Safety Guard

Overvoltage protection for LiPo cell/pack charging

Note: This is a summary of FMA's Safety Guard white paper. The complete paper is available at *www.fmadirect.com > Support > Application Notes*.

Lithium Polymer (LiPo) chemistry is the next generation electric power technology for radio control applications. As with any new technology, modelers must learn how to safely handle, charge and use LiPo cells and packs.

With more than one million cells used in radio control applications, LiPo technology has an excellent safety record. Based on field reports, most safety concerns are associated with LiPo charging.

Safety Guard, an inexpensive accessory offered by FMA, provides a first line of defense against overvoltage during charging. Safety Guard is available in three models for use with 2-cell, 3-cell and 4-cell series-connected LiPo packs.

Safety Guard's primary application is to prevent overvoltage when charging LiPo packs with a current-regulated LiPo charger. Connected between charger and pack, Safety Guard limits charge voltage to 4.2 volts per cell. When Safety Guard's output voltage exceeds this amount, Safety Guard disconnects the pack from the charger—minimizing the chance of cell damage and dangerous conditions.

A second application* for Safety Guard is to charge LiPo packs from sources not specifically designed for that purpose, such as certain wall plug-in DC power supplies, radio control transmitter chargers, high current sources (e.g., lead acid batteries and DC power supplies), and 1-7 cell NiCd/NiMH fast chargers.

A third application* for Safety Guard is to prevent LiPo packs from being discharged below 2.5 volts per cell (a condition that lowers pack performance and life). Because Safety Guard disconnects the LiPo pack from the current drain in this application, uses in radio control are limited.

Used with recommended charging and handling procedures, Safety Guard helps modelers obtain maximum performance and life from their LiPo packs.

FMA is dedicated to helping radio control modelers (and other users) safely handle, charge and use LiPo technology. For additional LiPo documentation, see *www.fmadirect.com > Support > Application Notes*.

*** CAUTION:** The second and third applications require detailed knowledge of the charging source. Those specifications can be found in the full text of this paper.

FMA, Inc. ● 5716A Industry Lane ● Frederick, MD 21704 U.S.A.
Phone: (800) 343-2934 ● Fax: (301) 668-7619 ● Web: www.fmadirect.com