More tips

- The chargers can also charge Lithium Ion cells and packs.
- Kokam/USA's Versatile Adapter, part number 501MC, is a great companion for the charger. It provides Futaba, JR, Airtronics, Deans and Molex connectors, plus 2.1mm and 2.5mm power connectors, enabling you to easily connect your cells and packs to the charger.
- To determine the LiPoly pack configuration that will work best in your application, use the LiPo Calc design tool in the support section of the Kokam/USA Web site, www.kokamusa.com (or www.fmadirect.com).

LiPo-102 and LiPo-202 Lithium Polymer Battery Charger specifications

For battery types	Lithium Polymer (LiPoly) and Lithium Ion (LiIon) only
Nominal output voltage	LiPo-102: 3.7VDC for single cells (4.21VDC at end of charge cycle) LiPo-202: 7.4VDC for two cells in series (8.42VDC at end of charge)
Output current	User-settable to 5mA through 225mA
Maximum output power	LiPo-102: 0.9W LiPo-202: 1.6W
Input voltage	LiPo-102: 9 to 12VDC LiPo-202: 11 to 13.5VDC
Dimensions	1.7 in. (43mm) L x 0.9 in. (23mm) W x 0.4 in. (10mm) H (including connectors and jumpers, not including interconnect wires)

Kokam/USA limited warranty for chargers

Kokam/USA warrants this product to be free of manufacturing defects for the term of one year from the date of purchase. Should any defects covered by this warranty occur, the charger shall be repaired or replaced with a unit of equal performance by Kokam/USA or an authorized Kokam/USA service station.

Limits and exclusions

This warranty may be enforced only by the original purchaser, who uses this product in its original condition as purchased, in strict accordance with the product's instructions. Units returned for warranty service to a Kokam/USA service center will be accepted for service when shipped postpaid, with a copy of the original sales receipt or warranty registration form, to the service station designated by Kokam/USA.

This warranty does not apply to:

- Consequential or incidental losses resulting from the use of this product.
- Damage resulting from accident, misuse, abuse, neglect, electrical surges, reversed polarity on connectors, lightning or other acts of God.
- Damage from failure to follow instructions supplied with the product.
- Damage occurring during shipment of the product either to the customer or from the customer for service (claims must be presented to the carrier).
- Damage resulting from repair, adjustment, or any alteration of the product by anyone other than an authorized Kokam/USA technician.
- Installation or removal charges, or damage caused by improper installation or removal.

Call (301) 668-7614 for more information about service and warranty repairs.

LiPo-102 and LiPo-202 Lithium Polymer Chargers

Model LIPOCH102 for single LiPo cells, or 3.7V LiPo packs

Model LIPOCH202 for 2 LiPo cells in series, or 7.4V LiPo packs

About the chargers

The Kokam LiPo-102 and LiPo-202 chargers are designed to charge Kokam/USA Lithium Polymer (LiPo)—as well as Lithium Ion—cells and battery packs. Both models enable you to set one of 31 output currents from 5 to 225mA. Output is through a 2.5mm power connector (designed to plug directly into the FMA 501MC Versatile Adapter).

Model LiPo-102 charges single LiPo cells, or 3.7V parallel-connected LiPo packs. This model can be powered from any 9 to 12VDC source, including a lead acid or gel cell battery, or a DC power supply.

Model LiPo-202 charges two LiPo cells in series, or 7.4V series/parallel-connected LiPo packs. This model can be powered from any 11 to 13.5VDC source, including a lead acid or gel cell battery, or a DC power supply.

LiPo cells are best charged using a special sequence: constant current at the beginning of the charge cycle, followed by constant voltage at the end of the charge cycle. The LiPo-102 and LiPo-202 chargers automatically follow this sequence. Two LEDs show charger status.

Kokam/USA Lithium Polymer cells are the next-generation replacement for NiCd, NiMH and Lithium Ion cells. This unique power technology offers high energy density, low weight, long life, safe operation and environmentally-friendly chemistry. Order Kokam/USA cells and packs through the Kokam/USA Web site, www.kokamusa.com (or www.fmadirect.com). LiPo technical and application information is available in the Support section of the Web site.

Precautions

- Follow all instructions in this manual to assure safe operation.
- The LiPo-102 and LiPo-202 chargers are designed specifically for charging Lithium Polymer (LiPo) and Lithium Ion cells and packs. **Do not** use the chargers to charge NiCd, NiMH or any other type of battery.
- Never charge LiPo batteries with a charger designed for NiCd, NiMH or any other type of battery chemistry. LiPo cells require a special charging sequence (described above) not provided by chargers made for other battery technologies.
- For best results, use a 1C or lower charge rate* (where C = cell/pack capacity). Charging at a 1C rate takes approximately 1 hour (for a fully discharged cell/pack). Charge rates greater than 1C may reduce cell capacity.* Extreme charge rates **will** damage cells.
- Follow all guidelines for charging, discharging, handling and storing LiPo cells.*

*For details, see the *Kokam/USA Lithium Polymer Cell application manual*, AN000001, available in the Support section of the Web site.

