

TSS

Battery Chargers

Cabinets S-A-B



USER'S MANUAL

V3.0 – May 2014

www.energicplus.com

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1. SAFETY INSTRUCTIONS AND WARNINGS

Before to start using your *Energic Plus* battery charger, please take the time to read these instructions carefully.

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

To indicate important instructions, the following blocks are used throughout this manual.

CAUTION!

This operation can be dangerous for the user.

ATTENTION!

This operation is important for the functionality and reliability of the charger.

GENERAL

Battery charging products 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 output 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.

CHARGING 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. Don't replace the original cables with longer cables.

Don't use additional cables to lengthen the original connections.

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. Keep inside 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. Always wear correct eye and body protection when near batteries.

FIRE AND EXPLOSION PREVENTION

When batteries are being recharged, 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 charger 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 physician 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.

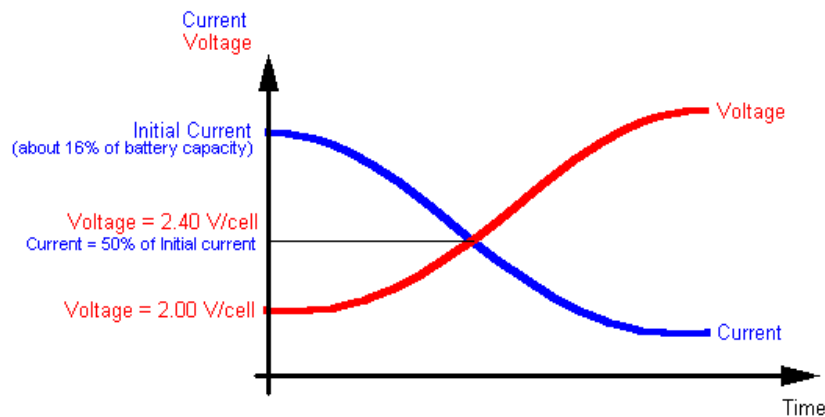
2. DESCRIPTION OF THE CHARGER

Energic Plus TSS battery chargers have been designed to charge Pb batteries. These units convert the AC main supply in a DC output at the correct voltage, in order to charge the battery cells.



The microprocessor controlled electronic card is used to monitor the state of the charge, and automatically turn the charger off when the battery is fully charged.

The charge current follows the W_a curve, and the operation is fully automatic.



3. INSTALLATION OF THE CHARGER

Conditions of use:

- Operating temperature: 5°C to 45°C
- Storage temperature: -20°C to 60°C
- Relative humidity: less than 75%

CAUTION!

Risk of electrical shock!
The charger can be installed by qualified personnel only.

To prevent fire or shock hazard, do not expose the unit to rain or moisture.
Don't use the unit in presence of flammable gas, because it can generate sparks.

ATTENTION!

Make sure that the unit's maximum input power (reported on the data label) is available from your power supply, and verify that the unit's operating voltage is correct.
Allow adequate air circulation to prevent internal heat buildup.
Don't place the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.

AC INPUT CONNECTION AND VOLTAGE SETTINGS

ATTENTION!

The proper setting of the power transformer taps is fundamental for the correct operation of the charger.

If the real AC input voltage is different than the AC nominal voltage to which the charger is set, the charging current of the charger may be significantly different than the nominal.

The charger must be connected to the AC input using an adequate cable and plug, with disconnect switch and fuses.

- Find the POWER TRANSFORMER TAPS and the label with the list of the NOMINAL voltages available.

POSITION	120 VAC INPUT	240 VAC INPUT
1	130 VAC	250 VAC
2	125 VAC	240 VAC
3	120 VAC	224 VAC
4	115 VAC	208 VAC
5	110 VAC	200 VAC

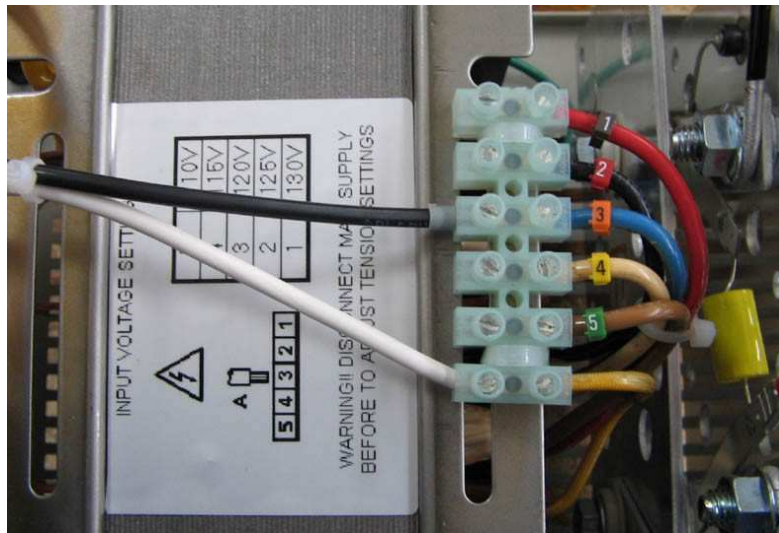
- Using an adequate AC-voltmeter, measure the value of the REAL AC input voltage available at the mounting location of the charger.
- Identify which of the 5 NOMINAL voltage values is closest to the REAL measured value.

