

How to Control Multiple Individual Servo Functions from a Single RC Channel

The Problem

Most builders of radio controlled model boats use radio control systems which have a maximum of four separate joystick operated channels.

After at least two of these channels have been allocated to rudder and motor speed control, there are only a maximum of two left for any other auxiliary servo operated functions which one might wish to control remotely. Such functions might include:

- Gun turret traversing control
- Gun elevation control
- Anchor and towing winch control
- Mast and aerial raising and lowering
- Loading ramp control

In addition to a shortage of radio channels to operate such auxiliary functions, a standard radio channel controlled by a joystick often does not give the form of control which one would like - for example, servo rotation at a controlled rate between two fixed end points.

The Solution

To provide a simple and elegant solution to all of these problems, **Timpdon Electronics** has designed a new range of equipment The Multi-Pulse system. Each Multi-Pulse unit is an in-line self powered unit fitted between an output of your radio receiver and the servo being controlled.



Dimensions: 45 mm x 18 mm x 12 mm

Up to seven Multi-Pulse units can be connected to a single radio channel, controlled by a spring loaded centre neutral transmitter joystick, and push button programmed to be individually addressable using counting of transmitter joystick movements. The principle of joystick pulse counting is described below.

The Multi-Pulse range comprises a number of different models designed to provide specific control functions for particular applications:

Model	Typical Application	Function
MPSS1	Mast Raising Aerial Raising Loading Ramp Control	Automatic controlled servo rotation between two end points. Servo end points and rotation rates are user programmable.
MPSS2	Gun Turret Traversing Gun Elevation Control	Forward - Stop - Reverse servo rotation between two end points. Servo end points and rotation rates are user programmable.
MPSS3	Anchor Winches Towing Winches	Continuous Forward - Stop - Reverse rotation, at a user programmable speed. Requires a modified servo with end stops removed and position feedback potentiometer disconnected. See Timpdon Electronics Technical Note 16 - How to Convert a Standard RC Servo to a Bi-directional RC Controlled Low Speed Motor Gearbox for details.

Principles of Joystick Pulse Counting

Operation requires a spring loaded transmitter joystick channel, with a centre neutral position.

Each Multi-Pulse unit connected to the same RC channel counts the number of joystick movements from Centre-Off to Maximum or Centre-Off to Minimum. Counting stops 0.5 seconds after the last Off-Maximum or Off-Minimum transition. At this point, only the Multi-Pulse unit or units which have been programmed to respond to that count will respond. The action then taken is model specific. All other units will take no action.

Each Multi-Pulse unit can be user programmed to respond to a specific pulse count number between one and seven. More than one unit can be programmed to the same pulse count to accommodate, for example, multiple gun turrets operating in synchronism.

