Y Match

Cod. 90020303

USAGE MANUAL V1.3

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Dear Customer,

Thank you for your purchase of the Y Match, the useful programmer for servos.
The device is able to perfectly manage and synchronize the movement of two servos.

It accepts in input the signal from receiver or from any power unit Alewings such as MiniMAC or MAC.

It is installed between receiver and servos or between power unit and servos for the following purposes:

- To synchronize the movement of two servos working mechanically on the same control surface (es. on rudder, on aileron and on elevator of most of acrobatic planes)

- To connect two servos (even if they have opposite movement by activating the Reverse function) into only one channel of receiver. This is useful for saving one channel on flaps, air brakes and elevators with independent servos.

- To have a filtering and amplification function on servo signal

You don't need any external device for programming; by your transmitter and the button on the Y Match the programming is immediate.

CONNECTIONS

CONNECTION TO RECEIVER:
connect the three-wire cable to the channel on the receiver.
If you use powerful servos with a current drain higher than 1,5A for each, you have to connect also the two-wire cable to a free channel into receiver; if all channels are occupied, please use an y cable to split a channel of your choice.
ATTENTION: inverting polarity may damage servos and/or the device.
Both cables must be connected to the same power supply.

CONNECTION TO SERVOS:
connect the servos to the output connectors paying attention to polarity (please refer to the indications on the device)
ATTENTION: inverting polarity may damage servos and/or the device.

PICTURE 1

Two-wire cable
Three-wire cable

PRG button

BLACK
RED
WHITE/YELLOW

UP = Output servo SALVE
DOWN = Output servo MASTER

Both cables must be connected to the same power supply.

UP = Output servo SALVE
DOWN = Output servo MASTER

Both cables must be connected to the same power supply.

If all channels are occupied, please use an Y cable to split a channel of your choice

UP = Output servo SALVE
DOWN = Output servo MASTER

- To invert the polarity connecting the Y Match to the receiver may damage the receiver and/or the device

- To connect the three-wire cable and the two-wire cable to different power sources damages the device

-T he MAXIMUM input voltage for Y Match is 6,0V (DON'T use 5S Nixx, 2S LiFe or 2S LiPoli without a voltage regulator and set the tension at a value less than 6V)

- To invert the polarity connecting the Y Match to the servos may damage the servos and/or the device

NOTE: each of the two servo outputs (Master and Slave) is protected against short circuit and over current by a fuse not self-resetting.

- An over current (due for example to total blocking of a servo) or a short circuit downstream of the Y Match outputs (due for example to defective servos, wire extensions, plugs ecc..) causes the rupture of the fuse.

THE FUSE DOESN'T BURN FOR CAUSES OTHER THAN SHORT CIRCUIT AND/OR OVER CURRENT.

STARTING THE DEVICE FOR THE FIRST TIME

Before using the device, make sure you have done all connection in the right way, as illustrated into the previous paragraph.

IMPORTANT:
Make sure that all two servos are mechanically disengaged from the control surface; one servo blocking at his end point may damage the device, the servo and/or the control surface.

When you turn your receiver on, the device is supplied and ready to work: if you move the sticks on your transmitter, the servos connected to the outputs of the Y Match must move.

DEFAULT SETTING

How to restore the default settings:
This procedure allows you to restore all the device settings to the factory default values.

- Before restoring the default settings, disengage the servos from the control surface
- Turn the receiver off with the Y Match connected
- Press and keep pressed the PRG button
- At the same time turn the receiver on
- When the device is on, release the button

The Y Match is set to the factory default values, i.e. Y Match is "transparent" for the signal coming from the receiver (it behaves as a simple y cable).
This procedure causes the total loss of all previous settings.

PROGRAMMING

Before proceeding with setting of Y Match it is advisable to carry out the restoring of the default settings (see the previous paragraph).

IMPORTANT: make sure that servos are mechanically disengaged from the control surface. It is recommended to uncouple both servo arm from servo and linkage from surface.