Example 1: for a charger with 120 VAC nominal input voltage, if the measured voltage is 118 VAC, the transformer should be connected to the tap that corresponds to 120 VAC.

Example 2: for a charger with 240 VAC nominal input voltage, if the measured voltage is 210 VAC, the transformer should be connected to the tap that corresponds to 208 VAC.

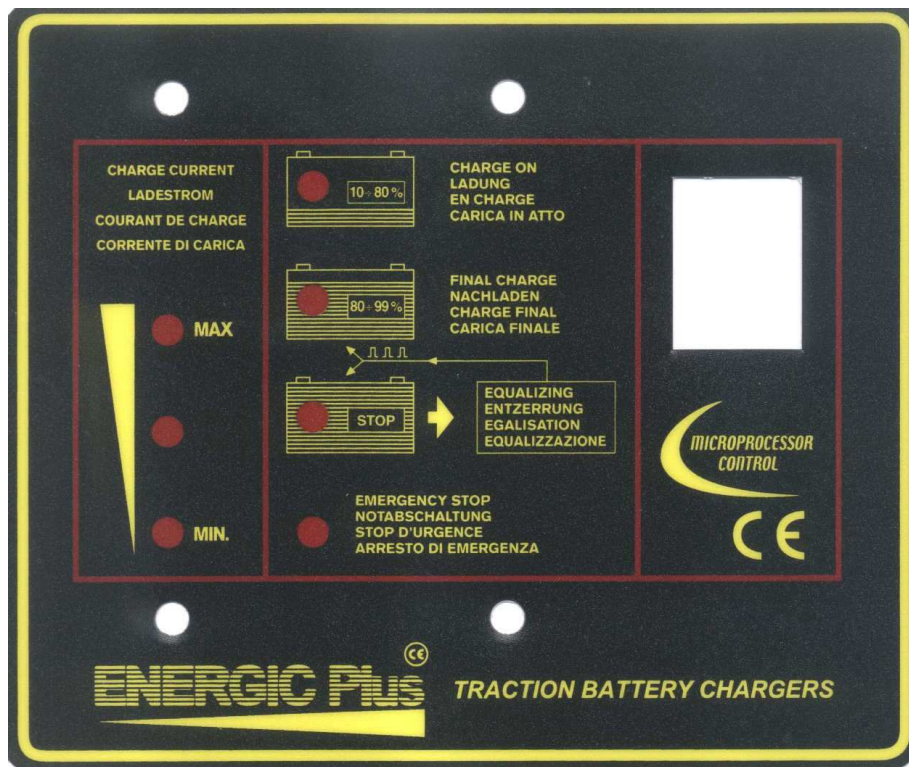
- In the smaller units (with a single primary winding), it's sufficient to move the transformer wire marked with the letter "A" to the correspondent terminal block.
- In the bigger units (with two primary windings), the wires to be moved may be one or two, both marked with the letter "A".
- Tighten the terminal block screw with the right torque, and pull the wire in order to make sure that it's properly mounted.

Example: TSS with 120VAC nominal input voltage



Move BLACK wire to the terminal block correspondent to the measured AC INPUT voltage

4. HOW TO USE THE CHARGER



HOW TO CONNECT THE BATTERY

- Check that all the LEDs of the charger are OFF.
If one or more LEDs are on, push the STOP button.

- Connect the charger to the battery.
When the battery is correctly connected, the first LED “CHARGE ON” lights on.

CHARGE OPERATION

When the battery is connected, the charger turns on automatically in 5 seconds and the LED “CHARGE ON” starts to flash. If the main supply is not present, all the control LEDs (except the “BATTERY CONNECTION” LED) starts to flash alternately.

