



**MODEL FC300 PEAK DETECTION  
RAPID CHARGER**

## **OWNER'S MANUAL**

**NOTE: PLEASE READ MANUAL COMPLETELY BEFORE OPERATION**

### **INTRODUCTION:**

Thank you for purchasing the FMA Direct / RCLine MINIPULSE peak detection rapid charger. The MINIPULSE is one product in a series of quality battery management devices from FMA, Inc. Designed specifically for electric powered R/C aircraft, marine, and car models, the MINIPULSE is capable of rapid charging *any* 4 to 7 cell nicad battery. The MINIPULSE operates using a separate, +12V power source (not supplied) i.e., an automotive battery. Featuring Delta-Peak technology cut-off circuitry on the charging output, the MINIPULSE is perfect for rapid charging electric power packs or as a fast-field-charger for radio control receiver packs. The MINIPULSE is packaged in a small, heavy-duty, all-metal case, comes with a "TAMIYA" type connector for the charger output, and includes fuse and reverse polarity protection.

### **SPECIFICATIONS:**

<b>SIZE:</b>	3.83"L X 2.45"W X 0.91"H
<b>FUNCTION:</b>	NICAD BATTERY RAPID CHARGER / MAINTENANCE CHARGER
<b>INPUTS / CONNECTIONS:</b>	+12V D.C. VIA ALLIGATOR CLIPS POWER PACK / RCVR VIA "TAMIYA" TYPE CONNECTOR
<b>OUTPUT CAPABILITIES:</b>	1 POWER PACK / RCVR BATTERY: 4 TO 7 CELLS, USER SELECTABLE CHARGE RATES (1A, 2A, 4A) FOLLOWED BY TRICKLE CHARGE (15% OF SET CHARGE CURRENT), PEAK DETECTION CUT-OFF
<b>READOUT:</b>	LED POWER, CHARGE, AND TRICKLE INDICATORS
<b>POWER SUPPLY:</b>	DESIGNED FOR USE WITH EXTERNAL +12V D.C. POWER SUPPLY CAPABLE OF 6A CURRENT CONSUMPTION (MINIMUM) OR +12V LEAD ACID AUTOMOTIVE BATTERY

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**FMA  
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## OPERATION:

### ● OVERVIEW

A vast array of different nicad battery manufacturers and cell configurations are available to the modeling community today. One must pay special attention to the type of batteries you will be charging using your MINIPULSE rapid charger. Typically, most modern nicad batteries are capable of withstanding a moderate 1C charge rate. Some will handle 2C, and fewer will accept up to 4C. A 1C charge rate is defined as 1 times the mAh capacity of your battery pack. As an example, at a 1C charge rate, a 1000 mAh battery pack charges at 1000 mA (or 1A). This equates to a 1 hour charge time on a battery that is completely dead at start of charge. A 2C charge rate for this same 1000 mAh pack would be 2000 mA (or 2A) and the battery would be fully charged in 1/2 hour from a completely dead state. Rapid charging batteries utilizing peak detection circuitry is an extremely efficient method of putting a full charge into a battery without overcharging it because the electrons within the battery become more active with greater current. For the same reason, rapid charging batteries does shorten the overall life span of a battery by a small fraction. Because of the multitude of various battery configurations on the market today, it is impossible for FMA, Inc. to verify whether or not your particular battery brand / cell type is capable of accepting the charge rates supplied by the MINIPULSE. This being the case, it is very important that you consult your battery manufacturer's guidelines for charging the battery type(s) that you have. FMA, Inc. will not accept any liability for failure to comply with your battery manufacturer's guidelines when charging using any FMA Direct rapid charging products.

**CAUTION:** When using the MINIPULSE, always set it on a stable, non-flammable surface along with the batteries connected to the unit. When the MINIPULSE has completed rapid charging, fully charged batteries will feel warm to the touch. Do not be alarmed, this is a normal outcome of rapid charging nicad batteries. As current flows through the battery, exciting electrons, excess energy as a result of certain inefficiencies in the battery charging process, will cause heat to escape from the interior of the batteries. Should the batteries connected ever become "too hot to touch", remove them from the charger immediately to prevent the possibility of fire or explosion. Re-check your battery manufacturer's guidelines for charging this battery pack. If the problem continues, call FMA Direct at (301) 831-8980 for service information.

### ● CONNECTING THE MINIPULSE TO A +12V POWER SOURCE

Connect the MINIPULSE to a +12V power source capable of at least 6A consumption by using the supplied alligator clips. Automotive batteries or field box batteries work quite well as a power source. The RED cable is +Volts and the BLACK cable is negative. The yellow POWER indicator LED will glow.