Turn the device on.
- Identify the servo connected to the MASTER output (DOWN) and carry out the following settings by your transmitter
- Choose the desired rotation sense (REV/NOR on the transmitter)
- Insert the servo arm into his seat on servo Master in a centered position
- Set the centre position of the servo by your transmitter (SUBTR) and check it by connecting temporarily the servo to the control surface
- Set the end points of the control surface by your transmitter (ATV) making sure that servos don't force too much the surface at the end points positions.

Recording of the centre position (CE) and the end points (HI and LO) for servo Master:
 - Position the transmitter stick in centre (CE) and hold in place
 - At the same time press the PRG button and keep pressed for at least 3 seconds: the centre position (CE) is recorded and both servos make a small motion for confirmation

NOTE: if recording doesn't occur (servos don't make any motion) check that the CE position is a valid one referring to Picture 2.

 - Move the transmitter stick to one end point position (LO) and hold in place
 - At the same time press the PRG button and keep pressed for at least 3 seconds: the LO position is recorded and both servos make a small motion for confirmation.
 - Move the transmitter stick to the other end point position (HI) and hold in place
 - At the same time press the PRG button and keep pressed for at least 3 seconds: the HI position is recorded and both servos make a small motion for confirmation
 - Move the stick back to centre position CE

Choosing the rotation sense for servo SLAVE (output UP):
 - Briefly press the PRG button to change the rotation sense from normal to reverse and back;
Moving the transmitter stick check the servo SLAVE movement. When you have chosen bring back the stick in centre position CE.
 - Press the PRG button and hold for at least 3 seconds; both servos make a small motion for confirmation.
At this point Master and Slave servos are stopped in CE position.

Programming the centre position (CE) for servo SLAVE:
 - Insert the servo arm into his seat on servo Slave in a centered position and temporarily connect the servo to the control surface
 - Move the stick of your transmitter to one end or to the other for choosing the direction of correction
 - Press the PRG button to define the amount of correction (holding the stick into position);
a single pression generates a motion of 0,1°, if you keep the button pressed for more than 1 second, the motion is quick and continuous.

When you find the desired position, release the PRG button and bring back the stick in centre position.
 - Disengage the uniball or the clevis linked to servo Slave from the control surface again.
 - Press the PRG button (with the transmitter stick in centre position) for at least 3 seconds: the centre position for servo Slave is recorded.
The two servos automatically move to low end point position (LO).

IMPORTANT: remember to disengage the servo from the control surface before recording the position in order to avoid an excessive strain of the servo (with consequent possible damage of the servo or of the device) when it automatically moves to the next position

Programming the low end point position (LO) for servo SLAVE:
 - Temporarily connect the servo to the control surface, making sure that the servo doesn't be forced; (if it is, don't connect the servo to the control surface, proceed to adjust the end point position and try again)
 - Move the stick of your transmitter to one end or to the other for choosing the direction of correction
 - Press the PRG button to define the amount of correction (holding the stick into position);
a single pression generates a motion of 0,1°, if you keep the button pressed for more than 1 second, the motion is quick and continuous.
When you find the desired position, (servo Slave aligned with servo Master) release the PRG button and bring back the stick in centre position.
 -Disengage the uniball or the clevis linked to servo Slave from the control surface again.
 -Press the PRG button (with the transmitter stick in centre position) for at least 3 seconds: the low position for servo Slave is recorded.
The two servos automatically move to high end point position (HI).

IMPORTANT: remember to disengage the servo from the control surface before recording the position in order to avoid an excessive strain of the servo (with consequent possible damage of the servo or of the device) when it automatically moves to the next position

Programming the high end point position (HI) for servo SLAVE:
 - Temporarily connect the servo to the control surface, making sure that the servo doesn't be forced; (if it is, don't connect the servo to the control surface, proceed to adjust the end point position and try again)
 - Move the stick of your transmitter to one end or to the other for choosing the direction of correction
 - Press the PRG button to define the amount of correction (holding the stick into position);
a single pression generates a motion of 0,1°, if you keep the button pressed for more than 1 second, the motion is quick and continuous.
When you find the desired position, (servo Slave aligned with servo Master) release the PRG button and bring back the stick in centre position.
 - Press the PRG button (with the transmitter stick in centre position) for at least 3 seconds: the high position for servo Slave is recorded.

The device exits the programming and comes back to working modality; the two servos automatically move to centre position (CE).

