

M5 Receiver specifications

Size	1.30 inches x 0.80 inches x 0.58 inches
Weight	0.30 ounces (9 grams)
Type	Dual conversion, super heterodyne
Decoding	Microprocessor-based decoder
Channels	1-5
Modulation	FM / PPM (pulse position modulation)
Ultimate bandpass	±8.5kHz at >55dB down
Usable sensitivity	> -95dBm
3OIP	+9dBm
Operating voltage	+2.7 to +8VDC
Legal use	Meets AMA guidelines and FCC 1999 radiation requirements
FCC Information	FCC ID: KH8-T2000. This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: 1) This device may not cause harmful interference, and 2) this device must accept interference received, including interference that may cause undesired operation.
Frequencies	U.S. RC aircraft channels 11-60

FMA limited warranty for receivers

FMA, Inc. warrants this product 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 product shall be repaired or replaced with a unit of equal performance by FMA or an authorized FMA service station.

Limits and exclusions

This warranty may be enforced only by the original purchaser, who uses this product in its original condition as purchased, in strict accordance with the product's instructions. Units returned for warranty service to an FMA service center will be accepted for service when shipped postpaid, with a copy of the original sales receipt or warranty registration form, to the service station designated by FMA.

This warranty does not apply to:

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

Call (301) 668-4280 for more information about service and warranty repairs.



M5LV Low Voltage Sub-Micro Receiver for Aircraft

- Model 805FM72LVF for use with 72MHz negative shift transmitters (Futaba/Hitec)
- Model 805FM72LVJ for use with 72MHz positive shift transmitters (JR/Airtronics)

Features

- Full range, full performance.
- Operates from 2.7 to 8VDC. Can be powered by a single Lithium Polymer (LiPo) cell or 3 to 5 cell series-connected NiCd/NiMH pack. Ideal for micro and indoor electric-powered aircraft, as well as small glow-powered aircraft.
- Equipped with 1.25mm connectors—plug-in compatible with FMA's low capacity LiPo packs, Super 9LV electronic speed control and PS20LV low voltage sub-micro servos.
- Available with either negative shift (for Futaba, Hitec transmitters) or positive shift (for JR, Airtronics transmitters).
- Dual conversion, narrow band, PPM.
- Digital filtering improves noise immunity.
- "Last good frame hold" stabilizes servos when interference is present.

Note: Servos and battery packs having standard J type connectors will not plug into the M5LV. However, if servo and battery J connectors are replaced with 1.25mm connectors, they can be used with the M5LV.

Safety precautions

- Follow all instructions in this manual to assure safe operation.
- If you have not assembled and operated a radio controlled model before, obtain help from an experienced modeler. You will need guidance to successfully assemble, test and operate radio controlled models. One of the best ways to obtain help is to join your local radio control club.
- In some areas of the country, you cannot legally operate radio controlled models except at approved fields. Check with local authorities first.
- Observe frequency control. If someone else is operating a radio controlled model on the same channel as your transmitter, **do not turn on your transmitter—even for a short time.** Your transmitter has a channel number marked somewhere on its case. **When a model receives signals from two transmitters on the same channel at the same time, it cannot be controlled and will crash—possibly causing personal injury or property damage.** For safety, most RC flying fields have formal frequency control rules. Follow them carefully.
- Do not operate your radio control transmitter within 3 miles of a flying field. Even at a distance, your transmitter can cause interference.

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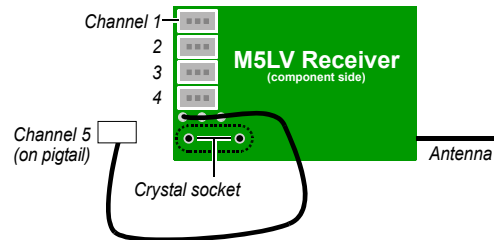
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FMA
Direct

Installing the M5LV Receiver

You must supply:

- Crystal: FMA Quantum or Fortress series dual conversion or Hitec dual conversion (on same channel as your transmitter).
- Battery pack outputting 2.7 to 8VDC: typically a 1 cell LiPo pack or 3 cell NiCd pack. (Do not use alkaline batteries!)
- Radio on/off switch harness or electronic speed control that can operate from the battery pack.
- Servos capable of operating from the battery pack.



