

Station and Mobile Lithium-ion Battery Chargers

For use with the

LIFEPAK® 15 Monitor/Defibrillator

INSTRUCTIONS FOR USE

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Station and Mobile Lithium-ion Battery Chargers

The LIFEPAK® 15 Monitor/Defibrillator Station Lithium-ion (Li-ion) Battery Charger and Mobile Li-ion Battery Charger are intended for use only with LIFEPAK 15 Li-ion rechargeable batteries.

IMPORTANT! No other batteries are compatible with these chargers. To avoid confusion between batteries for the LIFEPAK 15 and the LIFEPAK 12 defibrillator/monitors, segregate charger and battery storage locations for each device. Batteries, chargers, and monitors are designed by fit and color to help prevent incorrect pairing.

- The Station Charger is designed for use indoors in a controlled environment. The Station Charger uses AC power only.
- The Mobile Charger can be used indoors as well as in a mobile-type environment. The Mobile Charger uses AC or DC power.

DANGER

EXPLOSION HAZARD Do not use this device in the presence of flammable gases or anesthetics.

WARNING

POSSIBLE EXPLOSION, FIRE, OR NOXIOUS GAS The battery charger is for use with LIFEPAK 15 monitor/defibrillator Li-ion rechargeable batteries only. Attempting to charge a battery that is not designed for this charger can cause an explosion, fire, or release of noxious gas.

POSSIBLE LOSS OF POWER DURING PATIENT CARE Physio-Control has no information regarding the performance or effectiveness of this Li-ion battery charger for use with other manufacturers' batteries. Using other manufacturers' batteries may result in battery charger failure. Use only Physio-Control batteries and the appropriate Physio-Control battery charger.

POSSIBLE ELECTRICAL INTERFERENCE Equipment operating in close proximity may emit strong electromagnetic or radio frequency interference (RFI), which could affect the performance of this device. RFI may result in inadequate battery charging. Avoid operating the device near RF communications equipment. Refer to Table 3 on page 8 for recommended distances of equipment. Contact Physio-Control technical support if assistance is required.

The LIFEPAK 15 Li-ion battery chargers are intended for use by trained operators only.

Contents

The charger package includes:

- One battery charger (Station or Mobile)
- One AC power cord (country/region specific)
- One DC power cable (Mobile Charger only)
- One mounting bracket with 4 (8-32 x 0.5") screws, 4 lock washers, and template

Mounting the Charger

You can use the Station or Mobile Charger on a solid horizontal surface, or mount the charger on a horizontal or vertical surface using the mounting bracket provided.

The following procedures refer to Figures 1 and 2 in the *Mounting Bracket Template* (Template) that ships with the bracket.

IMPORTANT! Make sure the mounting surface can support the charger.

1. Attach the mounting bracket to the charger:
 - A. Align the bracket with the bottom of the charger as shown in Figure 1 in the Template.
 - B. Attach the bracket to the charger using the four screws and lock washers (provided) and tighten using a #2 Phillips screwdriver.
 - C. If using AC power, connect the AC power cord to the battery charger now. Do NOT plug the AC power cord into the wall outlet at this time.

2. Mount the charger to the surface:

Note: You need four #8 or M4 bolts (not included) or other hardware appropriate for your mounting surface.

- A. Use the Template to mark the four locations for the mounting bolts on the surface.
- B. Drill appropriate-sized holes for the mounting hardware you are using.
- C. Use the mounting hardware to attach the bracket to the mounting surface as shown in Figure 2 in the Template.

CAUTION

POSSIBLE EQUIPMENT DAMAGE

- The battery charger must be used indoors only.
- Use only the designated power cords, cables, and mounting bracket.
- Do not place the charger near sources of moisture or liquids.
- If using the mounting bracket, make sure the charger and mounting bracket are securely attached to the mounting surface prior to use.
- Inadequate wall or surface construction, or improper installation of the mounting bracket may result in bodily injury.
- Inspect the power cables for damage prior to use.

Setting Up the Charger

IMPORTANT! The AC power cord and the DC power cable are the safety disconnect mechanisms. Maintain clear access to all connections and the wall outlet at all times.

To set up the battery charger for AC power only:

1. Connect the AC power cord to the battery charger AC port.
2. Plug the AC power cord into the wall outlet.

To set up the battery charger for AC/DC power (Mobile Charger only):

1. Connect the two wires from the DC power cable to the 12 VDC power source—red or brown for positive, black for negative.
2. To insert the DC power cable, align the DC power connector notch with the corresponding key in the DC port. Twist the plastic locking ring clockwise until it locks.

