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## GENERAL SAFETY RULES

### **! WARNING**

#### **READ AND UNDERSTAND ALL INSTRUCTIONS**

Failure to follow all instructions may result in electrical shock, fire, equipment damage, and/or serious personal injury.

#### **SAVE THESE INSTRUCTIONS**

## **OPERATOR'S MANUAL** **CHG-50™ Lithium Ion Battery Charger**

TO REDUCE THE RISK OF INJURY, YOU MUST READ THIS OPERATOR'S MANUAL AND COMPLY WITH ALL INSTRUCTIONS AND PROCEDURES DESCRIBED HEREIN.

**FAILURE TO DO SO MAY RESULT IN FIRE, PERSONAL INJURY, AND/OR OTHER DAMAGE.**

### **PATENTS AND PATENTS PENDING**

7,838,142 • 7,990,102 • 8,025,118 • 8,026,698  
8,084,154 • D601,088 • D632,649 • 20100197222  
20100248616 and others

This manual contains important safety and operating information for the Modtech Corp. CHG-50 24V *Lithium-Ion* battery charger. Before using the charger, read this operator's manual. Also, read and observe all information on the labels attached to the charger.

- 1. CAUTION! TO REDUCE THE RISK OF INJURY AND/OR EQUIPMENT DAMAGE, USE CHG-50 ONLY TO CHARGE MODTECH CORP. EM-100 LITHIUM ION BATTERY PACKS.** The use of other types of batteries or equipment may result in personal injury or equipment damage. Under no circumstances attempt to connect the charger to any power supplies or other equipment that is not specifically and expressly designated for use with this model charger.
- 2. AVOID DANGEROUS CONDITIONS AND ENVIRONMENTS.** Do not charge battery packs in damp or wet conditions. Avoid using the charger in direct exposure to rain or snow. Do not use the battery pack or charger in the presence of explosive gases or flammable materials because sparks will be generated whenever a battery pack is plugged or unplugged from chargers or other equipment.
- 3. USE CHARGER IN WELL VENTILATED AREA.** Do not block charger air vents.
- 4. AVOID USING OR STORING THE CHARGER IN EITHER EXTREME COLD OR EXTREME HOT TEMPERATURES.** The charger will not charge batteries under conditions of extreme heat (above 45 °C) nor will it charge batteries under conditions of extreme cold (below 0 °C).
- 5. MAINTAIN CHARGER ELECTRICAL CORD.** Unplug only by pulling on the plug, not the cord. Do not use cord as carrying handle. Avoid contact with oil, solvents, or sharp edges which may damage insulation. Protect against stepping upon, driving over, or tripping upon cord. If cord appears damaged in any way, retire charger from service immediately until it can be repaired.

6. **CHARGER IS RATED FOR 115 VAC OPERATION.** Use charger only with appropriate electrical outlets.

7. **UNPLUG CHARGER WHEN NOT IN USE.** Remove battery pack as well.

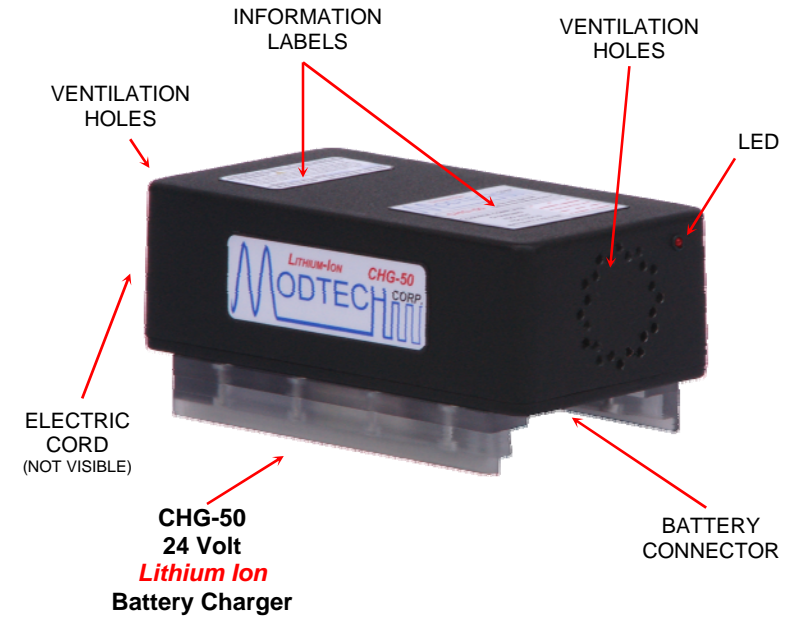
8. **TO REDUCE USE OF ELECTRIC SHOCK** always unplug charger before cleaning or maintenance. Use of a Ground Fault Circuit Interrupter is recommended to reduce shock hazards.

