Team NOVAK

NER-3FM
3-CHANNEL FM RECEIVER

INSTRUCTION MANUAL

THE NOVAK NER-3FM

The NER-3FM is a compact, 3-channel narrow band FM receiver that is compatible with all popular FM transmitters, including Futaba's 1024 PCM and Airtronics' (Sanwa) CS2P and Caliber 3P transmitters. It will work on 20 kHz channel spacing and is immune to pager frequencies.

Specifically designed for use with electronic speed controls (ESCs), the NER-3FM operates at a low voltage—eliminating glitches during acceleration. It is also protected against the application of reverse voltage.

Other features include a user-friendly 18" antenna and the ability to use a direct servo controller harness.

FOR PROPER OPERATION, FOLLOW STEPS 1-4.

SPECIFICATIONS

Dimensions	1.39" x 1.42" x 0.57"
Weight *(without crystal)*	0.58 oz
Modulation	FM
No. of Channels	3
Frequency Bands Available*	27 and 75 MHz
Usable Sensitivity	3.0 microvolts
Selectivity	6 db at ± 3 kHz
Adjacent Channel Rejection	60 db at ± 9 kHz
Voltage Range	3.5 VDC to 12.0 VDC
Current Consumption	5.0 mA over full voltage range

* Available in 29, 35, and 40 MHz in countries where legal.

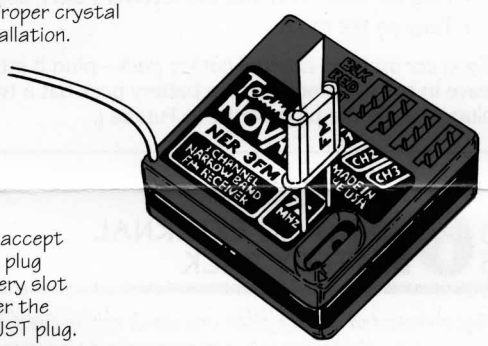
STEP 1 RADIO CRYSTALS

Your Novak receiver has been factory tuned and does not need further tuning. The crystal is not included with the receiver.

1. Only use Airtronics, Futaba or JR Propo FM crystals.
2. The FM crystal used MUST match the radio system and frequency band.
3. Carefully insert the crystal into the crystal socket by guiding the two crystal prongs into the mounting holes (FIGURE 1).
4. The crystal is non-polarized and can be inserted in either direction (the crystal is not included).
5. The color of the antenna wire indicates the frequency band of the receiver*.

Black	27 MHz	Yellow	40 MHz
Red	29 MHz	Green	75 MHz
Orange	35 MHz		

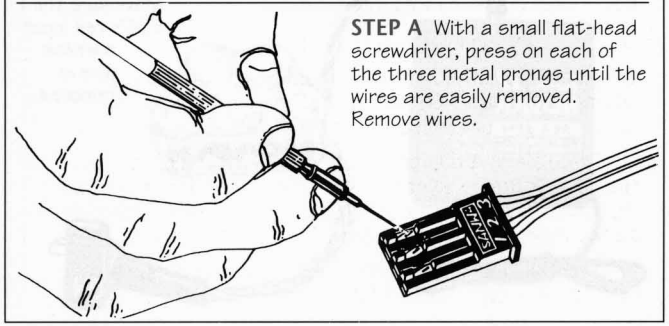
FIGURE 1 Proper crystal and plug installation.



Channels 1-3 accept the Futaba J plug and the battery slot accepts either the Futaba J or JST plug.

STEP 2 CHANGING THE INPUT PLUG

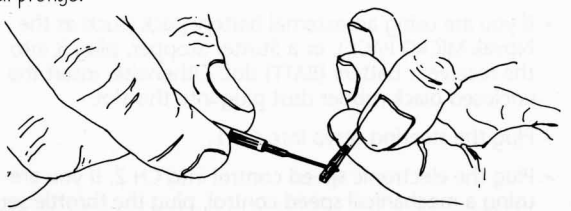
1. If your radio system has Futaba J plugs, proceed to STEP 3.
2. If your radio system has Airtronics plugs you must change the plug plastics to Futaba J type by using the included Novak Futaba J plug plastics. Follow STEPS A-C.



STEP A With a small flat-head screwdriver, press on each of the three metal prongs until the wires are easily removed. Remove wires.

STEP 2: Changing the Input Plug continued

STEP B With the screwdriver, carefully lift up each of the metal prongs.



STEP C Insert each wire pin into the correct plug slot. Each pin should click in.

