style" Airtronics connectors are the reverse polarity of industry standard and are wired positive, negative, signal! If you are unsure of the polarity of your receiver, contact your local dealer or phone FMA Direct immediately for assistance!

TABLE 1 RCVR WIRING COLOR ORIENTATION

RECEIVER BRAND	1	2	3
FUTABA	BLK / -V	RED / +V	WHT / SIG
JR	BRN / -V	RED / +V	ORG / SIG
HITEC	BLK / -V	RED / +V	YLW / SIG
AIRTRONICS (OLD STYLE)	RED / +V	BLK / -V	BLK / SIG

2. Connect the WHITE wire from the ESC to the positive (+) terminal on your motor. Connect the BLUE wire from the ESC to the negative (-) terminal on your motor. Motor wires may be cut to the appropriate length for your installation and soldered directly to the motor terminals.
3. Take care when connecting a battery to the mini 5. It is highly recommended that a power switch be installed in the +V line to the battery to prevent the motor from turning unexpectedly. Install this switch in the middle of the remaining RED wire from the ESC and make certain it is in the OFF position before proceeding. Connect the RED wire from the switch to the positive (+) solder terminal on your battery. Connect the remaining BLACK wire from the ESC to the negative (-) solder terminal of the battery. Be certain to maintain proper polarity between the battery and the mini 5. Failure to do so will result in damage to the unit not covered by warranty!

TESTING THE mini 5 WITH YOUR RADIO SYSTEM

The mini 5 is factory calibrated. No adjustment is required for it to interface properly with your R/C equipment. To verify proper operation of the mini 5 with your equipment, proceed as follows:

2. Make certain the mini 5 power switch is OFF.
3. Charge the battery pack completely.
4. Make certain the aircraft cannot move when the motor is turned on and that the propeller is free of obstructions (including body parts).
5. Turn the transmitter power ON.
6. Position the transmitter throttle and trim control to OFF.
7. Turn the mini 5 power switch ON.
8. Slowly increase throttle control on the transmitter. The motor should turn. If the motor does not turn, try reversing the throttle channel at the transmitter and repeat steps 1 through 7.
9. If you encounter problems, check to make certain all interconnections are made in accordance with the section titled INSTALLATION. If you require further assistance, contact the technical department at FMA (301) 668-7614.
10. To reduce size and weight, the mini 5 does not include a low voltage motor cutoff. When flying your aircraft, take precautions to land before the battery is completely drained. If you ever begin to lose control of the aircraft in flight, immediately throttle back and land.

FMA LIMITED WARRANTY ON ELECTRONIC SPEED CONTROLLER PRODUCTS

FMA, Inc. warrants this speed controller to be free of manufacturing defects for the term of 90 days from the date of purchase. Should any defects covered by this warranty occur, the speed controller 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 speed controller in its original condition as purchased, in strict accordance with the mini 5 owner's manual. Speed controllers 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 speed controller.
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.

mini 5

MODEL SC5 HI FREQUENCY, MICROPROCESSOR CONTROLLED, MINIATURE SLOW FLYER SPEED

OWNER'S MANUAL

NOTE: PLEASE READ MANUAL COMPLETELY BEFORE OPERATION

INTRODUCTION:

Thank you for purchasing the FMA Direct / RCLine mini 5 miniature slow flyer electronic speed controller (ESC). The mini 5 is one product in a family of quality ESC devices available from FMA, Inc. Designed specifically for slow flyer aircraft, the mini 5 is the smallest, lightest ESC currently available (.088 oz). Featuring high-frequency operation, this microprocessor-controlled ESC will provide smooth throttle response at a continuous current draw of up to 5 amps. The built-in battery eliminator circuit (BEC) feature of the mini 5 further reduces over-all system weight and size by eliminating the need for a separate battery pack to power the on-board R/C equipment installed in the aircraft.

SPECIFICATIONS:

SIZE:	**0.75"L X 0.32"W X 0.28"H**
WEIGHT:	**0.088 OUNCES**
FUNCTION:	**FORWARD, B.E.C.**
INPUTS / CONNECTIONS:	**5 TO 8 CELL NICAD BATTERY - 1 R/C RECEIVER**
OUTPUT CAPABILITIES:	**1 D.C. MOTOR - DOWN TO 25 TURNS**
MAIN CONTROL:	**MICROPROCESSOR**
FREQUENCY:	**3 kHz**
CONTINUOUS CURRENT:	**13 AMP (FET RATING) - 5 AMP (TESTED)**
RDS:	**11 m OHM**
B.E.C. SPECS:	**5V / 1A**

INSTALLATION: RECEIVER / MOTOR / BATTERY CONNECTIONS

1. Because the mini 5 is designed for ultra-light weight applications, no connectors are provided for servo, motor, or battery hook-up. In ultra-small applications, it is common for all connections to be made with solder to reduce weight. Carefully consider the following:

CAUTION: IT IS IMPORTANT THAT YOU REALIZE THE IMPLICATIONS OF SOLDERING SERVO WIRES DIRECTLY TO YOUR R/C RECEIVER! MOST MANUFACTURERS CONSIDER PRODUCT ALTERATION AS GROUNDS FOR VOIDING THE ORIGINAL MANUFACTURER'S WARRANTY! IN MOST INSTANCES, SIMPLY OPENING THE CASE OF THE RADIO RECEIVER IS GROUNDS FOR VOIDING PRODUCT WARRANTY. FMA, INC. WILL ASSUME NO RESPONSIBILITY FOR ANY PRODUCT ALTERATION CONDUCTED BY A CONSUMER TO ANY PART OF HIS R/C SYSTEM INCLUDING INTERCONNECTION OF THE MINI 5 TO HIS R/C RECEIVER, BATTERIES, OR MOTORS.

Should you elect to solder the three "ribbon type" servo wires (black, red, white) to the throttle output pins on your receiver, be absolutely certain to maintain the proper color/ polarity orientation. Please refer to TABLE 1 for assistance. NOTE: The mini 5 comes equipped with Futaba style color coded wiring of black / red / white whereby the battery and signal polarity correlates to negative / positive / signal respectively. *CAUTION:* Should you elect to interface the mini 5 to an "old style" Airtronics receiver, take special care to identify the polarization of +V and -V at the receiver as indicated in TABLE 1. Remember, "old

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FMA Direct

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