No. S1002.mz-12 HoTT. USA

Graupner HoTT

HOPPING.TELEMETRY.TRANSMISSION

COMPUTER-SYSTEM

mz-12 HoTT

OPERATING INSTRUCTION

Prior to use, please read this manual thoroughly.

Keep this manual in a convenient place for quick and easy reference.

WWW.OPENHOBBY.COM

Contents

• The Transmitter Programming Setup

BEFORE USE

Thank you for purchasing mz-12 HoTT 2.4GHz Radio System. This system is extremely versatile and may be used by beginners and pros alike. In order for you to make the best use of your system and to fly safely, please read this manual carefully. If you have any difficulties while using your system, please consult the manual, our online Frequently Asked Questions (on the web pages referenced below), your hobby dealer, or the Graupner Service Center. Due to unforeseen changes in production procedures, the information contained in this manual is subject to change without notice.

SUPPORT AND SERVICE

- **Customer support**

We are happy to assist you with any question by e-mail or phone. Customer service hours are from 9 am to 5 pm PST (Pacific Standard Time) during the workweek, Monday through Friday. E-mailed questions will be answered as soon as possible

- **Online Support**

Please visit us at www.openhobbby.com, to stay up to date with the latest software, firmware and product information.

- **A/S Support**

During the warranty period, we can repair this product at no cost in the event that it has become faulty under normal operating conditions.
For non-functional products that are past the expiration date of the warranty or have been improperly used, we would be happy to repair this product for an appropriate amount of cost to the consumer.

- **Warranty information**

Refer to the WARRANTY CARD in the Package

OPENHOBBY A/S CENTER

3245 University Ave, Suite 1520, San Diego, CA 92104, United States of America
Phone: +1 855-5-RCisHoTT (+1 855-572-4746) Fax: +1 855-546-0350
E-mail: service@openhobby.com

1. BOX CONTENTS

- mz-12 HoTT Transmitter
- 8 Channel Receiver
- Manual
- Charger
- Warranty Card
- Battery Pack

2. FLYING SAFETY

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Graupner. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

1. Do not fly your model near spectators, parking areas or any other area that could result in injury to people or damage of property.
2. The radio system is affected by signal environment and the electronic jamming signals can cause disorientation and loss of control of your aircraft.
3. Since models are hazardous when operated and maintained incorrectly, install and operate a radio control system correctly and always pilot a model so the model is kept under control in all conditions
4. Ensure that all channels are working in the proper manner.
5. Do not fly during adverse weather conditions. Poor visibility can cause disorientation and loss of control of your aircraft. Strong winds can cause similar problems
6. When working with a model, always power on the transmitter first and power off the transmitter last.
7. After a model is bound to a transmitter and the model is set up in the transmitter, always bind the model to the transmitter again to establish failsafe settings.
8. When working with a model, always power on the transmitter first and power off the transmitter last.
9. Ensure all batteries are full charged before flying.
10. Only to use the recommended adapter when charging the battery of the transmitter and receiver
11. The transmitter shouldn't be switched off at any time during flight
12. Perform a range check of the transmitter and the model before flying the model
13. Make sure all control surfaces correctly respond to transmitter controls before flying.
14. Perform the programming setup of the transmitter after removing a power battery from a model or stopping an engine of a model.
15. Don't move or touch the transmitter antenna during flight

3. FEATURES

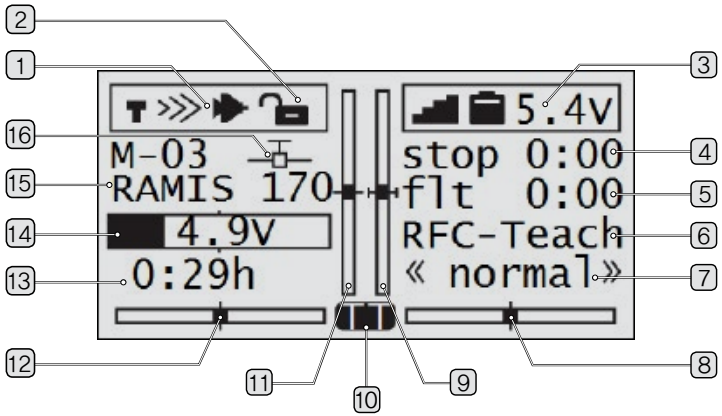
1. HOPPING TELEMETRY TRANSMISSION(HoTT)
The use of up to 75 hopping channels provides advanced reliable operation while keeping from any external interference.
2. This HoTT radio system gives user real-time information on various useful data such as user model's RPM, voltage, temperature, user programmable warning, and so on.
3. All telemetry data are directly obtained from telemetric speed controllers equipped with this HoTT system without having to install separate sensor devices.
4. Future-proof update capability using data interface of USB or Data pin.
5. Advanced HoTT wireless trainer system makes Teacher and Pupil system more enjoyable and gives user convenience for the teaching/learning.
6. Simple, ultra-fast binding of transmitter and receiver.

4. TRANSMITTER CONTROL IDENTIFICATION

5. SPECIFICATION

	Transmitter mz-12	Receiver 8 Ch
Frequency band	2.4~2.4835GHz	2.4~2.4835GHz
Modulation	FHSS	FHSS
Output power	100mW	-
Current drain	Approx 125mA	Approx 70mA
Operating voltage	3.4V~6V	3.6V~8.4V

6. DISPLAY EXPLANATION



1. Receiver signal indicator
2. Button Lock status
3. Battery voltage of receiver
4. Timer
5. Flight timer
6. Trainer indicator
7. Q. LINK
8. Aileron trim
9. Throttle trim
10. Transmitter type
11. Elevator trim
12. Rudder trim
13. Model type
14. Battery voltage of transmitter
15. Model name and model memory
16. Model type

- Function Help

[2] Button Lock function
This function is used to prevent from pressing buttons accidently during flight.
Press both of TLM and VIEW buttons at the same time to lock the buttons. If you press both of TLM and VIEW buttons at the same time again, the lock function is turned off.

[10] Transmitter type
- NR (Normal) : When transmitter is operated in the normal mode
- T.T (Trainer) : When transmitter is operated in the trainer mode

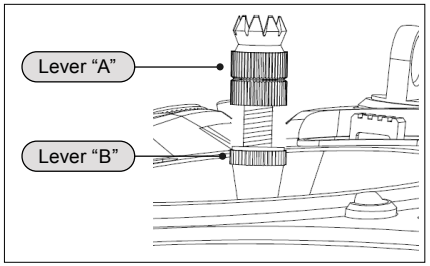
If Jack select programming is set to DSC at Basic sett, there is no display

7. ADJUSTABLE STICK LENGTH

The control stick is consisted of 2pc of stick levers and it allows you to adjust the control stick's length as you want.

1. Hold the lever "B" and turn the lever "A" counter clockwise. Lever "B" The lock will be released.

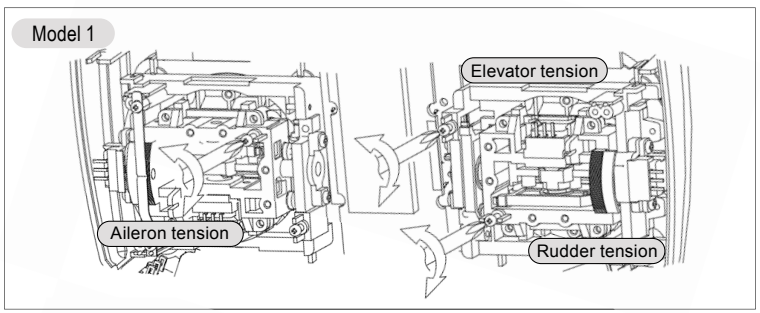
2. Turn the lever "B" and adjust the control stick's length as you want. Turn the lever "A" clockwise, then the lever "A" and "B" are interlocked and fixed.

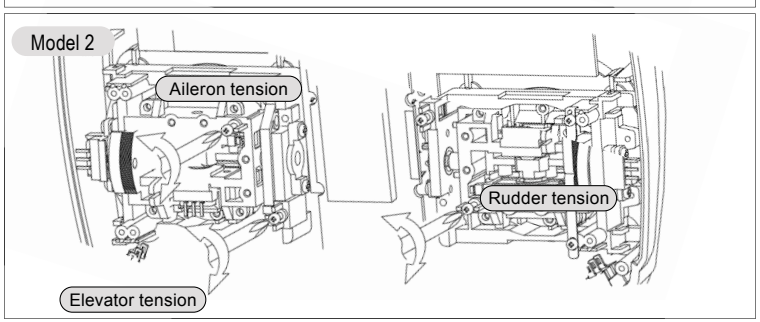


8. ADJUSTABLE STICK TENSION

The mz-12 offers adjustable tension on the throttle, aileron, elevator and rudder sticks.

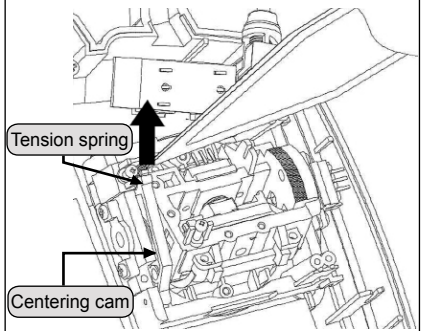
1. Remove the battery cover and battery form the transmitter
2. Unscrew the six Philips head screws that hold the transmitter's rear cover and remove the rear case.
3. Using a Philips screw driver, adjust the stick tension screw for the desired control. Clockwise to tighten and counter clockwise to loosen.



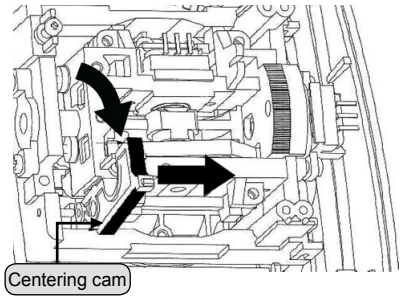


9. Mode exchange of throttle stick for Mode 1 and Mode 2

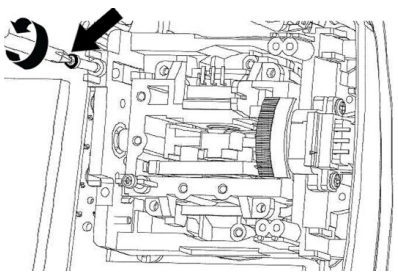
1 Unscrew the transmitter's rear case and remove the rear case and disassemble the tension spring from the centering cam in the elevator gimbal of mode 1 transmitter with tweezers



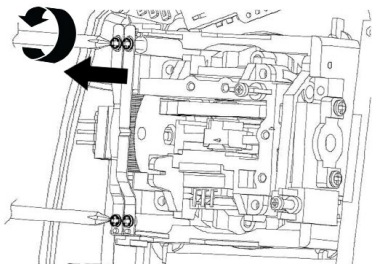
2 Disassemble the centering cam form the gimbal



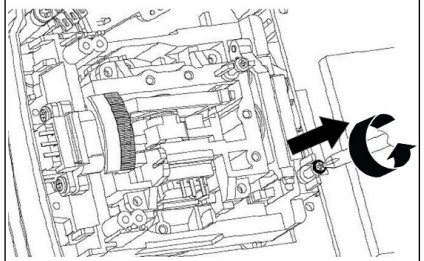
3 Unscrew the tension spring control bolt in the elevator gimbal of mode 1 transmitter



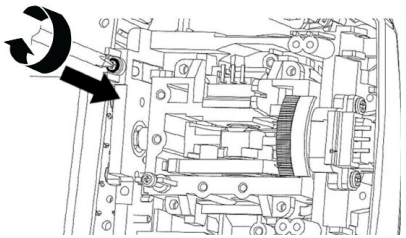
4 Disassemble 2pcs of leaf spring in the throttle gimbal of mode 1 transmitter



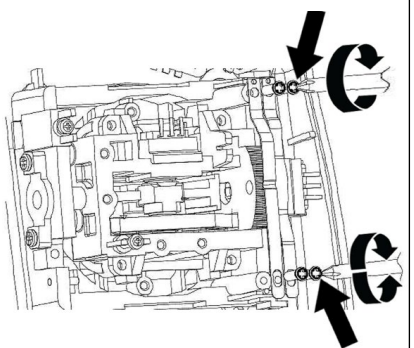
5 Unscrew the tension spring control bolt in the elevator gimbal of mode 1 transmitter



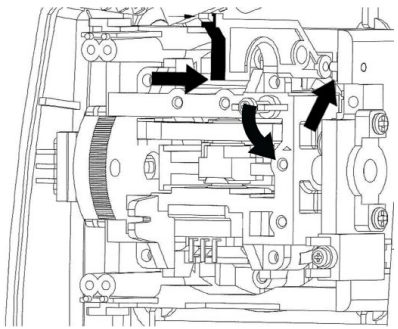
6 Screw the disassembled bolt from the throttle gimbal of mode 1 transmitter into the elevator gimbal to fix the controller



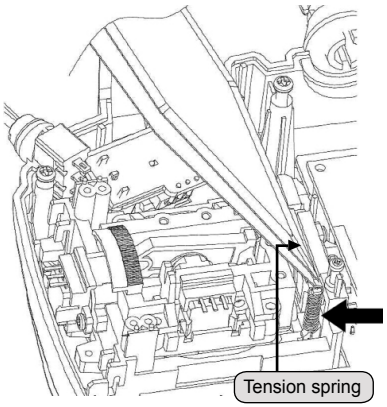
7 Assemble 2pcs of disassembled leaf spring from the throttle gimbal of mode 1 transmitter into the elevator gimbal and adjust the bolt for the desired control



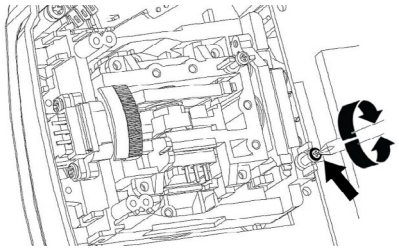
8 Assemble the disassembled centering cam form the elevator gimbal of mode 1 transmitter into the throttle gimbal pin



9 Assemble the centering cam into the throttle gimbal of mode 1 transmitter and set the spring in the center control part and the centering cam with tweezers



10 Screw the disassembled tension control bolt from the elevator gimbal of mode 1 transmitter into the throttle gimbal and adjust the bolt for the desired control



Assemble the transmitter's rear case and switch to mode 2 from mode 1 at Stick mode page in the transmitter programming setup section according to the manual.

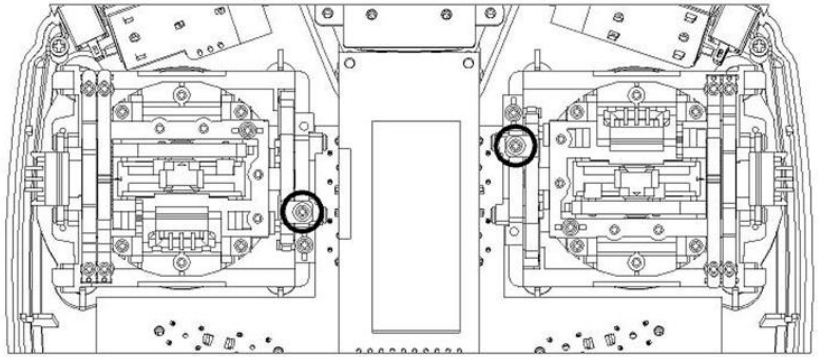
NOTICE

Make sure to test all functions are normally operated in mode 2 before flying

The sticks of mz-12 Europe Version shall be operated by tension Modes.
According to the below picture with guideline, after disabling the other side stick, you can pick the throttle channel of mode 1 or 2.

The method of Disabling Tension
The both sticks could be used tension or throttle types according to the users.
At first, you can open the case of Transmitter.
If you turn the screw clockwise at the blow black-colored circle, the tension function shall be disabled.
If you want to use the one stick by throttle function, you can disable the tension of the stick.

Please refer to the below picture, you can adjust the screw.

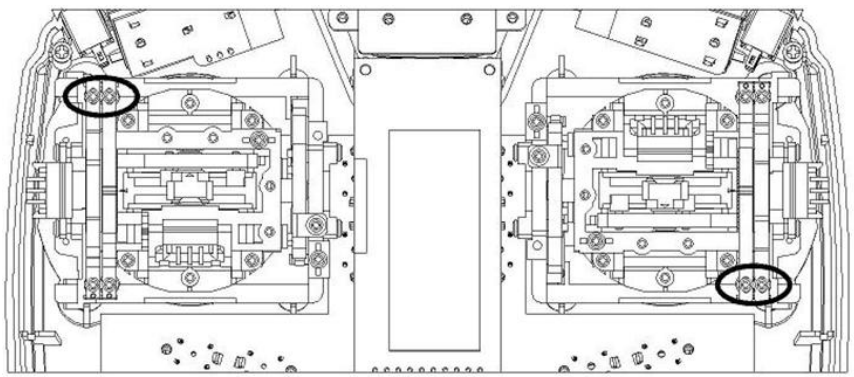


Ratchet Type Options and Strength Adjustment for Throttle Stick.

There are two options for the ratchet type of throttle stick. The one is clank type generally operating airplane and the other one is no-clank type usually operating helicopter.

The right sided screw of the black-colored circles on the below picture is for strength adjustment of throttle ratchet spring in case of operating helicopter (no-clank type).
The left sided screw of the black-colored circles on the below picture is for strength adjustment of throttle ratchet spring in case of operating airplane (clank type).

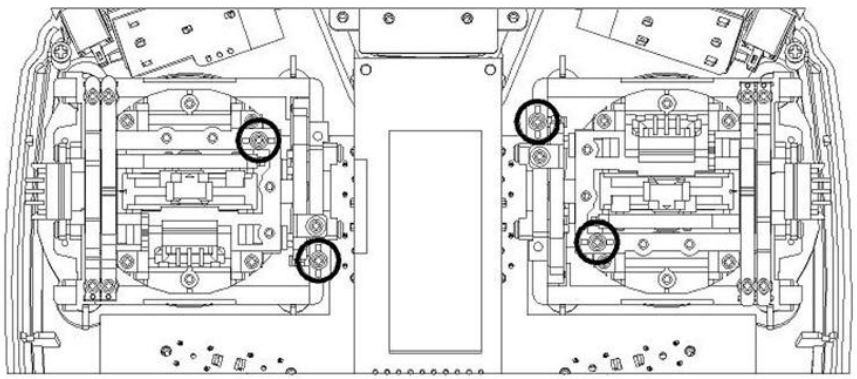
Therefore, you can pick your required type by tightening the related screw (left screw for airplane; right screw for helicopter).
Please refer to the below picture, you can adjust the screw.



The Spring Strength Adjustment of Elevator, Aileron and Rudder Stick.

According to your preference, you can adjust the spring tension by tightening the related screws for elevator, aileron and rudder stick.
There are related screws beside return-spring as below picture.
You can tighten the related screws for tension its adjustment (elevator, aileron and rudder).
There are the screws at the black-colored circles. You can tighten the screw for stronger and loosen for smoothly.

Please refer to the below picture, you can adjust the screw.



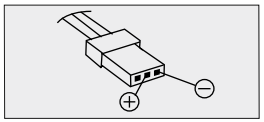
10. WHAT IS HoTT

HOPPING TELEMETRY TRANSMISSION(HoTT)
it is Graupner's unique telemetry technology in 2.4GHz signal protocol that support Bi directional data transmission gives user real-time information on things like user model's RPM, Voltage, Temperature, User programmed warning, and etc. The use of up to 75 channels ensures extreme operating reliability and immunity to external interference thanks to optimized frequency hopping broad channel sequence.

11. BATTERY INSTALLATION

Optional NiCd or NiMH 1.2-volt AA rechargeable 4-cell batteries can be used. A battery connecter is on the inside of the transmitter for convenient recharging. Graupner offers rechargeable NiCd, NiMH batteries, part number S22331.

Remove the battery cover and install the battery pack ensuring the polarity of the battery connecter.



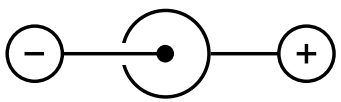
- **CHARGING BATTERIES**

The included charger is designed to recharge your batteries at a rate of 150mA. Do not use this charger for equipment other than Graupner transmitters that use 4-cell battery packs. The charging plug polarity may not be the same and equipment damage can result. During the charging operation, the charger's temperature is slightly elevated. This is normal.

⚠CAUTION

Charge only rechargeable batteries. Non-rechargeable batteries may burst causing injury to persons and/or damage to property. Never leave charging batteries unattended.

Graupner
Transmitter Charge Jack Polarity

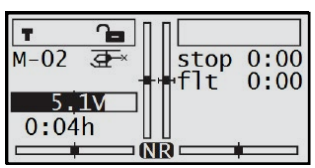


The mz-12 is compatible with all current Graupner Aircraft receivers (R Series)

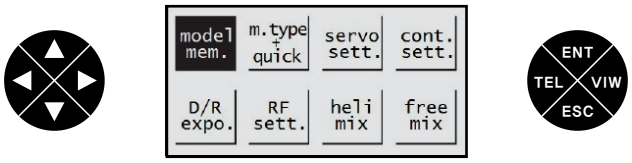
12. BINDING

You must bind the receiver to the transmitter before the receiver will operate. Binding teaches the receiver the specific code of the transmitter so that it will only connect to it's corresponding transmitter.

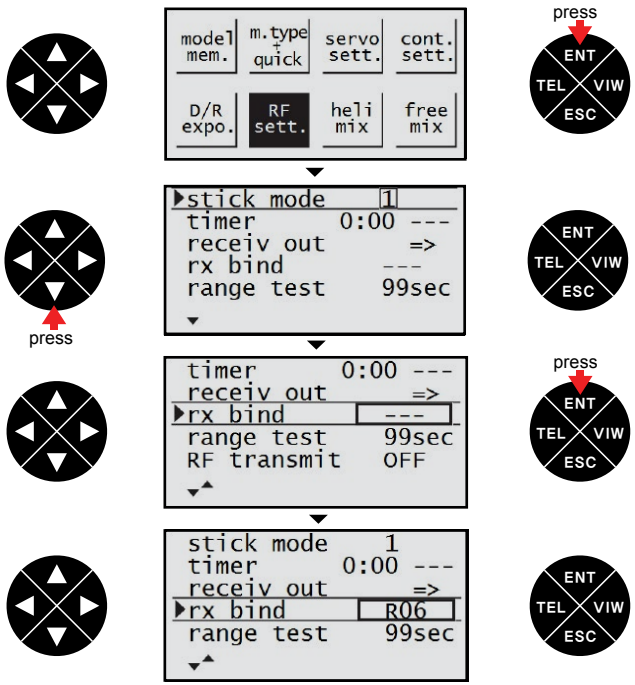
1. With the transmitter on and the home screen displayed, press the ENT button.



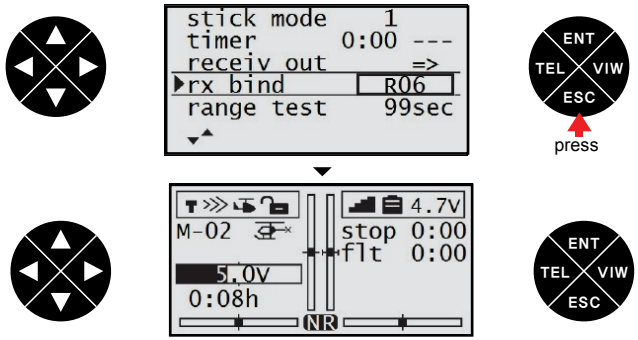
2. The model men is highlighted then press the direction button to highlight RF sett.



3. Press the ENT button, the cursor is automatically on the stick mode line then press the direction button to select the hyphen in the rx bind line. Turn on the receiver then press the ENT button on the receiver for over 3 seconds so that the receiver enter the binding mode. Press the ENT button of the transmitter, the system will be connected within a few seconds and the model name of the receiver is displayed on the screen.



4. After completing the bind, press the ESC button to return to the home screen.

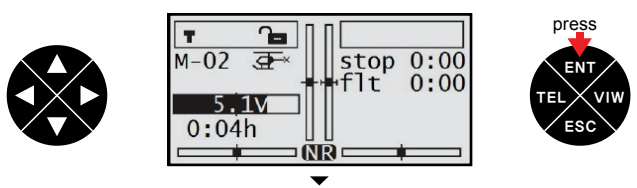


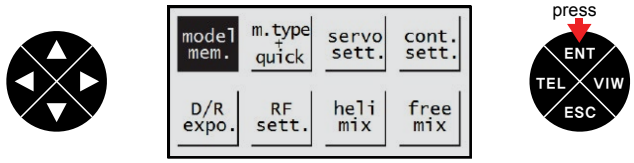
• The Transmitter Programming Setup

1. Model mem (Aircraft and Helicopter)

The model mem (model memory) contains 4 categories: select model, model name, clear model and copy model.

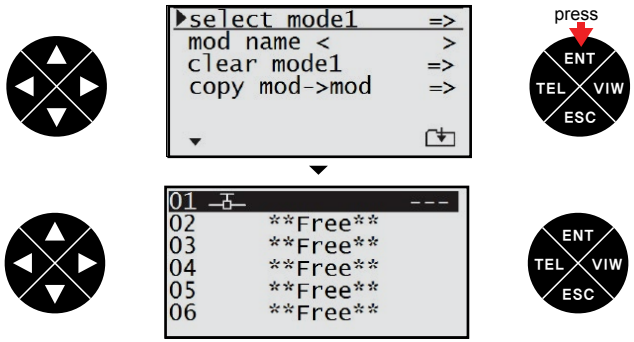
- Select model : It is used to add or select model of the already set 10 models.
- Model name : The Model Name function allows you to name a model. This makes identifying and selecting models much easier.
- Clear model : Clear Model is used to remove the programmed model you will no longer be flying. No other model memories will be affected.
- Copy mod->mod : Copy model function copies the currently selected model's programmed value to another model list.



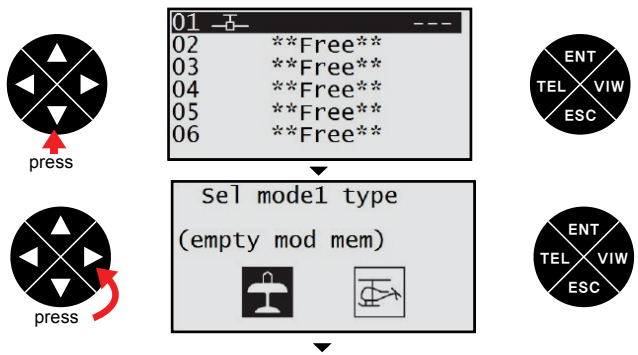


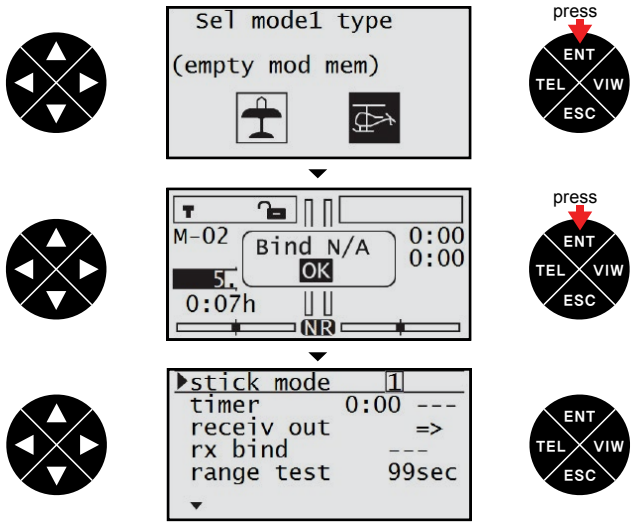
- Select model

In the home screen, press the ENT button then the model mem is highlighted. Press the ENT button to access the function.



Press the direction button to select the model then press the ENT button to access the Sel model type screen. Press the direction button to highlight the desired model type (Aircraft or Helicopter) then press the ENT button to select the model type. The home screen is displayed and the popup message “Bind N/A with the highlight on OK” appears then press the ENT button to bind. The rx bind screen automatically appears then you may bind the transmitter to the receiver according to the bind procedure.

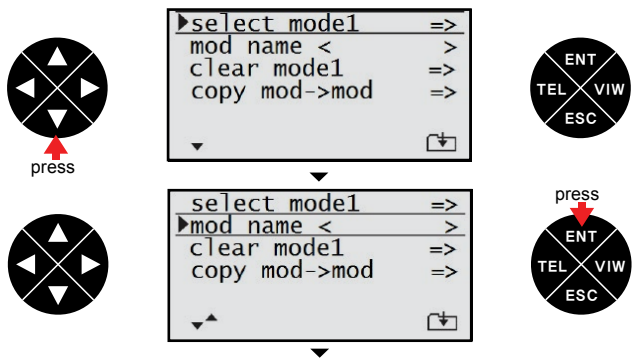


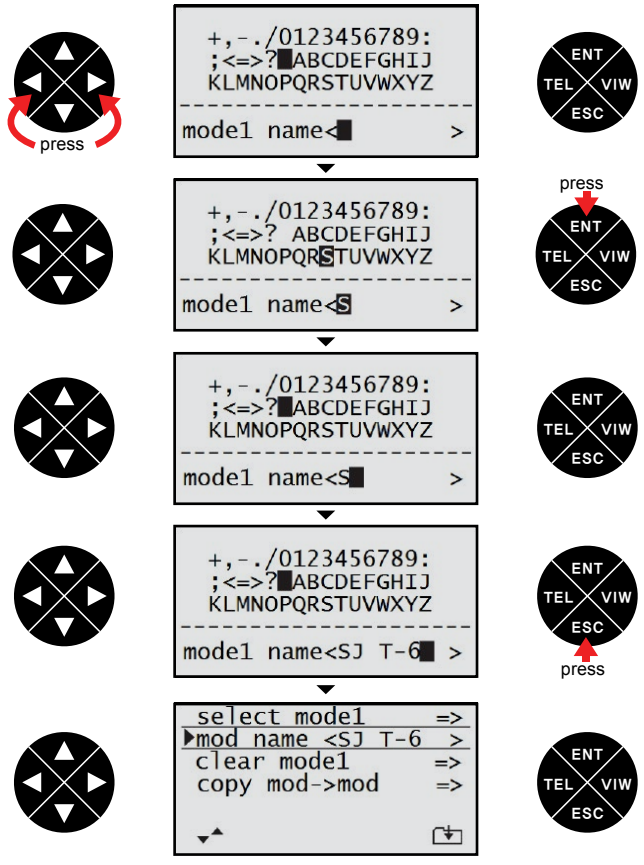


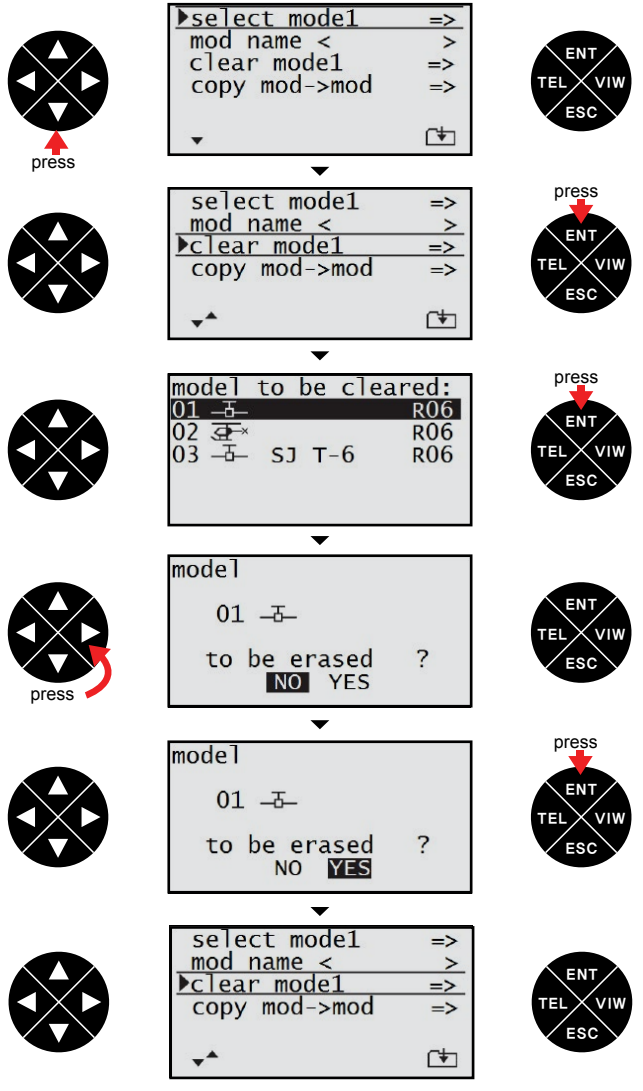
- Model name

When the model mem is highlighted, press the ENT button then the cursor is on the select model line. Press the direction button to select the mod name line then press the ENT button to access to the function. Press the direction button to highlight the desired character then press the ENT button to accept. Repeat the process until completing. The name will display on the model name line. Press the ESC button to get back to the model mem screen.

