

GECI™ ORANGE DIAMOND CHARGER

PORTABLE MULTI-VOLTAGE PLUG-IN CHARGER SYSTEM

USER'S MANUAL

SAFETY INSTRUCTIONS AND WARNING:

Before to start using your IBCI MV50 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.



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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.

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 sparkretarding 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.<<<

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.

GECI™ ORANGE MV25-MV50 CHARGER DESCRIPTION

IBCI MV50 battery chargers have been designed to charge Lead-Acid batteries.

These units are based on a ferroresonant power transformer, with different charging curves:

IBCI MV50: AC input 105/120 Vac - 15 A
Manually Selectable outputs, with Wa (decreasing current) curve:

- 12V-50A
- 24V-50A
- 36V-35A
- 48V-25A

IBCI MV25CC: AC input 105/120 Vac - 15 A
Constant current output 25A
Output voltage range 6V-48V

IBCI MV50CC: AC input 200/250 Vac - 15 A
Constant current output 50A
Output voltage range 6V-48V

The operation of the IBCI MV50 chargers is managed by a digital, programmable control board of the last generation, which includes flat membrane keyboard and LCD display.

GECI™ ORANGE MV25-MV50 CHARGER INSTALLATION

CONDITIONS OF USE:

- Temperature (operation): from 5°C to 45°C
- Temperature (storage): from -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.

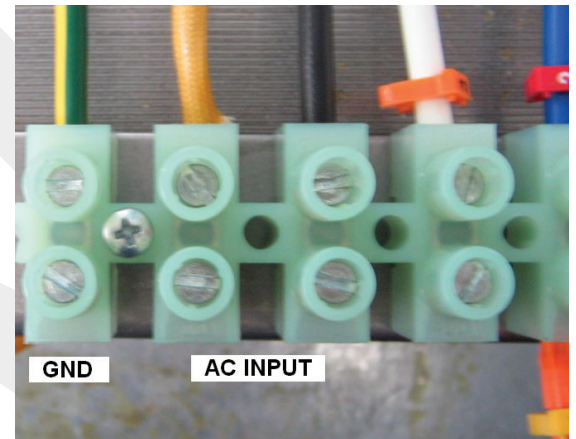
CONNECTION OF THE AC INPUT:

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

The AC input wires have to be connected to the **TERMINAL BLOCKS FOR AC INPUT CABLE**, that are located over the main transformer (see picture on the next page).

Make sure to tighten the terminal block screws with the right torque, and pull each wire separately in order to verify that they are mounted properly.

The model IBCI MV5025 is already equipped with the adequate cable and plug.



EM50

AC INPUT VOLTAGE SETTINGS:

>>>ATTENTION!<<<

The proper setting of the power transformer taps is fundamental for the correct operation of the IBCI MV50 chargers.

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.

With reference to the following pictures, find the **POWER TRANSFORMER TAPS** and the label with the list of the **NOMINAL** voltages available, that are located on the left side of the internal panel.

MV50 / MV25-CC

- 1 1x 120 VAC
- 2 1x 115 VAC
- 3 1x 110 VAC
- 4 1x 105 VAC

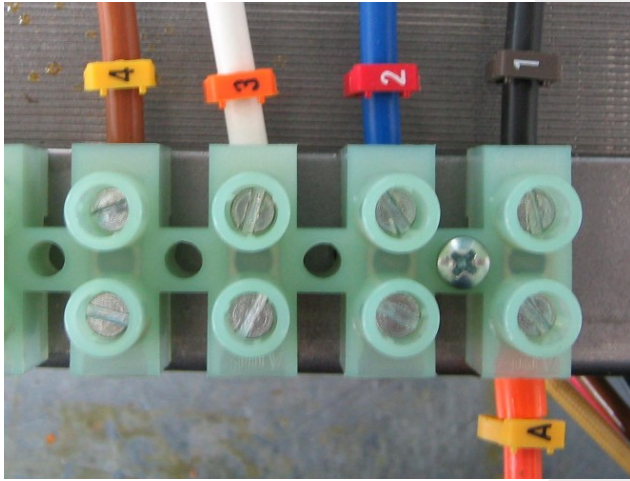
MV50-CC

- 1x 250 VAC
- 1x 240 VAC
- 1x 230 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 NOMINAL voltage values is closest to the REAL measured value.

Example: for a charger EM 25 if the measured voltage is 117 VAC, the transformer should be connected to the tap number 2, that corresponds to 115 VAC.