1. Plug in crystal.
2. Plug in servos. Servo channel 1 is farthest from crystal. 1.25mm connectors are keyed for proper orientation.

Tip: If you don't need Channel 5, you can cut off the pigtail to save weight.

3. Plug battery/switch harness or ESC throttle cable into any unused channel.
4. If receiver will be subject to vibration, wrap it in 3/8" thick (or thicker) foam rubber. **Failure to protect receiver from vibration voids warranty.**
5. Secure receiver in aircraft with rubber band, Velcro® or double-sided foam tape, as appropriate.
6. Route antenna.
 - You may cut antenna to as short as 12" without de-tuning receiver. However, range will be reduced. Be sure to range test and cut off a little bit at a time until antenna reaches desired length.
 - If you don't want to cut antenna, you can coil it inside aircraft. Total effective antenna length is diameter of coiled section plus length of straight section. Be sure to range test.
 - Helicopters generate RF noise and heavy vibration. For best reception, route antenna as far as possible from tail boom. One option is to route antenna through nylon pushrod tubing mounted to the skids.

Tip: Azarr antennas (FMA part numbers M72ANT and M72ULTANT) are the ideal replacements for the stock antenna. FMA also offers low voltage servos, low voltage electronic speed controls, LiPo battery packs, chargers and many other accessories. See your local FMA dealer or visit the FMA Direct web site (www.fma.com).

Operating the M5LV Receiver

The M5LV operates like any RC receiver, but there are some things you need to know about low voltage operation in electric-powered aircraft:

- FMA's Super 9LV electronic speed control is the ideal companion for the M5LV. It operates from a single LiPo cell or 3 to 5 NiCd/NiMH cells in series. However, if you don't have a Super 9LV ESC, then...
- The M5LV will work with any ESC, but you will only get low voltage operation if the ESC supports it. Disabling the low voltage cutoff (LVC) on the ESC may allow low voltage operation.
- If the ESC has a battery eliminator circuit (BEC), your radio system may not operate when the voltage falls below 3.5V. This isn't a receiver problem. It's caused by the voltage drop across the ESC's voltage regulator. Servos can pull the BEC output below the 2.7V minimum needed to operate the M5LV.

Range checking

Quick range checking

1. Fully collapse transmitter antenna.
2. Walk away from aircraft about 150 feet (45 meters).
3. Move transmitter sticks. Have someone close to aircraft watch for loss of control.

Rigorous range checking

The procedure described above is only a cursory range check. If you suspect range problems, follow these steps to check your radio system with the receiver out of the aircraft:

1. Place receiver on a non-metallic surface (a cardboard box, for example) to elevate it about 2 feet (60cm) off the ground.
2. Fully extend receiver antenna and position it vertically above receiver (tape antenna to a wooden dowel, for example).
3. Connect one servo to receiver channel 1.
4. Fully collapse transmitter antenna.
5. Turn on transmitter.
6. Connect a battery pack directly to receiver. Do not use a switch harness for this test, since a switch harness may reduce range.
7. Walk away from receiver while moving transmitter stick for channel 1. During this time, have someone watch the servo and note any loss of control.

With full length receiver antenna (39.75"), you should obtain at least 200 feet (60m) line-of-sight ground range if everything is operating properly.

Note: Over time, all RC transmitters are susceptible to detuning, frequency drift and power reduction. If you suspect your radio system's performance has degraded, carry out the formal range check (above) with the receiver out of the aircraft. If, under these conditions, the radio system experiences failures, there may be a problem with the transmitter, the receiver or another part of the radio system. If you suspect the transmitter is out of tune, FMA can tune it for you. With proof of purchase for an FMA receiver, FMA will tune your transmitter (any brand) at no charge. The only cost is for shipping.