NOTE : Pressing the direction button to highlight the blank and pressing the ENT button will erase the current character.





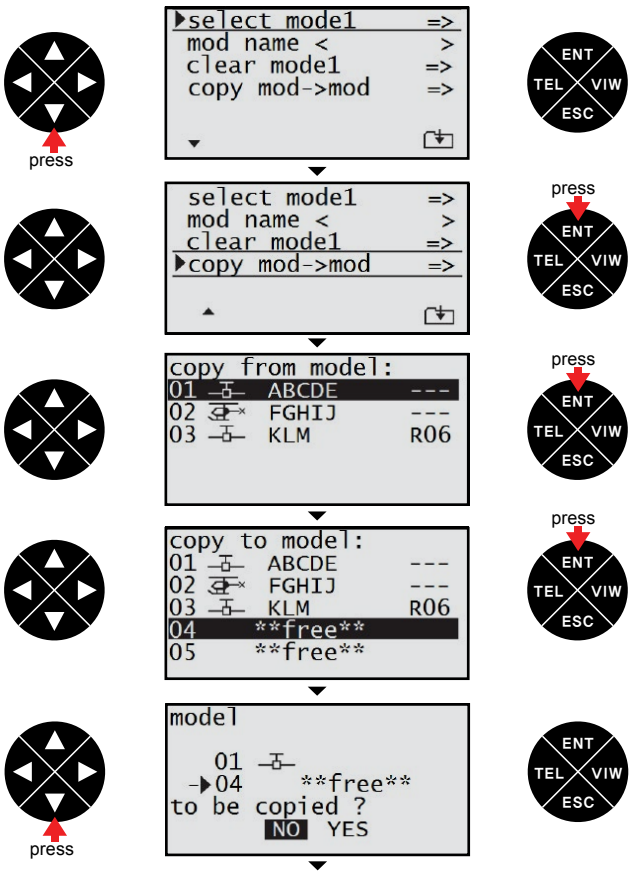


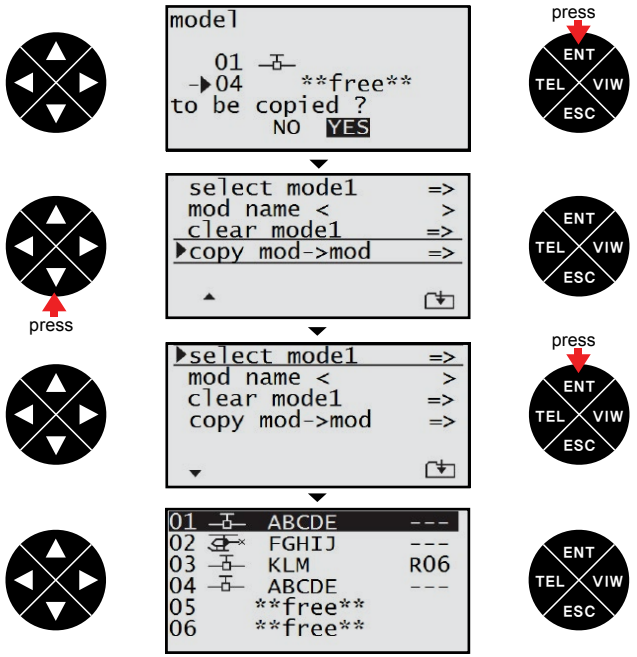
- Clear model

When the model mem is highlighted, press the ENT button then the cursor is on the select model line. Press the direction button to select the clear model line then press the ENT button to access to the function. Press the direction button to highlight the model that you wish to clear then press the ENT button. The popup message “YES or NO” appears on the screen. Press the direction button to highlight YES then press the ENT button to clear the model. The screen will return to the model mem screen.

- Copy mod->mod

The model mem is highlighted in the menu screen then press the ENT button. The cursor is on the select model line. Press the direction button to select the copy mod ->mod line then press the ENT button to access to the function. When the copy from model screen appears, press the direction button to highlight the model you want to copy then press the ENT button to accept. When the copy to model screen appears, press the direction button to highlight the model memory to copy to then press the ENT button to accept. The message “to be copied YES or NO” appears on the screen. Press the direction button to highlight YES then press the ENT button to complete to copy. The copy mod ->mod is automatically displayed. If you press the ENT button after selecting the select model line then you may check the copied model.





2. m.type + quick (Aircraft)

The m.type+quick function allows to program the various function of Airplane and Helicopter model. Always choose model type (Aircraft or Helicopter) before programming any other function of the selected model type. The function that can be programmed is different depends on the model type, Aircraft or Helicopter.

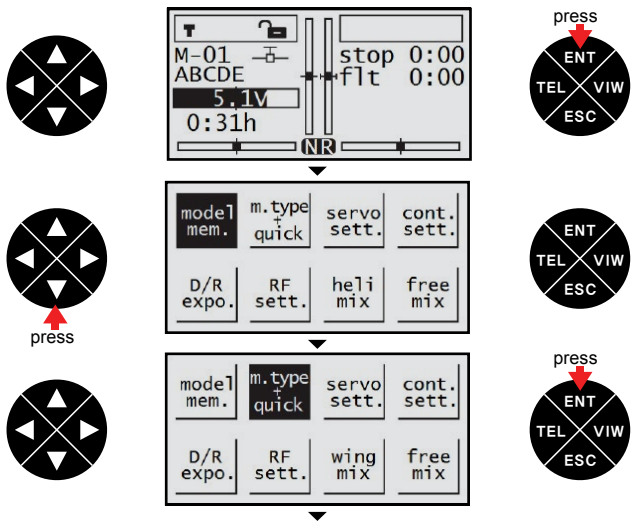
- Motor at C1 : Use the motor at C1 function to set the direction of the throttle channel in the Aircraft and program to use the throttle channel as the brake in the glider.
- Tail type : Use the Tail type functions to program the tail mix to match your airplane. 4 tail types (normal, V tail, delt/flw, 2elev sv appear) are available.
- Aile/flap : Use the Aile/flap functions to program aile/flap mix to match your airplane 5 aile/flaps (1aile, 1aile 1flap, 2aile, 2aile 1flap, 2aile 2flap) are available.

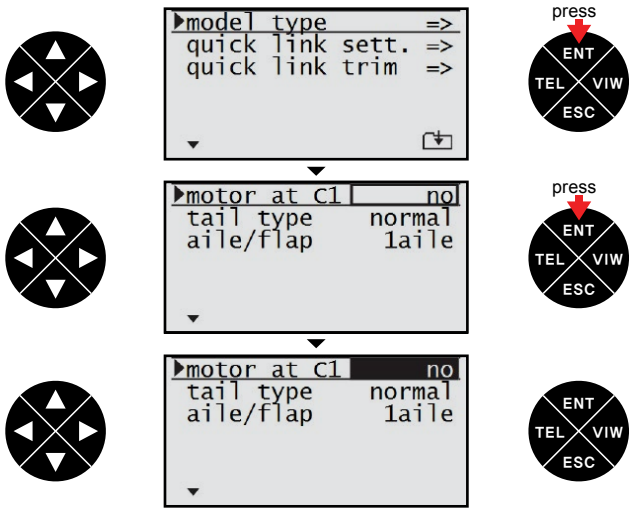
- Quick link set : The quick link sett function allows to adjust the D/R expo value and to assign the corresponding switch to cope with various flight conditions such as 3D flight or the flight with the strong wind. Since the adjusted value is activated by moving the switch, you can cope with various flight conditions with switch. It makes you operating the flight much easier. You can select take off, thermal, dist, speed, acro, landing, air-tor, test at quick2 and quick3.

- Quick link trim : Use the quick link trim function to program the appropriate trims of the quick 2 and quick 3 in the quick link. The user can program the trim in advance to cope with various flight condition such as 3D flight or the flight with the strong wind and match the flight situation of the takeoff , thermal and speed of the glider. If the switch is ON, the corresponding trim is activated so the user does not need to set these trims every time.

⚠ **NOTICE** : The programming value of the quick link trim depends on the motor at C1, Tail type, Aile/flap

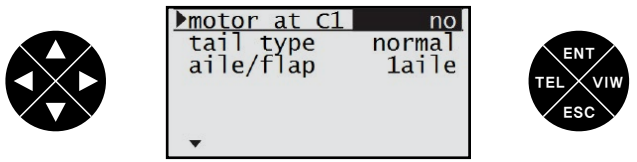
With the transmitter and the home screen displayed, press the ENT button. Press the direction button to highlight the m.type quick then press the ENT button to access. The model type is selected then press the ENT button to select the motor at C1. Press the ENT button again to highlight the value in the motor at C1 then press the direction button to select the desired value. 4 values (no, no/inv , idel re, idel fr) as explained below are available.





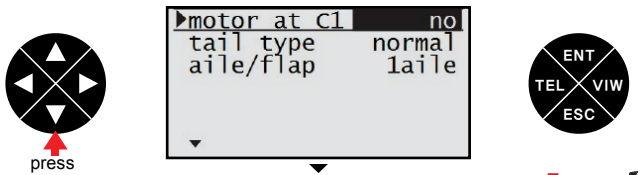
- Motor at C1 no

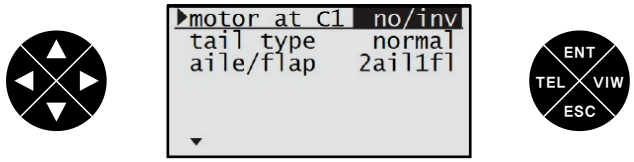
It creates the air brakes using aile/flap. When the C1 (The throttle channel) is moved, 1~3 air brakes that the user programmed is created. The value of the created air brake would be programmed, the air brake function works according to the throttle stick's movement from the high to the lower position. When the throttle stick moves to the high position, the air brake channel is in the neutral, when it moves to low position, the air brake works proportionately to the throttle stick's movement according to the programming.



- Motor at C1 no/inv

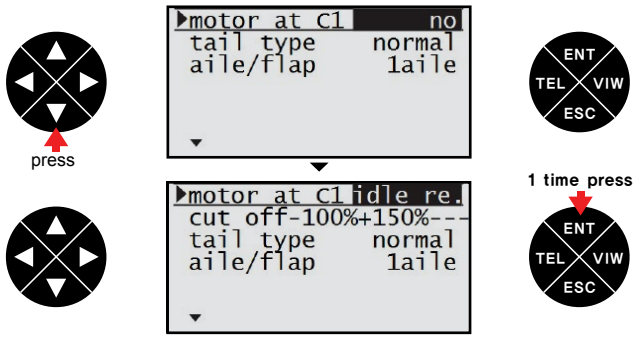
It is contrary to "no". When the throttle stick moves to the low position, the air brake channel is in the neutral, when it moves to high position, the air brake works proportionately to the throttle stick's movement according to the programming.





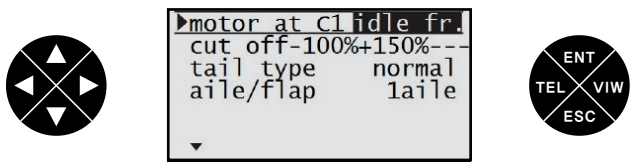
- Motor at C1 idel re

The idle position of the throttle stick (C1) is back, toward the user, if the throttle stick is not there, the throttle warning message “Throttle too high” appears and the cut off option is activated.



- Motor at C1 idel fr

The idle position of the throttle stick (C1) is forward, away from the user, if the throttle stick is not there, the throttle warning message “Throttle too high” appears and the cut off option is activated.



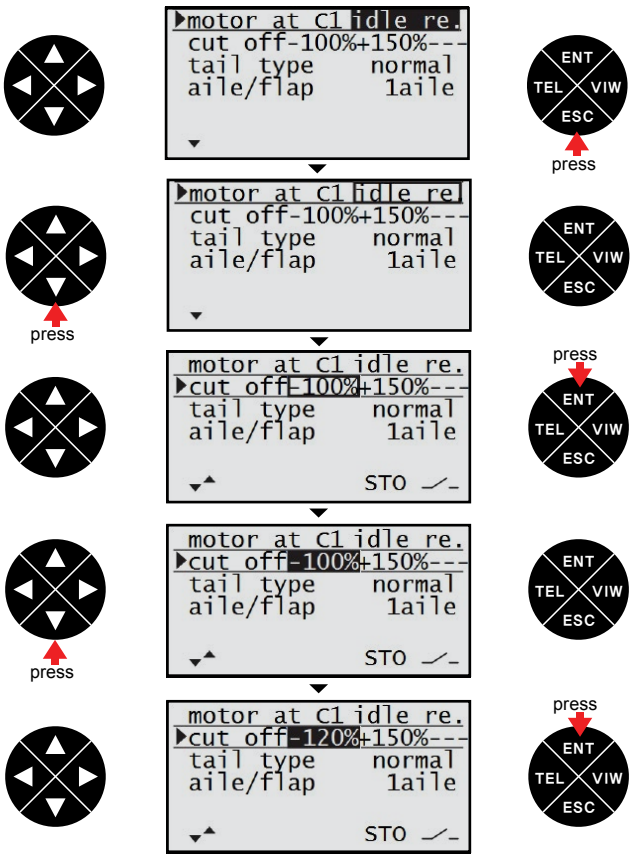
⚠ **WARNING** : Ensure that any internal-combustion engine or electric motor shouldn’t be running accidentally during the programming process.

- Cut off

When the option of “idle re” or “idle fr” is selected, the cut off option is activated. It turns off the internal combustion engine or the electric motor.

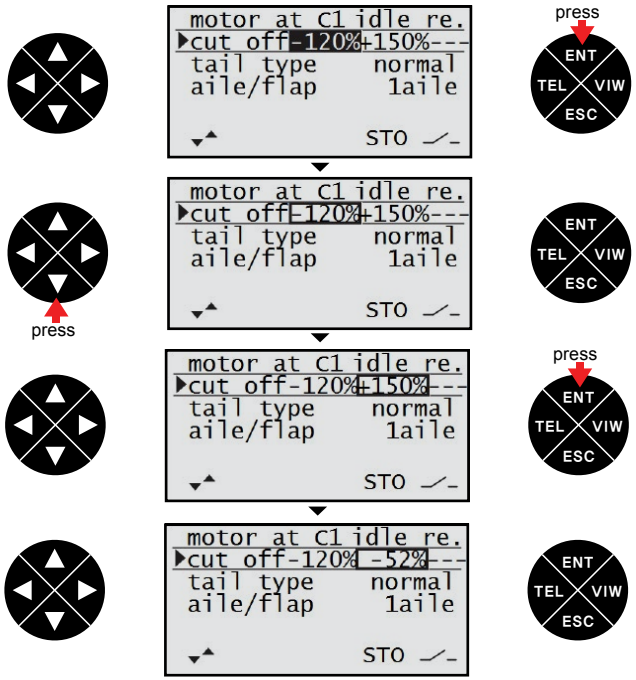
Press the ENT button to remove the highlight of the motor at C1 value then press the direction button to select the cut off line. Press the ENT button to highlight -100% of the cut off value then press the direction button to adjust the value. Press the ENT button to remove the highlight

NOTE : The value of -100% is the cut off position the user can program, if the cut off value is programmed less than -100%, the breathing hole of Engine carburetor is block or the speed controller make the motor off so the power is not delivered to the airplane.

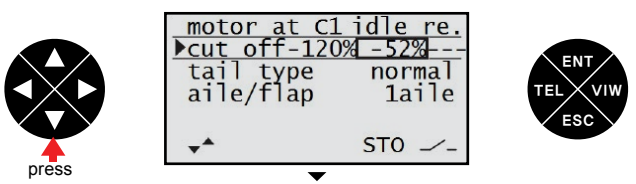


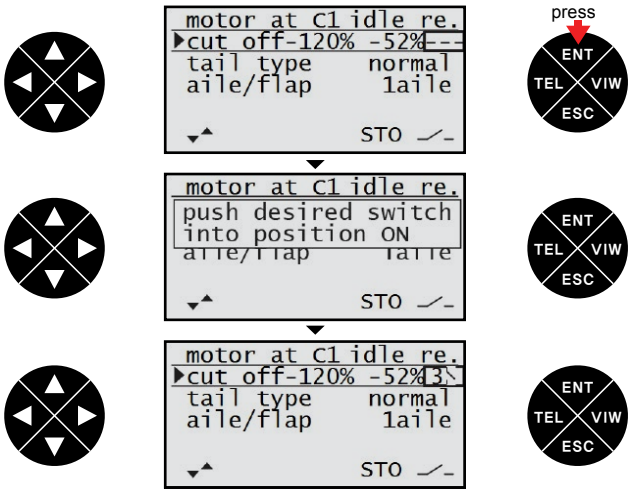
Press the direction button to select the value,+150%,. Place the throttle stick at the desired position and press the ENT button then the adjusted value is applied (The adjusted value is activated when the throttle stick is in that position).

NOTE : the value,+150%, is the throttle stick position where the cut off function is activated.



Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears then move the switch to the desired position (The cut off function is activated when the switch is moved to that position)

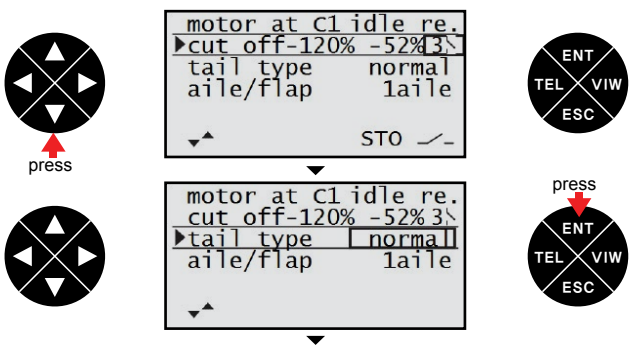


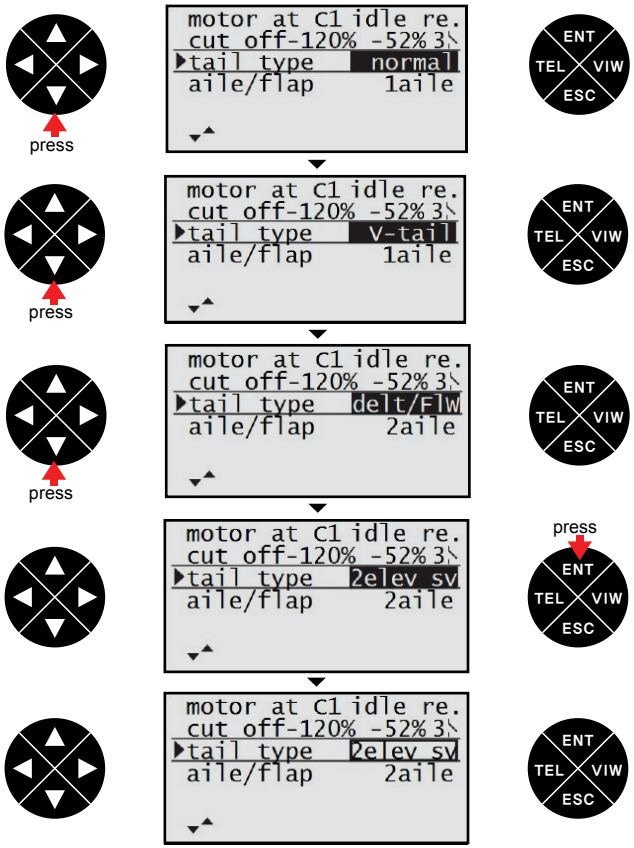


- Tail type

Use the Tail type functions to program the tail mix to match your airplane. 4 tail types (normal, V tail, delt/flw, 2elev sv appear) are available. The correct value should be matched each other since the some value is not match to the others, refer to the below table.

Press the direction button to select the tail type line then press the ENT button to highlight the value. Press the direction button to choose desired value then press the ESC button to remove the highlight. Press the ESC button again to return to the previous screen.



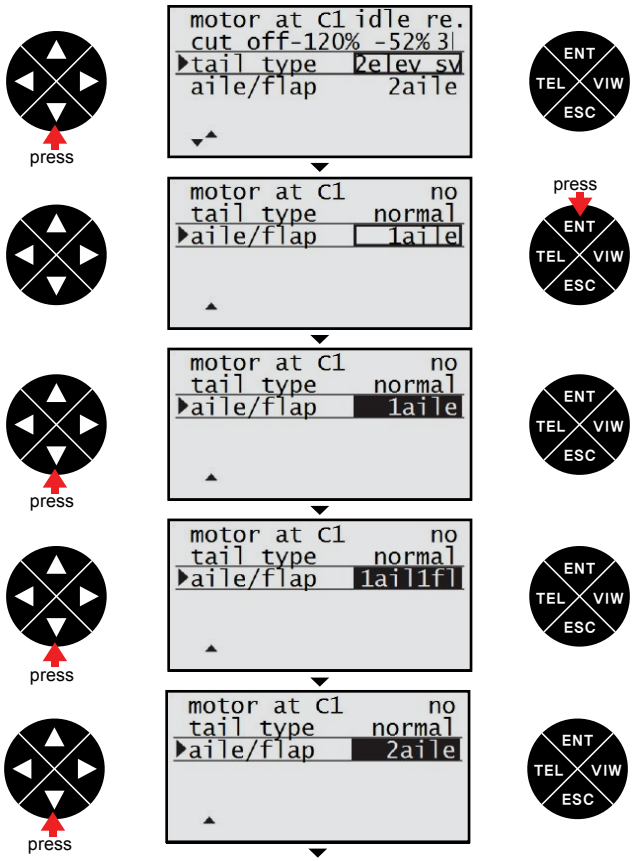


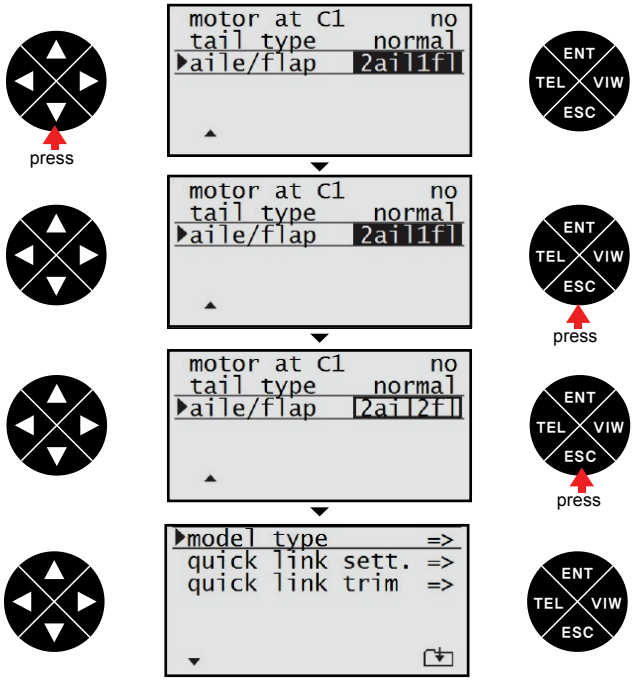
- Aile/flap

Use the Aile/flap functions to program aile/flap mix to match your airplane. 5 aile/flaps (1aile, 1aile 1flap, 2aile, 2aile 1flap, 2aile 2flap) are available. The correct value should be matched each other since the some value is not match to the others, refer to the below table. Press the direction button to select the aile/flap line then press the ENT button to highlight the value. Press the direction button to choose desired value then press the ESC button to remove the highlight. Press the ESC button again to return to the previous screen.

Motor at C1	no, no/inv		Idle re, idel fr		
Tail type	normal,V-tail,delt/FlW	2 elev sv	normal,V-tail	Delt/FlW	2 elev sv
Aile/flap	1 aile	1 aile	1 aile	2 aile	1aile
	1 aile 1 flap	1 aile 1 flap	1 aile 1 flap	2 aile 1 flap	1 aile 1 flap
	2 aile	2 aile	2 aile	2 aile 2 flap	2 aile
	2 aile 1 flap	2 aile 1 flap	2 aile 1 flap		
	2 aile 2 flap				

NOTE : The correct value should be matched each other since the some value is not match to the others, refer to the table.

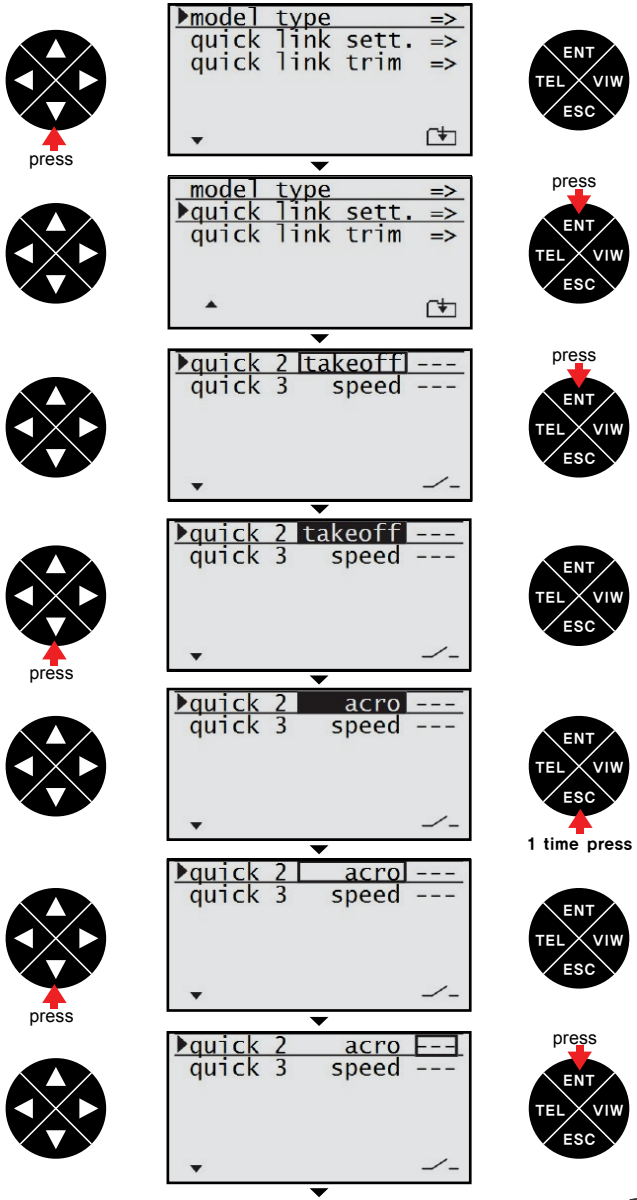


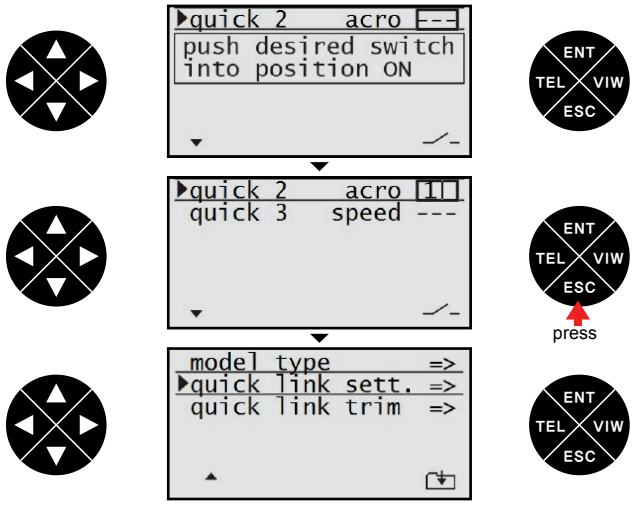


- Quick link sett

The quick link sett function allows to adjust the D/R expo value and to assign the corresponding switch to cope with various flight conditions such as 3D flight or the flight with the strong wind. Since the adjusted value is activated by moving the switch, you can cope with various flight conditions with switch. It makes you operating the flight much easier.
You can select take off, thermal, dist, speed, acro, landing, air-tor, test at quick2 and quick3.

Press the direction button to select the quick link sett then press the ENT button to access the function. Press the direction button to select the qucik2 line or the quick3 line then press the ENT button to highlight the value. Press the direction button to select the desired value (take off, thermal, dist, speed, acro, landing, air-tor, test at quick2 and quick3). Press the ENT button to remove the highlight then press the direction button to select the hyphen. If you press the ENT button, the popup message “push desired switch into position on” appears. Move the switch to the desired position then the corresponding value appears. Press the ESC button to get back to the m.type + quick screen then the quick link programming is completed.



