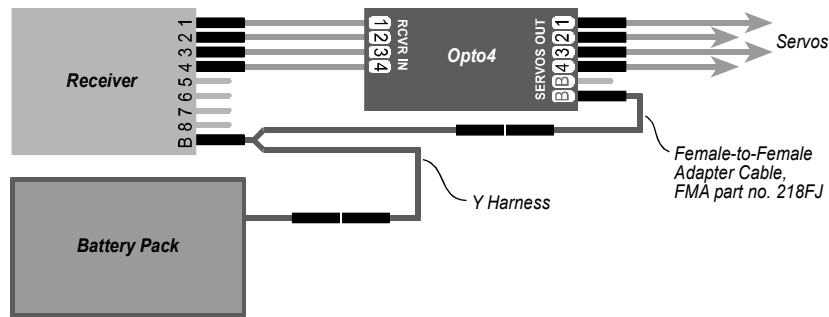


## 4 channel partial isolation with 1 battery pack

If you can't use separate receiver and servo battery packs, you can still have partial isolation when both the receiver and Opto4 are powered from the same pack. This configuration doesn't provide as much protection from interference, but is a good choice when space and weight limitations prevent using a second battery. You can plug together this system using a Y harness and a female-to-female servo adapter cable available from FMA.



## Specifications

Maximum output current	5A on servo power bus
Receiver current drain	2mA
Dimensions	1.95" (including header, not including pigtails) x 0.80" x 0.40"
Weight	0.4oz (12g)

## FMA limited warranty

FMA, Inc. warrants this product 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 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) 668-7614 for more information about service and warranty repairs.

050207



## Opto4 optical isolator

Model OPTO4, for optically isolating 4 servos from an RC receiver

## Introduction

Radio controlled aircraft are subject to radio frequency interference (RFI) and electromagnetic interference (EMI) from a variety of sources. Potential interference sources include:

- Loose metal-to-metal joints
- Struts and landing gear
- Helicopter tail boom supports
- Dry or noisy ball bearings
- Electric motor brush noise
- Brushless motors
- Onboard electronics
- Electronic control units for turbines
- Onboard video transmitters
- Poor spark plug shielding or loose spark plug wires on gas engines
- Nearby commercial transmitters for paging, cell phone service and television

...and the list goes on. Further, vibration from a poorly tuned engine, or one turning an unbalanced prop, can exaggerate mechanical RFI/EMI sources.

Any RC receiver's tuned front end and intermediate stage minimize interference picked up by the antenna. However, servo wires—especially those with extensions—can act as antennas that open a "back door" for interference to enter the receiver.

FMA's Opto4 is a four-channel optical isolation system. An optical isolator uses a short optical transmission path to electrically isolate two circuits. When used with two batteries (one for the receiver and one for the servos) the Opto4 divides your airborne electronics into two electrically separate systems. This prevents interference received by servo wires from propagating back into the receiver.

### Power sources for systems using the Opto4

- Receiver battery:**
  - Receivers that don't have to drive servos typically draw less than 20mA, so you can power your receiver with a small, lightweight pack.
  - Most RC receivers can operate from up to 10 volts. Check your receiver specs to determine its maximum input voltage. You may be able to operate your receiver from a 2s (7.4 volt) Lithium Polymer pack, which will weigh less compared to a NiCd/NiMH pack with the same capacity.
- Servo battery:** Select a pack sufficient to support your servo system's voltage and current requirements.
- Regulator:** Aircraft equipped with high current servo systems often benefit from a regulated power source. FMA recommends its Power Force VRLI high power voltage regulator and LED indicator for two reasons. First, it gives you flexibility by operating from a 2s to 4s LiPo pack or a 5 to 12 cell NiCd/NiMH pack. Second, it outputs up to 10A at a regulated 5 volts or 6 volts (user selectable).

## Precautions

- Unused battery pins on the Opto4 are live. Protect them from shorting.
- Read, understand and follow all instructions provided with Lithium Polymer batteries.