MV50, MV25-CC

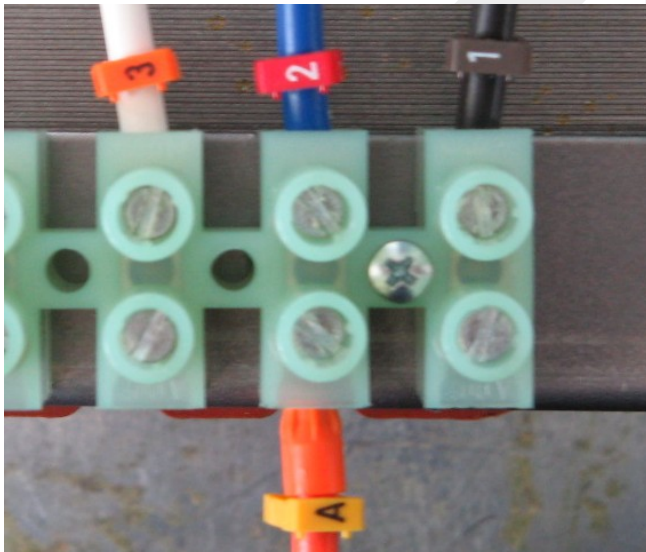
INPUT VOLTAGE SETTING

4	105V
3	110V
2	115V
1	120V





WARNING!! DISCONNECT MAIN SUPPLY BEFORE TO ADJUST TENSION SETTINGS




MV50-CC

INPUT VOLTAGE SETTING

3	230
2	240
1	250



WARNING!! DISCONNECT MAIN SUPPLY BEFORE TO ADJUST TENSION SETTINGS

GECI™ ORANGE MV25-MV50 CHARGER PROGRAMMING



GECI™ ORANGE MV25-MV50 CHARGER STARTUP SEQUENCE

- 1 Connect the Charger to AC input.
The display shows the message:

Charger Ready
No Battery

- 2 Connect a battery.
The display shows alternatively these messages for 10 seconds:

ANALYZING
THE BATTERY

PRESS ENTER TO
CHANGE PROGRAM

If the user does not press the button ENTER within this 10 seconds period, the charge begins automatically, and the charge parameters are set automatically, following these rules:

- The Ah limit will be the same that was programmed in the previous charge cycle.
The factory setting for this parameter is 2000 Ah.
- The Maximum time limit will be the same that was programmed in the previous charge cycle.
The factory setting for this parameter is 12 h.
- The Maximum voltage limit is calculated as the 140% of the measured battery voltage.

If the button ENTER is pressed during the 10 seconds, the display will visualize the measured battery voltage:
Where "xx.x" is the measured battery voltage.

Vbatt = xx.x V
Press any key

- 3 Press any key.
The display shows the message:

Set Charge Time
> 12 Hours <

By pushing the buttons + and -, set the desired charge time.

Min programmable time: 1 h.

Maximum programmable time: 96 h.

By pushing the button ENTER, the value is saved.

- 4 The display shows the message:

Set Ah Limit
> 2000 Ah <

By pushing the buttons + and -, set the desired Ah limit.

Min programmable capacity: 10Ah.

Maximum programmable capacity: 2000Ah.

By pushing the button ENTER, the value is saved.

- 5 The display shows the message:

Set VOLT Limit
> xx.x V <

By pushing the buttons + and -, set the maximum Voltage limit, with steps of 0,1 V.

Default value is 140% of the measured battery voltage.

Min programmable Voltage: Measured value +1V.

Maximum programmable Voltage: 70V.

By pushing the button ENTER, the value is saved.

6 The board shows the message:

By pushing the buttons + and -, the "arrow" moves between the two lines, and the selection is made by pushing ENTER.

If you select "REVIEW PROGRAM", the board goes back to the beginning of the programming sequence.

If you select "START CHARGE", the charge process begins.

```
> Start Charge
Review Program
```

CHARGE PROCESS

The board shows the message:

```
Starting
...
```

After 3 seconds, the charger begins, and the display shows:

```
Volts    Amps
Ah       Time
```

While the charge is in progress, the display continues to show the battery voltage (Volts), the charging current (Amps), the total capacity returned to the battery (Ah) and the charging time (hours and minutes).

END OF CHARGE

If the charge ends because the PROGRAMMED TIME is reached, the display shows the following messages:

```
CHARGE COMPLETE
Max Time Reached
```

...click Up or Down button, you can see charging info

```
Volts    Amps
Ah       Time
```

If the charge ends because the MAX PROGRAMMED CAPACITY is reached, the display shows the following messages (alternately):

```
Volts    LIMIT.AH
Ah       Time
```

If the charge ends because the MAXIMUM PROGRAMMED VOLTAGE is reached, the display shows the following messages (alternately):

```
Volts    LIM.VOLT
Ah       Time
```

MANUAL STOP

If, during the charge, any button is pressed, the display gives the message (for 5 seconds):

```
> Stop Charge
Modify Program
```

By pushing the buttons + and -, the "arrow" moves between the two lines, and the selection is made by pushing ENTER.

If you select "STOP CHARGE", the charge is stopped and the board gives the message:

```
CHARGE STOPPED
Press any key
```

If one button is pressed, the board goes to the beginning of the programming sequence.

If you select "MODIFY PROGRAM", the board allows to modify the 3 programmed parameters, without stopping the charge.