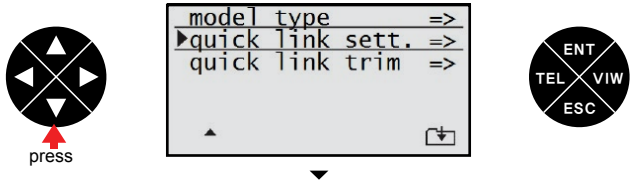


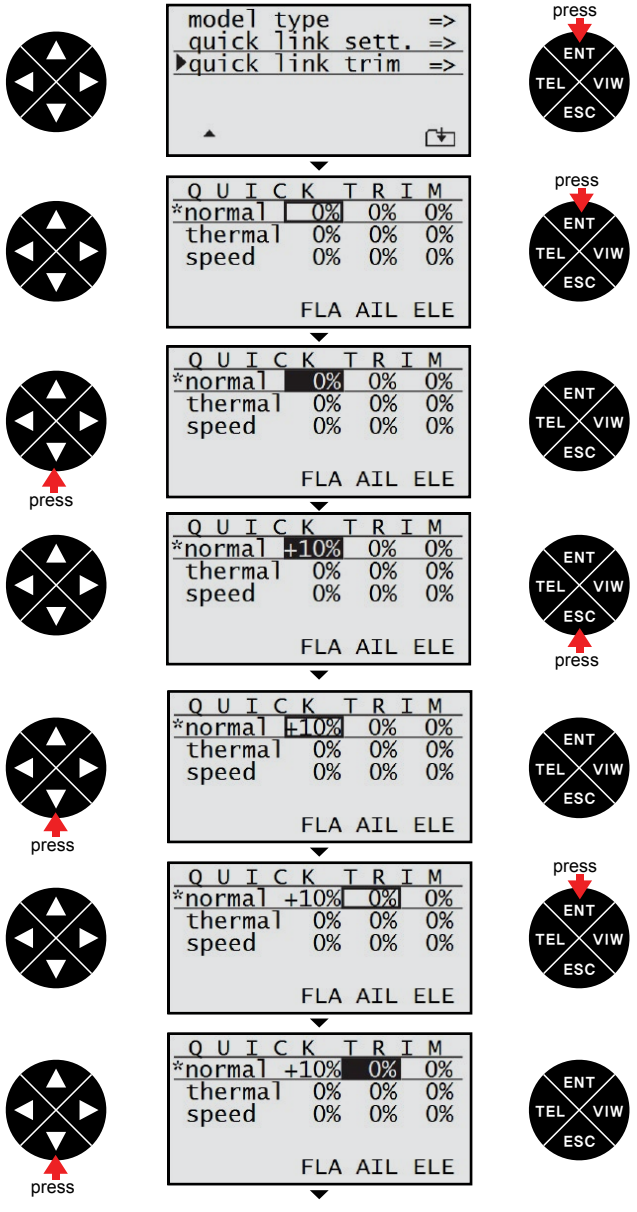
- Quick link trim

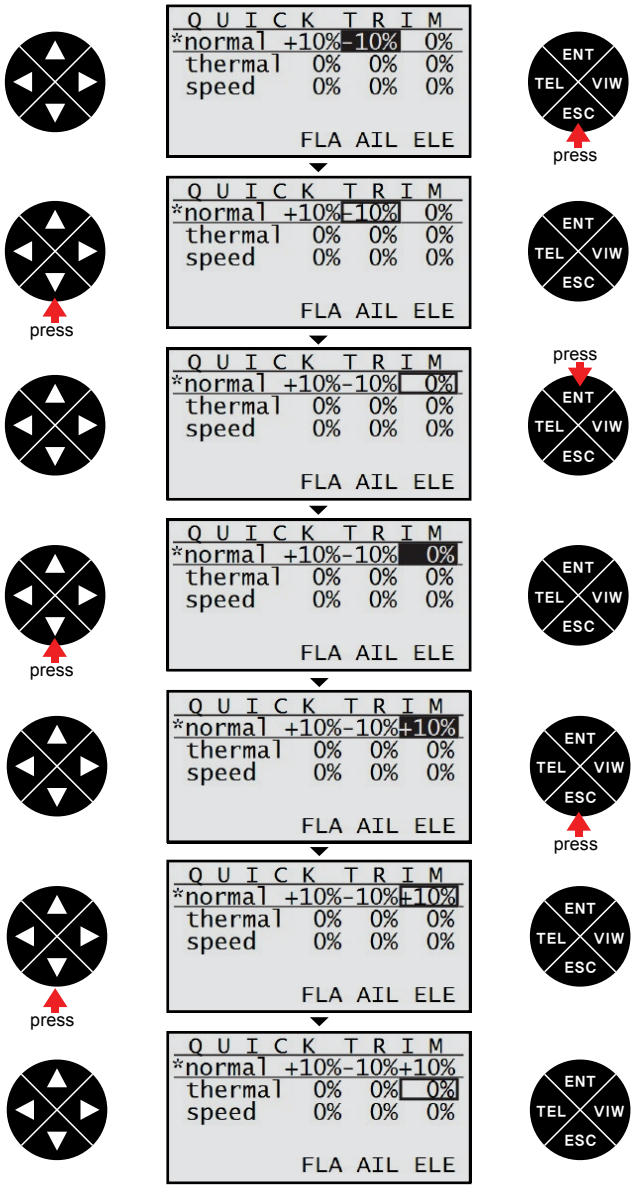
Use the quick link trim function to program the appropriate trims of the quick 2 and quick 3 in the quick link. The user can program the trim in advance to cope with the unexpected situation such as the flight with the strong wind and match the flight situation of the takeoff , thermal and speed of the glider. If the switch is ON, the corresponding trim is activated so the user do not need to set these trims every time.

⚠**NOTICE**: The programming value of the quick link trim depends on the motor at C1, Tail type, Aile/flap

Here is an example in case of motor at C1 (no) , tail type (normal) , aile/flap (2aile 2flap) at the model type Press the ENT button to access the function. The cursor is on the FLA value in the normal line then press the ENT and the direction buttons to highlight and adjust the desired value. Press ENT button and direction button to remove the highlight and select the AIL value. The AIL value and ELE value can be adjusted in the same method with the FLA programming.

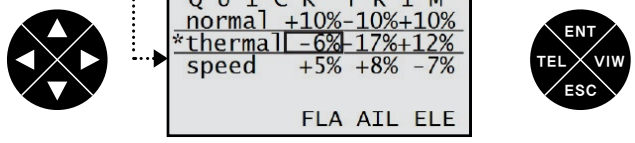




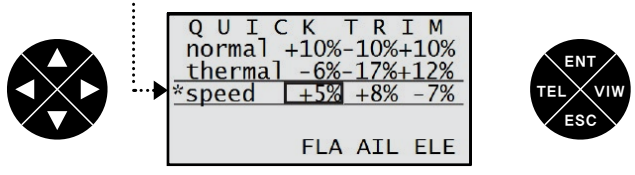


After completing the normal quick link adjustment, press the direction button to select the thermal quick link line. The thermal quick link and speed quick link can be programmed in the same method. If you already set the quick link switch and the switch is ON, the cursor is automatically moved to the corresponding quick link value.

If the thermal quick link switch is ON, the cursor is moved to the thermal quick link and the user can check the thermal quick link is ON



If the speed quick link switch is ON, the cursor is moved to the speed quick link and the user can check the speed quick link is ON



2-1. Model type (Helicopter) : 5 functions are available

- Swashplate

Use the swashplate function to set the swahplate type to match your Helicopter model.
It supports 6 value (1servo, 2 servo,3sv(2rol),3sv(140),3sv(2nic),4sv(90))

- Cut off

The cut off function allows to turn off the internal combustion engine or the electric motor.

- Rotor direct

Use the rotor direct function to set the rotation direction of the main rotor.

- Pitch min

Use the pitch min function to reverse the servo direction in all of pitch, elevator, aileron and throttle
channels, the default value is rear. Available settings are rear and front.

• Aurtorotat

You may set the switch to be used as auto rotation. If the switch is on, throttle channel is hold at 90% position and pitch, elevator and aileron that is connected to throttle channel are normal operated. It is the same function with throttle hold.

• Quick link sett

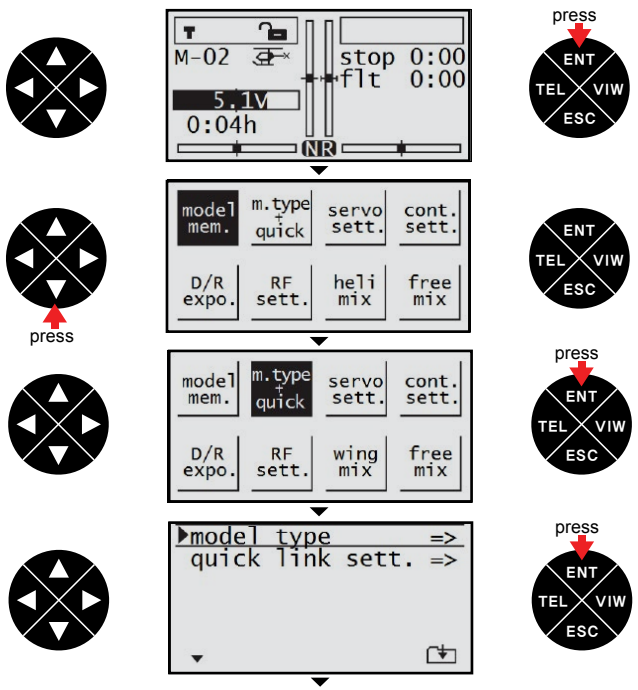
The quick link sett function allows to adjust the quick2 value and assign the corresponding switch to cope with various flight conditions such as 3D flight or the flight with the strong wind.

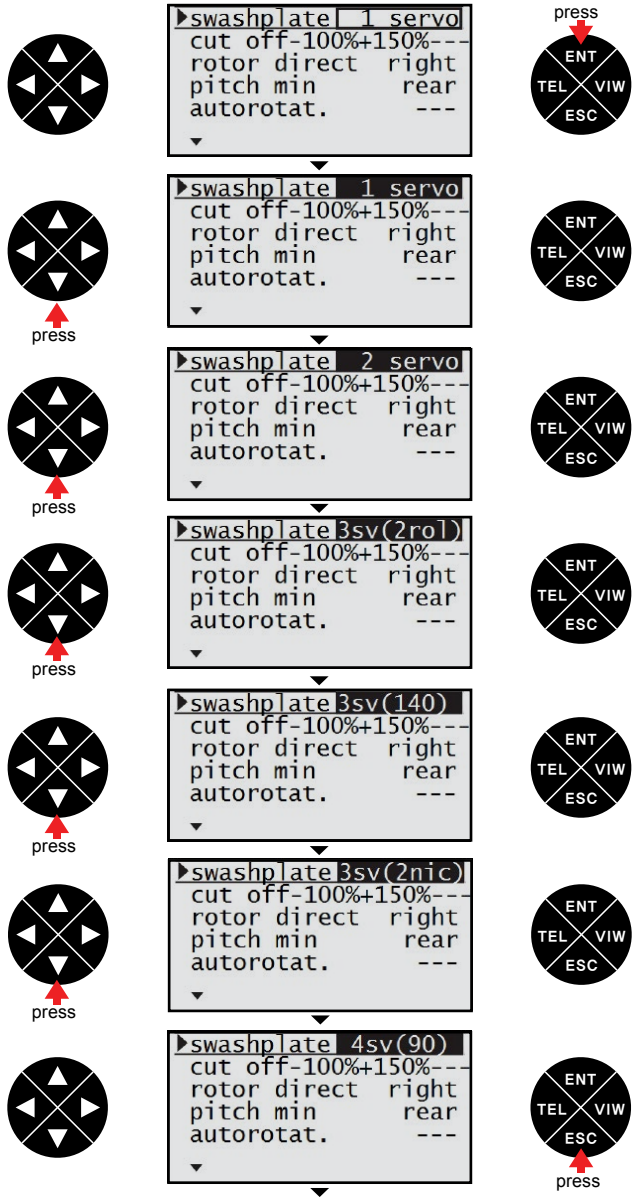
Since the adjusted value is activated by moving the switch, you can cope with various flight conditions with switch. It makes you operating the flight much easier.

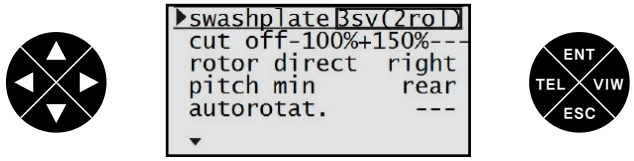
You can select hover, acro, acro 3D, speed and test at the quick2 line.

- Swash plate

With the transmitter on and the home screen displayed, press the ENT button. The transmitter menu is displayed. Press the direction button to move the highlight to the m.type quick then press the ENT button to access the m.type quick function. The cursor is on the model type line then press the ENT button to highlight the value. Press the direction button to the desired value in the swashplate line then press the ESC button to remove the highlight



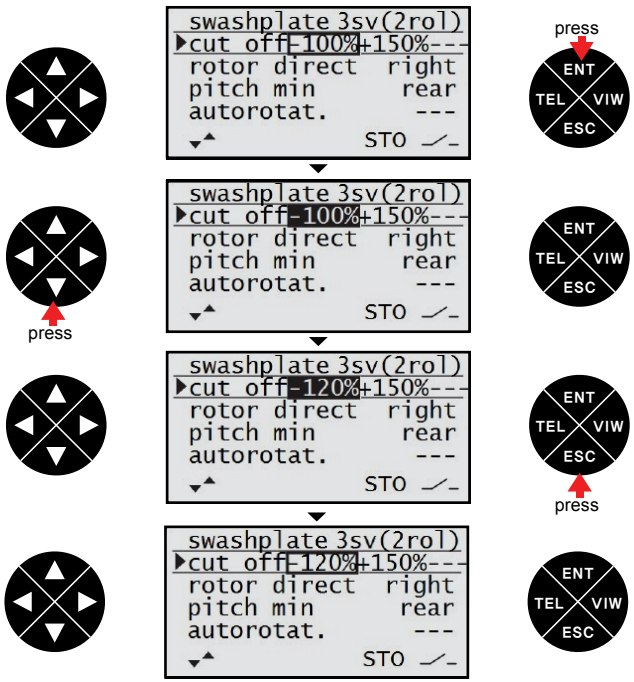




- Cut off

Press the direction button to select the cut off line then press the ENT and the direction button to highlight and adjust the value less than -100%. Press the ESC button to remove the highlight.

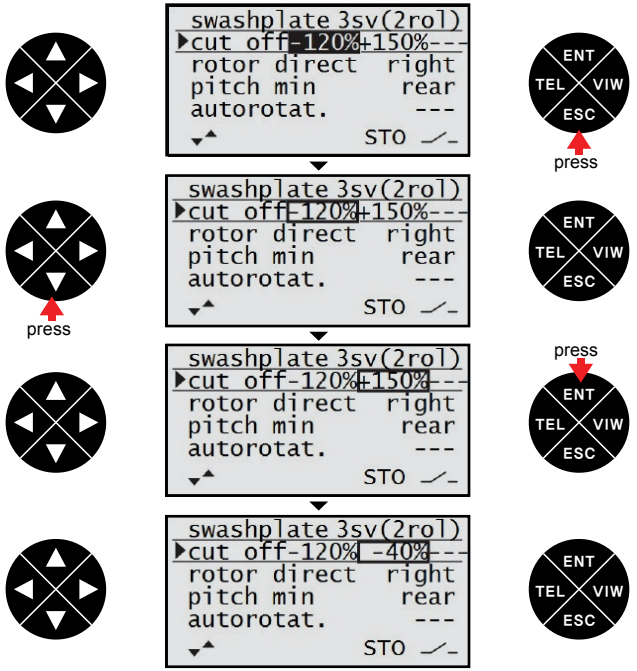
NOTE : The value of -100% is the cut off position the user can program, if the cut off value is programmed less than -100%, the breathing hole of Engine carburetor is block or the speed controller lets the motor off so the power is not delivered to the Helicopter.



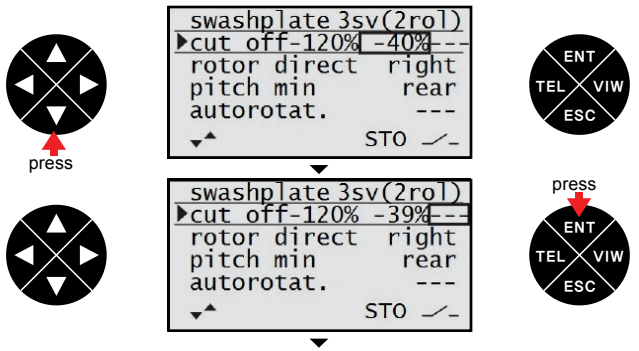
Press the direction button to select +150% in the value.

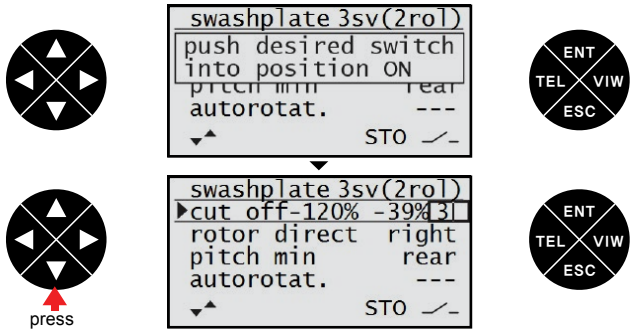
Place the throttle stick at the desired position and press the ENT button then adjusted value is applied (The adjusted value is activated when the throttle stick is in that position).

NOTE : the value of +150% is the throttle stick position where the cut off function is activated.



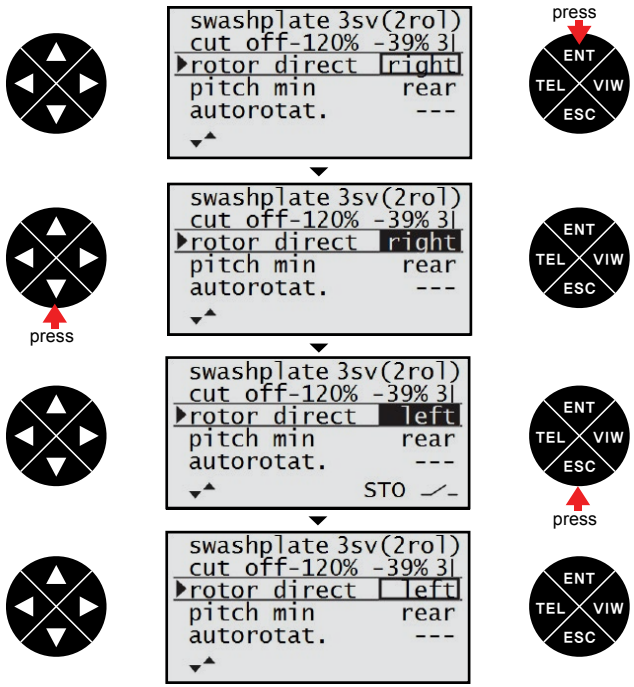
Press the direction button to select the hyphen then press the ENT button. The popup message"push desired switch into position ON"appears then move the switch to the desired position (The cut off function is activated when the switch is moved to that position)





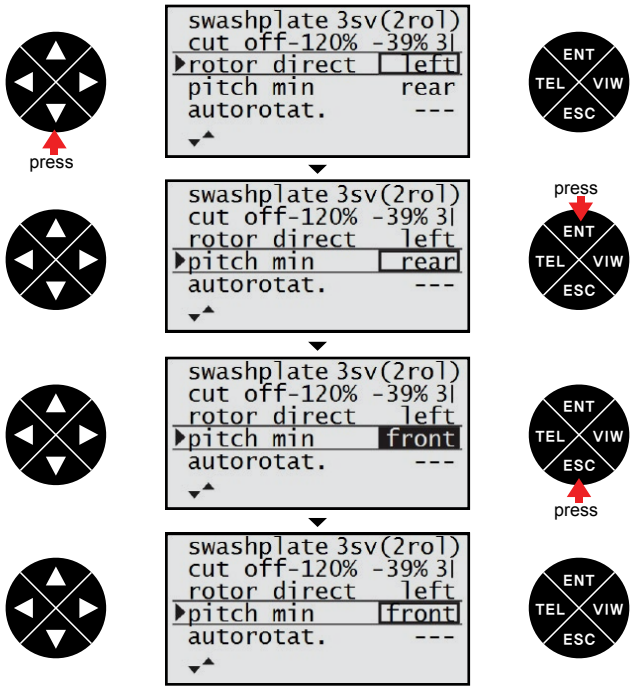
- Rotor direction

Press the direction button to select the rotor direct line then press the ENT button to highlight the value. Press the direction button to select the right or left. Press the ESC button to remove the highlight.



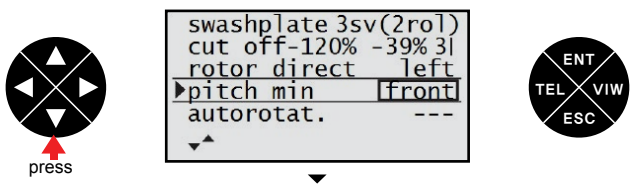
- Pitch min

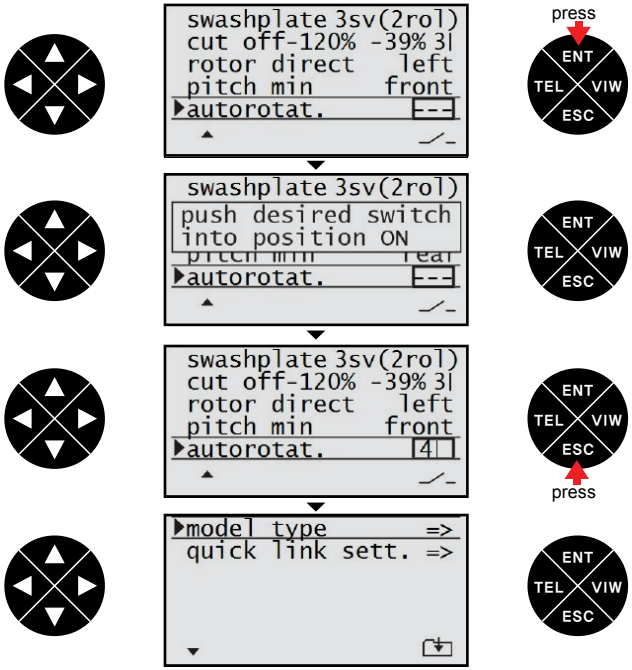
Use the pitch min function to reverse the servo direction in all of pitch, elevator, aileron and throttle channels, the default value is rear. Available settings are rear and front. Press the direction button to select the pith min line then press the ENT button to highlight the pitch min value. Press the direction to select the desired value (rear or front) then press the ESC button to remove the highlight.



- Aurtorotat

Press the direction button to select the autorotat line then press the ENT button. The popup message “push desired switch into position ON” appears. Move the switch to the desired position then the corresponding value appears. The autorotat function is activated when the switch is moved to that position. Press the ESC button to get back to the m.type + quick screen.

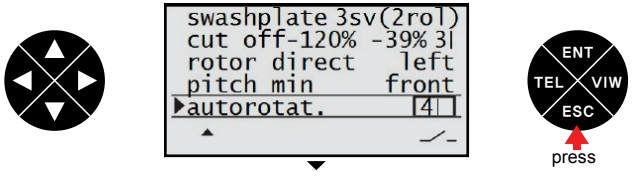


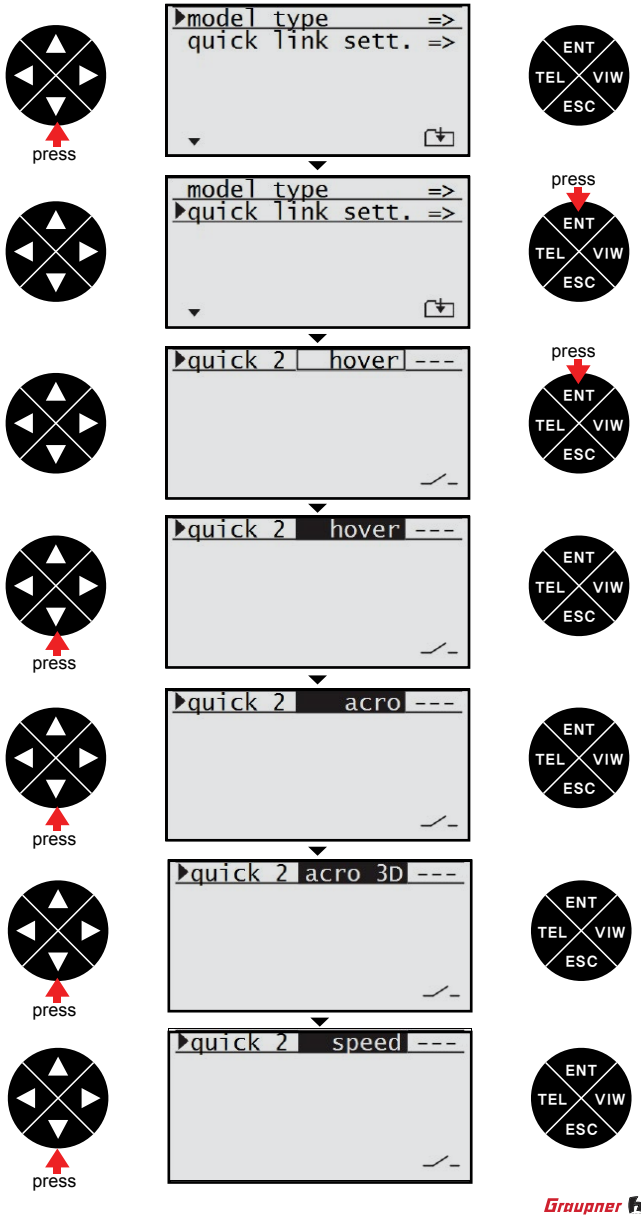


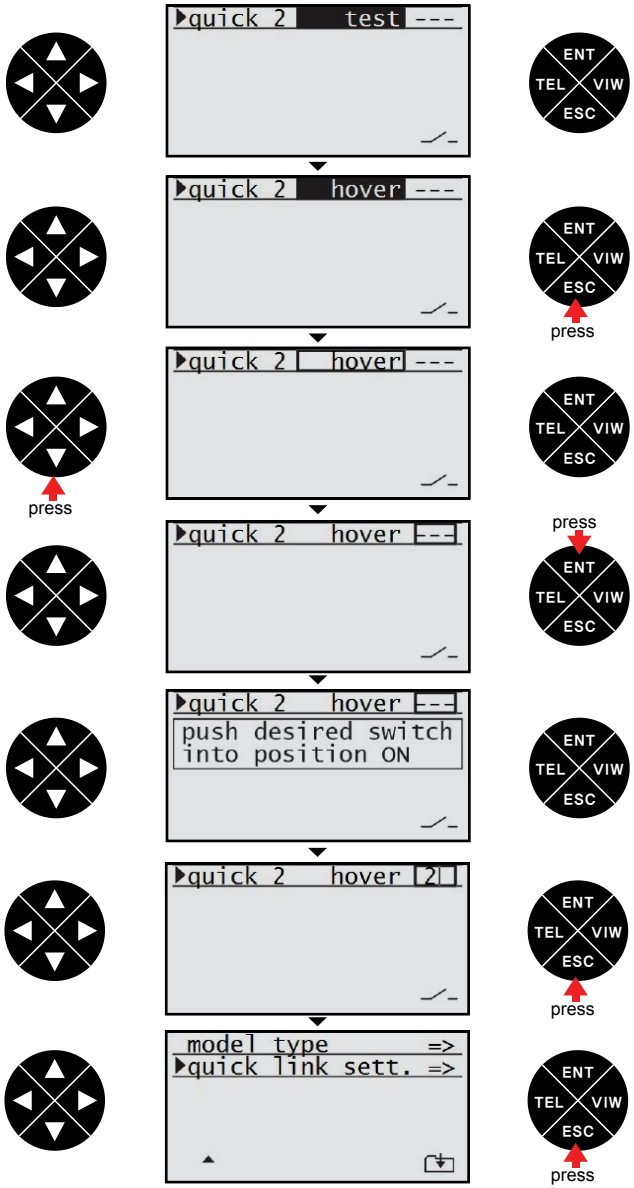
- Quick link sett

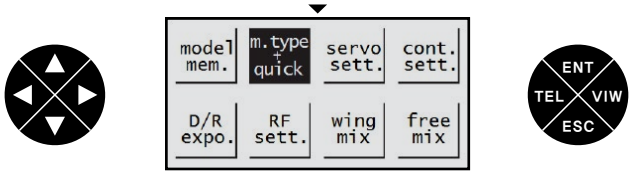
The quick link sett function allows to adjust the quick2 value and assign the corresponding switch to cope with various flight conditions such as 3D flight or the flight with the strong wind. Since the adjusted value is activated by moving the switch, you can cope with various flight conditions with switch. It makes you operating the flight much easier.
You can select hover, acro, acro 3D, speed and test at the quick2 line.

Press the direction button to select the quick link sett line then press the ENT button to access the function. The cursor is on the default value, hover, in the quick 2 line then press the ENT button to highlight. Press the direction button to select the desired value then press the ENT button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position ON” appears. Move the switch to the desired position then the corresponding value appears. Press the ESC button to get back to the m.type + quick screen. The quick link function is connected to the D/R expo and the heli mix functions so the different value of the normal and quick2 can be programmed to the D/R expo and the heli mix functions.









3. Servo sett (Aircraft and Helicopter)

The servo sett adjusts the servo reverse, center, travel for all six channels.

- Rev : used to reverse the servo direction for all channels.
- Cent : used to set the neutral position of the servo.
- Trv : used to increase or decrease the moving angle of the servo travel.

- Rev (Reverse)

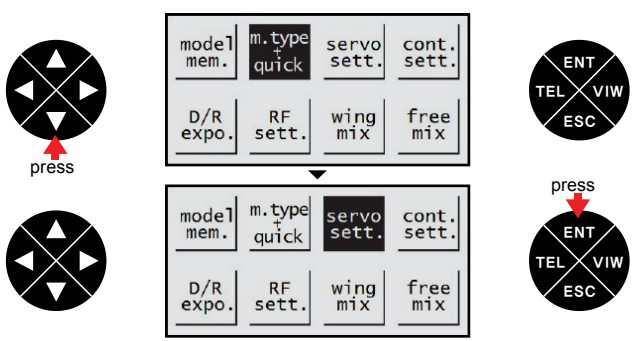
Press the direction button to highlight the servo sett then press the ENT button to access the function. The cursor is at the rev value, the arrow mark, in the S1 line then press the ENT button to highlight the arrow mark. Press the direction button then the arrow mark is reversed and the direction of the servo in S1 (throttle channel) is reversed. Press the ENT button to remove the highlight. The S2~S6 channels can be program in the same method with the S1.