Novak's Futaba J plug shown

BLK= Black wire terminal
RED= Red wire terminal
WHT= White wire terminal

PRECAUTION Improper installation of these wires may cause damage to the receiver, servo and/or ESC.

STEP 3 MOUNTING INSTRUCTIONS

Mounting receiver incorrectly can greatly reduce its performance.

1. Mount the receiver with double-sided sticky tape in electric cars and boats. In gas cars and gas boats, it should be mounted in foam rubber.
2. **If you have a car with a metal chassis, and your radio is in the 75 MHz band, do not mount the receiver or antenna on the chassis.**

   This set up may decrease the range of your radio by as much as 50%. Mount the receiver and antenna as high in the car as possible. For example: place the receiver and antenna on the front of the rear shock tower in off-road cars (such as the RC-10, JR-X2, etc.).
3. The antenna wire must not come close to the power leads of any servo, speed control, the drive motor, or the battery because of possible radio interference.
4. Do NOT vary the length of the antenna.

   Off-Road Cars: The antenna should be run up the plastic antenna tube supplied with most kits. Allow the excess antenna to trail out the top of the tube.

   On-Road Cars: A fiberglass antenna shaft should be used. Heat shrink the receiver antenna to the fiberglass antenna shaft with several pieces of 1/4" wide heat shrink tubing and let the excess trail over the top.

   Another method is to coil the antenna up the antenna shaft (keep coils spaced about 1/8" apart).

STEP 4 HOOK-UP INSTRUCTIONS

- If you are using an external battery pack (such as the Novak MICRO PACK), or a Stutter Stopper, plug it into the receiver's battery (BATT) slot. Otherwise, insert the enclosed black rubber dust plug into this slot.
- Plug the steering servo into CH 1.
- Plug the electronic speed control into CH 2. If you are using a mechanical speed control, plug the throttle servo into this channel.
- If you are using a servo for a third control, plug it into CH 3. Otherwise, insert the black dust plug into the CH 3 slot.

Note that the two enclosed dust plugs are different.

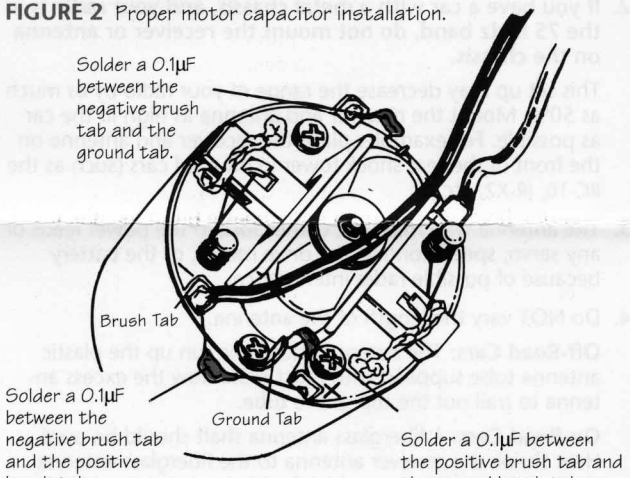
To prevent receiver glitching, three 0.1µF (50 V) ceramic disc capacitors **MUST** be installed on **EVERY** motor (FIGURE 2). Three capacitors are included. Extra 0.1µF capacitors are available in the Novak accessory kit #5620. Solder a 0.1µF (50V) capacitor between:

- POSITIVE (+) & NEGATIVE (-) motor brush tabs
- POSITIVE (+) brush & GROUND† motor tabs
- NEGATIVE (-) brush & GROUND† motor tabs

If you have a low frequency speed control (such as a Novak T4), solder a 47 µF electrolytic capacitor (note polarity) between the positive and negative motor brush tabs. DO NOT use this capacitor if using a high frequency speed control.

† Use the can of the motor if your motor does not have a motor tab. (An area of plating must be removed before soldering to case—this can be done with a file.)

FIGURE 2 *Proper motor capacitor installation.*



* If using a low frequency ESC, solder a 47 µF capacitor between the positive and negative brush tabs (note polarity).

STEP 5 USING A DIRECT SERVO CONTROLLER (DSC) HARNESS

A DSC harness can be used to adjust components such as linkages and the speed control without interfering with another racer on your frequency.

The DSC feature is available on the Futaba PCM 1024 and the Airtronics Caliber 3P transmitters. The Futaba DSC cord is directly compatible with the NER-3FM receiver, and plugs into the battery slot. To use the Airtronics DSC harness, you must change the Airtronics plug plastic to the enclosed Novak Futaba J plug plastic. The wire with the red stripe must be inserted into the BLK slot of the Futaba J plug plastic, and the other wire must be inserted into the WHT slot.

