Futaba

MULTI SERVO ADJUSTER

MSA-10

INSTRUCTION MANUAL

Note:
Always read this manual before using your MSA-10.
Store this manual in a safe place where it can be used at any time.

The MSA-10 can use one servo input signal to simultaneously drive up to four servos. It exhibits its functions when using multiple servos to drive one control surface. The servo and receiver power supplies can be separated by using a separate battery pack for the servos.

Features

- One servo signal input can simultaneously drive up to four servos.
- The neutral position, the left and right throw (individually and simultaneously), and reverse setting of each servo can be adjusted.
- A separate battery pack can be used for the servos connected to the MSA-10.
- Easy setting by rotary and push switches.
- Setting state display by LED.

Dimensions and weight

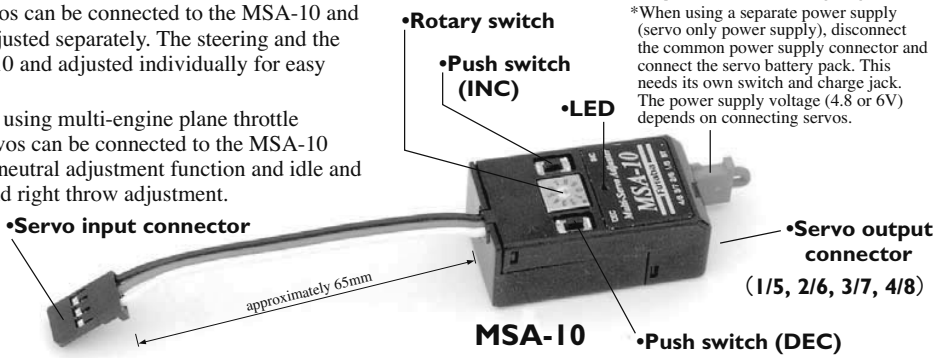
- 39.8X21.4X15.4mm
- 13g

[Example of primary use]

- When installing two servos each for the left and right ailerons with a model that uses four servos to drive the ailerons, maximum servo torque can be obtained without applying unreasonable force to the servos by connecting the two right aileron servos to the MSA-10, trimming the neutral position of each servo and setting the servo throws individually. The left aileron can also be set by following the same procedure as the right aileron and a second MAS-10.
- With scale models, the left and right flap servos can be connected to the MSA-10 and the left and right throw of the flaps can be adjusted separately. The steering and the rudder servos can be connected to the MSA-10 and adjusted individually for easy handling.
- The left and right engine RPM can be unified using multi-engine plane throttle control. The left and right throttle control servos can be connected to the MSA-10 and medium speed can be adjusted using the neutral adjustment function and idle and maximum speed can be adjusted using left and right throw adjustment.

•Common power supply connector
*When receiver and servos use a common power supply, connect the common power supply connector.

•Separate battery pack input connector (BT)
*When using a separate power supply (servo only power supply), disconnect the common power supply connector and connect the servo battery pack. This needs its own switch and charge jack. The power supply voltage (4.8 or 6V) depends on connecting servos.



⚠WARNING

Always use a NiCd battery as the power supply. Check the battery voltage and charge the battery quickly.

[Usage Method]

1. Connect the servo input connector to the receiver servo output channel.
2. Connect the servos (maximum 4) to the servo output connectors (1/5 to 4/8) of the MSA-10.
3. Set the transmitter stick and trim to the neutral position and install the horn to each servo.
4. Adjust the neutral position of each servo using the neutral position adjustment function of the MSA-10.
5. Connect the linkage and adjust the linkage so that unreasonable force is not applied to the servo at the neutral position.
6. Push either one of the transmitter sticks fully in any direction and individually adjust the throw of the servos so that unreasonable force is not applied to the servos. Push the same transmitter stick fully in the opposite direction and individually adjust the throw of the servos so that unreasonable force is not applied to the servos.

[When using a separate power supply]
Even if using a receiver with Battery Fail Safe function, it can not detect the voltage of the separate power supply. Therefore check the battery voltage and charge the battery regularly.

⚠WARNING [Mounting Precautions]

Dislodgement of a connector or breaking of a wire due to vibration during flight may cause a crash. Especially, since the number of wires becomes large, be sure to prevent connector dislodgement, broken wires, etc. If using an extension cord, fasten the input connector section with a fastener and take vibration countermeasures.

If the extension cord is long, insert an extension cord with filter between the receiver and the MSA-10 to minimize the effects of noise, etc. Connection of a large number of short extension cords will cause a voltage drop. Make the number of extension cord connections as small as possible.

Vibrationproof of the MSA-10 by wrapping it in sponge rubber or some such material.

[MSA-10 Settings]

Notes:
- If the power switch is turned off without returning the rotary switch to 0 or 9 after function setting, the settings will not be memorized.
- After setting the rotary switch to 1 to 8, always return the it to 0 or 9 and check that the LED are stay on before turning off the power.

Settings	LED display
Normal use Rotary switch (0 or 9) 1 Set the rotary switch to 0 or 9 when operating the MSA-10.	LED on When input signal abnormal, LED blinks.
Neutral setting Rotary switch (1 to 4) 1 Set the rotary switch to 1, 2, 3, or 4 corresponding to the servo No. (given on the MSA10 nameplate) whose neutral position you want to adjust. 2 When the transmitter stick and trim approaches the neutral position, the LED goes off. 3 When the LED is off, perform neutral adjustment by pushing the INC or DEC push switch.	LED off The LED blinks while the push switch is being pushed.
Left and right independent endpoint adjustment Rotary switch (1 to 4) 1 Set the rotary switch to 1, 2, 3, or 4 corresponding to the servo No (given on the MSA-10 nameplate) whose endpoint you want to adjust. 2 When the transmitter stick is pushed to the side whose throw you want to adjust, the LED comes on. 3 When the LED is on, perform throw adjustment by pushing the INC or DEC push switch.	LED on The LED blinks while the push switch is being pushed.
Servo reverse Rotary switch (5 to 8) 1 Set the rotary switch to 5, 6, 7, or 8 corresponding to the servo No.+4 (given on the MSA-10 nameplate) whose reverse you want to adjust. 2 When the transmitter stick and trim approaches the neutral position, the LED goes off. 3 When the LED is off, reverse and normal are interchanged each time the INC or DEC push switch is pushed.	LED off
Throw adjustment (left and right throw simultaneous increase/decrease) Rotary switch (5 to 8) 1 Set the rotary switch to 5, 6, 7, or 8 corresponding to the servo No.+4 (given on the MSA-10 nameplate) whose throw you want to increase or decrease. 2 When the transmitter stick is pushed, the LED comes on. 3 When the LED is on, adjust the throw by pushing the INC or DEC push switch.	LED on The LED blinks while the push switch is being pushed.
Reset Rotary switch (9) 1 Set the power supply to the off state. 2 Set the rotary switch to 9. 3 When the power is turned on while simultaneously pushing the INC and DEC push switches, all settings return to their initial value.	