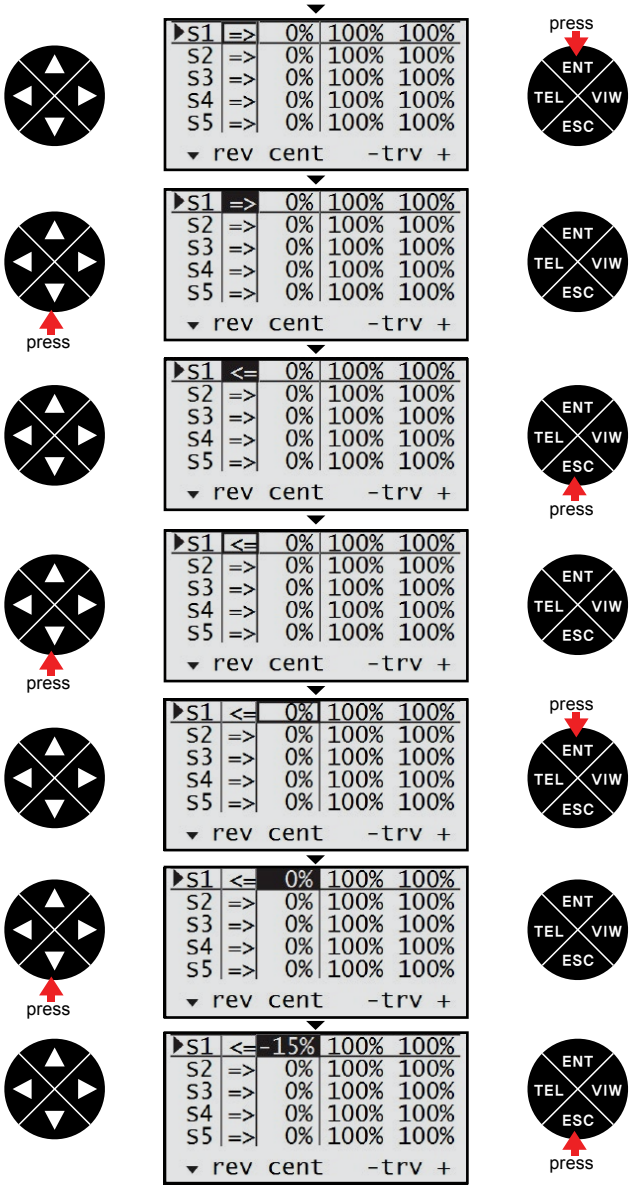
- Cent (Center)

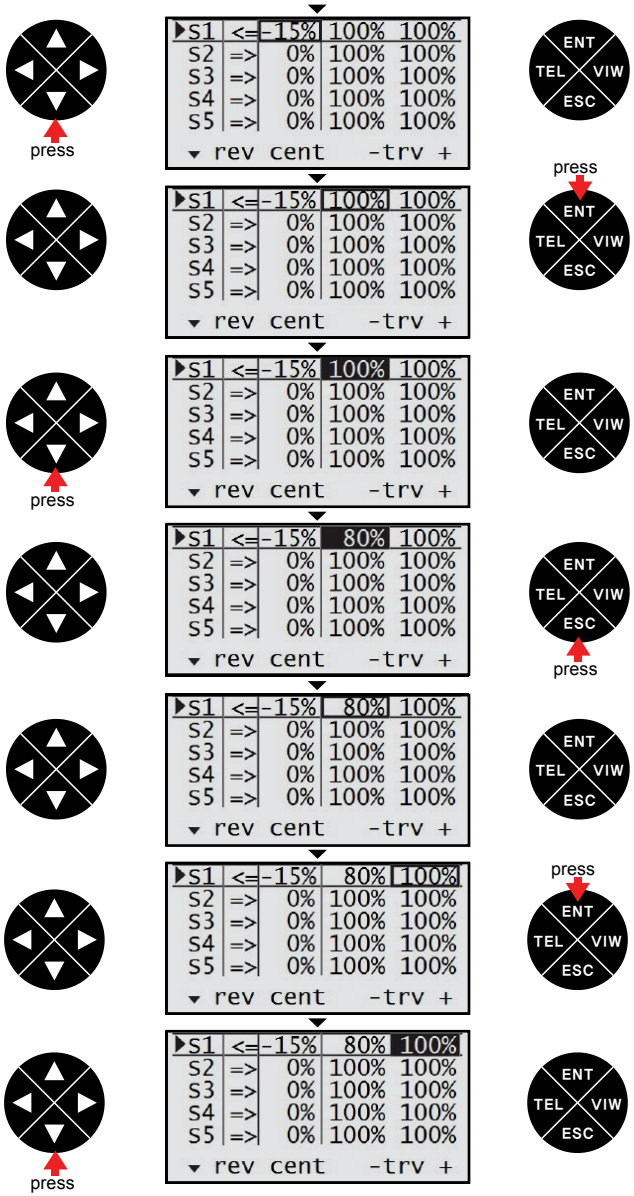
Press the direction button to select the cent value in the S1 line then press the ENT button to highlight the value. Press the direction button to adjust the desired center value. Check the neutral position of the model with adjusting the center value of the S1. Press the ENT button to remove the highlight. The S2~S6 channels can be program in the same method with the S1.

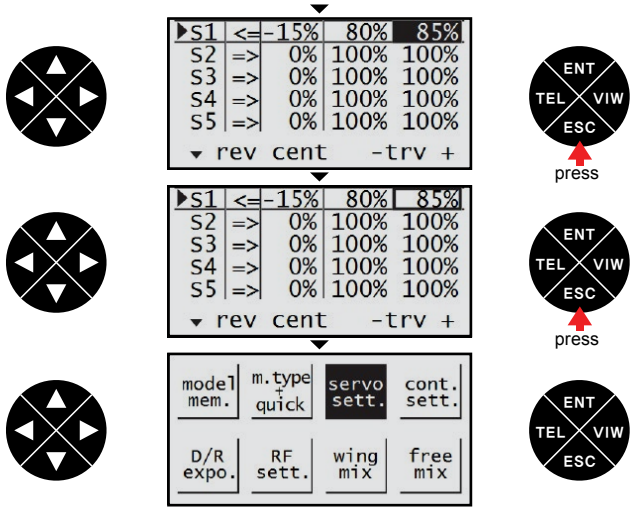
- Trv (Travel)

Press the direction button to select the trv value of the S1 line then press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Move the stick to select the other trv value then press the ENT button to highlight. Press the direction button to select desired value. Press the ENT button to remove the highlight and press ESC button get back to the menu screen. The S2~S6 channels can be program in the same method with the S1.




S1 => 0% 100% 100%
S2 => 0% 100% 100%
S3 => 0% 100% 100%
S4 => 0% 100% 100%
S5 => 0% 100% 100%
rev cent -trv +
press
ENT
TEL VIW
ESC


S1 <=-15% 100% 100%
S2 => 0% 100% 100%
S3 => 0% 100% 100%
S4 => 0% 100% 100%
S5 => 0% 100% 100%
rev cent -trv +
S1 <=-15% 80% 100%
press
ENT
TEL VIW
ESC



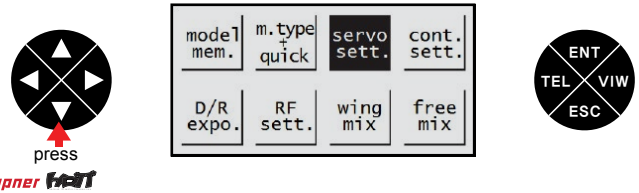
4. Cont sett (Aircraft and Helicopter)

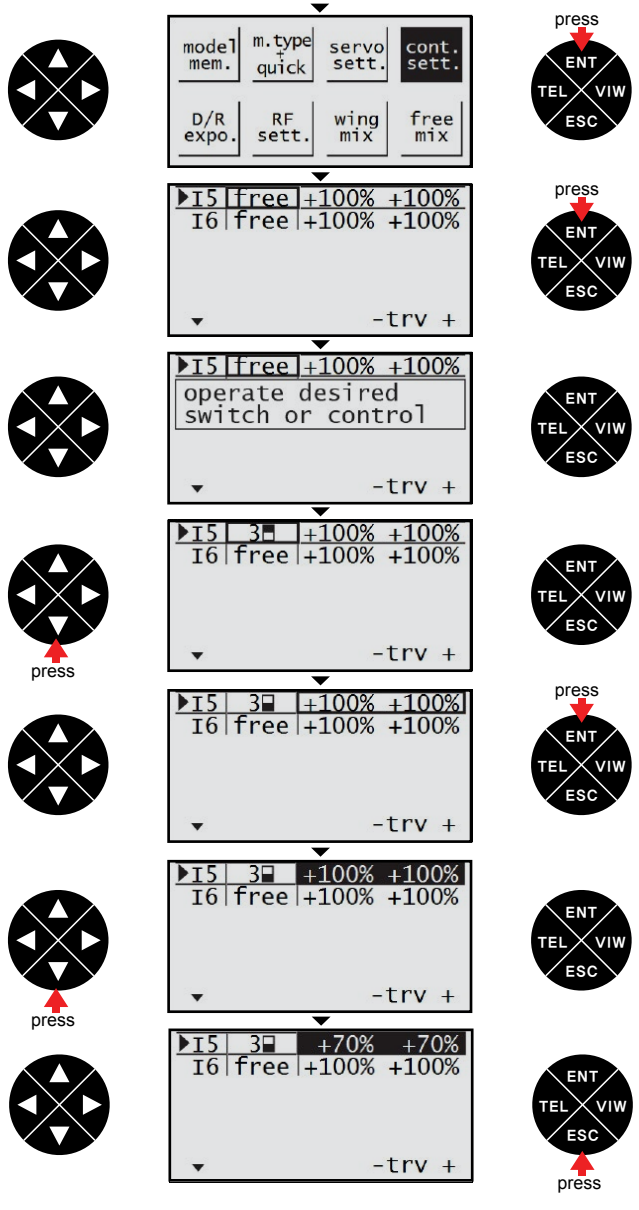
It contains 3 categories: model type, quick link set and quick link trim. You can program the 5 and 6 channels in mz-12 to the special function that you want. Typically, the 5 channel is used for the on/off switch of the retractor gear and the 6 channel is used for the on/off switch of the flap function. The special 2 channels are widely used, depending on the airplane wing type.

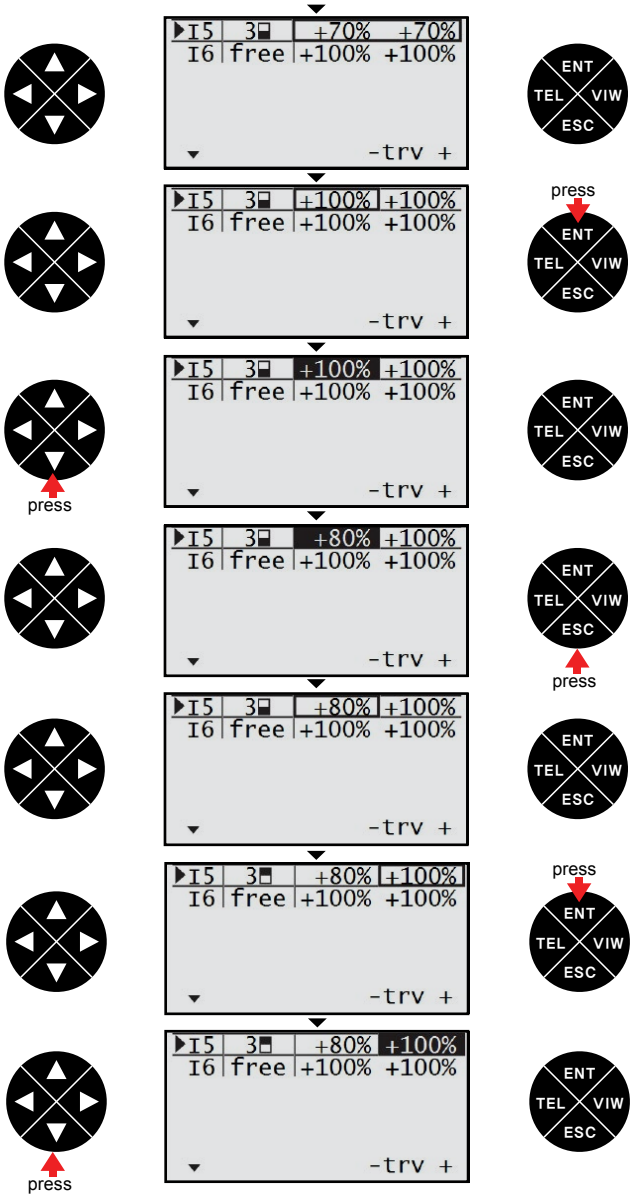
- Cont sett (AIRCRAFT)

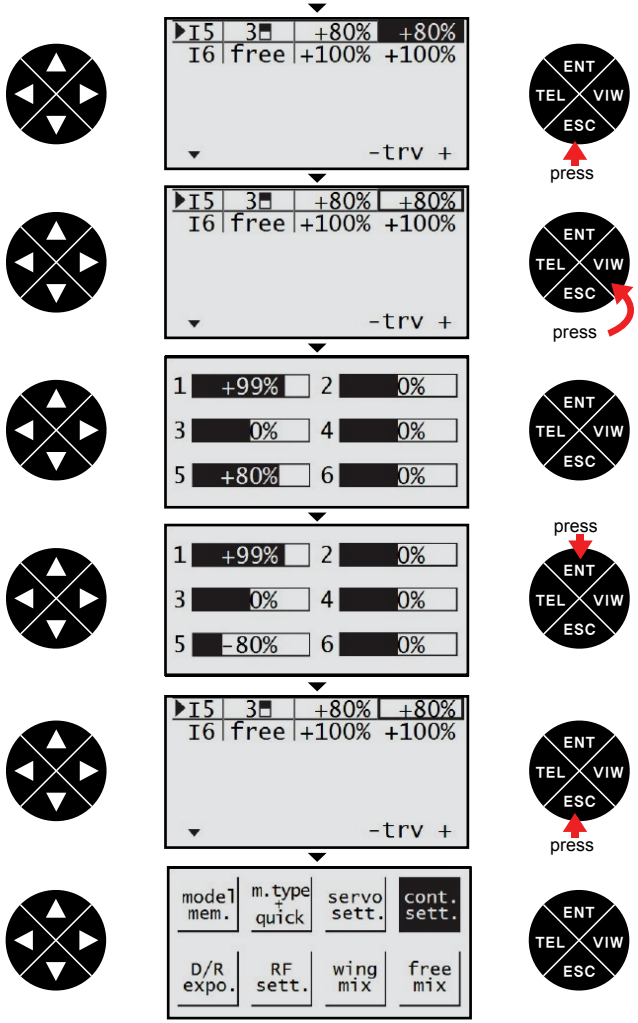
Press the direction button to highlight the cont sett then press the ENT button to access the function. The cursor is at the free of I5 line. Press the ENT button then the pop up message “operate desired switch or control” appears. Move the switch or the volume that you want to use, then they are set to the special channels. Here is the example that the NO.3 switch is set. Press the direction button to select the trv value then press the ENT button. Both of – value and + value are simultaneously highlighted. Press the direction button to adjust the desired value (If you press the VIW button, you can check the adjusted value) then press the ESC button to get back to the menu screen. The 6 channel can be programmed with the same method with the channel 5.

NOTE : If you move the switch or volume that is designated as the special channel, the cursor is moved to the corresponding value then you can adjust each of – value and + value. Press the ENT to highlight the value then press the direction buttons to adjust the desired the value.









- Cont sett (Helicopter)
The basic setting of the Helicopter cont sett is NO.5 gyro, NO6. Throttle, Lim. DV (Digital volume). Generally, this function is seldom used, but Lim. DV (Digital volume) can control the operation range of digital volume -100 ~ +100. If DV is programmed, throttle channel is operated only programmed range.

5. D/R expo (Aircraft and Helicopter)

The basic setting of the Helicopter cont sett is NO.5 gyro, NO6. Throttle, Lim. DV (Digital volume). Generally, this function is seldom used, but Lim. DV (Digital volume) can control the operation range of digital volume -100 ~ +100. If DV is programmed, throttle channel is operated only programmed range.

- D/R

Affects the overall travel which in turn affects control response sensitivity equally throughout the range of that channel. Reducing the dual rate reduces the maximum control rate as well as overall sensitivity.After programming the max moving angle of the servo at the servo sett function, the D/R switch is ON, the basic value of the normal flight can be programmed. Depending on the D/R switch is on/off, the Aircraft to have a high control rate for aggressive maneuvers and a low control for smooth, precise maneuvers.

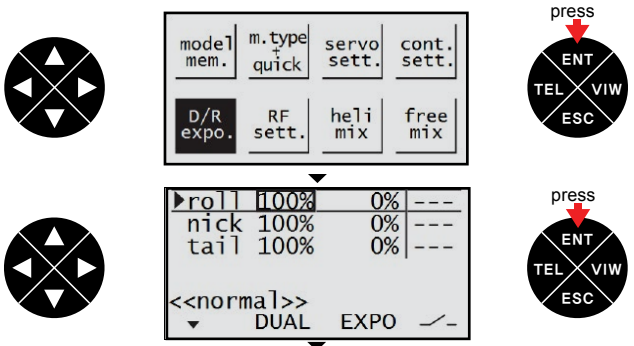
- Expo

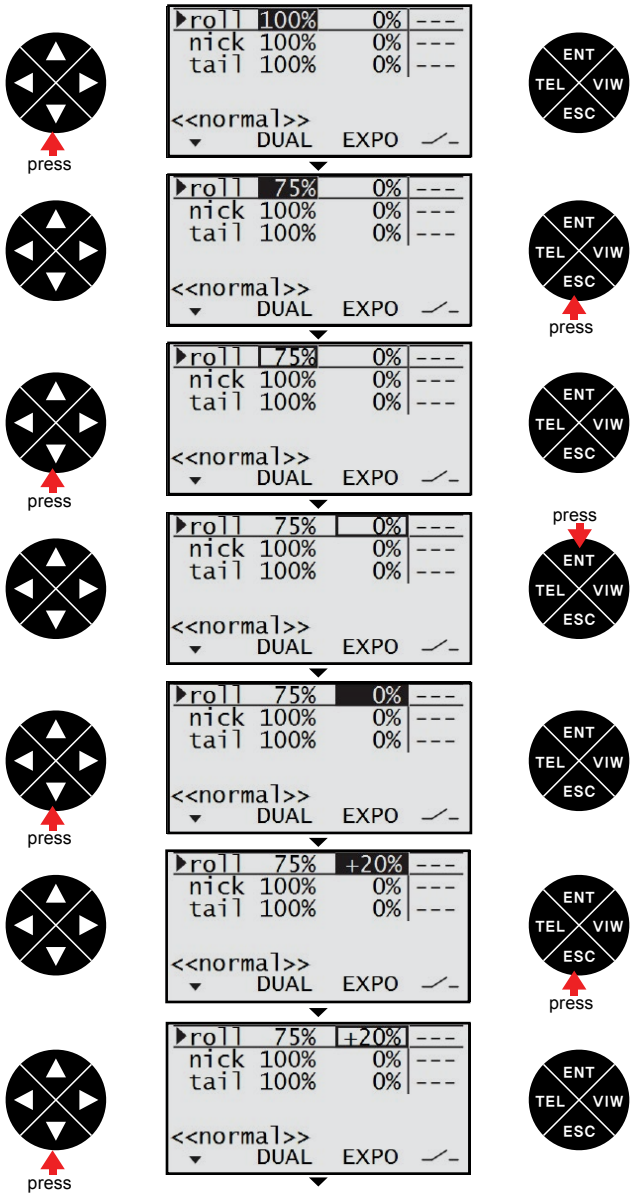
Affects the sensitivity around center but has no affect on the overall travel. Positive Exponential reduces control sensitivity around neutral for more precise control but does not affect the maximum control response. Negative exponential increase control sensitivity around neutral.

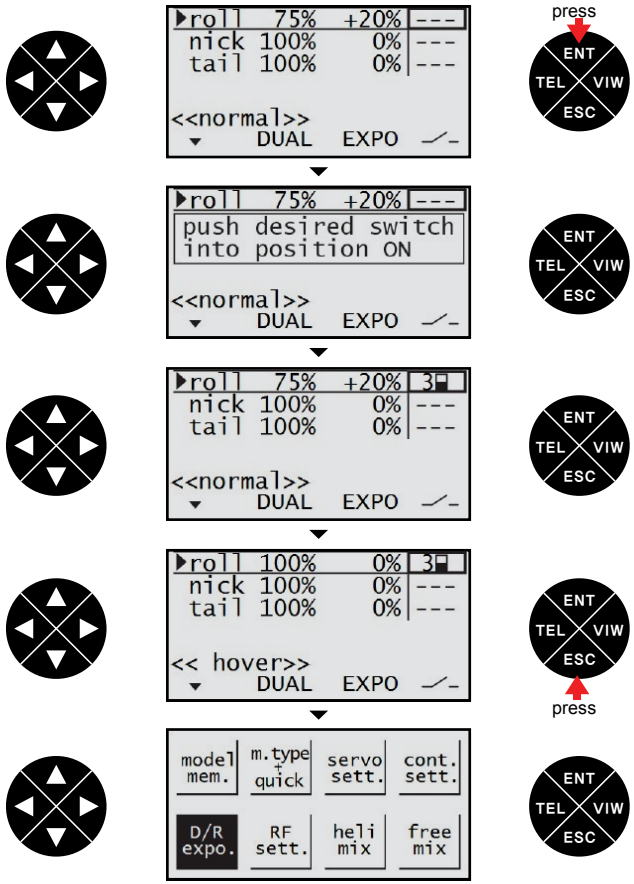
- D/R expo

Press the direction button to highlight the D/R expo then press the ENT button to access the function. The cursor is at the dual value of the aileron channel. Press the ENT and the directions button to highlight and adjust the desired value then press the ESC and the direction buttons to select the expo value in the aileron channel. Press the ENT and the direction buttons to highlight and adjust the desired value then the press the ESC and the direction button to select the hyphen. Press the ENT button then the pop up message “push desired switch into position on” appears. Move the switch that you want to assign as the dual on/off . That switch is assigned to the aileron dual on/off switch.

NOTE : If the quick link switch is ON when the quick link function is activated, the dual value can be programmed to go with the purpose of the quick link The elevator and rudder channels can be program in the same method with the aileron channel.



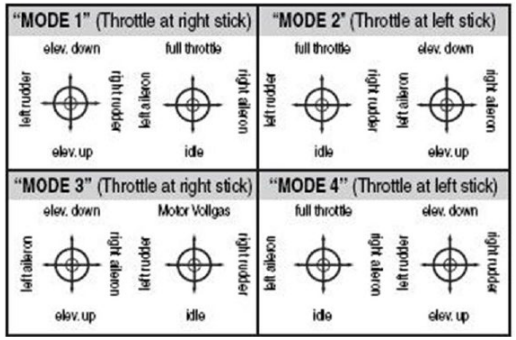




6. RF sett (Aircraft and Helicopter)

The RF function of the transmitter can be programmed, it contains 6 models of stick mode, timer, receiv out, rx bind, range test, RF transmit.

• Stick mode
The mz-12 has four stick modes with the two dual axis sticks. The user can select one among the four default stick modes the default mode is the mode 1.

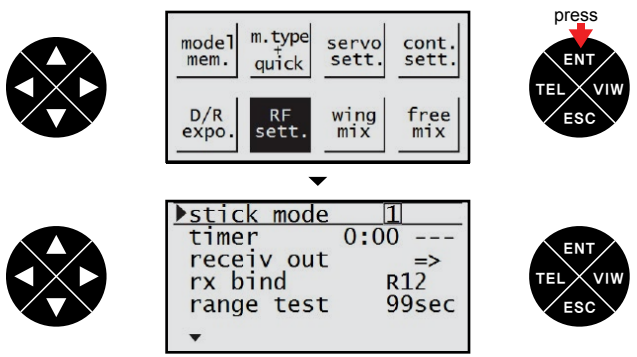


• Timer
The mz-12 has four stick modes with the two dual axis sticks. The user can select one among the four default stick modes the default mode is the mode 1.

• Receiv out
For the maximum flexibility of the receiver socket assignment, the mz-12 provides to swap over the servo outputs 1 to max.6. If you try to use more than 1 servos at the aileron or the elevator or the rudder, the receiver output socket can be assigned as you intend.
• Rx bind : The receiver must be bound to the transmitter before the receiver will operate. Binding teaches the receiver the specific code of the transmitter, so it will only connect to that transmitter.

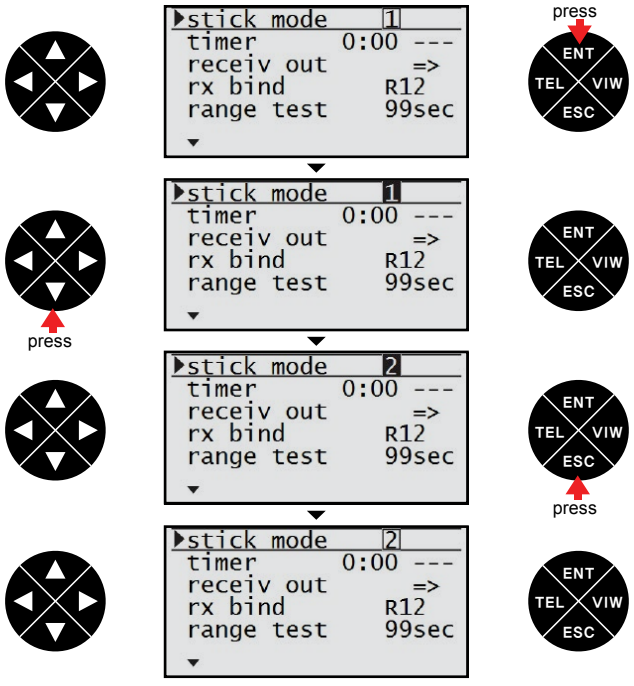
• Range test : The Range Test function reduces the power output. This allows for a range test to confirm the RF link is operating correctly. Perform a range check at the beginning of each flying session to confirm system operation.

• RF transmit : RF transmit function allows to turn on/off the RF power output



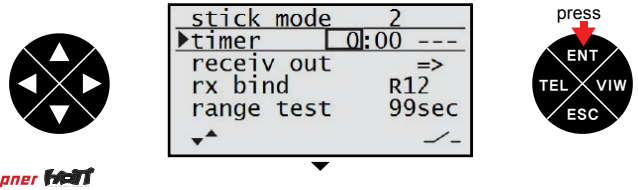
- Stick mode

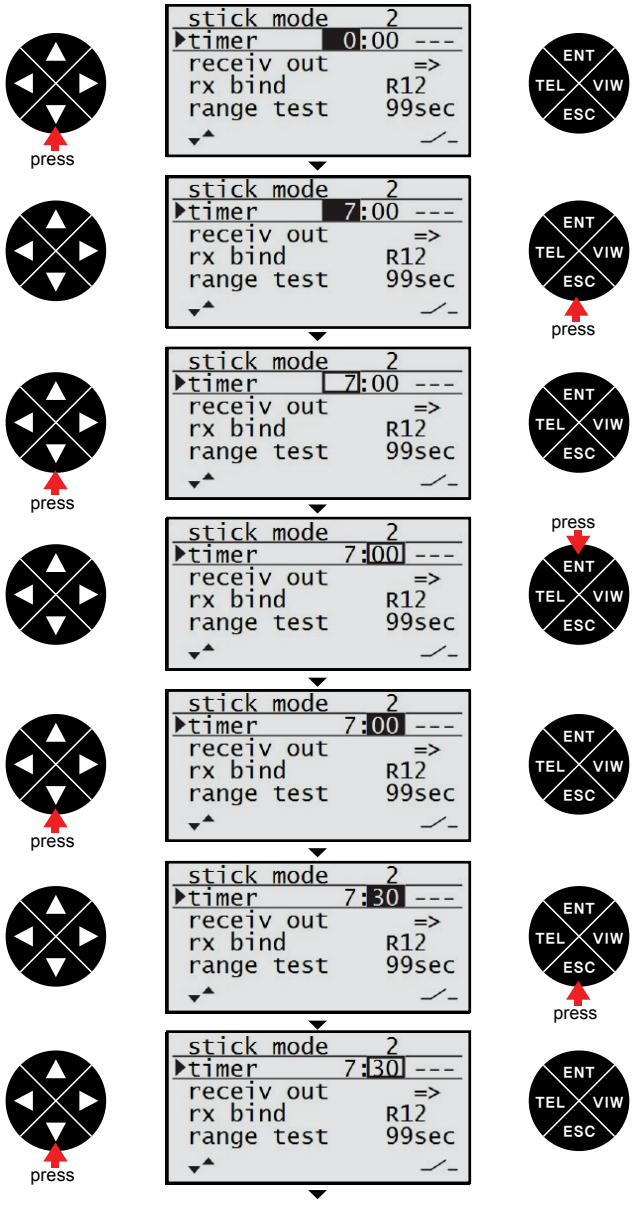
Enter the stick mode from the RF sett on the menu. Press the ENT button to highlight the value then press the direction button to select the mode number of 4 modes.

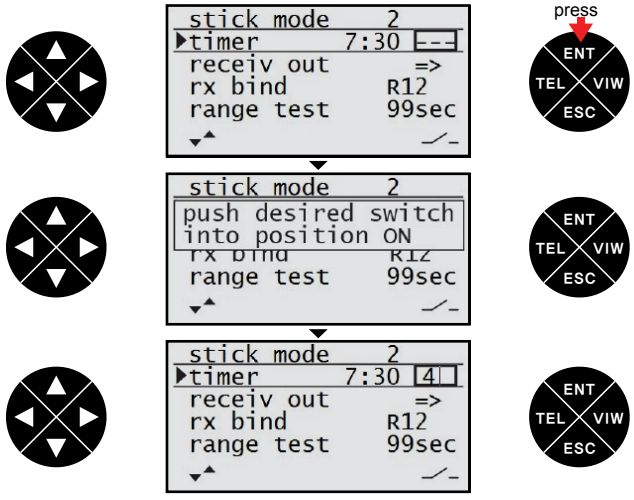


- Timer

Press the direction button to select the timer line and press the direction button again to select the minute or second. Press the ENT button to highlight the value then press the direction button to adjust the desired. Press the ESC button to remove the highlight then press the direction button to select the hyphen. Press the ENT button then the popup message “push desired switch onto position ON” appears. Move the switch then the corresponding value appears (The timer function is on/off when the switch is moved). Press the ESC button to remove the highlight.







- Receiv out

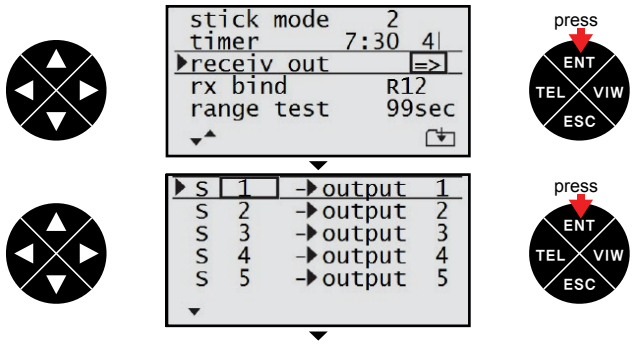
Press the direction button to select the receiv out line then press the ENT button to access the function. The cursor is on the arrow mark then press the ENT button to access the function.