**CAUTION:** NEVER START THE VEHICLE ENGINE TO WHICH THE MINIPULSE IS CONNECTED OR PERMANENT DAMAGE MAY OCCUR TO THE UNIT AND TO THE BATTERY PACK BEING CHARGED!

### ● CHARGING A POWER PACK:

The MINIPULSE is ideally suited for rapid charging electric power packs used in R/C model aircraft, boats, and cars. The MINIPULSE is capable of charging *any* 4 to 7 cell battery pack at one of the user-selectable charge rates of 1A, 2A, or 4A when connected to the charger output. Never exceed the maximum cell count limits of the MINIPULSE or damage could result to the unit not covered by warranty. To charge a power pack, verify that the battery pack is nicad and contains from 4 to 7 cells. Consult your battery manufacturer's guidelines concerning charge rates for your battery type. Make certain that your battery is designed to handle rapid charging. At this point, you will need to calculate the amperage required to rapid charge your battery at the charge rate recommended for your battery type. Remember, for a 1000 mAh pack, a 1C charge rate is 1A and will charge a fully discharged pack in one hour. If your battery comes equipped with a mating "TAMIYA" type connector, plug the battery in at the charge output. If your battery is not equipped with a "TAMIYA" type connector, obtain a suitable charge pigtail for your battery type from a local hobby dealer. Make certain the RED or + wire goes to the positive (+) terminal of the battery and BLACK or ground wire goes to the negative (-) terminal of the battery. With the battery pack properly connected, the green TRIC indicator lamp should light indicating trickle charge is

commencing. Set the CURRENT ADJUST indicator switch to the charge current for your battery. Press and hold the START button for three seconds. The red CHG indicator LED will glow. The battery connected is now charging at the charge rate selected. When the battery has reached full charge, the peak detection circuit will automatically switch the unit from rapid charge to trickle charge. The red CHG indicator LED will go out and the green TRIC indicator LED will glow. The unit will remain in trickle mode until the battery is disconnected.

### ● CHARGING A RECEIVER BATTERY PACK

Verify that your receiver battery pack is nicad and contains from 4 to 7 cells. Consult your battery manufacturer's guidelines concerning charge rates for your battery type. Make certain that your battery is designed to handle rapid charging. Calculate the amperage required to rapid charge your battery at the charge rate recommended for your battery type. Remember, for a 1000 mAh pack, a 1C charge rate is 1A. You will need to obtain or construct an adapter cable to convert from the supplied "TAMIYA" type connector to the proper mating connector for your battery brand (see your local dealer). *When wiring the adapter, be certain to maintain the proper polarity. The RED wire goes to the positive (+) terminal of the battery, the BLACK wire goes to the negative (-) terminal of the battery.* **CAUTION:** *If you are unsure about the polarity of your receiver battery, consult your local dealer or call FMA service at (301) 831-8980.* With the battery pack properly connected, the green TRIC indicator lamp should light indicating trickle charge is commencing. Set the CURRENT ADJUST indicator switch to the charge current for your battery. Press and hold the START button for three seconds. The red CHG indicator LED will glow. The battery connected is now charging at the charge rate selected. When the battery has reached full charge, the peak detection circuit will automatically switch the unit from rapid charge to trickle charge. The red CHG indicator LED will go out and the green TRIC indicator LED will glow. The unit will remain in trickle mode until the battery is disconnected.

### ACCESSORIES:

Various adapter cables, the Versatile Adapter, power cables, and numerous other accessories as well as a full line of batteries, other chargers and cyclers are available for use with your FMA MINIPULSE either direct or from your local FMA dealer.

## FMA LIMITED WARRANTY ON RAPID CHARGER PRODUCTS

### THE WARRANTY

FMA, Inc. warrants this charger 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 FMA, Inc., or an authorized FMA service station.

### LIMITS AND EXCLUSIONS

This warranty may be enforced only by the original purchaser, who uses this charger in its original condition as purchased, in strict accordance with the MINIPULSE owner's manual and battery manufacturer's guidelines for charge rates applicable to any batteries connected to the unit. Chargers returned for warranty service to an FMA service center will be accepted for service when shipped post-paid, with a copy of the original sales slip or warranty registration form, to the service station advised by FMA, Inc.

### THIS WARRANTY DOES NOT APPLY TO

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

CALL (301) 668-7614 FOR INFORMATION ABOUT SERVICE AND WARRANTY REPAIRS.