If you don't make a selection within 5 seconds, the charge continues and the display goes back to the normal visualization:

```
Volts    Amps
Ah       Time
```

OVERCURRENT PROTECTION

If, during the charge, the current exceeds a max value (programmable with password) for more than 5 seconds, the charge is stopped and the display shows these messages, alternately:

CURRENT
TOO HIGH

Volts ALARM
Ah Time

OR..

Volts MAX.CURR
Ah Time

In this case please you must CHECK VOLTAGE SETTINGS

UNDERCURRENT PROTECTION

If, during the charge, the current exceeds a min value (programmable with password) for more than 5 seconds, the charge is stopped and the display shows these messages, alternately:

Volts MIN.CURR
Ah Time

In this case please you must CHECK VOLTAGE SETTINGS

AC INPUT ERROR

If, during the charge, the current is ZERO for more than 5 seconds, the charge is stopped and the display shows these messages, alternately:

CHECK DC FUSE
AND AC INPUT

In this case please you must CHECK DC FUSE and AC INPUT and CHECK VOLTAGE SETTINGS

SHUTDOWN ON BATTERY DISCONNECTION

If the battery is disconnected while the charge is in progress, the IBCI MV50 charger will return automatically in stand-by mode.

>>>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.

PROGRAMMING MEMORY

The IBCI MV50 has a static memory that is used to save automatically the charge parameters programmed by the user.

This exclusive feature allows the user to program the desired charging parameters only the first time than a battery is connected.

The next time that the IBCI MV50 will be powered and a battery will be connected, all the parameters previously programmed by the user will be in memory, so the operation of the charger is always FULLY AUTOMATIC.





WARRANTY

GECI™ ORANGE DIAMOND MV25-MV50 CHARGER

Green Energy Concepts, Inc. (hereinafter called "GECI") warrants that each new and unused GECI battery charger, power supply or converter (hereinafter called "equipment") manufactured and supplied by it is of good workmanship and is free from any inherent mechanical defects, provided that (1) the product is installed and operated in accordance with generally accepted industrial standards and in accordance with the printed instructions of GECI, (2) the product is used under normal conditions for which designed, (3) the product is not subjected to misuse, negligence or accident, and (4) the product receives proper care, protection and maintenance under supervision of competent personnel. This warranty is subject to the following provisions:

1. PRODUCTS AND PARTS WARRANTED. Subject to the exceptions listed below each GECI equipment is warranted for a period of three (3) years from the date of its shipment, provided the charger is used in accordance with GECI's published performance rating or the unit involved. The Warranty covers parts, components and/or assemblies supplied completely free of charge but does not extend to labor, service, interventions and or any other costs whatsoever related to fixing defective chargers and/or parts. The conditions of this parts warranty are as follows:

- a. Primary switch contacts, fuses, bulbs and filters are not warranted unless found to be defective prior to use.
- b. Power transformers of 60Hz chargers are warranted for ten (10) years after GECI's shipment of the unit(s).
- c. The charger brand names that are warranted under this document are the Green, Red, Black and Orange Diamond.
- d. The Blue Diamond is handled separately and is not part of this warranty agreement.

2. COMMENCEMENT OF WARRANTY TIME PERIODS. The warranty periods shall commence on the date of shipment by GECI.

3. PERSONS COVERED BY WARRANTY. This warranty is extended by GECI only to the purchaser of new equipment from GECI or one of its authorized distributors. The products purchased under this agreement shall be used exclusively by the buyer and its employees and by no other persons, and therefore there shall be no third party beneficiary of this warranty.

4. LIMITATION OF REMEDY. The existence of claimed defects in any product covered by this warranty is subject to GECI's factory inspection and judgment. GECI liability is limited to repair of any defects found by GECI to exist or, at GECI's option, the replacement of the defective equipment, F.O.B. factory after the defective product has been returned by the purchaser at its expense to GECI's shipping place. Replacement and exchange parts will be warranted for the remainder of the original warranty or for a period of ninety (90) days, whichever is greater. GECI and its authorized distributors or dealers shall not be liable for direct or indirect, special or consequential damages in excess of such repair or replacement. In no event shall the purchaser be entitled to recover for contingent expenses resulting from, but not limited to, telephone calls, telegrams, travel expenses, lodging, duties and taxes, labor, rental or replacement equipment, loss of business or profits or other commercial losses.

5. USE OF DEFECTIVE PRODUCTS. Continued use of GECI equipment after discovery of a defect voids all warranties.

6. ALTERED EQUIPMENT. Except as authorized in writing, the warranty specified does not cover any equipment that has been altered by any party other than GECI.

EXCEPT AS STATED ABOVE, ALL OTHER WARRANTIES AND CONDITIONS, WHETHER EXPRESSED OR IMPLIED, INCLUDING IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED. BASSI NEITHER ASSUMES NOR AUTHORIZES ANY PERSONS TO ASSUME FOR BASSI ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OR USE OF THE GOODS SOLD, AND THERE ARE NO ORAL AGREEMENTS OR WARRANTIES COLLATERAL TO OR AFFECTING THIS WRITTEN WARRANTY.

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