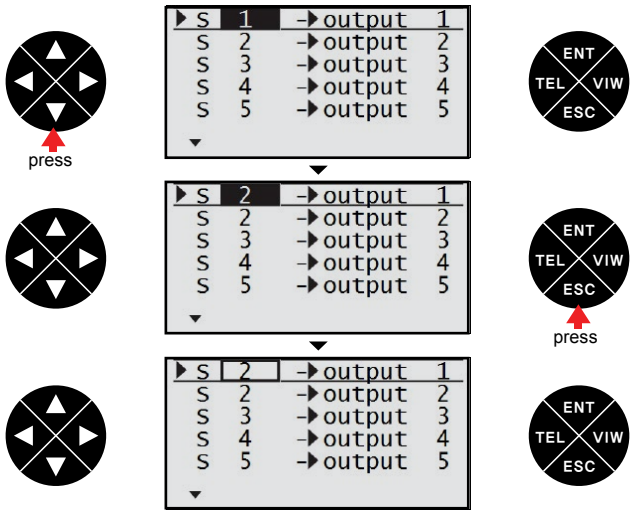
-The default channel assignment-

Channel		Output
Throttle	S1	Output 1
Aileron	S2	Output 2
Elevator	S3	Output 3
Rudder	S4	Output 4
5 Channel	S5	Output 5
6 Channel	S6	Output 6

The default channel assignment appears on the screen. Press the direction button to select S1~S6 then press the ENT and the direction buttons to highlight and change to the desired channel. Press the ESC button to get back to the previous screen.

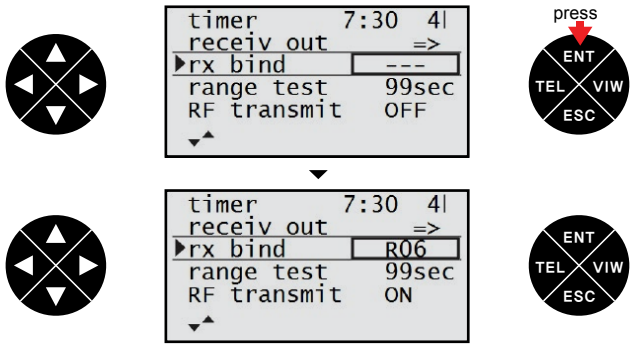
NOTE: If you change S1 to S2, the S2 have the 2 channels of output 1 and output 2 so the both servo of output 1 and output 2 are simultaneously moved when the stick of the S2 is move.





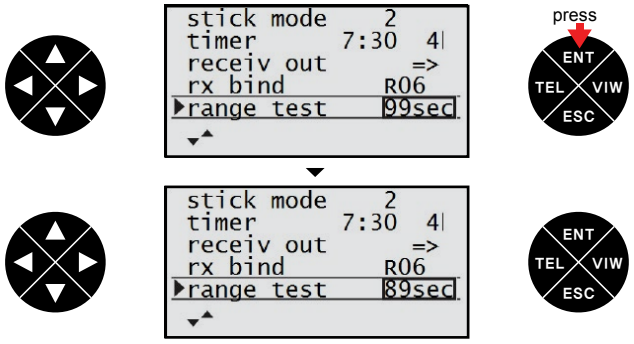
- Rx bind

Press the direction button to select rx bind line then the cursor is at the hyphen. Turn on the receiver then press the ENT button on the receiver for over 3 seconds so that the receiver enter the binding mode. Press the ENT button of the transmitter, the system will be connected within a few seconds and the model name of the receiver is displayed on the screen after completing the bind.



- Range test

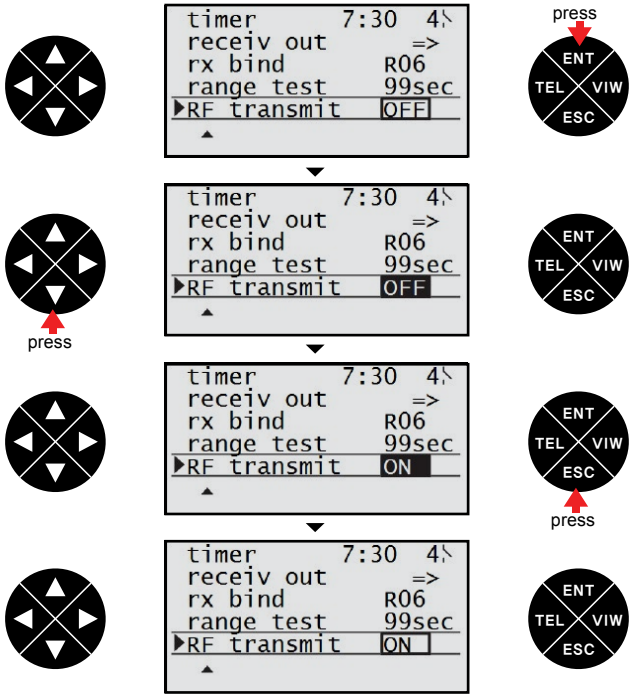
Press the direction button to select the range test, the cursor is at the 99sec. Turn on the receiver then press the ENT button on the transmitter. With the range test started, the Graupner logo blinks with beep for 99sec. Walk over 50 meters away from the model with controlling the transmitter sticks constantly and check whether the model is operating normally. You should have total control of the model with the trainer switch pulled.



- RF transmit

RF transmit function allows to turn ON/OFF the RF power output.

Press the direction button to select the RF transmit then press the ENT button to select ON or OFF.



7. wing mix (AIRCRAFT)

• Diff aile

The diff aile mixing allows to overcome the adverse yaw when the Aircraft is deflected. the servo travel of the aileron channel is so adjusted that the flight vertical axis is straightened.

• Diff flaps

The diff flaps mixing allows the aileron channel to be mixed to the flap channel. If the aileron is operated, the flap is simultaneously operated. This mixing help to overcome adverse yaw characteristics as well.

• Aile->rudd

The aileron to rudder mixing allows to overcome adverse yaw characteristics with the glider or the scale Aircraft and makes coordinating turns easier. When the aileron command is given, both of the aileron and the rudder are operated simultaneously.

• Aile->flaps

The aileron to falp mixing allows enhance the performance of the roll flight. When the aileron command is given, both of the aileron and the flap are operated simultaneously.

• Brak->elev

When the air brake of the glider has been programmed with the value of the motor at C1 being no or no/inv, the air brake usually cause the flight nose up and down. The brake to elevator mixing offers the down and up signal to the elevator to compensate for the flight nose up and down.

• Brak->flap

When the air brake (with the value of the motor at C1 being no or no/inv) is operated, both flap servos is simultaneously moved for the landing approach. You can program the travel direction and range of the flap servos.

• Brak->aile

When the air brake (with the value of the motor at C1 being no or no/inv) is operated, both aileron servos is simultaneously moved for the landing approach. You can program the travel direction and range of the aileron servos.

NOTE : The typical programming for the air brake is that the aileron up, the flap down and the elevator up.

• Elev->flap

The elevator to flap mixing allows the elevator channel to be mixed to the flap channel. If the elevator is operated, the flap is simultaneously operated. This mixing help to enhance the effect of the elevator in tight turns and aerobatics. The typical programming for elevator to flap is that the elevator up and the flap down.

• Elev->aile

The elevator to flap mixing allows the elevator channel to be mixed to the aileron channel. If the elevator is operated, the aileron is simultaneously operated. This mixing help to reinforce the elevator response. The typical programming is elevator up to aileron down and elevator down to aileron up.

• Flap->elev

When the flap command is given, both of the flap, the flight nose up and down. The flap to elevator mixing offers the down and up signal to the elevator to compensate for the flight nose up and down.

• Flap->aile

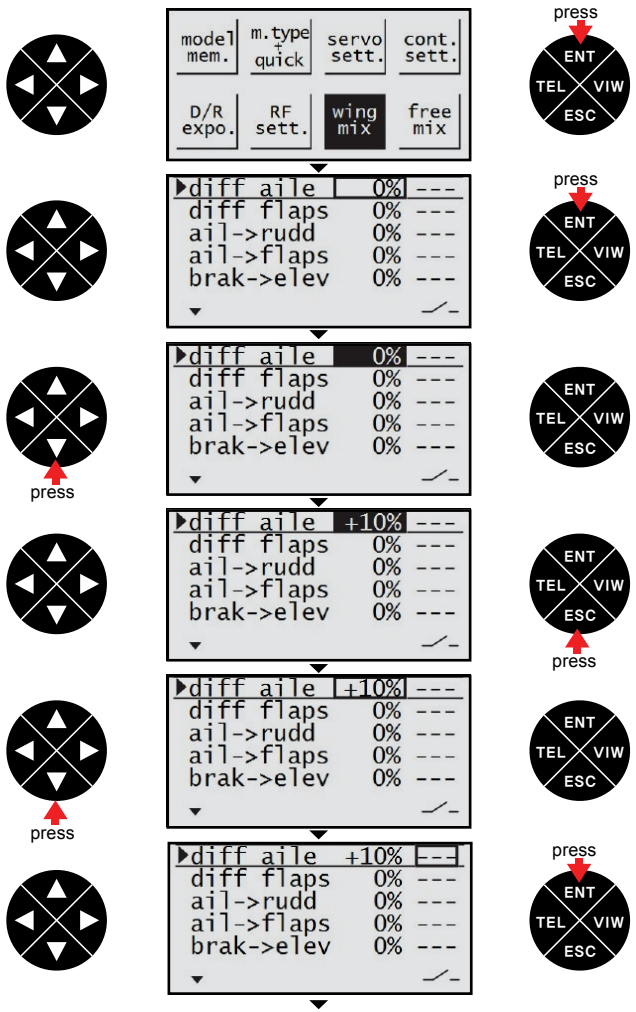
When the flap command is given, both of the flap and the aileron are operated simultaneously.

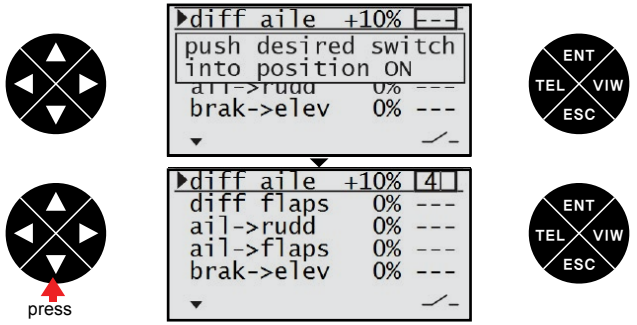
Diff-red

The differential reduction mixing allows the differential aileron mixing to work, even in the situation that the airbrake (the aileron up, the flap down) is programmed so that you can't use the differential aileron mixing.

- Diff aile

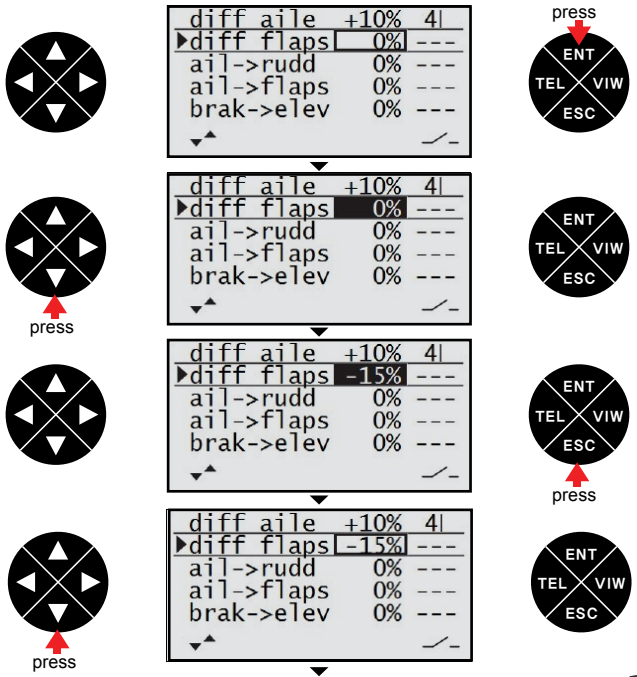
Press the ENT button to access the diff aile mixing then press the ENT button again to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The diff aile mixing is on/off when the switch is moved). Press the direction button to select other mixing.

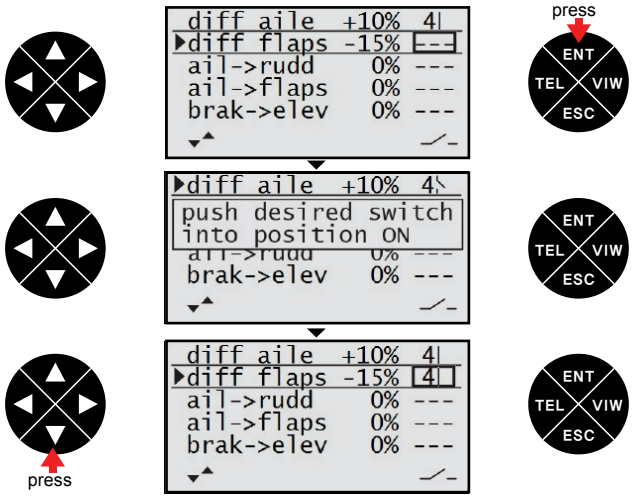




- Diff flap

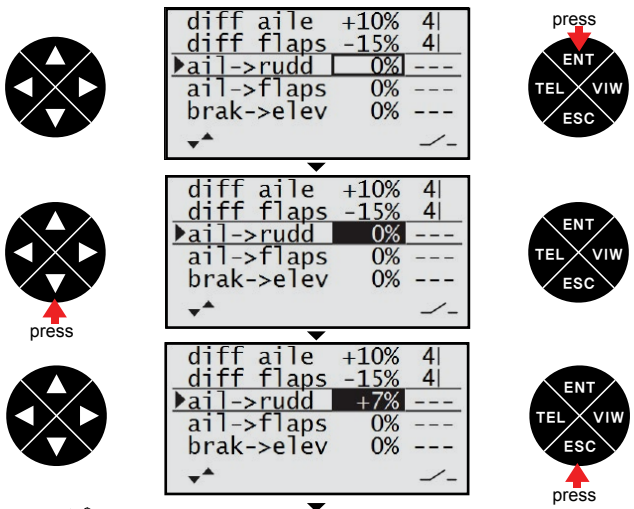
Press the direction button to select the diff flaps line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The diff flaps mixing is on/off when the switch is moved). Press the direction button to select other mixing.

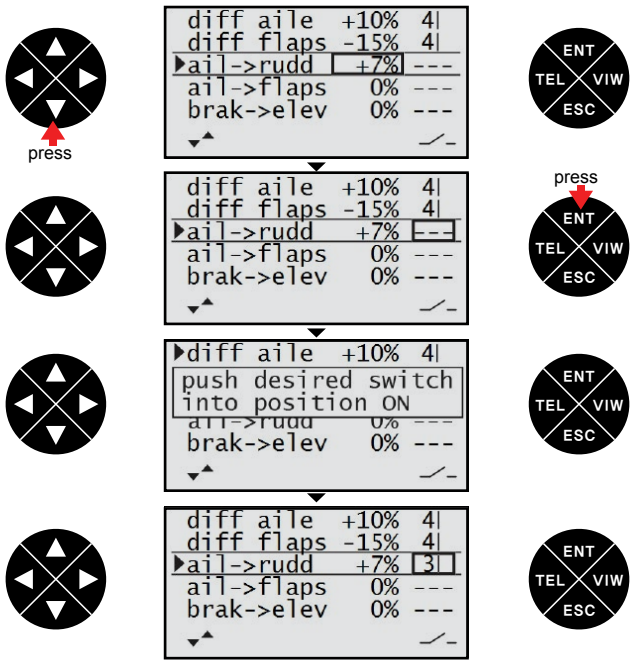




- Ail->rudd

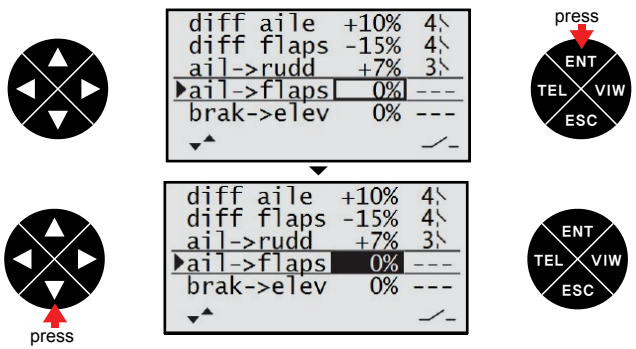
Press the direction button to select the ail -> rudd line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The ail -> rudd mixing is on/off when the switch is moved). Press the direction button to select other mixing.

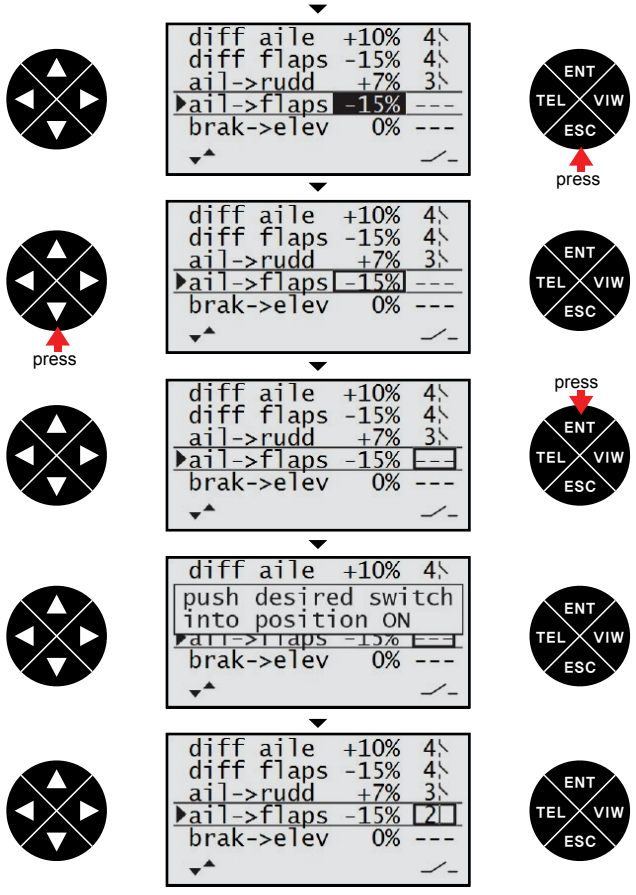




- Ail->flap

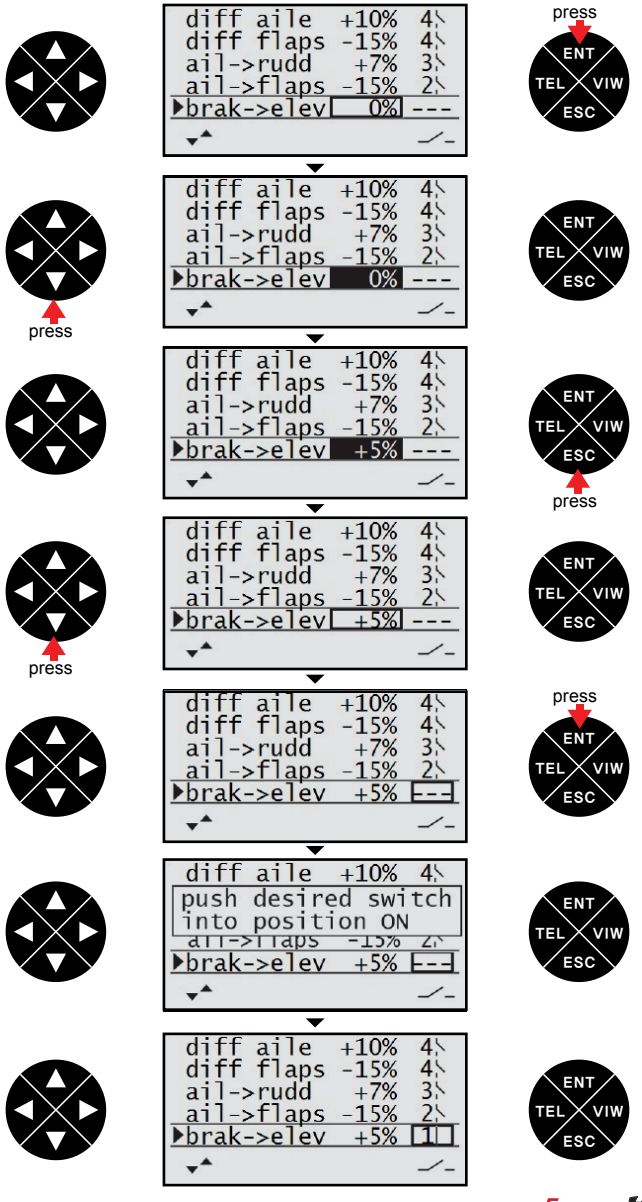
Press the direction button to select the ail -> flaps line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The ail -> flaps mixing is on/off when the switch is moved). Press the direction button to select other mixing.





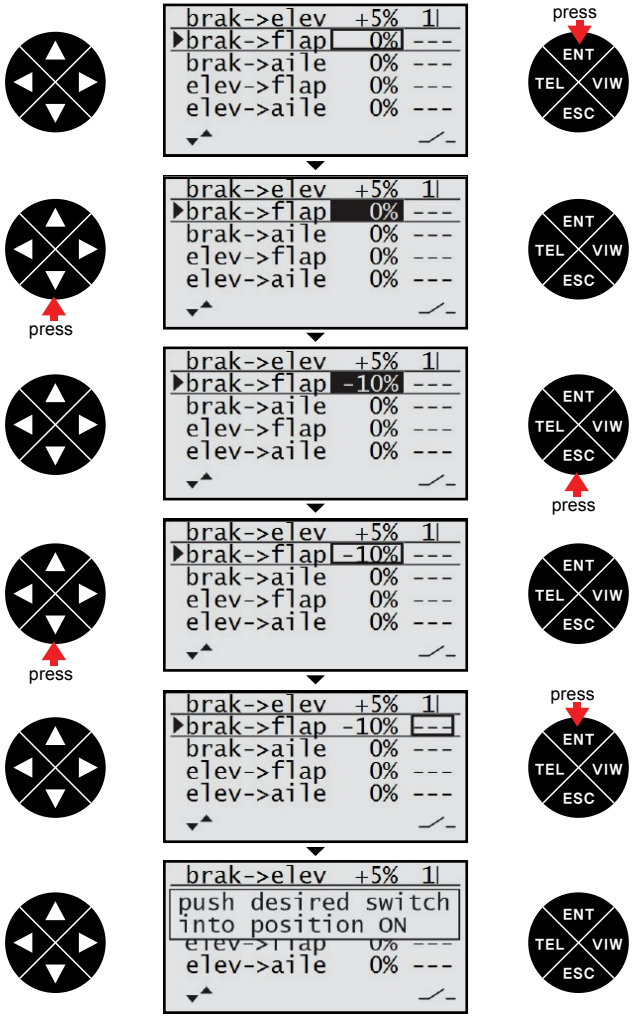
- Brak->elev

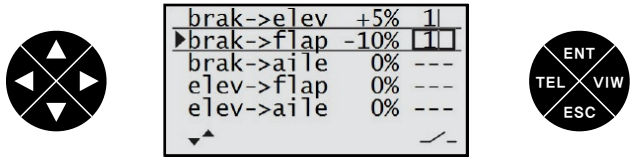
Press the direction button to select the brak -> elev line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The brak -> elev mixing is on/off when the switch is moved). Press the direction button to select other mixing.



- Brak->flap

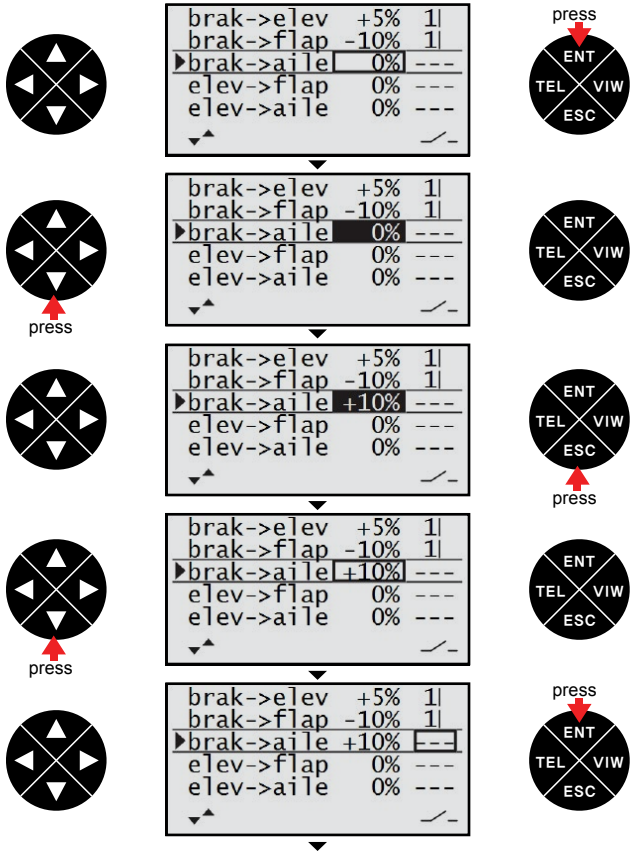
Press the direction button to select the brak -> flap line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The brak -> flap mixing is on/off when the switch is moved). Press the direction button to select other mixing.

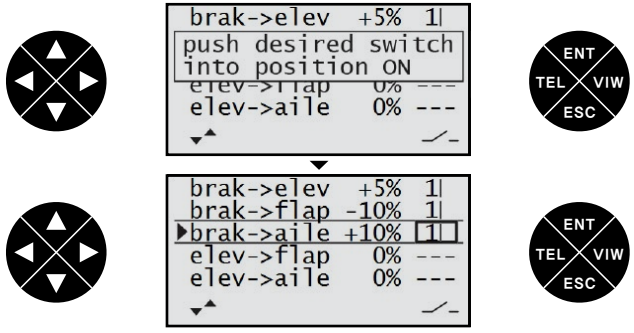




- Brak->aile

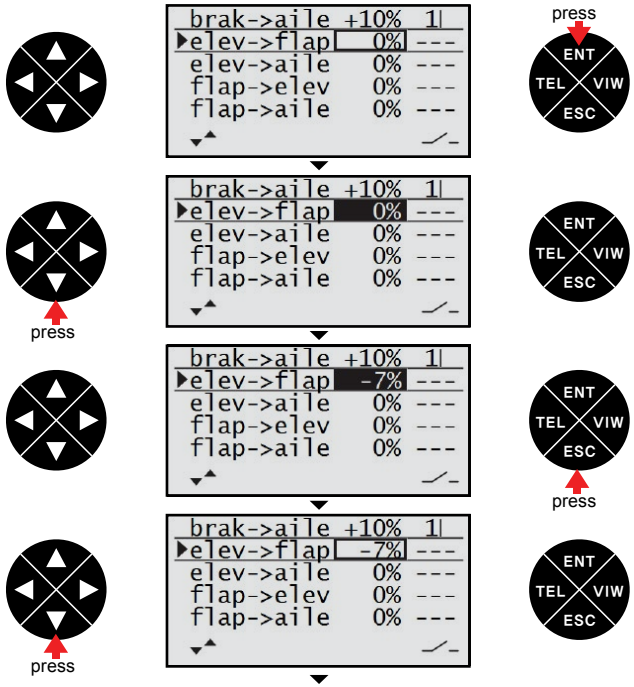
Press the direction button to select the brak -> aile line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The brak -> aile mixing is on/off when the switch is moved). Press the direction button to select other mixing.

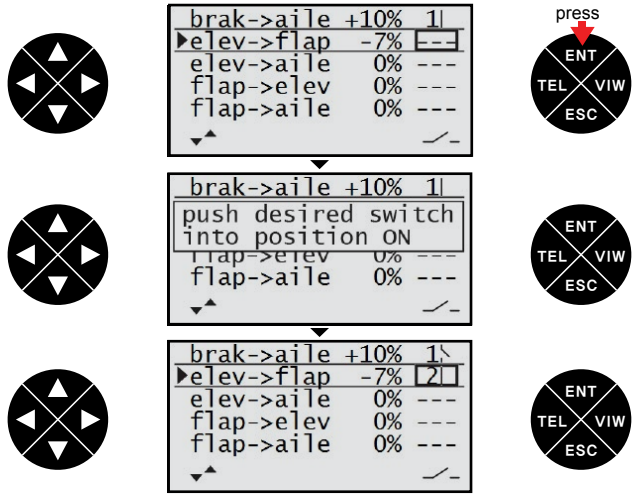




- Elev->flap

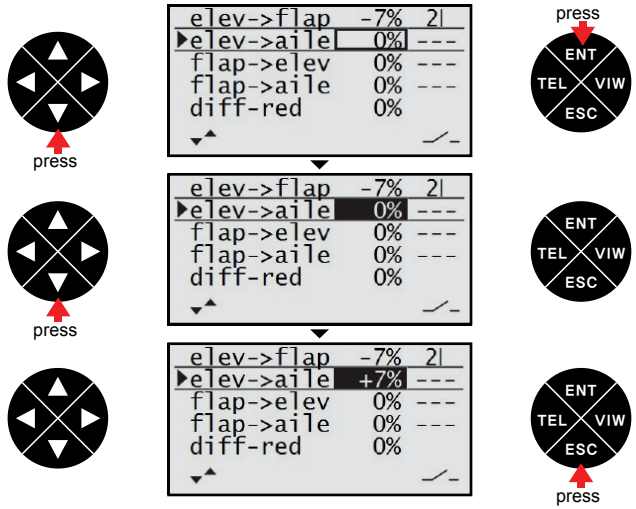
Press the direction button to select the elec -> flap line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The elec -> flap mixing is on/off when the switch is moved). Press the direction button to select other mixing.

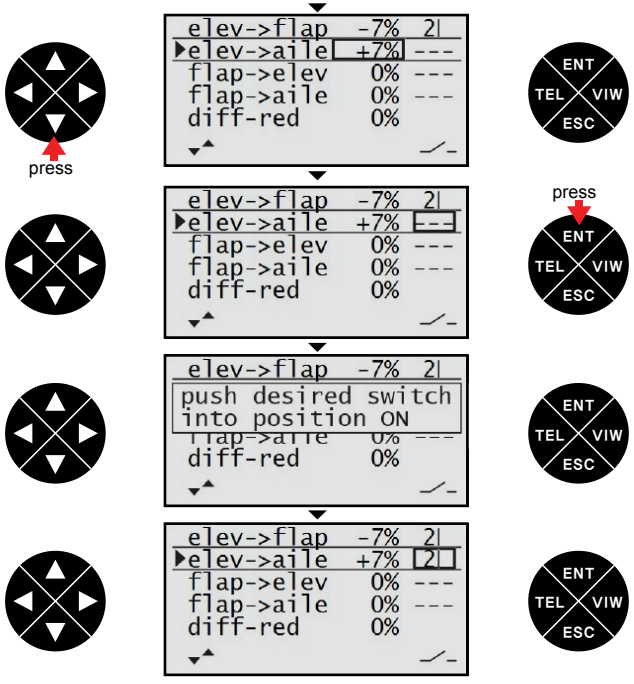




- Elev->aile

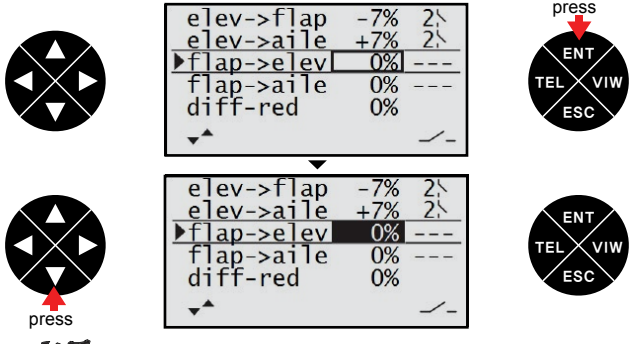
Press the direction button to select the elec -> aile line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The elec -> aile mixing is on/off when the switch is moved). Press the direction button to select other mixing.

