mat or dry wood and use insulating gloves when dampness or sweat cannot be avoided. Keep clothing dry.

INSTALLATION AND GROUNDING - A power disconnect switch must be located at the equipment. Check the data label for voltage and phase requirements. If only 3-phase power is available, connect single-phase equipment to ONLY TWO WIRES of the 3-phase line.
DO NOT CONNECT the equipment grounding conductor to the third live wire of the 3-phase line as this makes the equipment frame electrically HOT, which can cause a fatal shock.
If a grounding conductor is part of the power supply cable, be sure to connect it to a properly grounded switch box or building ground. If not part of the supply cable, use a separate grounding conductor. Don't remove a ground prong from any plug. Use correct mating receptacles. Check ground for electrical continuity before using equipment. The grounding conductor must be of a size equal to or larger than the size of the line conductors.

DISCHARGING LEADS – Inspect leads often for damage to the insulation. Replace or repair cracked or worn leads immediately. Use leads having sufficient capacity to carry the operating current without overheating.

BATTERY TERMINALS – Do not touch battery terminals while equipment is operating.

SERVICE AND MAINTENANCE – Shut OFF all power at the disconnect switch or line breaker BEFORE inspecting, adjusting, or servicing the equipment. Lock switch OPEN (or remove line fuses) so that the power cannot be turned ON accidentally.
Disconnect power to equipment if it is to be left unattended or out of service.
Disconnect battery from charger.
Measure voltage on capacitors and, if there is any voltage reading, wait 5 minutes before to proceed.
Keep insude parts clean and dry. Dirt and/or moisture can cause insulation failure. This failure can result in high voltage at the charger output.

BURN AND BODILY INJURY PREVENTION

The battery produces very high currents when short circuited, and will burn the skin severely if in contact with any metal conductor that is carrying this current.
Do not permit rings on fingers to come in contact with battery terminals or the cell connectors on top of the battery.
Battery acid is very corrosive. Alwais wear correct eye and body protection when near batteries.

FIRE AND EXPLOSION PREVENTION

When batteries are being charged, they generate hydrogen gas that is explosive in certain concentrations in air (the flammability or explosive limits are 4.1% to 72% hydrogen in air). The spark-retarding vents help slow the rate of release of hydrogen, but the escaping hydrogen may form an explosive atmosphere around the battery if ventilation is poor.

The ventilation system should be designed to provide an adequate amount of fresh air for the number of batteries being charged. This is essential to prevent an explosion.
Always keep sparks, flames, burning cigarettes, and other sources of ignition away from the battery recharging area. Do not break "live" circuits at the terminals of batteries. Do not lay tools or anything that is metallic on top of any battery.

ARCING AND BURNING OF CONNECTOR

To prevent arcing and burning of the connector contacts, be sure the discharger is OFF before connecting or disconnecting the battery. The ammeter should NOT indicate current flow.

MEDICAL AND FIRST AID TREATMENT

First aid facilities and a qualified first aid person should be available for each shift for immediate treatment of electrical shock victims.
EMERGENCY FIRST AID: Call phisician and ambulance immediately and use First Aid techniques recommended by the American Red Cross.

DANGER: ELECTRICAL SHOCK CAN BE FATAL.
If person is unconscious and electric shock is suspected, do not touch person if he or she is in contact with charging equipment, battery, charging leads, or other live electrical parts. Disconnect power at wall switch and then use First Aid.
Dry wood, wooden broom, and other insulating material can be used to move cables, if necessary, away from person.
IF BREATHING IS DIFFICULT, give oxygen.
IF NOT BREATHING, BEGIN ARTIFICIAL BREATHING, such as mouth-to-mouth.
IF PULSE IS ABSENT, BEGIN ARTIFICIAL CIRCULATION, such as external heart massage.

In case of acid in the eyes, flush very well with clean water and obtain professional medical attention immediately.