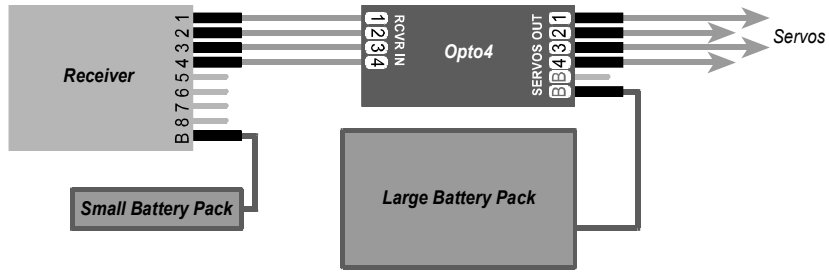
FMA, Inc. • 5716A Industry Lane • Frederick, MD 21704

Sales: (800) 343-2934 • Technical: (301) 668-7614 • [www.fmadirect.com](http://www.fmadirect.com)



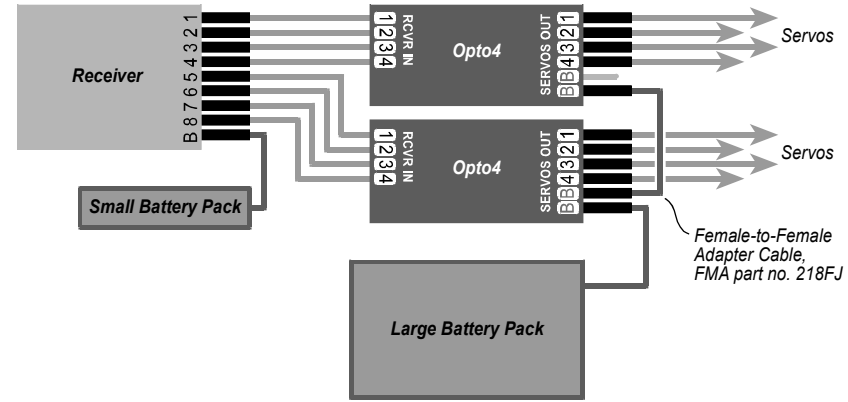
### 4 channel full isolation with 2 battery packs

In this basic system, Opto4 drives four servos from a battery pack. A separate, small battery pack powers the receiver.



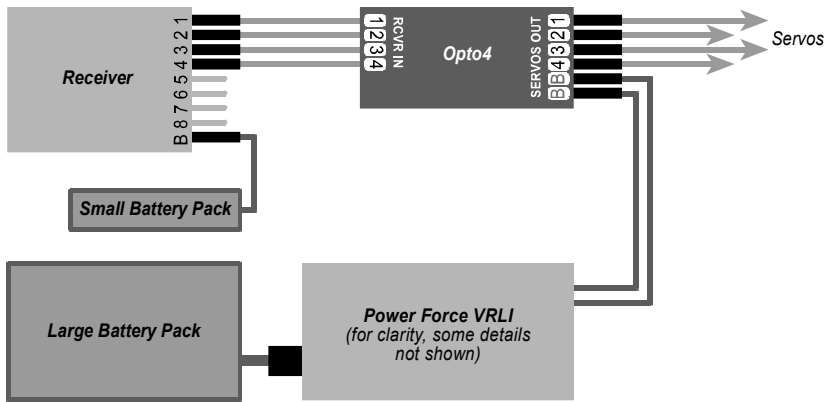
### 8 channel full isolation with 2 battery packs

The basic configuration shown on the previous page can be easily expanded to support up to 8 channels. Servo power enters one Opto4's battery connector, and is passed through the second battery connector to the other Opto4. This setup uses a female-to-female servo adapter cable available from FMA. You could also wire the servo battery pack with two output connectors.



### 4 channel full isolation with 2 packs and Power Force VRLI

For a high current servo system, use a voltage regulator to maintain constant voltage output to the servos. The FMA Power Force VRLI regulator is the ideal companion for the Opto4.



### 8 channel full isolation with 2 packs and Power Force VRLI

Since the Power Force VRLI has two output connectors, it powers two Opto4s without additional wiring.