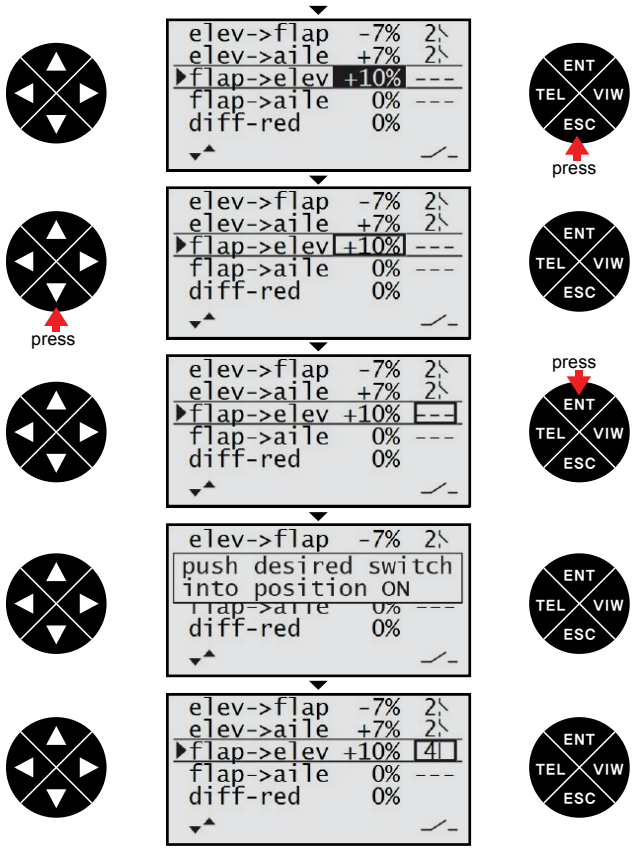




- Flap->elev

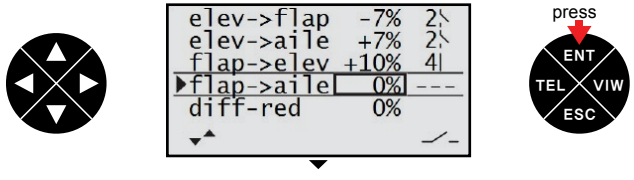
Press the direction button to select the flap -> elev line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The flap -> elev mixing is on/off when the switch is moved). Press the direction button to select other mixing.

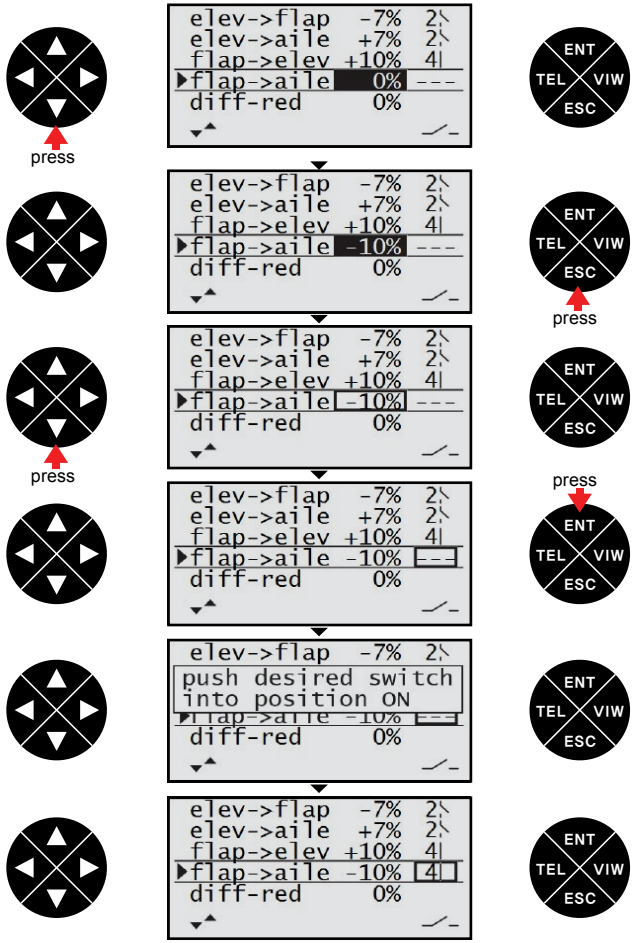




- Flap->aile

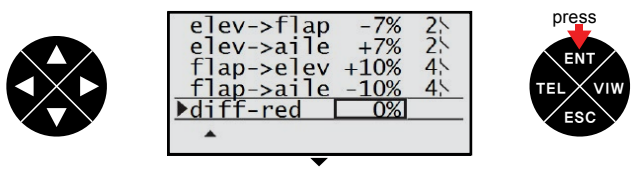
Press the direction button to select the flap -> aile line and press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button. The popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The flap -> aile mixing is on/off when the switch is moved). Press the direction button to select other mixing.

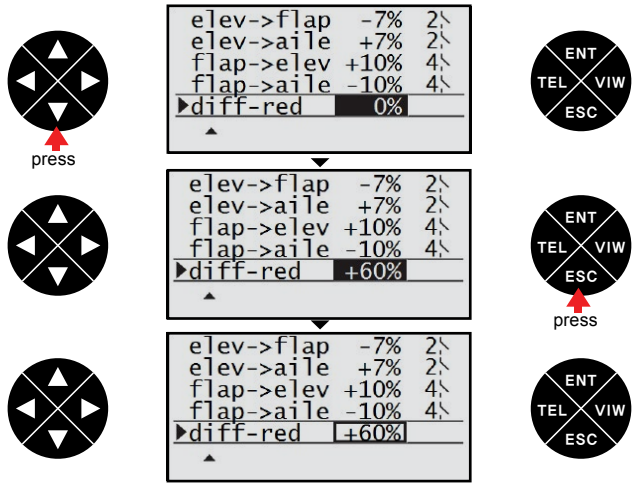




- Diff-red

Press the direction button to access the diff-red mixing then press the ENT button to highlight the value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight.





8. heli mix (Helicopter)

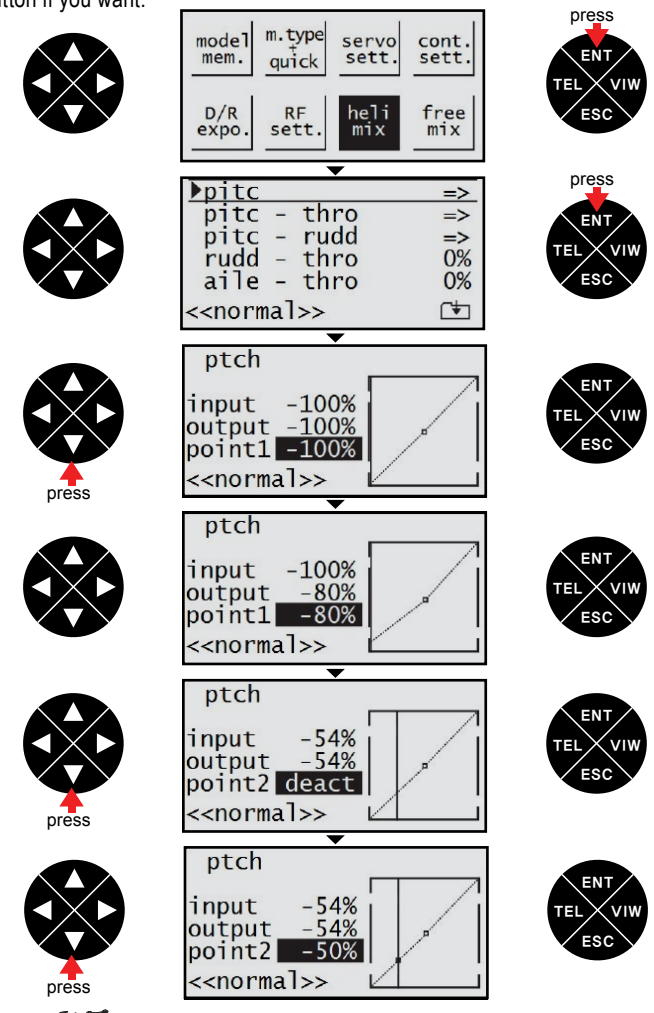
The mz-12 offers the mixing function in Helicopter model type. Heli mix is connected to 2 quick link function and the mixes are assigned to each quick link function.

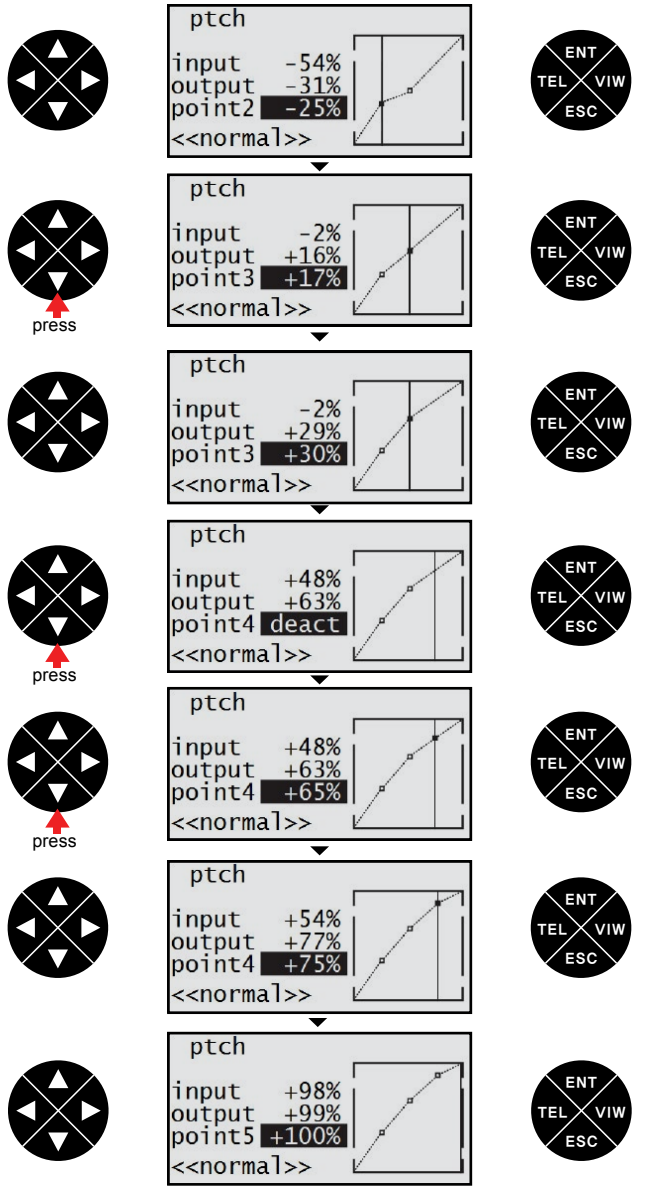
- Ptch : The ptch mixing allows to adjust 5 points of the pitch curve that corresponds to the throttle stick to maintain the best flight condition. You can program the different pitch curve for each quick link.
- Pitc-thro : pitc -> thro function allows to adjust 5 points of the throttle curve that corresponds to the pitch angle for the throttle stick operation so that the engine or motor leads the best flight condition. You can program the different throttle curve for each quick link.
- Pitc-rudd : It is pitch rudder mixing. This function is used for offsetting the counter torque that is generated by the pitch of the main rotor or the change of the motor/engine RPM in accordance with the movement of the throttle stick. You can set the point at the position where the counter torque is generated to program the rudder value. This mixing might not be necessary when the high performance Gyro (Tail lock) or might be need to adjust the small value. You can adjust the different value for each quick link.
- Rudd-thro : This function is used to offset to fall down Helicopter engine RPM by the load that is generated for rudd operation during Helicopter hovering. It can be offset with throttle channel.
- Aile-thro : This function is used to offset to fall down Helicopter engine RPM by the load that is generated for aile operation during Helicopter hovering. It can be offset with throttle channel.
- Elev-thro : This function is used to offset to fall down Helicopter engine RPM by the load that is generated for elec operation during Helicopter hovering. It can be offset with throttle channel.
- Gyro : The gyro mixing allows to adjust the gyro gain. You can adjust the different gyro gain for each quick link.
- Swash lim : If the aileron and elevator related with the swashplate is simultaneously controlled, the linkage connected to the servo might be damaged. The swash lim mixing allows to restrict the travel range of the swash plate to prevent the damage of the linkage. It is typically used for 3D Helicopter.
- Governor 8ch : This function is used to set governor ON/OFF
- Governor rate : This function is used to set the value of governor operation.

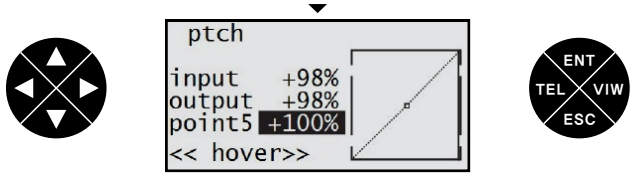
- Ptch

Press ENT button to access the ptch mixing then press the ENT button again to access the function. -100% of the point 1 value is highlighted. Move the throttle stick to the high position step by step then the point 2,3,4,5 is selected in turn. After selecting the point number, press the direction button to adjust the desired value. Press the ESC button to return to the previous screen.

NOTE : The default values of the point 2 and point 4 is remained not to be programmed so the “deact” is displayed at the value box. You may activate and adjust the desired value by the direction button if you want.



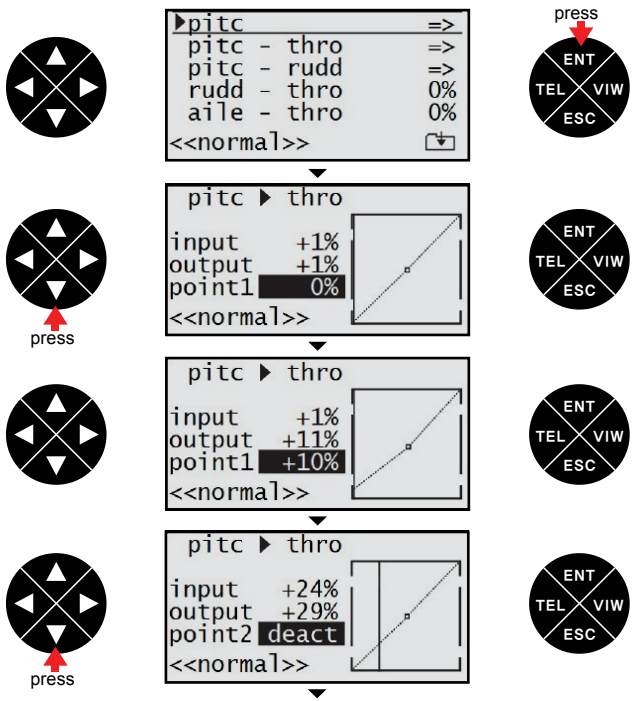


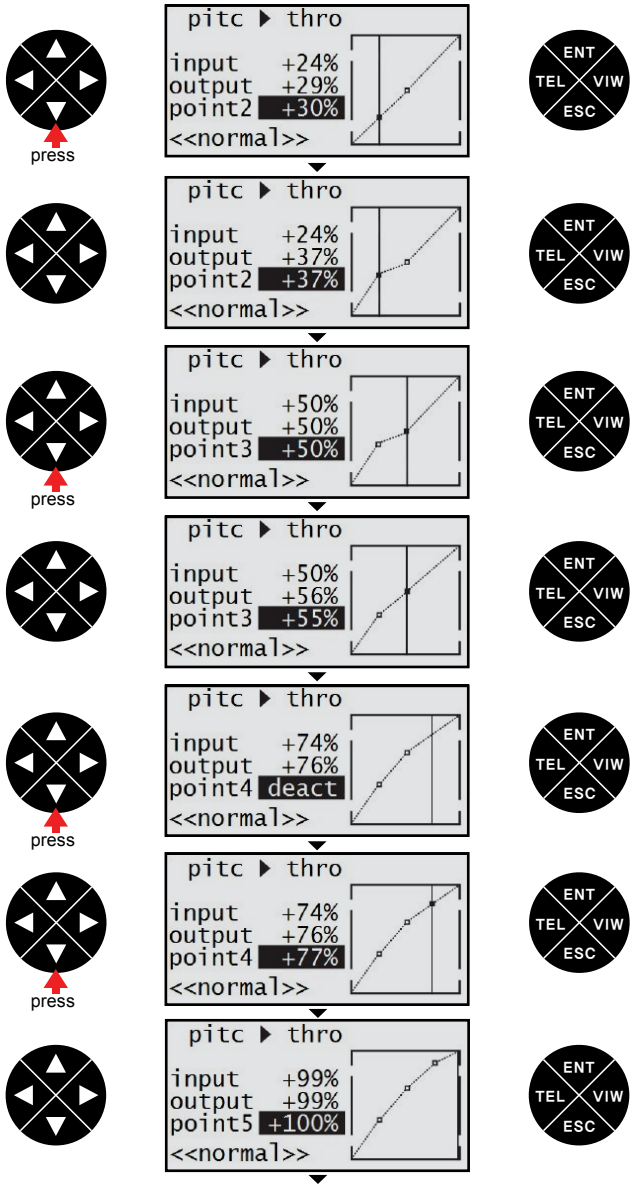


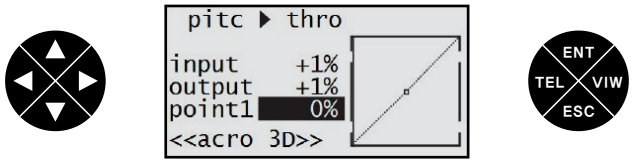
- Pitc->thro

Press the direction button to select pitc->thro line and press the ENT button to access the pitc->thro function. 0% of the point 1 value is highlighted. Move the throttle stick to the high position step by step then the point 2,3,4,5 is selected in turn. After selecting the point number, press the direction button to adjust the desired value. Press the ESC button to return to the previous screen.

NOTE : The default values of the point 2 and point 4 is remained not to be programmed so the “deact” is displayed at the value box. You may activate and adjust the desired value by the direction button if you want. When the value of the point 2 and point 4 are activated, the basic value of point 2 is 25% and point 4 is 75%



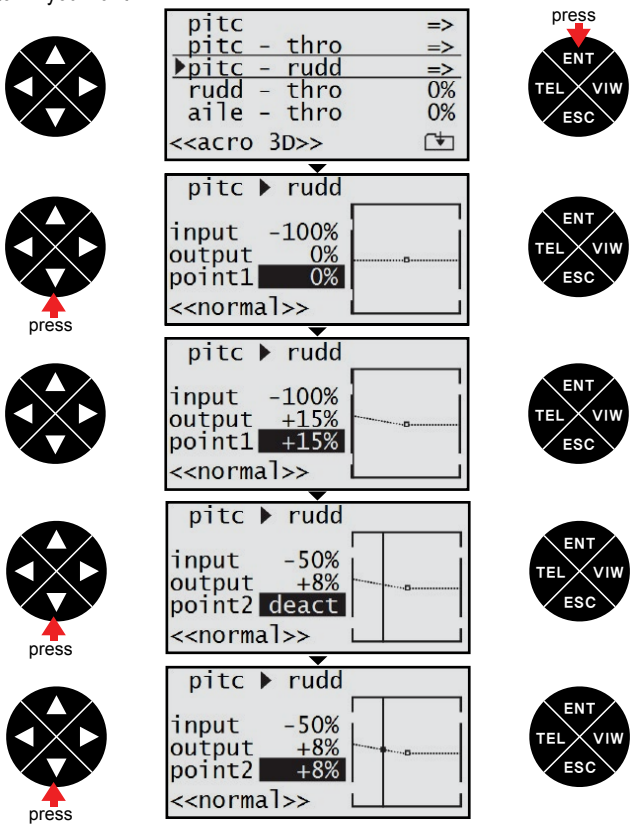


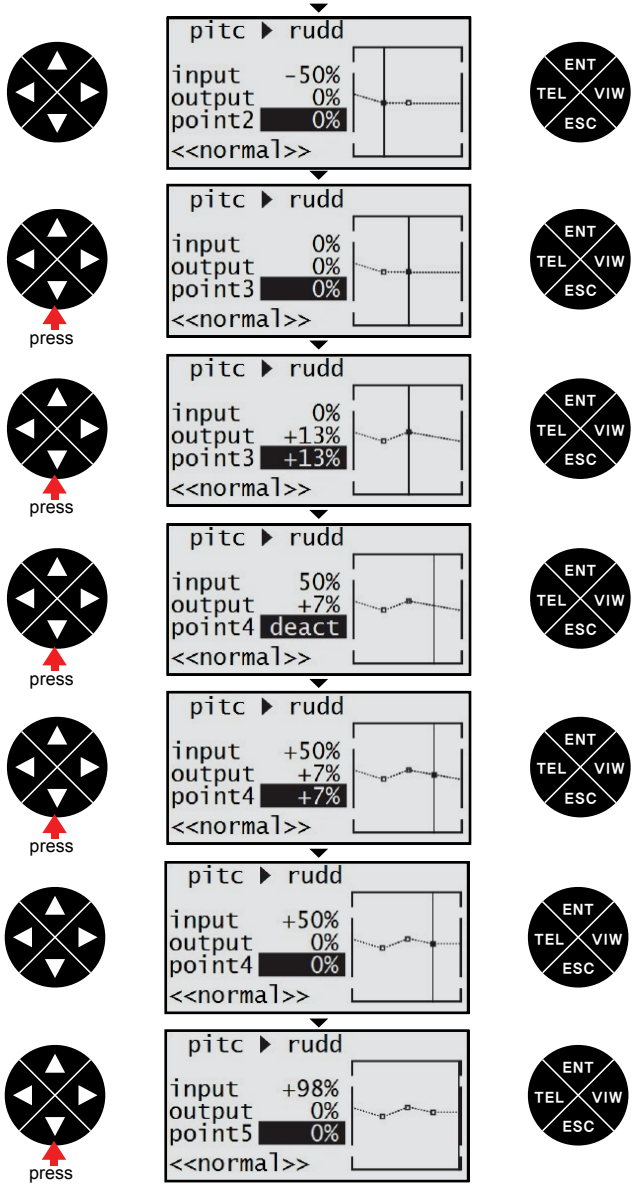


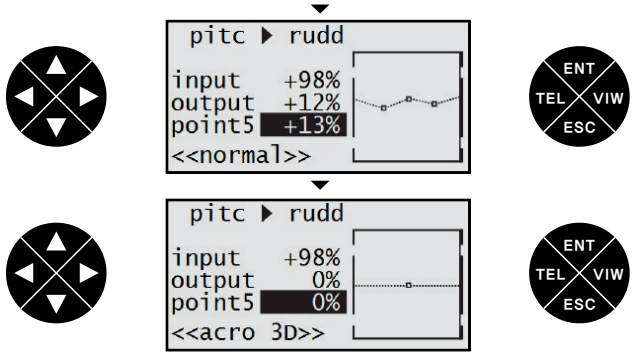
- Pitc->rudd

ruddPress the direction button to select pitc->tail line and press the ENT button to access the pitc-> tail function. 0% of the point 1 value is highlighted. Move the throttle stick to the high position step by step then the point 2,3,4,5 is selected in turn. After selecting the point number, press the direction button to adjust the desired value. Press the ESC button to return to the previous screen.

NOTE : The default values of the point 2 and point 4 is remained not to be programmed so the “deact” is displayed at the value box. You may activate and adjust the desired value by the direction button if you want.



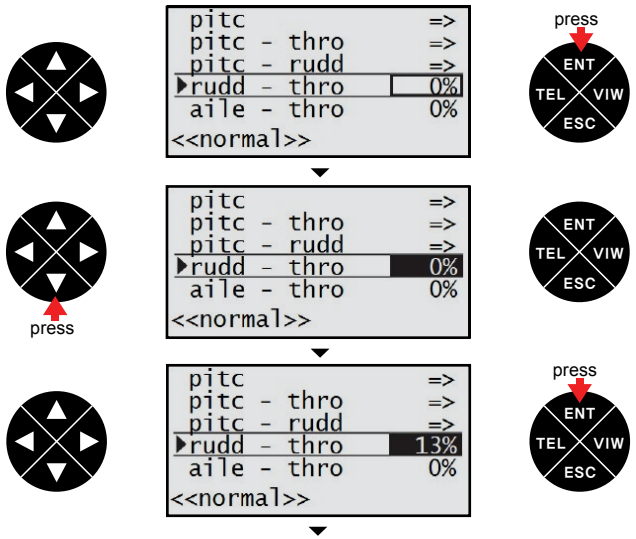


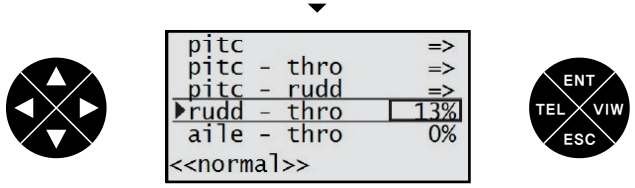


- Rudd-thro

Press the direction button to select rudd – thro line and press the ENT button to access the rudd – thro function. The value 0% is highlighted then press the direction button to adjust the desired value.

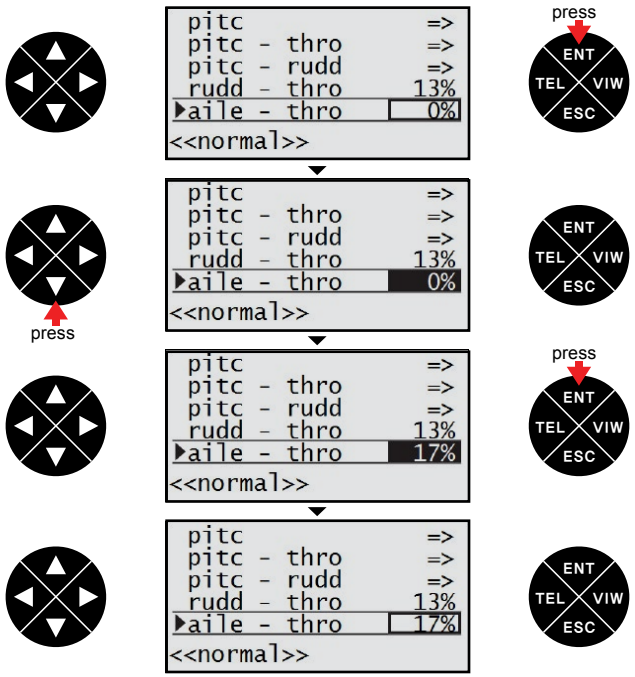
NOTE : In case that the direction of Helicopter rotation is clockwise, rudd–thro function is only operated when rudd is moved to the right side and if the direction of Helicopter rotation is unclockwise, rudd–thro function is only operated when rudd is moved to the left side.





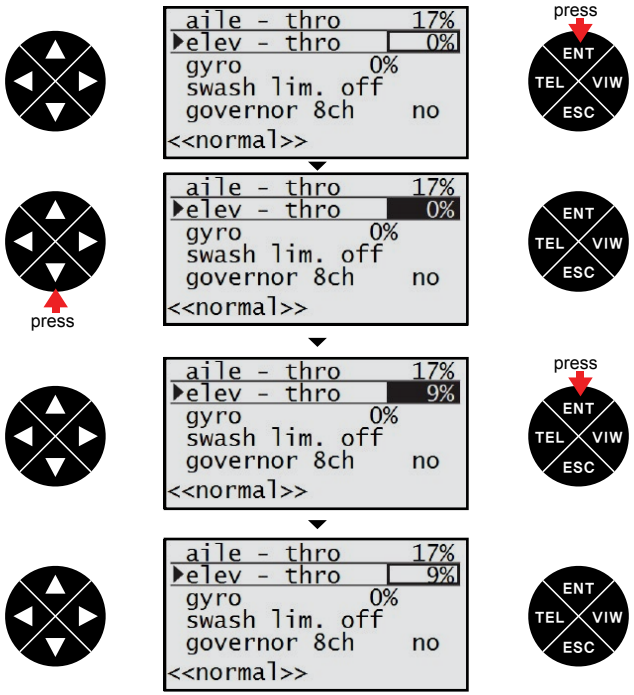
- Aile-thro

Press the direction button to select aile – thro line and press the ENT button to access the aile – thro function. The value 0% is highlighted then press the direction button to adjust the desired value.



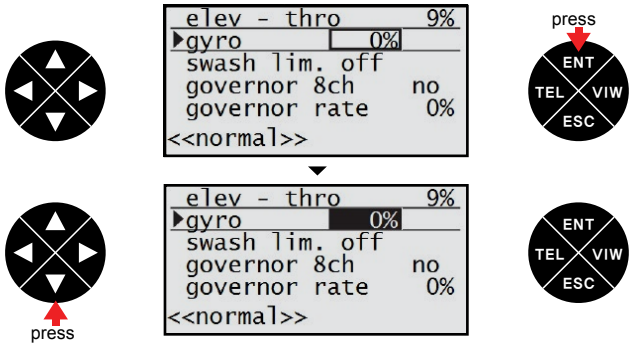
- Elev-thro

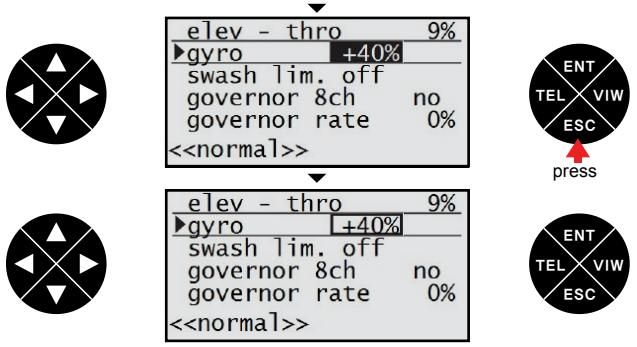
Press the direction button to select elev – thro line and press the ENT button to access the elev – thro function. The value 0% is highlighted then press the direction button to adjust the desired value.