Kokam USA

FMA Direct

Kokam/USA • 5716A Industry Lane • Frederick, MD 21704
Sales: (800) 343-2934 • Technical: (301) 668-7614 • www.kokamusa.com • www.fmadirect.com

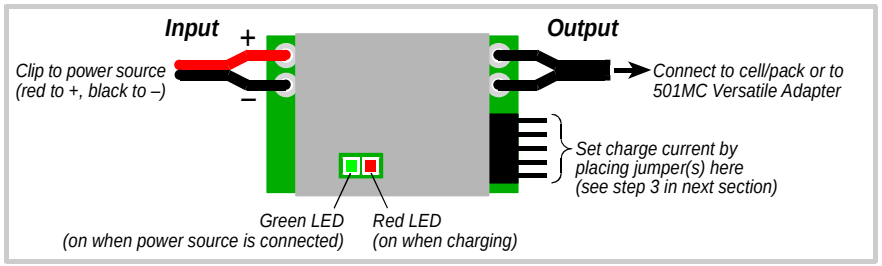
Parts list

- Charger (Model LiPo-102 or Model LiPo-202)
- 5 Jumpers, plus 2 spares

Setting up the charger

You must supply:

- A DC power source with these **minimum** output specifications:
  - For Model LiPo-102: 9 to 12VDC at 300mA.
  - For Model LiPo-202: 11 to 13.5VDC at 300mA.
- A method for connecting the charger to the battery pack. *Recommended:* FMA 501MC Versatile Adapter, with jacks for several connector types.



Charging a cell or pack

1. Determine cell/pack voltage and capacity. Use the information and examples below as a guide. "C" is the capacity of a single cell in milliamp-hours (mAh).

Use LiPo-102 charger

Single cell	**Example:** for a single 145mAh cell...
Voltage: 3.7V Capacity: C mAh	Cell voltage is 3.7V Cell capacity is 145mAh
Parallel-connected pack	**Example:** for four 145mAh cells in parallel...
Voltage: 3.7V Capacity: P x C mAh *where P = no. cells in parallel*	Pack voltage is 3.7V Pack capacity is 4 x 145mAh = 580mAh

Use LiPo-202 charger

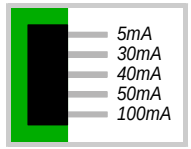
Two cells in series	**Example:** for two 45mAh cells in series...
Voltage: 7.4V Capacity: C mAh	Pack voltage is 7.4V Pack capacity is 45mAh
Series/parallel-connected pack	**Example:** for three parallel-connected sets of two 145mAh cells connected in series...
Voltage: 7.4V Capacity: P x C mAh *where P = no. cells in parallel*	Pack voltage is 7.4V Pack capacity is 3 x 145mAh = 435mAh

continued

2. Determine desired charge rate. ("C" is cell/pack capacity in mAh.)

Charge rate	Example	
	Desired charge rate	*In step 3, you would set charger current to*
Very slow: <1/5 C mAh	Very slow charge rate for 3270mAh cell would be 225mA	225mA
Slow: 1/5 C mAh	Slow charge rate for 145mAh capacity cell would be 30mA	30mA
Moderate: 1/2 C mAh	Moderate charge rate for 560mAh capacity cell would be 280mA	225mA
Maximum: 1 C mAh	Maximum charge rate for 145mAh capacity cell would be 145mAh	145mA; to prevent charging too rapidly, round the 1C rate *down* to the closest charger current

3. Set charger's output current.

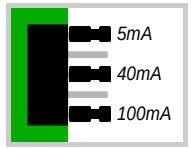


Carefully place one or more jumpers on the pins to set the desired output current.

Tip: Currents corresponding to pins are marked on the bottom of the charger.

Currents can be added by using multiple jumpers. For example, placing jumpers on the 50mA and 30mA pins provides 80mA output current (50mA + 30mA). The charger provides 31 different output currents from 5mA (1 jumper) to 225mA (5 jumpers).

Example: *Jumpers in the example to the right are set for 145mA output current (100mA + 40mA + 5mA).*



4. Connect charger to LiPo cell/pack and power source.

5. Monitor charger. The LEDs show charger status.

Charging is complete when the red LED changes from on to off (step d in table).

Condition	Green LED	Red LED
a. No input power	off	off
b. Input power applied	**on**	off
c. Charging	**on**	**on**
d. Charging complete	**on**	off

Tip: Continue charging for a while after the red LED goes off. This assures the cell/pack is 100% charged.

6. When charging is complete:

a. Disconnect charger from power source.
b. Disconnect cell/pack from charger.