At the beginning of the charge, check that the LED “CHARGE ON” is flashing at frequency of about 1 second. This control is useful to make sure that the electronic control is working correctly.

ATTENTION!

Energic Plus TSS chargers are programmed to do a complete cycle of charge automatically, however it's recommended to survey the operation when the battery remains connected to the charger for more than 12 hours (example: week-ends)

- The maximum time allowed to reach the gassing voltage is 12 hours. If the battery doesn't reach the gassing voltage within 12 hours the charger stops and the LED “EMERGENCY STOP” lights on and the EQUALIZATION is excluded.
- When the battery reaches the gassing voltage, the LED “FINAL CHARGE” starts to flash, together with the LED “CHARGE ON”, and the charge continues for 3 hours.
- If the battery is disconnected, the charger turns off in 3 seconds and the charge process is completely reset.
- When a battery is re-connected, the charger turns on automatically and the charge starts from the beginning.
- If, during the charge or equalization, there are one or more black-outs of the mains, the microprocessor keeps in memory the state of the charge and, when the power supply is available again, the charge re-starts from the exact point of interruption.
- When the charge is complete, the charger goes in stand-by mode for 15hours 30minutes, before to proceed with the equalization, therefore the equalization will be executed only when the charger remains connected for more than 24hours (normally in the weekend).
- The equalization consists in 4 small charge cycles (30 minutes long), with 15hours and 30 minutes of interval between each cycle. During extra charge cycles the LEDs “ FINAL CHARGE” and “STOP-100%” flash alternately.

END OF THE CHARGE

When the battery is completely charged the charger is turned off and the LED “STOP – 100%” continues to flash.

CAUTION!

**NEVER disconnect the battery while it's being charged.
Disconnecting the battery while it's being charged is hazardous
for the user and voids the charger warranty.**

5. TROUBLE SHOOTING

- When a battery is connected, the LED "CHARGE ON" does NOT turn on and the charger does not start:
 - Verify that the charger and the battery are connected properly;
 - Verify the output fuse;
 - Verify output cables and connectors of the charger and the battery;
 - Contact the manufacturer;
- When a battery is connected, the LED "CHARGE ON" is not turned on:
 - The main supply may be absent;
 - Verify that the power available on the main supply is sufficient for the charger;
 - Verify fuses of the main supply;
 - Contact the manufacturer;
- Charge current is too high:
 - Check the battery cells for short circuits;
 - The main supply voltage is too high, and then it's necessary to reset the charger. See chapter 4;
 - If the battery is old, it's voltage increases slowly, and this can cause a high final charge current. Keep the battery under supervision against overheats during the charge;
 - Contact the manufacturer;
- Charge current is too low:

- The main supply voltage is too low, and then it's necessary to reset the charger. See chapter 4;
- Contact the manufacturer;
- The LED "ERROR" is turned on:
 - The last charge cycle has been too long, and the electronic control stopped the charger to avoid overheating and/or damaging the battery;
 - Contact the manufacturer;

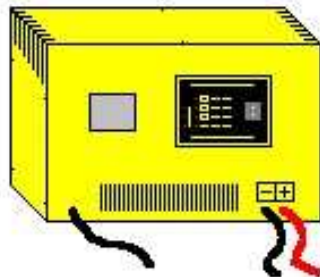
6. DIMENSIONS TABLE



BOX S

25 x 20 x 32(h) cm

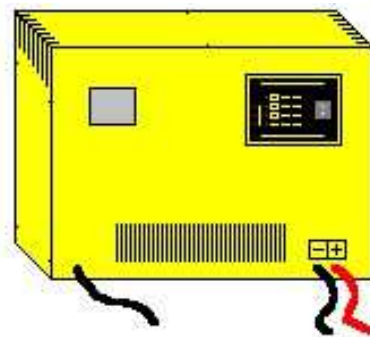
10 – 25 Kg



BOX A

43 x 29 x 27(h) cm

10 – 30 Kg



BOX B

50 x 34 x 36(h) cm

25 – 45 Kg

BOX TABLE:

MODEL	BOX
12/10	S
12/15	S
12/20	S
12/25	S
12/30	S
12/40	S
24/10	S
24/15	S
24/20	S
24/25	S
48/10	S

MODEL	BOX
12/50	A
12/60	A
24/30	A
24/40	A
24/50	A
24/60	A
36/30	A
36/40	A
48/15	A
48/30	A

MODEL	BOX
12/80	B
12/100	B
24/80	B
24/100	B
36/50	B
36/60	B
36/80	B
40/50	B
40/60	B
48/40	B
48/50	B
48/60	B