- Gyro

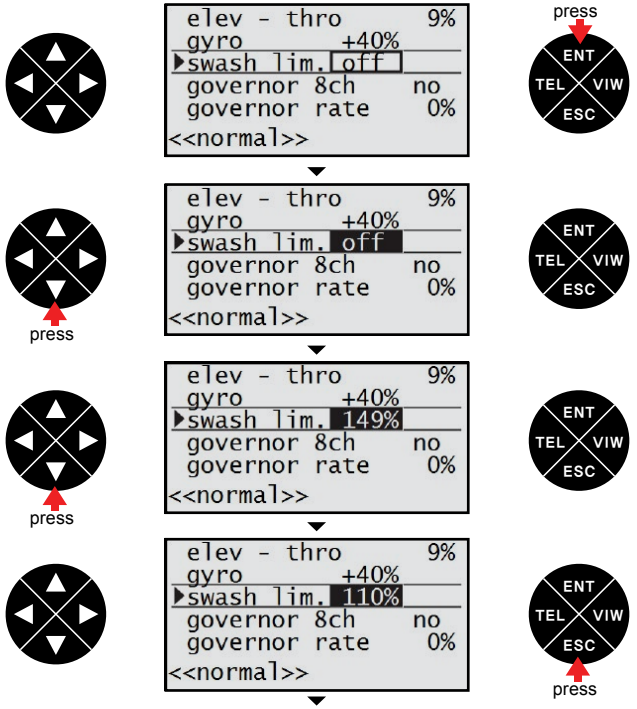
Press the direction button to select the gyro mixing line then press the ENT button to access the function. 0% of the gyro gain is highlighted. Press the direction button to adjust the desired the gain then press the ESC button to remove the highlight.

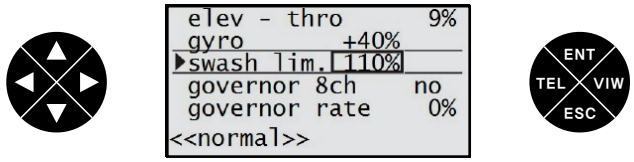




- Swash lim

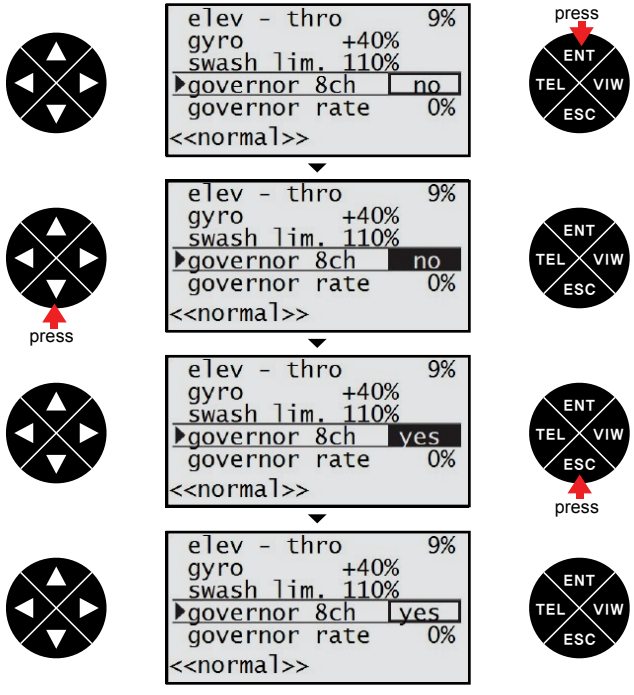
Press the direction button to select the swash lim mixing then press the ENT button to access the function. off of the swash lim value is highlighted. Press the direction button to adjust the desired the gain then press the ESC button to remove the highlight.





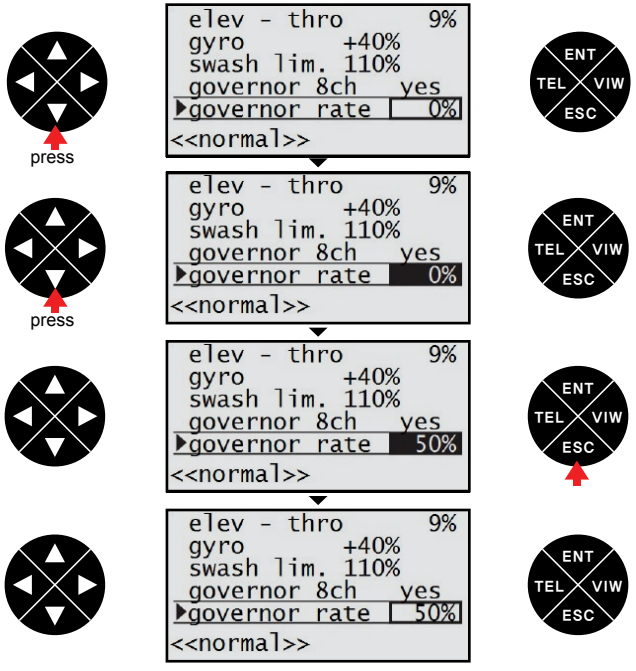
- Governor 8ch

Press the direction button to select the governor 8ch then press the ENT button to access the function. The value no of is highlighted. You may select yes or no by the direction button. Press the ESC button to remove the highlight.



- Governor rate

Press the direction button to select the governor rate then press the ENT button to access the function. The value 0% of is highlighted. Press the direction button to adjust the desired value then press the ESC button to remove the highlight.



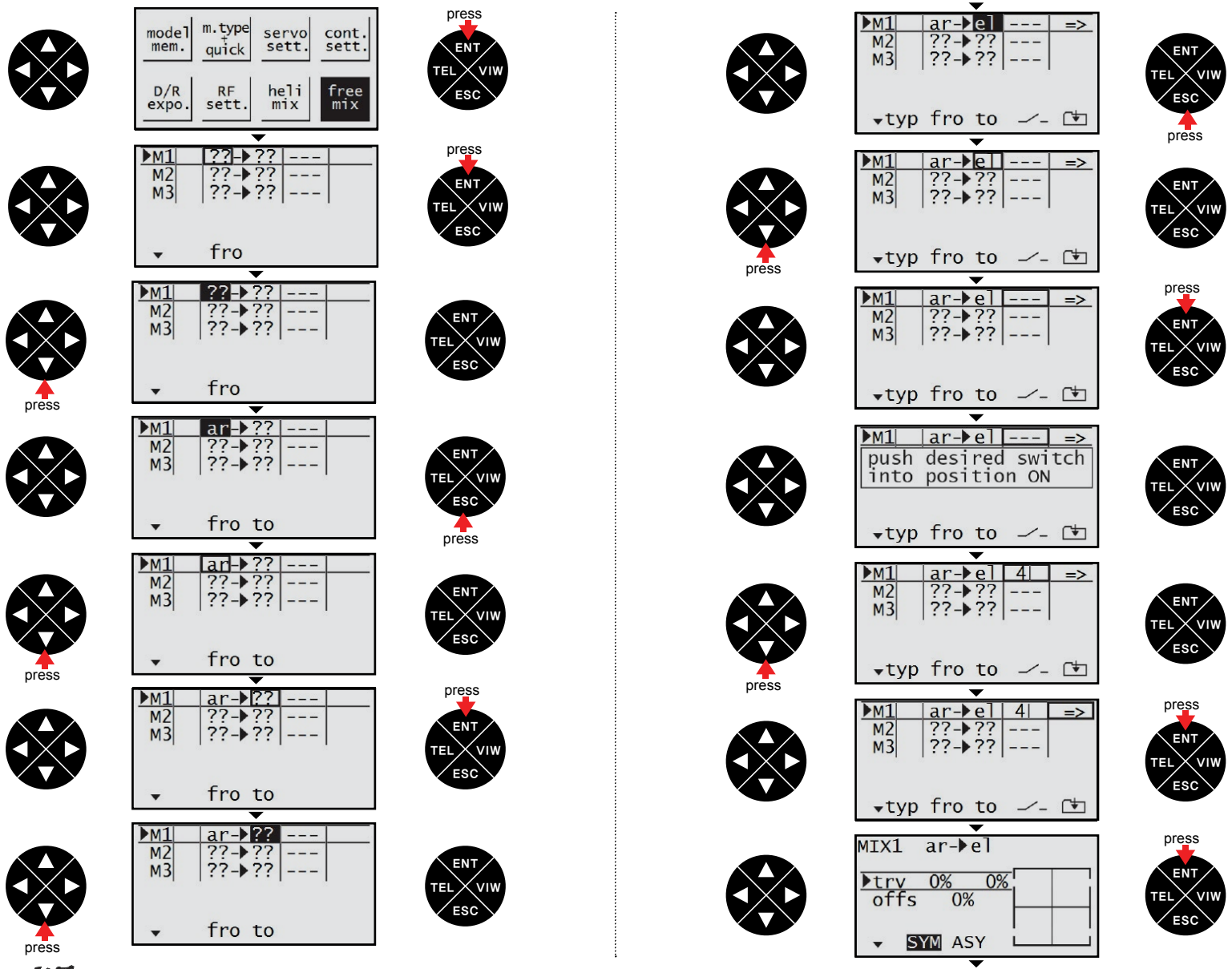
9. free mixer (Aircraft and Helicopter)

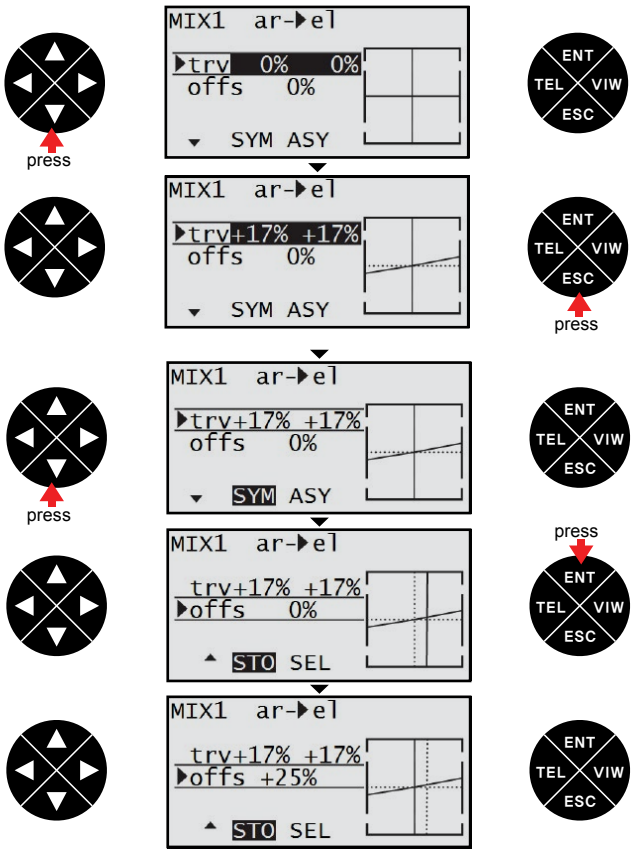
The free mixer allows to select the master channel that is controlling channel and the salve channel. The Master channel will be mixed to the slave channel and the slave channel will follow the master channels input based on the rate that is programmed. Three free mixers are available for each of the ten model memories.

- Free mixer

Press the ENT button to access the free mixer. The first ?? at M1 line is highlighted then press the ENT button to highlight the value. The first ?? is for the master channel programming. Press the direction button to select the master channel then press the ESC button to remove the highlight. Press the direction and ENT buttons to select the next M1 ?? and highlight the value. The next ?? is for the slave channel programming. Press the direction button to select the slave channel then press the ESC button to remove the highlight. Press the direction button to select the hyphen then press the ENT button then the popup message “push desired switch into position on” appears. Move the switch then the corresponding value appears (The M1 free mixer is on/off when the switch is moved).

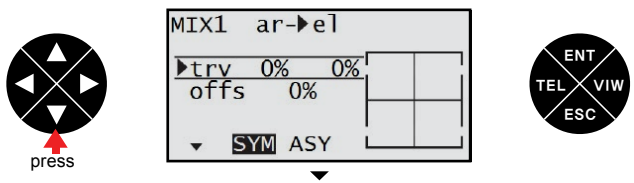
Press the direction button to select the arrow mark then press the ENT button to access the free mixer ratio. The SYM is highlighted then press the ENT button to highlight both values of the trv line. Press the direction button to adjust the desired value. Both values are adjusted simultaneously and appeared in the diagram.

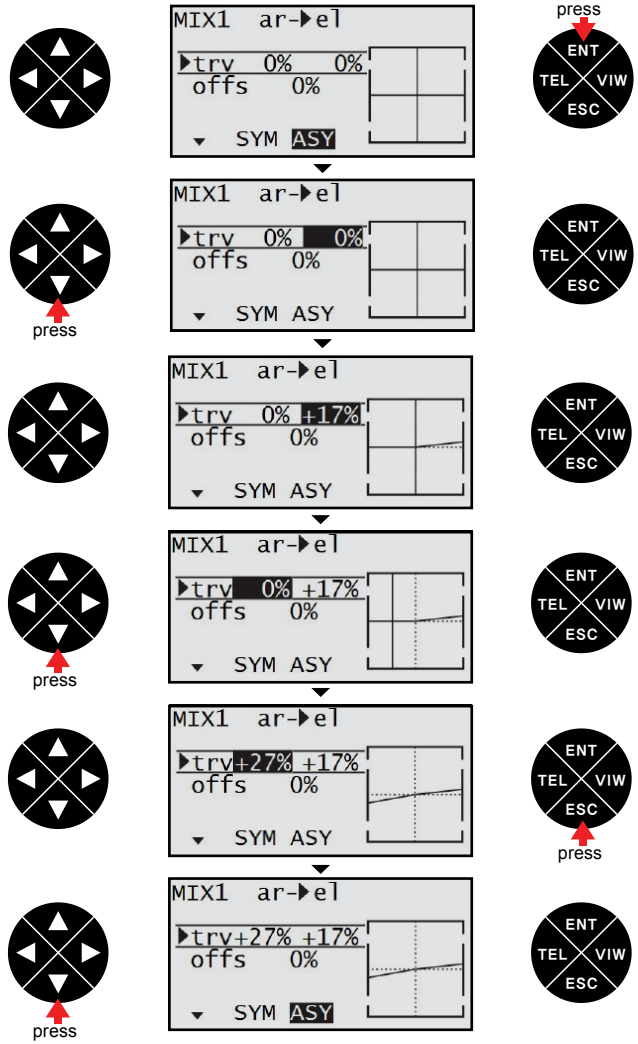

model mem.
m.type + quick
servo sett.
cont. sett.
D/R expo.
RF sett.
heli mix
free mix
press
ENT
TEL
VIW
ESC
M1 ??->?? ---
M2 ??->?? ---
M3 ??->?? ---
fro
fro to
ar->?? ---
ar->e] ---
push desired switch into position ON
typ fro to
ar->e] 4
MIX1 ar->el
try 0% 0%
offs 0%
SYM ASY



- ASY

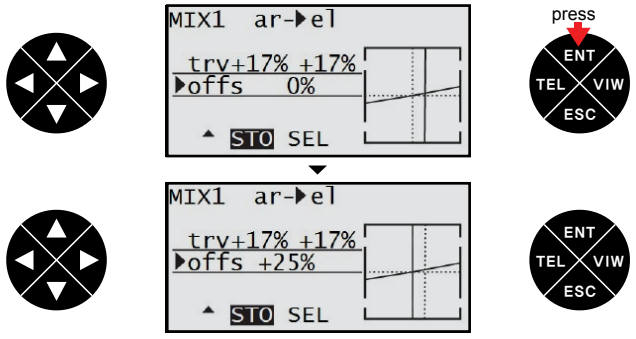
To adjust the different value for the master channel, press the direction button to highlight the ASY from the SYM then press the ENT button to highlight the trv value in the right. Move the stick of the master channel then you can select the trv value in the right side or left side. Press the direction button to adjust the desired value. Both trv values are appeared in the diagram.





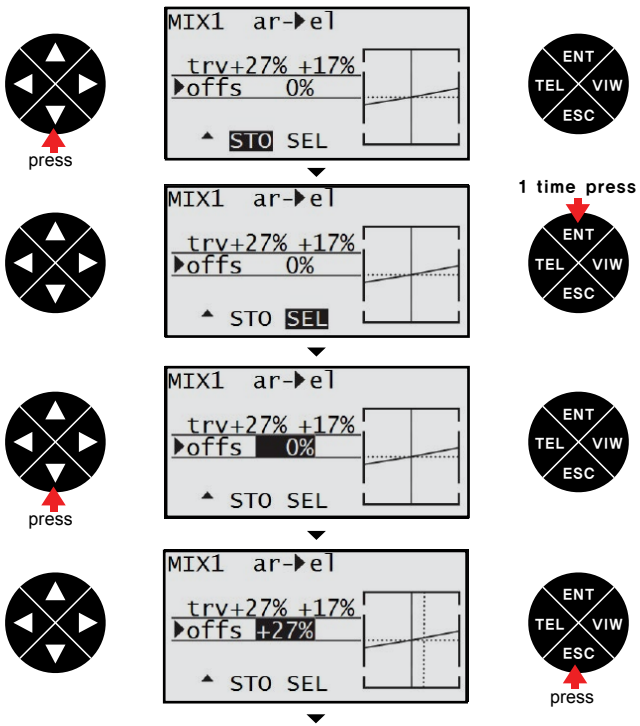
- STO

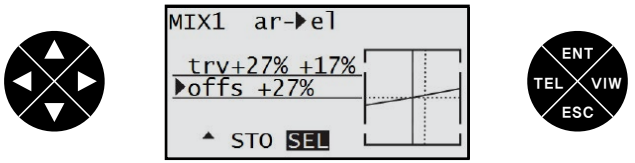
Press the direction button to select the offset line then the STO is highlighted. Move the stick of the mater channel till the vertical line on the diagram is moved to the desired position then press the ENT button. The offset value is assigned at that position.



- SEL

Press the direction button to select the offset line then the STO is highlighted. Press the direction button to select the SEL then press the ENT button to highlight the offset value. Press the direction button to adjust the desired value then press the ESC button to remove the highlight.

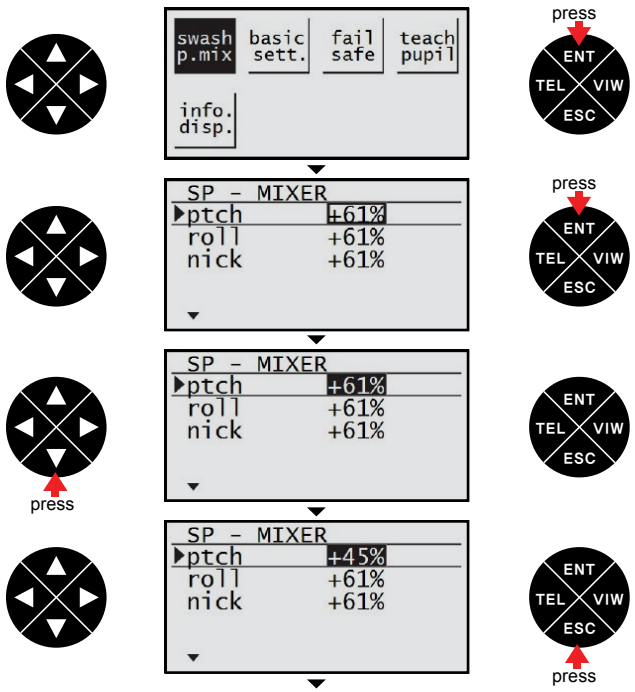


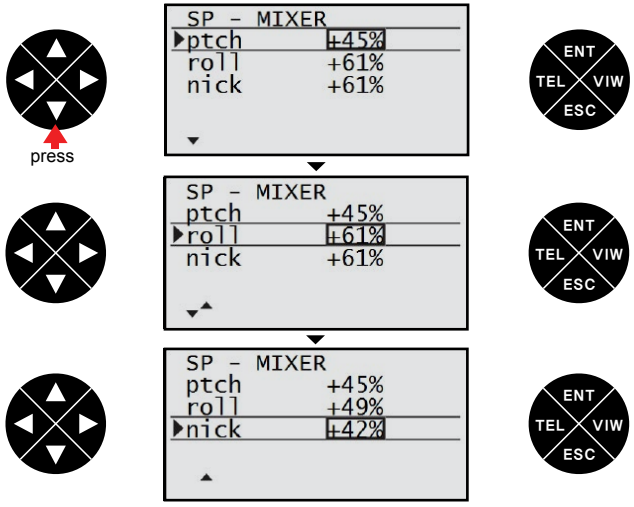


10. Swash mix (Helicopter)

The Swash mix adjusts the amount and direction of travel for the aileron, elevator and pitch functions. You can adjust the high/low travel range of the swashplate and prevent from the mechanical interference of the linkage.

Press the direction button to highlight the swqashp.mix then press the ENT button to access the function. The ptch, roll and nick are available. Press the direction button to select one of them then press the ENT and the direction buttons to highlight and adjust the value. Press the ESC button to remove the highlight.





11. Basic sett (Aircraft and Helicopter)

• Batt type

The battery that is used to the transmitter can be selected. NiMH and LiPo are available.

• Batt warning

When the transmitter voltage drops below the preset voltage, the transmitter beeps the alarm to warn the low battery.

• Touch sense

The touch sense is used for adjusting the sensitivity of the button. The available values are 1~10. The lower the value, the more sensitive.

• Contrast

Use the contrast to adjust contrast of the LCD. The available values are -20~20. The lower the value, the more bright.

• Display light

The backlighting time is adjusted.

• Rf country

mz-12 offers 2 modes of GENERAL and FRANCE. You need the France RF setting to comply with France regulations in FANCE. France RF setting should only be turned on when operating your transmitter in France outdoors.

• Voice volume

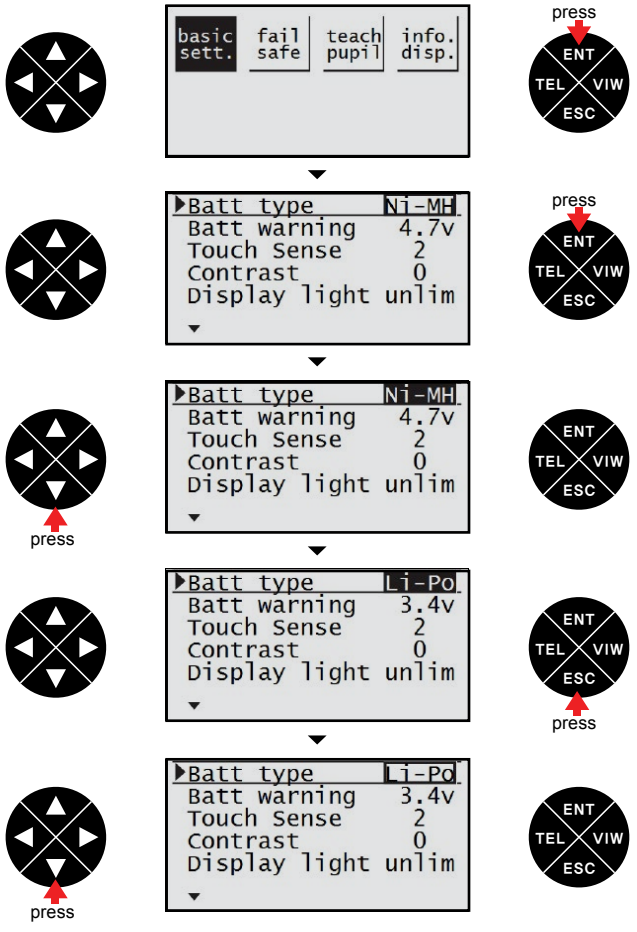
The volume of the telemetry is adjusted.

• Beep volume

The beep volume is adjusted.

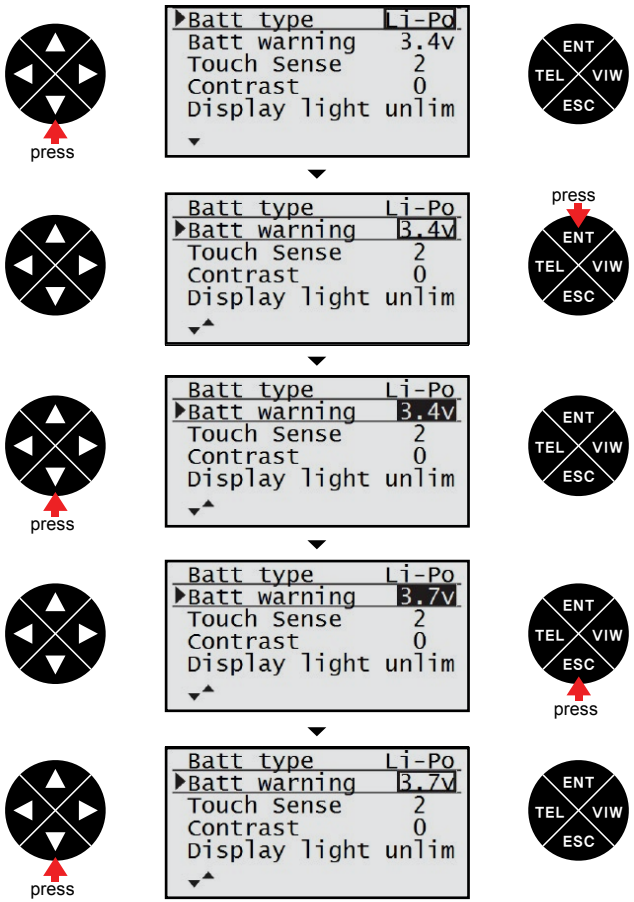
- Batt type

Press the direction button to highlight the basic sett then press the ENT button to access the Batt type line. Press the ENT button to highlight the value then press the direction button to adjust the value. Press the ESC button to remove the highlight. You may select the function of which you wish to adjust the value by pressing the direction button.



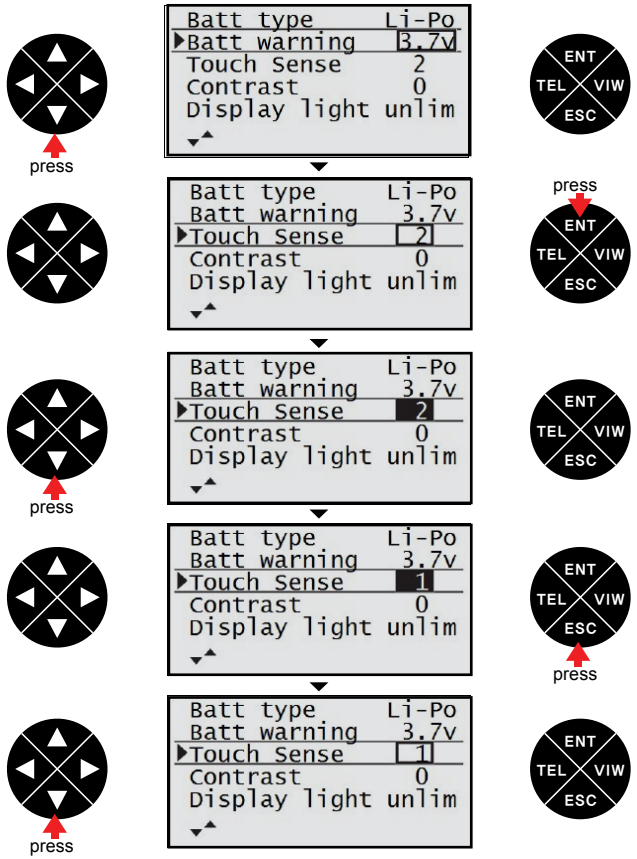
- Batt warning

Press the direction button to access the Batt warning line then press the ENT button to highlight the value. Press the direction button to adjust the value. Press the ESC button to remove the highlight.



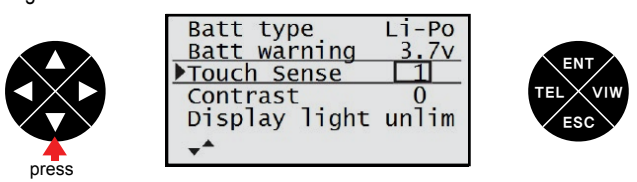
- Touch sense

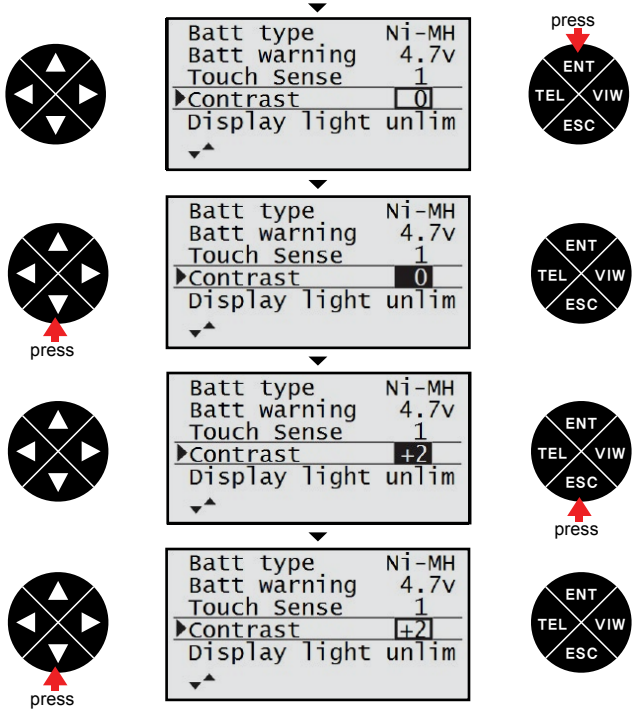
The same method is used to access the function and adjust the value with Batt type programming.



- Contrast

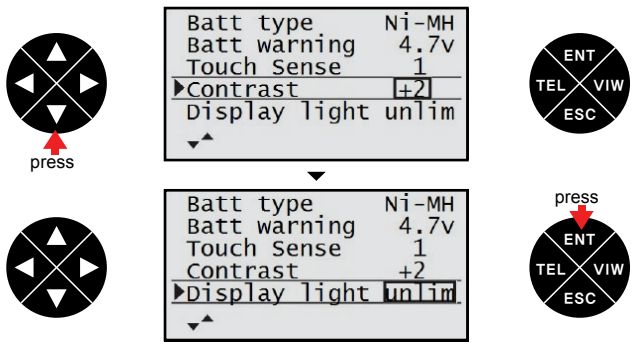
The same method is used to access the function and adjust the value with Batt type programming.