9. **DO NOT DISASSEMBLE.** Charger contains no user serviceable parts and should not be disassembled under any circumstances. If faulty operation is suspected, return charger for inspection and service if required.

10. **AVOID SHORT CIRCUITS.** A short circuit will result if conductive materials such as wires, metal tools, coins, keys, salt water, or other conductive objects contact the positive and negative terminals of the charger at the same time. A short circuit may cause sparks, excessive heat, fire, personal injury, or other equipment damage.

11. **STORE CHARGER IN A COOL, DRY PLACE.** Avoid leaving the charger in direct sunlight, vehicle cabs, compartments, or unventilated storage buildings during hot summer conditions. Under extreme temperature conditions damage may occur. Avoid allowing charger to become wet or damp. Allow damp or wet charger to dry thoroughly before using.

## FUNCTIONAL DESCRIPTION



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—	—	—	CHARGING
- - -	- - -	- - -	TOO HOT
- - -	- - -	- - -	TOO COLD
- - -	- - -	- - -	BATTERY FAILURE

If either the charger or battery pack is too hot (fast flashing) or too cold (slow flashing), the charger will wait until the temperature is in the acceptable range before charging. Once charging is underway, the LED will be mostly on, blinking off for a short time at 5-second intervals. When charging is complete, the LED will be mostly off, with only a brief flash every 2 seconds. If an error is detected, the charger will flash a dot-dash pattern. In this case the battery pack must be removed and may be re-installed. If charging does not proceed normally when the pack is re-installed, the battery pack may be damaged and should be retired from service and sent for inspection and repair if needed.

### WARNING

#### **READ AND SAVE THESE INSTRUCTIONS FOR FUTURE USE.**

Failure to follow all instructions may result in electrical shock, fire, equipment damage, and/or serious personal injury.

## CHARGER OPERATION

The CHG-50 is an intelligent, *lithium ion* battery charger. Operation is as follows:

**1. Battery packs may be charged whenever convenient:** If a battery pack is below 90% charge level, it may be placed on the charger at any time to recharge to 100%. Modtech Corp. lithium ion battery packs exhibit no memory effect and need not be completely discharged before recharging. **Battery packs that are already above 90% charge level when placed on the charger will not be further charged.** This is normal and intentional operation aimed at maximizing the life of your battery packs.

**2. Only acceptable battery pack types will be charged:** When a battery pack is placed on the charger its type is detected automatically. Only packs known and acceptable to the CHG-50 will be charged.

**3. Charge temperature is controlled:** The charger will measure its own temperature and the temperature of the battery pack. Charging proceeds only when both temperatures are within acceptable limits. The CHG-50 uses a thermostatically controlled fan. The fan will be enabled and operate at a speed needed to cool the charger. **Fan speed will generally increase as charging progresses** and the charger warms up. A slight “ticking” sound especially at low fan speeds is normal.

**4. When charging is complete,** removal of the battery pack and unplugging the charger at your earliest convenience are recommended. No damage will occur if a pack remains attached to the CHG-50 for an indefinite period of time, however.

**5. After unplugging the charger,** the LED may continue to flash for 10 seconds. This is normal and not a cause for concern.

**6. Charging time** for a fully discharged EM-100 battery pack is approximately 2-1/2 hours.

**7. Storing batteries at 40% to 50% charge level** is good practice to maximize battery life. When preparing to store a pack for an extended period of time, use the fuel gauge button to see the pack's charge level. If the pack is above 50% charge level, it may be used for a while to decrease the level. If it is below 40%, it may be placed on the charger. The charger will increase the packs charge level by 10% in approximately 12 minutes. Charge accordingly to achieve 40% to 50%.

**8. Failure indication** is a dot-dash pattern flashed by the LED. If the failure indication occurs with a different battery pack, the failure may be within the charger. There are no user serviceable parts within the charger and it must be returned for inspection and repair if needed.

## MAINTENANCE AND STORAGE

Moisture, extreme heat and extreme cold should be avoided when storing (or using) the CHG-50. Refrain from exposing the charger to rain, snow, or moisture of any kind. When storing the charger, a cool, dry location is best. The charger should be unplugged and the battery pack removed prior to storing

## SPECIFICATIONS

Nominal Input Power	115 VAC, 1 A, 60 Hz
Pack Types Charged	Modtech Corp. EM-100
Nominal Charging Voltage	24 VDC
Nominal Charging Current	2.4 A
Minimum Charging Temperature	0 °C
Maximum Charging Temperature	45 °C
Dimensions	6-1/4" x 3-1/4" x 2-3/4" (159 x 83 x 70 mm)
Weight	29 oz. (822 g)

NOTES:



CHG-50 Charger with EM-100 *Lithium Ion* Battery Pack

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