EQUIPMENT WARNING LABELS

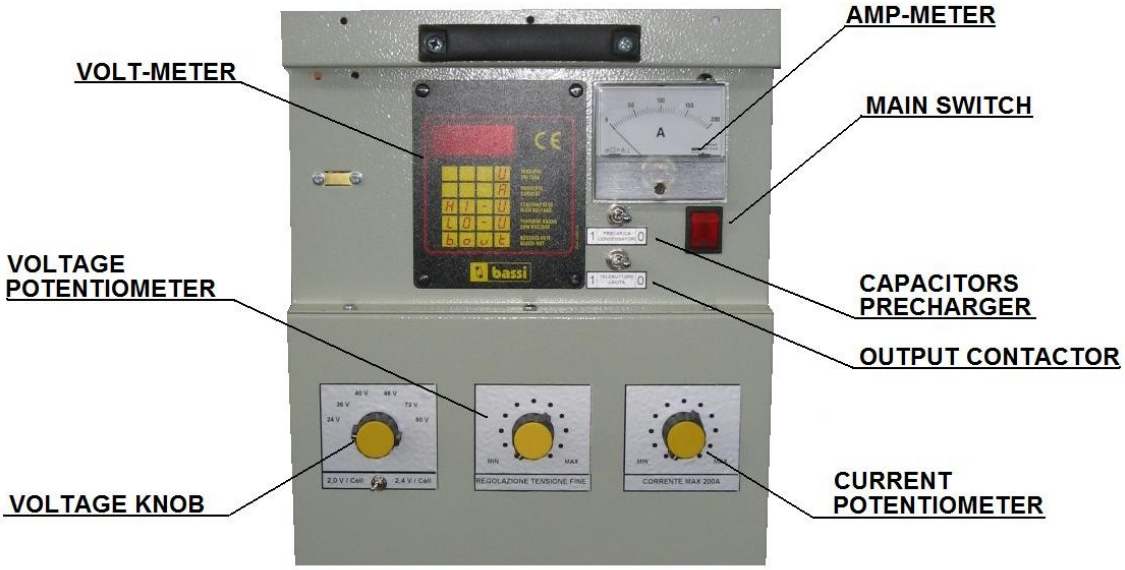
Inspect all precautionary labels on the equipment.

3. DESCRIPTION

The CBX battery simulator have been designed to simulate the batteries of any type, voltage and capacity.
It can be use to test battery charger and other general purpose power supply or to discharge battery of any type with voltage higher than 24V.

The CBX can operate at constant current or constant voltage.

CONTROL PANEL



SEQUENCE OF OPERATION

The CBX can operate as electronic load or battery discharger.

Electronic Load

***) set in position '0' the two selectors 'Capacitor Precharger' and 'Output Contactor'.**
***) turn on the CBX using the main switch,**
The display turns on and shows 0V.
***) select the voltage of the battery that need to be simulated using the voltage knob,**
***) select the volt/cell using the selector under the voltage knob,**
***) set maximum input current using the current potentiometer,**

The maximum input current must be higher than the maxim output current of the charger or power supply that have to be tested

***) set in position '1' the selector 'Capacitor Precharger',**

***) The input voltage of the CBX rises to the value selected,**
With the voltage potentiometer it's possible to adjust the input voltage to the desired value.
***) connect device that have to be tested,**
***) set in position '1' the selector 'Output Contactor' to connect the device to the CBX.**

Battery Discharger

***) set in position '0' the two selectors 'Capacitor Precharger' and 'Output Contactor',**
***) move the current potentiometer in position 0A,**
***) turn on the CBX using the main switch,**
The display turns on and shows 0V.
***) set the voltage knob in position 24V,**
***) set the selector under the voltage knob in position 2V/cell,**
***) connect the battery to the CBX,**
The display show the battery voltage,
***) set in position '1' the selector 'Output Contactor' to connect the CBX to the battery,**
***) select the discharger current moving the current potentiometer.**

The CBX can discharge only battery with voltage higher than 24V

ATTENTION: the CBX don't have a timer to stop the test automatically, so keep it under control during the use.

END OF TEST

***) move the current potentiometer in position 0A,**
***) set in position '0' the two selectors 'Capacitor Precharger' and 'Output Contactor',**
***) turn off the CBX using the main switch,**
***) disconnect the device tested.**

THERMAL PROTECTION

If the cooling system fails and/or the power electronic components of the BDX reach a temperature higher than a maximum value, the current is automatically set to ZERO until the temperature decreases below the limit.

Make sure that the ventilation ducts are not obstructed.

- END OF MANUAL -