



**4 CHANNEL FM DUAL
CONVERSION SUB-
MICRO SURFACE
RECEIVER**

FURY

OWNER'S MANUAL

NOTE: PLEASE READ MANUAL COMPLETELY BEFORE OPERATION

INTRODUCTION:

Thank you for purchasing the FMA Direct Fury FM surface receiver. Designed in collaboration with Sergio Zigras of Z-Tron, this tiny new surface receiver packs a sophisticated microcontroller and advanced dual conversion circuitry into a package with the footprint of two postage stamps side by side. With dimensions of 1.82"x0.94"x0.67" and a weight of a mere 0.6 oz (18 gm) encased, the new Fury will redefine the term performance in the surface market. Built on the foundations of reliable aircraft model receiver technology only found in FMA Direct receiver products, the new Fury will provide glitch free operation in even the most severe racing and boating conditions. Because it is microprocessor based, Fury includes new advanced S.M.A.R.T. (Selective Microprocessor Advanced Radio Transmission) decoding that digitally filters every frame of information to ensure that the servos never react to any random noise that might get past the superior RF circuitry. In the unlikely event that RF noise does get too high for reliable control, the Fury will failsafe to a "no servo output" state. This is great if you have an electric car and somebody turns a transmitter on your frequency. The ESC will automatically go to zero throttle. Available in two basic models to accommodate FM shift, the Fury supports either positive or negative FM modulation. Heavy-duty, SMT construction on a single, glass-epoxy P.C. board along with various other circuit improvements make the Fury design one of the most reliable we have ever produced. So plug it in and **FEEL THE FURY!**

FMA LIMITED WARRANTY ON RADIO RECEIVER PRODUCTS

FMA, Inc. warrants this receiver 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 receiver 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 receiver in its original condition as purchased, in strict accordance with the Fury owner's manual. Receivers 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 receiver.
2. Damage resulting from accident, crashes, 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.

SPECIFICATIONS:

SIZE:	1.82"L X 0.94"W X 0.67"H (IN NYLON CASE)
WEIGHT:	18 gm / 0.60 OZ.
DESIGN:	DUAL CONVERSION, SUPER HETERODYNE
SPECIAL CIRCUITRY:	uP CONTROLLED S.M.A.R.T. DECODING
CHANNELS:	1-4
MODULATION:	FM / PPM (PULSE POSITION MODULATION)
FREQUENCY:	R/C CH 61 - 90 - U.S. LEGAL SURFACE 75 MHz
ULTIMATE BANDPASS:	± 8.5 KHz @ >55 dB DOWN
USABLE SENSITIVITY:	> -95 dBm
30IP:	+12 dBm
OPERATING VOLTAGE:	+3.5V TO +26V DC LIMITED ONLY BY SERVO REQUIREMENTS
LEGAL USE:	MEETS AMA GUIDELINES/FCC 1999 RADIATION REQ.

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FMA
Direct

* FCC Information: FCC ID: KH8-T2000 - This device complies with Part 15 of the Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

PACKAGE CONTENTS:

1. FMA Direct Fury FM, 4 channel sub-micro surface receiver
2. Dealer or factory-installed channel crystal (if purchased with unit)
3. Owner's Manual

TABLE 1 TRANSMITTER COMPATIBILITY (72 MHz)

Part Number	Extreme 5 Label	ACE	AIR	FUT	HITEC	JR
404FM75F	FUTABA TYPE	✓		✓	✓	
404FM75J	JR TYPE		✓			✓

PREPARATION:

• **TRANSMITTER COMPATIBILITY, POWER AND SERVO CONNECTION**

Fury receivers are available in two models to support both positive and negative modulation (Futaba/Hitec or JR/Airtronics). TABLE 1 highlights transmitter compatibility depending on the part number and what is listed on your receiver label. If you are unsure which model receiver you have, contact FMA Direct immediately. Fury receivers are designed for use with all standard servo/ESC connectors and support Futaba, JR, Hitec servos, and Airtronics servos equipped with the new "Z TYPE" connectors, as well as other brands that use standard polarity (GROUND, PLUS, SIGNAL). When connecting power, ESC's, and servos to your Fury, please refer to TABLE 2 and Figure 1 for proper hookup of your equipment. Note: with the receiver sitting label side up, the ground (negative) lead (marked #1 in Figure 1 and color coded as in TABLE 2) must match up to the pin closest to the outside edge of the receiver. No damage will occur by plugging a servo or ESC in backwards, but the device will not operate. You may mix and match any standard type servos and ESC's, but neither may be used in combination with "Old Style" Airtronics equipment – see warning below. When hooking up power to your receiver, you may either connect a NiCd battery pack to any unused channel input or use a "Y" harness to connect the battery and a servo simultaneously to any receiver channel. In electric car and boat applications, the ESC will provide power to the receiver on the throttle output channel. This is usually either channel 3 or 4 of the receiver depending on the brand of transmitter being used. The throttle output channel from the receiver may not necessarily be the same as your existing receiver. Just plug the ESC in to the various receiver channel output until you find the one that works. The same is true for steering channels, etc. Just remember, for every transmitter channel being sent to the receiver, there is only one corresponding output channel on the receiver.