If you need to carry out further adjustments for servo Slave, enter again the programming menu and you will directly have access to the step **"Programming the centre position (CE) for servo SLAVE"**. From here you can carry out the other settings.
If you want to repeat the setting for servo Master and the choice of sense of rotation for servo Slave, you have to reset the device.

Note: the programming menu is a sequential one; for having access to the following step (without modify the setting), you have to press the PRG button for more than 3 seconds (recording of the choice):

Available range for recording the center position CE for the Master servo
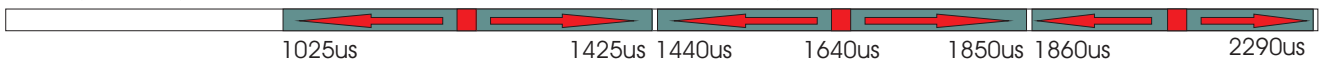Attention: you will not be able to record the center position CE out of this range
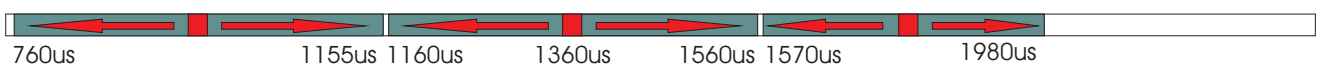
760us   1350us   1500us   1650us   2290us

MINIMUM   MAXIMUM
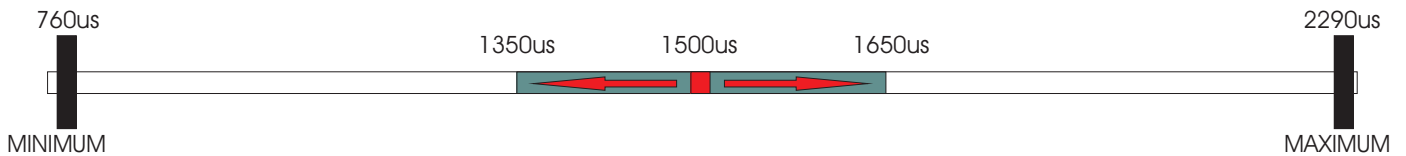
Example of programming with CE position recorded at 1500usec

815us   1015us   1215us   1300us   1500us   1700us   1720us   1920us   2120us

Example of programming with CE position recorded at 1640usec (upper position)

1025us   1425us 1440us   1640us   1850us 1860us   2290us

Example of programming with CE position recorded at 1360usec (downer position)

760us   1155us 1160us   1360us   1560us 1570us   1980us

FIXING

Fix the device with double sided tape or velcro applied on the side opposite to the programming button.

It is recommended to create an anti-vibration support for insulate the electronic device.

WARNING ⚠

This is not a toy.
Pay close attention to the following points, as the non observance of them can destroy the product, nullify your warranty and lead to property damages or personal severe injuries!
- Never leave the product unattended while it is switched on, in use or connected with a power supply. If a defect occurs, it could set fire to the product or to the surroundings.
- Avoid incorrect connections or connections with reversed polarity.
- All wires and connections have to be well insulated. Short-circuits might destroy the product.
- Never allow this product or other electronic components to come into contact with water, oil, fuels or other conductor liquids, as these could contain minerals, which are harmful for electronic circuits. If this happens, stop the use of your product immediately and let it dry carefully.
- Always wire up all the parts of the equipment carefully. If any of the connections loosens, due to vibrations, you might damage your device.
- Never cut off or modify the original plugs
- Never change the polarity of the receiver connectors
- Do not open the product and never solder on the PCB

SPECIFICATIONS

Dimensions:	14x27mm
Weight:	10g including cables and connectors
Operating voltage:	from 4,8V to 6V MAX recommend 5,4V stabilized
Max load:	3A continuous - 6A peak

Protection for short circuits on every output

Receiving resolution:	0,025°
Output resolution:	0,1°
Programmable range:	+-20°
Programmable steps:	0,1°
Working temperature:	-10 up to +60 °C

These specifications may be changed without advance notice.

WASTE DISPOSAL

At the end of its life cycle this product is subject to special waste disposal and it cannot be disposed with urban waste