If you do not have a DSC harness, use Novak accessory item #5625, which is compatible with the NER-3FM.

TO USE THE DSC CORD

- Plug the round male plug into the transmitter's DSC output (always leave transmitter switch off).
- Plug the other end into the receiver's BATT slot.
- Turn on the model.

If you are using an external battery pack—plug it into CH 3, and leave in to power radio. If the battery pack has a two-pin JST plug, change the plug plastic to Futaba J.

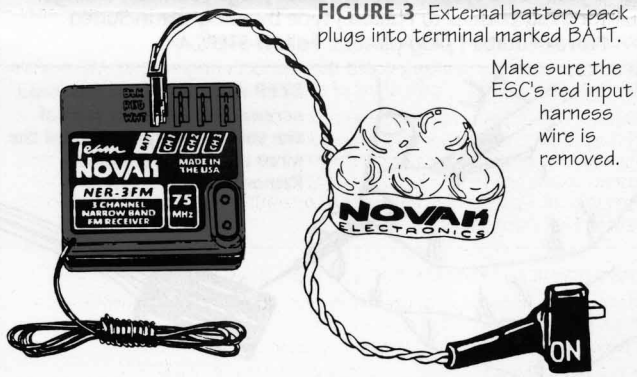
STEP 6 USING AN EXTERNAL BATTERY PACK

Recommended if more than one servo will be used, or if erratic radio operation is experienced during acceleration.

The 5-cell, 50 mAH Novak MICRO PACK supplies constant power to the receiver and is recommended for all applications.

If using an electronic speed control with an internal BEC (such as a Novak ESC), remove the red wire from the input harness plug. Plug the MICRO PACK's input harness into the battery slot of the receiver (Figure 3). Turn on the MICRO PACK's switch first; then turn on the ESC's switch.

FIGURE 3 *External battery pack plugs into terminal marked BATT.*



TROUBLE-SHOOTING GUIDE

RECEIVER GLITCHES— Due to one of the following:

1. Receiver is not mounted properly.
2. Proper number & type of capacitors are not installed on motor.

CAR STUTTERS— Caused by one of the following:

1. Bad power plug(s) or solder joints.
2. If running 4 or 6 cells with a low-frequency Novak ESC, connect the two red wires to bypass the internal voltage regulator.
3. Use a Novak MICRO PACK or Stutter Stopper.

NO RANGE— Bad crystal or receiver needs re-tuning.

REPAIR PROCEDURES

Receivers should be returned to Novak Electronics for repair, re-tuning, or frequency band changes. Send Units To:

NOVAK ELECTRONICS, INC.
128-C East Dyer Road
Santa Ana, CA 92707

CUSTOMER SERVICE HOURS (PST)

M-Th/ 8:00-4:00, F/ 8:00-2:00 • (714) 549-3741 • FAX (714) 549-2740

What to Send With Repair—Fill out enclosed Receiver Repair Return Card (or letter explaining problem) for EACH item. Include a legible name and return street address (no PO Boxes, please) INSIDE package.

For Warranty Work—Customer MUST CLAIM WARRANTY in letter and include a valid, dated, cash register or charge card receipt (or a previous repair invoice) WITH the repair.

Repair Costs—Receiver repair costs vary and cannot be determined until repaired. Repair estimates can only be provided for the following services: tuning and frequency changes. Customer is responsible for repair costs (parts, labor and shipping charges). **Units that operate normally when received will be charged a service fee and return shipping charges.** Repairs are returned UPS COD (cash only) unless VISA or Master Card is specified. Personal checks will not be accepted.

In a Hurry?—Send to Novak by a one or two day shipping service, such as UPS Blue Label or Federal Express Overnight. Customer assumes shipping charges and insurance.

PRODUCT WARRANTY Novak Electronics guarantees all products to be free from defects in material and workmanship for a period of 90 days from date of purchase (verified by sales receipt). This warranty does not cover poor installation, components worn by use, tampering with the electronics, allowing water, moisture, or any foreign material on the PC board, installing an alternate plug plastic incorrectly, or not removing the ESC's positive input wire when using and external battery pack.

In no case shall our liability exceed the product's original cost. We reserve the right to modify the provisions of this warranty without notice.

Because Novak Electronics, Inc. has no control over the installation and use of the product, no liability may be assumed nor will liability be accepted for any damage resulting from using this product. Every receiver is thoroughly tested and tuned before leaving our facility and is, therefore, considered operational. By the act of installing or operating this receiver, the user accepts all resulting liability.

All Novak products are designed and manufactured in the USA.

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