- If AC power will be used simultaneously with DC power, plug the AC power cord into the wall outlet. When both AC and DC power are available, the charger automatically selects AC power.

All LEDs flash briefly when power is first applied to the charger.

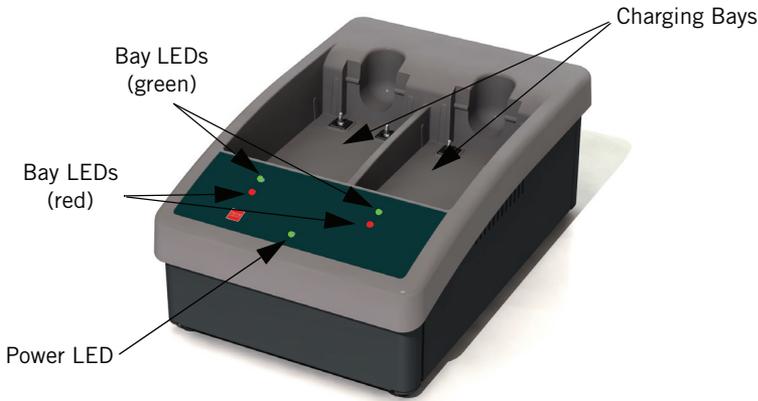


Figure 1 LIFEPAK 15 Li-ion Battery Charger

The single green power LED in the center of the charger label indicates the status of the charger:

- On—Power is applied.
- Off—Power is not applied, or internal fault.

Charging the Batteries

Fully charge the batteries prior to use, and fully recharge batteries once per year if in storage.

To charge a battery:

- Inspect battery for damage or leakage. If battery is damaged or leaking, recycle the battery and obtain a new battery.
- Verify that the battery charger is powered on (the Power LED is illuminated).
- Insert the battery into one of the bays on the charger. You can charge one or two batteries simultaneously.
- Observe the bay LEDs on the charger. Each bay has two LEDs. The LEDs are described in the following table.

BAY LED STATUS	EXPLANATION	
Flashing Green	Battery is charging.	A fully depleted battery typically takes up to 4.25 hours to charge.
Solid Green	Battery charging is complete.	If a battery remains in the charger after it is charged, the charger enters maintenance mode and periodically charges the battery to keep it optimally charged.
Both Off	No battery installed.	If bay LEDs are off when a battery is installed and power is applied, an internal charger fault has occurred or the battery is faulty. Contact your authorized service personnel.

BAY LED STATUS	EXPLANATION
Solid red	Battery or charger is faulty. Remove battery and check fuel gauge. If the charger's solid red LED persists when a functional battery is installed, the charger is faulty. Contact your authorized service personnel.
Flashing red	Environment is too hot or too cold. The battery temperature is too hot or too cold for battery charging operation. Remove battery to room temperature; allow sufficient time to adjust and then reattempt battery charging.
Flashing red and green	Charger is faulty. If either or both sets of bay LEDs repeatedly flash red and green, the charger is faulty. Contact your authorized service personnel.

The fuel gauge on the LIFEPAK 15 Li-ion battery has four LEDs that indicate the approximate level of charge. Push the gray button beside the battery symbol to activate the LEDs. Four visible LEDs indicate full charge.

For more information about the batteries, see the *LIFEPAK 15 Monitor/Defibrillator Operating Instructions*.

Charger Maintenance and Recycling

The battery chargers are designed to be maintenance free.

- Keep away from moisture.
- Clean only with dry or slightly damp, lint-free cloth.
- Do not clean with a flammable cleaner.
- Do not block ventilation slots.
- Do not disassemble. The charger has no internal user-serviceable parts.
- Routinely inspect battery pins for wear or scraping. If damaged, contact your authorized service personnel.
- Inspect the power cables for damage and replace, if needed.

Recycle the charger at the end of its useful life according to national and local regulations. For instructions on disposing of this product, see <http://recycling.medtronic.com>.

Symbols

The following symbols may be found on the battery charger or its accessories. A complete list of symbols and their definitions can be found in the *LIFEPAK 15 Monitor/Defibrillator Operating Instructions*.

SYMBOL	DESCRIPTION
	Attention, consult accompanying documents
	Battery charger
	Do not dispose of this product in the unsorted municipal waste stream. Dispose of this product according to local regulations. For instructions on disposing of this product, see http://recycling.medtronic.com .