TABLE 2 SERVO PLUG ORIENTATION

SERVO BRAND	1	2	3
FUTABA	BLK	RED	WHT
JR	BRN	RED	ORG
HITEC	BLK	RED	YLW

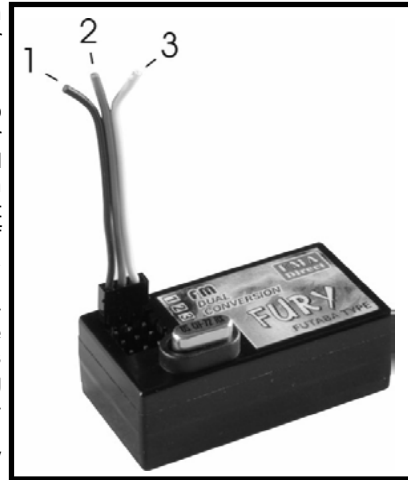


Figure 1 - Polarity

WARNING: IF YOU INTEND TO INTERFACE AIRTRONICS SERVOS OR ESC'S THAT USE "OLD STYLE" (PRE-"Z TYPE") AIRTRONICS CONNECTORS TO THE FURY, YOU MUST UPDATE THE CONNECTOR TO THE CURRENT INDUSTRY STANDARD POLARITY (SEE FIGURE 1) AND PROPER INDUSTRY STANDARD SHELL THICKNESS.

YOU MAY READILY CONVERT YOUR EXISTING "OLD STYLE" AIRTRONICS CONNECTORS TO CURRENT STANDARDS 1) BY INSTALLING APPROPRIATE ADAPTERS (FMA PN 217AJ) OR 2) BY REMOVING THE OLD CONNECTORS AND PINS AND REPLACING THEM WITH FMA PART NUMBER SEASSYJ. EACH SEASSYJ CONTAINS ONE JR COMPATIBLE MALE SHELL AND 3 FEMALE PINS. YOU WILL NEED TO CRIMP THE PINS AND SOLDER THEM TO THE WIRES OF YOUR EXISTING SERVO/ESC AND PLUG THEM INTO THE SHELL PROVIDED. MAKE CERTAIN THAT THE RED WIRE (+V) GOES TO THE CENTER PIN AS ILLUSTRATED IN FIGURE 1. FMA WILL NOT ACCEPT RESPONSIBILITY FOR ANY ATTEMPT TO USE "OLD STYLE" AIRTRONICS CONNECTORS WITH FURY RECEIVERS THAT DO NOT HAVE THE POLARITY CHANGED TO INDUSTRY STANDARDS.

• **CRYSTALS**

All Fury receivers support full crystal interchangeability using FMA Direct Quantum or Fortress series dual conversion 75 MHz crystals. The only difference between these crystals is the size. The new Quantum series crystals are low-profile and will not protrude beyond the receiver case top. Contact your local FMA Direct dealer or call FMA Direct to obtain the correct crystal for operation with your transmitter frequency. Slide the crystal through the opening in the case top and plug the crystal into the gold-plated crystal sockets mounted on the printed circuit board.

INSTALLATION

Care must be taken when installing your receiver to isolate the electronics from vibration. When possible, do this by wrapping the receiver in 3/8" thick foam rubber. Restrain the foam-packed receiver using Velcro or a rubber band if necessary. If you are unable to fit foam around the receiver in your installation, use shock absorbing adhesive foam instead. **NOTE: FAILURE TO USE FOAM RUBBER OR FOAM TAPE AS DESCRIBED ABOVE DURING INSTALLATION VOIDS PRODUCT WARRANTY.** Extend the antenna to its full length. Do not coil the antenna up or range will be shortened. If you are installing the Fury in a small vehicle and you require a shorter antenna, you may cut off a portion of the 39.75" antenna without de-tuning the receiver; a unique feature of FMA Direct receivers. Reducing antenna length *will* reduce range, however. Proceed carefully, removing only a short amount at a time and be certain to ground range check the receiver with each incremental reduction in antenna length. Try not to cut the antenna shorter than 18" whenever possible. When hooking up servos and ESC's to your receiver, use TABLE 1 and FIGURE 1 to check their plug wire color orientation.

RANGE TEST

To assure proper performance, the Fury receiver must be range tested with the "host" transmitter. The major reason for this important test is that over time, all R/C transmitters are susceptible to de-tuning and frequency "drift". To ensure the utmost in secure RF reception, current technologies for narrow-banding used in FMA designs can actually place a higher demand on transmitters. Power level and frequency accuracy of your transmitter are more important than ever before. Therefore, for the initial range check and in rare cases when you suspect degradation of performance from your R/C system, FMA would like to suggest the following guidelines: Do not install a switch harness for the initial range test because switch harnesses are often the cause of poor range. The power switch on an ESC installation is O.K. Collapse your transmitter antenna. With the receiver mounted in the vehicle, apply power and walk away from the receiver moving one control on the transmitter. You should obtain at least 100 feet of line-of-sight ground range if everything is operating properly. If any loss of servo control occurs, the system might need to be calibrated by an FMA service station. CALL (301) 831-8980 for FMA Direct technical assistance. In certain cases, the FMA service station may ask you to send in your transmitter along with your receiver.

ACCESSORIES:

Y-harness, switch harness, and numerous other accessories as well as a full line of servos, batteries, and chargers are available for use with your FMA receiver either direct or from your local FMA dealer.