SYMBOL	DESCRIPTION
 or 	Manufacturer's identification number (part number)
 or 	Catalog number
	Serial number
IP31	Enclosure ingress protection code per IEC 60529
	Mark of conformity according to the European Medical Device Directive 93/42/EEC
	Mark of conformity to Canadian and US standards
	Output
	Input
	Date of manufacture
	DC voltage
	AC voltage
	Manufacturer
	Authorized EC representative
	Safety Class II equipment (double or reinforced insulation)

Product Specifications

SPECIFICATION	DESCRIPTION
Supported Battery	LIFEPAK 15 Lithium-ion 5.7 Ah Rechargeable Battery
Power Requirements	AC input: 100–240 VAC 50/60 Hz, 1.4 A maximum DC input: 11.1–14.5 VDC, 8 A maximum (Mobile Charger only)
Operating Temperature	AC input: 10°–40°C (50°–104°F) DC input: 5°–50°C (41°–122°F) (Mobile Charger only)
Storage Temperature	-40°–70°C (-40°–158°F)
Charge Time	Typical charge time for a fully depleted battery: 4 hours and 15 minutes
Safety Class	AC powered: Safety Class I (with Class 2 parts) DC powered: Safety Class II (reinforced insulation)
Altitude	795 mmHg to 522 mmHg -382 to 3048 m (-1253 to 10,000 ft)

SPECIFICATION	DESCRIPTION
Object and Water Resistance	IP31 per IEC 60529

Electromagnetic Emissions

Table 1 Guidance and Manufacturer's Declaration - Electromagnetic Emissions

The LIFEPAK 15 Li-ion battery charger is intended for use in the electromagnetic environment specified below. The customer or user of the battery charger should ensure that the device is used in such an environment.		
Emissions Test	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR 11	Group 1	The LIFEPAK 15 Li-ion battery charger uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The LIFEPAK 15 Li-ion battery charger is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Essential Performance

The LIFEPAK 15 Li-ion battery charger maintains safe and effective performance of the battery charging functions when operated in the electromagnetic environment specified in Table 2 through Table 4.

Table 2 Guidance and Manufacturer's Declaration - Electromagnetic Immunity

The LIFEPAK 15 Li-ion battery charger is intended for use in the electromagnetic environment specified below. The customer or user of the battery charger should ensure that the device is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines Not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.

Table 2 Guidance and Manufacturer’s Declaration - Electromagnetic Immunity (Continued)

The LIFEPAK 15 Li-ion battery charger is intended for use in the electromagnetic environment specified below. The customer or user of the battery charger should ensure that the device is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the LIFEPAK 15 Li-ion battery charger requires continued operation during power mains interruptions, it is recommended that the LIFEPAK 15 Li-ion battery charger be powered from an uninterruptible power supply or battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_T is the AC Mains voltage prior to application of the test level.			

Table 3 Guidance and Manufacturer’s Declaration - Electromagnetic Immunity

The LIFEPAK 15 Li-ion battery charger is intended for use in the electromagnetic environment specified below. The customer or user of the battery charger should ensure that the device is used in such an environment.			
Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment - Guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	<p>Portable and mobile RF communications equipment should be used no closer to any part of the LIFEPAK 15 Li-ion battery charger, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1.2 \sqrt{P}$ <p>$d = 1.2 \sqrt{P}$ 80 MHz to 800 MHz</p> $d = 2.3 \sqrt{P}$ 800 MHz to 2.5 GHz <p>Where <i>P</i> is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and <i>d</i> is the recommended separation distance in meters (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,^a should be less than the compliance level in each frequency range.^b</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	
<p>Note 1: At 80 MHz and 800 MHz, the higher frequency range applies.</p> <p>Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			

- a. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitter, an electromagnetic site survey should be considered. If the measured field strength in the location in which the LIFEPAK 15 Li-ion battery charger is used exceeds the applicable RF compliance level above, the LIFEPAK 15 Li-ion battery charger should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the LIFEPAK 15 Li-ion battery charger.
- b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Table 4 Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and the LIFEPAK 15 Li-ion Battery Charger

The LIFEPAK 15 Li-ion battery charger is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or user of the LIFEPAK 15 Li-ion battery charger can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the LIFEPAK 15 Li-ion battery charger as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 Mhz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be determined using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Standards

- UL 60601-1:2003; CSA C22.2 No. 601.1-M90:R2005
- Medical Device Directive (MDD) 93/42/EEC
EN/IEC 60601-1 edition 2
IEC 60601-1-2 edition 2.1 (Class A)
- EN 1789:2003
- AS/NZS 4535:1999



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Publication date: 6/2008

MIN3208093-000 / **CAT**26500-002904