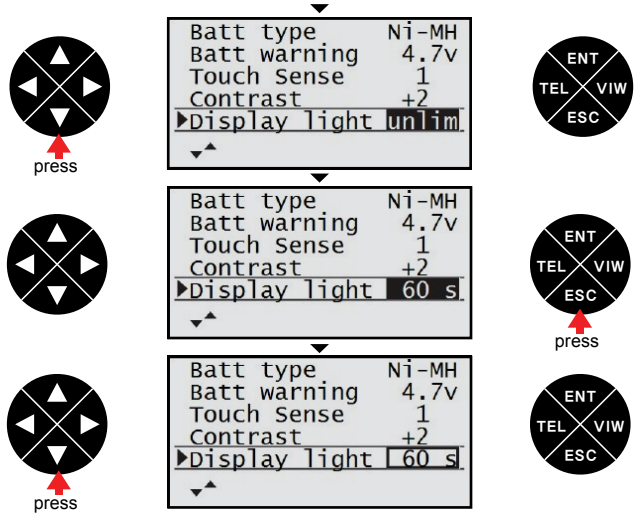




- Display light

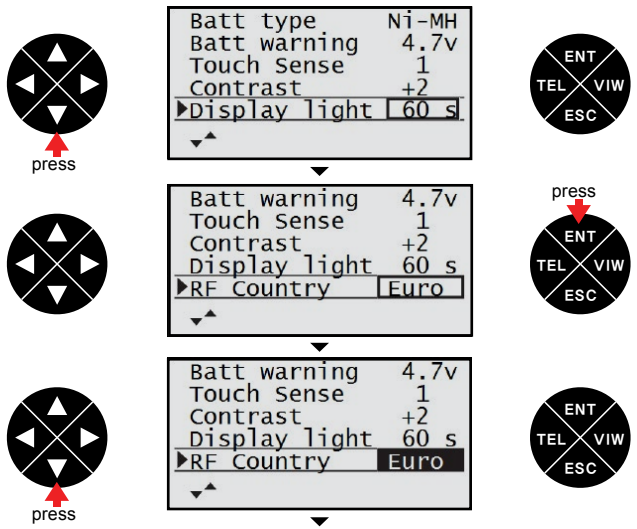
The same method is used to access the function and adjust the value with Batt type programming.

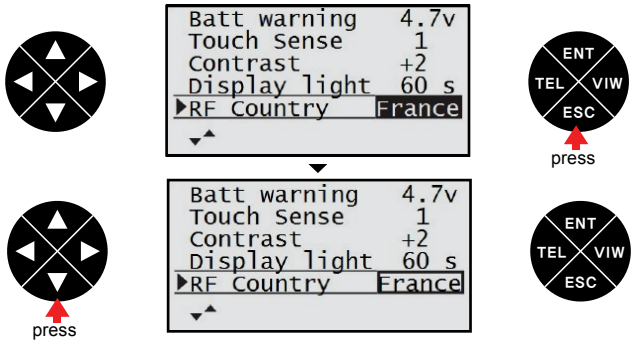




- RF country

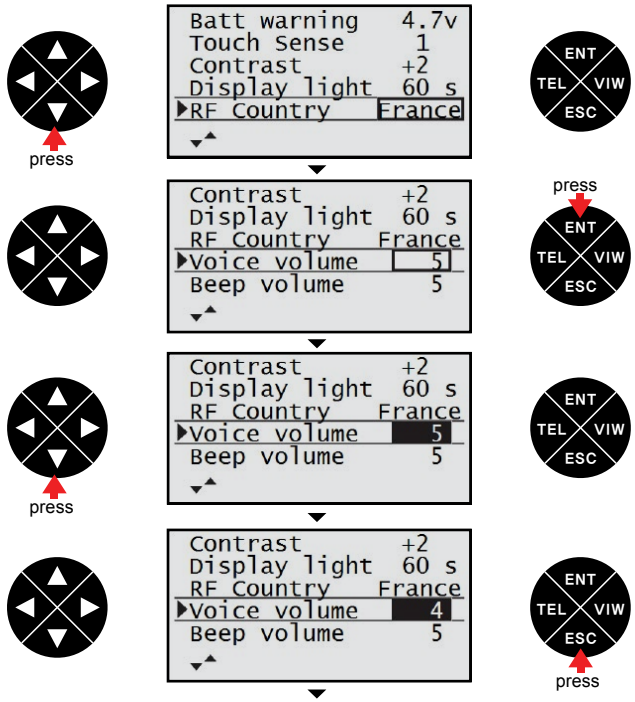
The same method is used to access the function and adjust the value with Batt type programming.

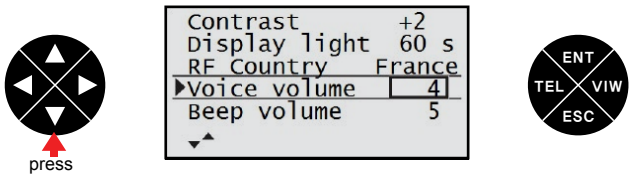




- Voice volume

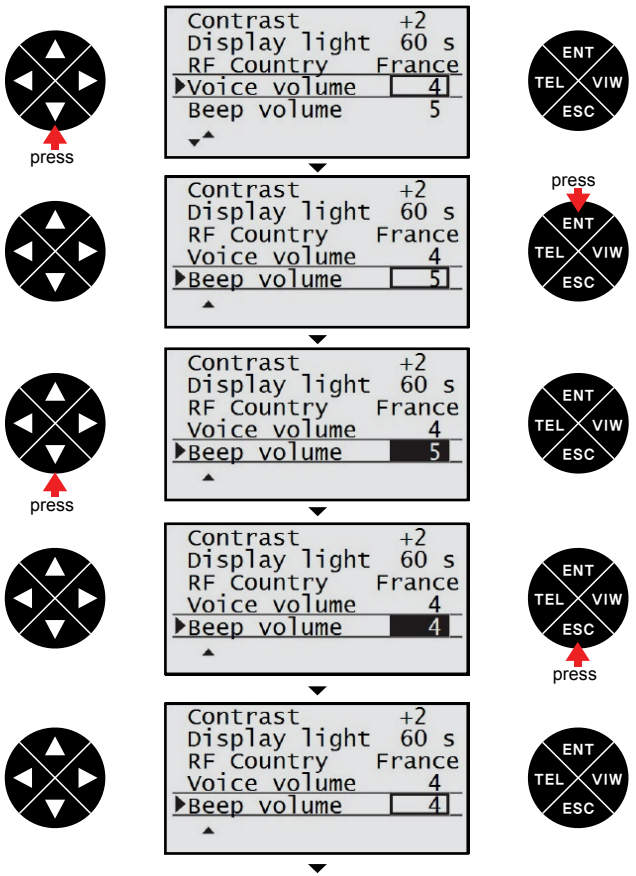
The same method is used to access the function and adjust the value with Batt type programming.

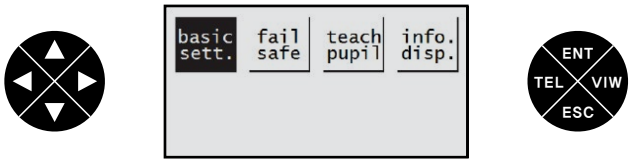




- Beep volume

The same method is used to access the function and adjust the value with Batt type programming.





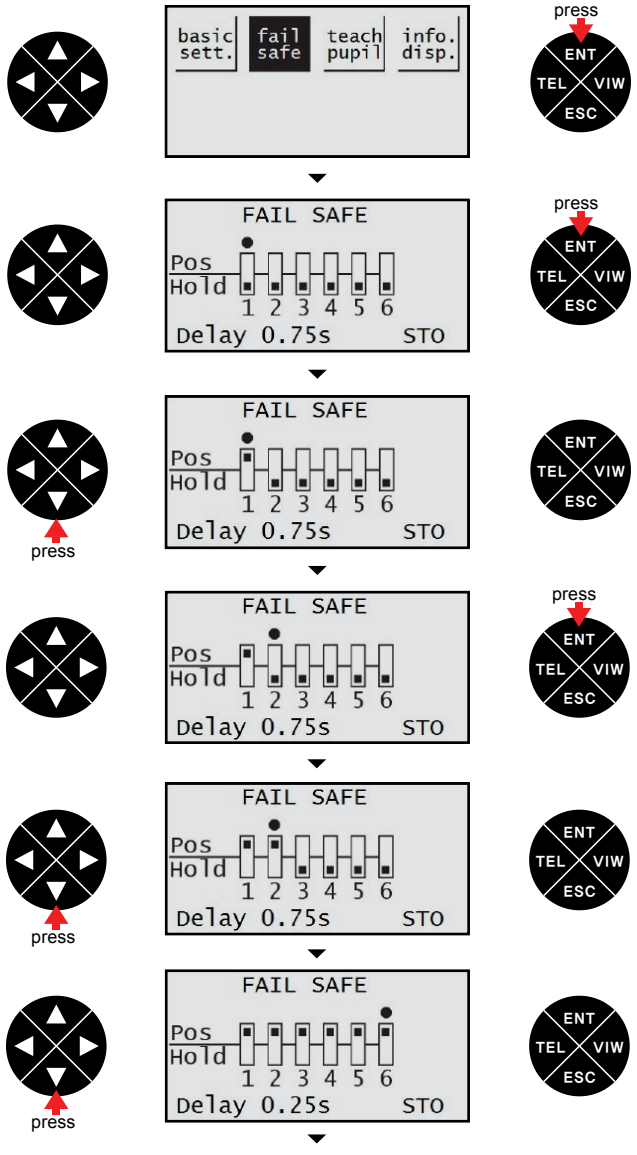
12. Fail safe (AIRCRAFR and Helicopter)

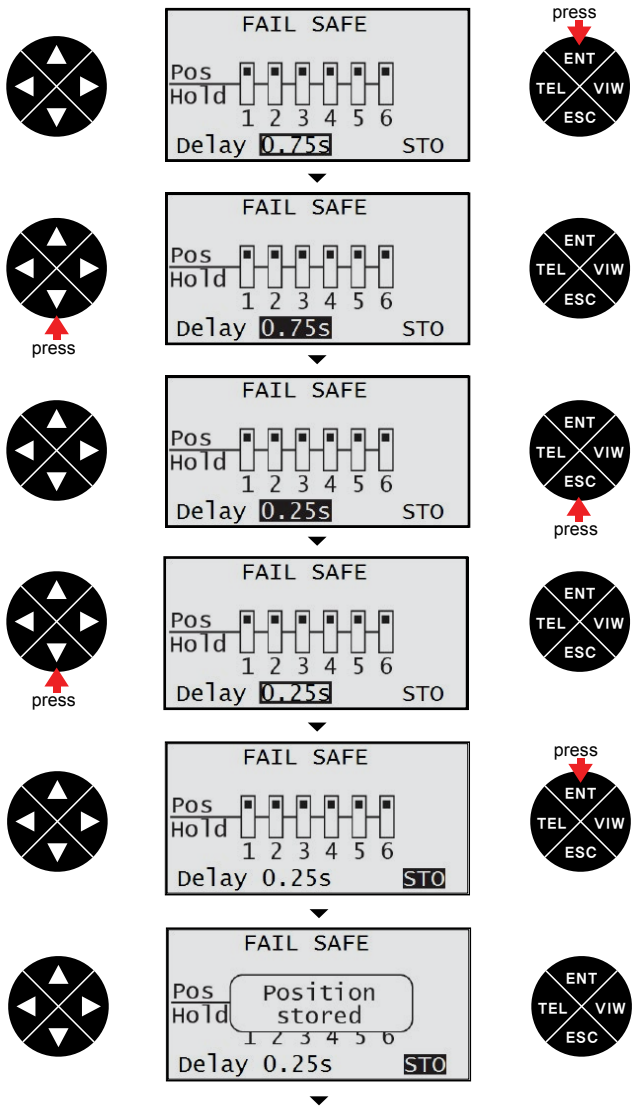
When you bind your transmitter, you are programming the receiver with failsafe defaults. If connection is lost between the transmitter and receiver, the receiver immediately operates in those preprogrammed default positions. Graupner receiver has 2 failsafe modes, hold and Pos (Position/Fail Safe)

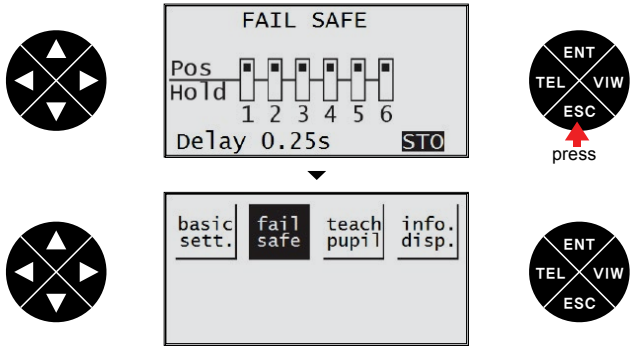
- Hold
If you lose connection between the transmitter and the receiver, all channels hold the last given command.

- F/S
If the signal is lost, all channels are driven to their failsafe preset position during binding.

Press the direction button to highlight the fail safe then press the ENT button to access the function. The black dot is on the NO.1 channel indicating NO.1 channel is selected and the Hold (the default mode) is assigned. Press the direction button to select the channel and press the ENT button to select the F/S or the hold. After completing to select the desired mode in all channels, press the direction button to select the Delay. Press the ENT button to highlight the value then press the direction button to adjust the desired value. Press the ESC button to highlight the STO. Move the stick to the desired position then press the ENT button. The popup message “position stored” appears (the F/S function is operated at that stick position). Confirm the failsafe setting is correct by turning off the transmitter.





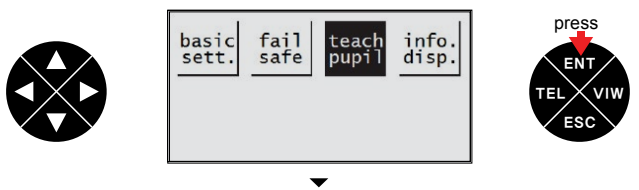


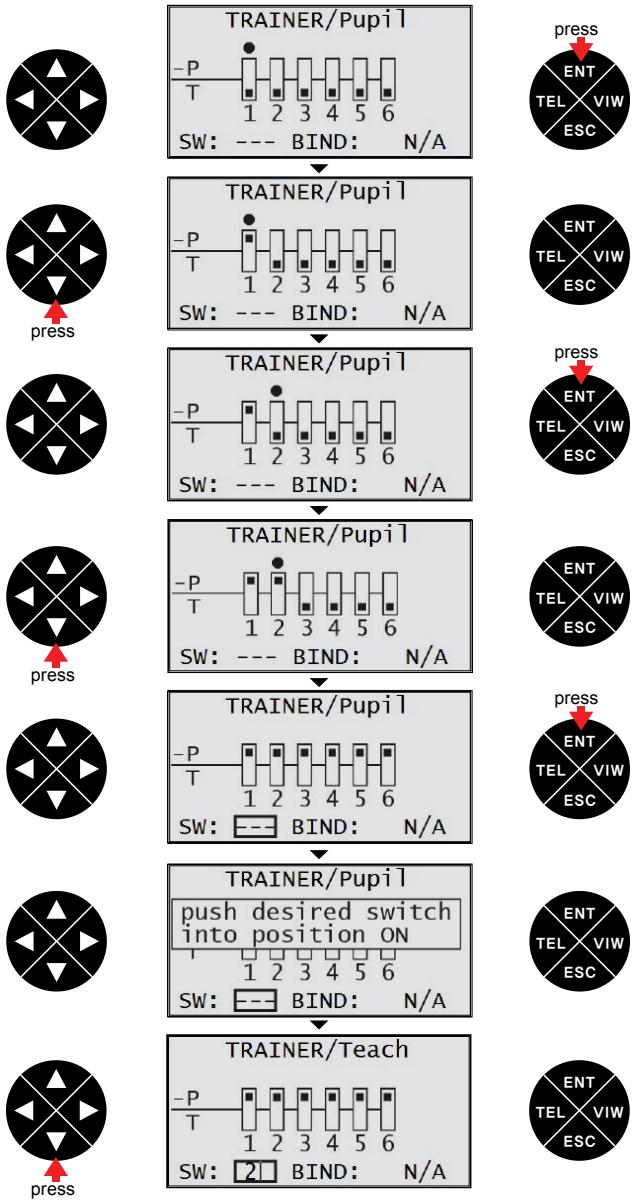
13. Trainer (Aircraft and Helicopter)

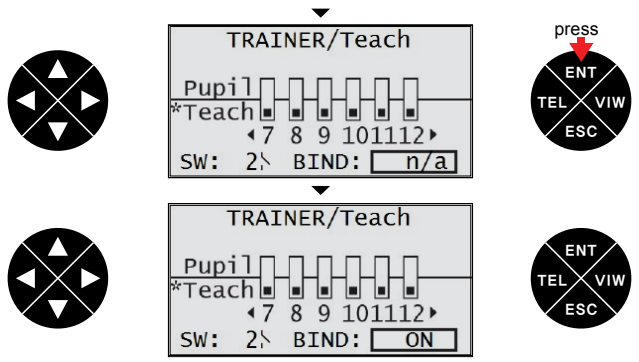
The mz-12 has the trainer function. The function activates when you select Teacher, Pupil and Normal mode. You may use this function by wireless and wired.

- The teacher mode programming setup

Press the direction button to highlight the teach pupil then press the ENT button to access the function. The black dot is on the NO.1 channel indicating NO.1 channel is selected and the T (Teacher/ the default mode) is assigned. Press the direction button to select the channel and press the ENT button to select the T (Teacher) or –P (Pupil). After completing to select the desired mode in all channels, press the direction button to select the hyphen. Press the ENT button then the popup message “push desired switch into position on” appears. Move the switch that you wish to use as the RF switch then the corresponding value appears (The trainer function is on/off when that switch is moved). Press the direction button to select the n/a in the BIND. The transmitter gets ready to bind to the pupil transmitter now.







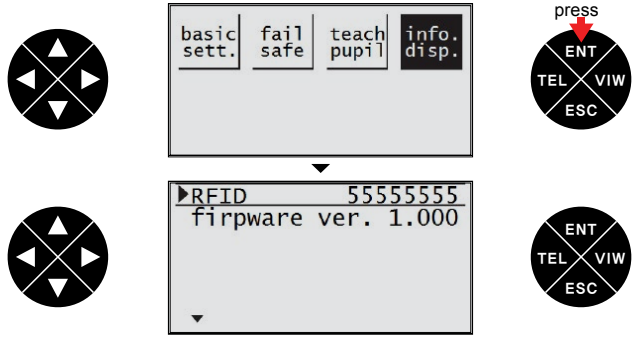
- The pupil mode programming setup

After selecting the n/a in the BIND, press the ENT button then bind to the teacher transmitter. The pupil transmitter doesn't need to program the other value.

⚠ **When the teacher transmitter to the pupil transmitter has been bound, the teacher transmitter can control all channels and if RF trainer switch of the teacher transmitter would be moved to PUPIL position, the pupil transmitter can control all channels**

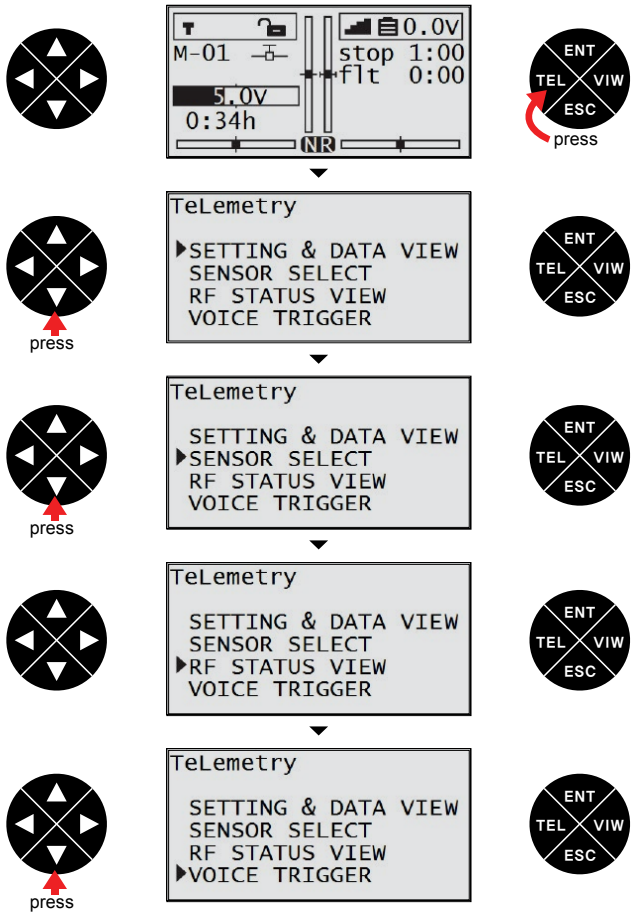
14. Info disp (AIRCAFT and Helicopter)

RFID and firmware version information are displayed. Press the direction button to highlight the info disp then press the ENT button to access the information, you can check the displayed information.



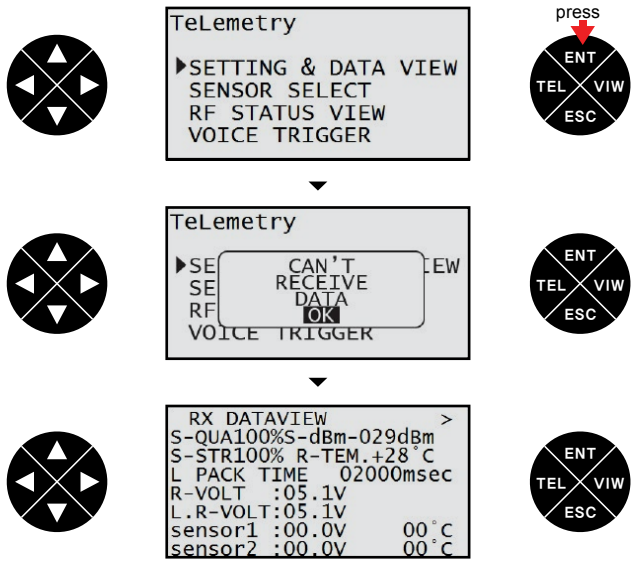
15. Telemetry

Telemetry is used to perform HoTT telemetry programming setup and check HoTT telemetry data. 4 functions of SETTING & DATA VIEW, SENSOR SELECT, RF STATUS VIEW and VOICE TRIGGER are available. Press TEL button to go to the start up page of telemetry. SETTING & DATA VIEW has been selected on the start up page. Whenever your press DOWN button, 4 functions is selected in turn.



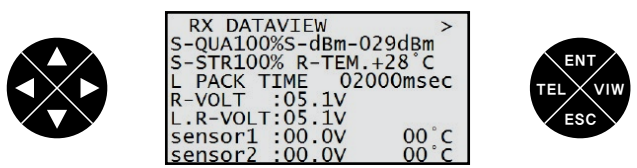
16. SETTING & DATA VIEW

This function is used to program receiver and telemetry sensor and get the data information on them. This function can be accessed only if transmitter and receiver are bound. If not, when the function is accessed, the error message “CAN’T RECIVE DATA OK” is appeared. Press ENT button to access RX DATA VIEW, you may program and get the data information on receiver data. If telemetry sensor is connected to receiver, you may also program and get the data information on telemetry sensors.



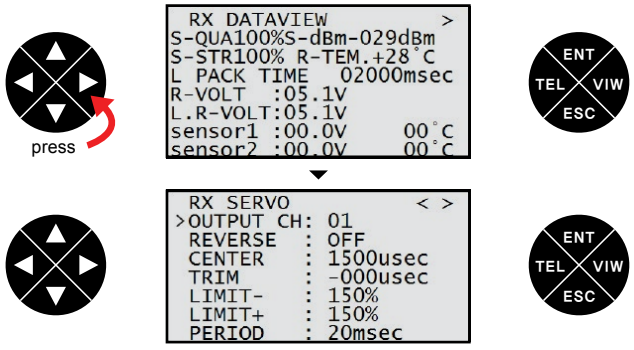
16-1. RX DATA VIEW

This function allows you to get the data information on receiver.



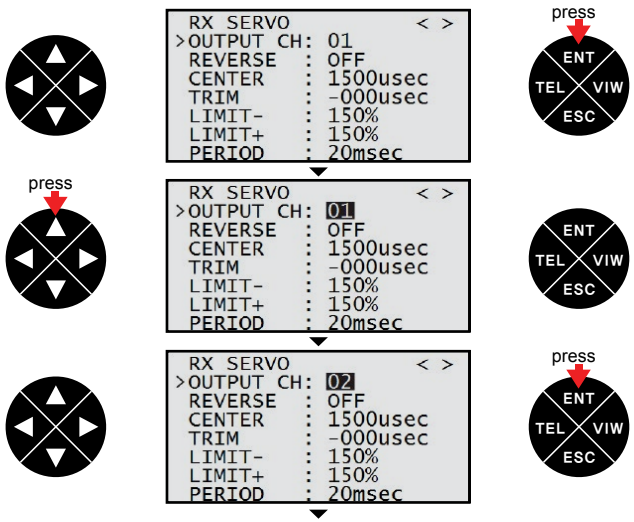
16-2. RX SERVO

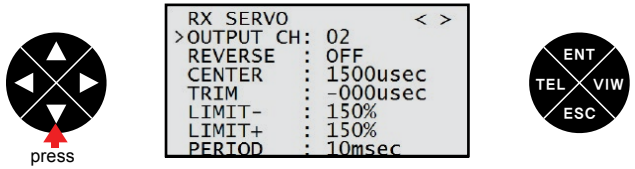
This function allows you to perform servo programming set up at the entries of OUTPUT CH REVERSE, CENTER, TRIM, LIMIT-, LIMIT+, PERIOD. Press the direction button on RX DATA VIEW mode to access to RX SERVO then press DOWN button to select the desired article. Press ENT button to highlight the value on the selected article, you may change to the desired value.



- OUTPUT CH

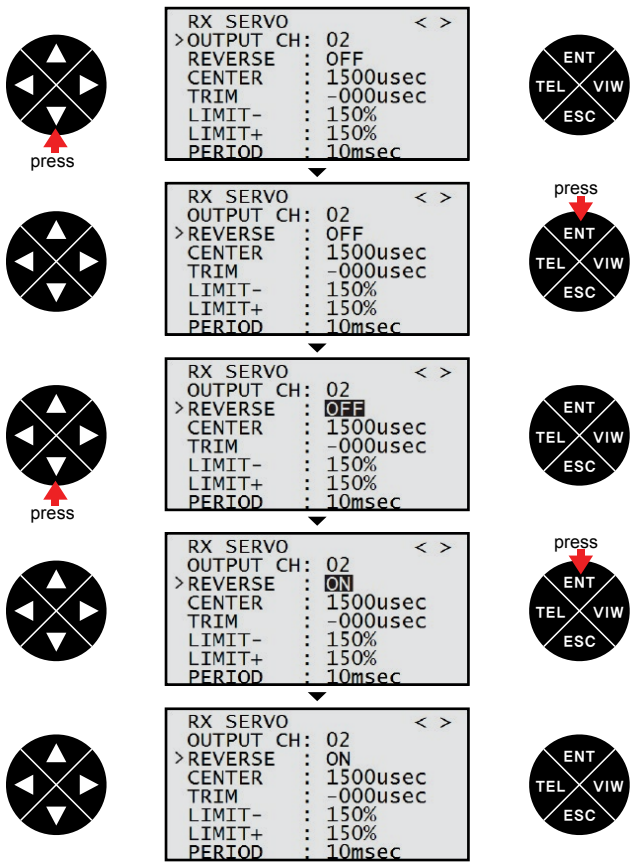
The receiver output channel can be selected. Press ENT button to highlight the value and press UP/DOWN buttons to set the desired value. Press ENT button to remove the highlight.





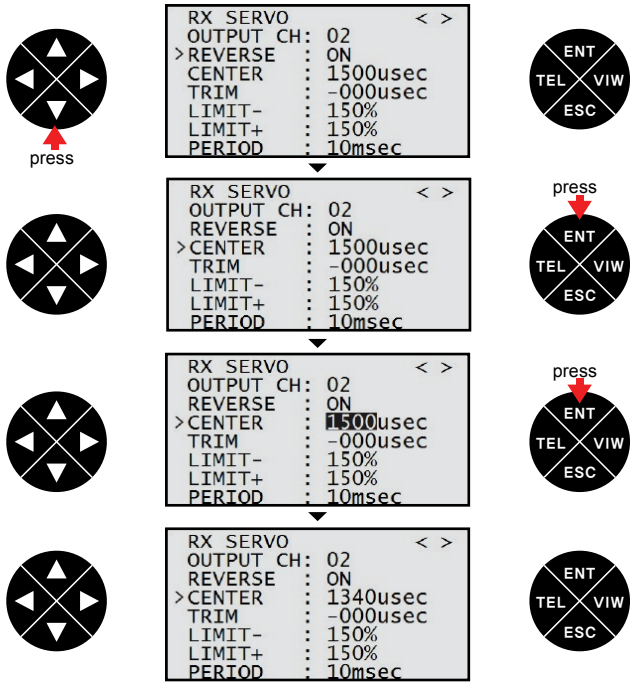
- REVERSE

It is used to decide the direction of servo rotation. Press DOWN button to access to REVERSE line then press ENT button to highlight the default value OFF. Press UP/DOWN button to select ON or OFF. Press ENT button to remove the highlight.



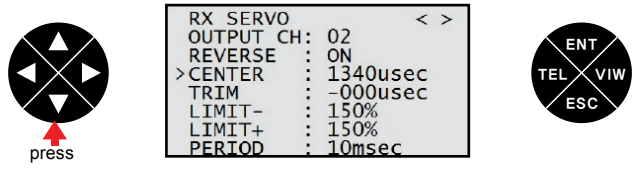
- CENTER

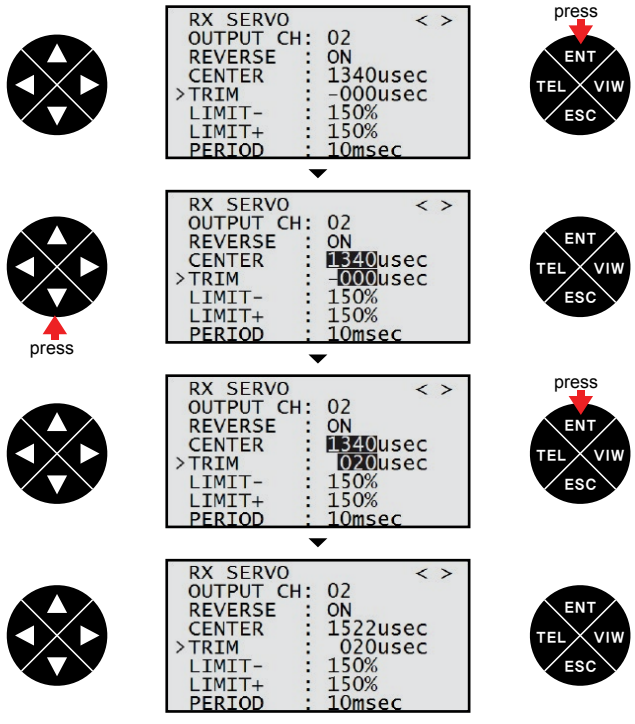
The value of servo center in the selected channel at OUTPUT CH can be programmed. The center value depends on transmitter throttle and trim position. General servo center value is 1500us. Press DOWN button to access to CENTER line then press ENT button to highlight the default value 1500usec. Move and hold transmitter throttle at the desired position then press ENT button, the center value corresponding to throttle position is set.



- TRIM

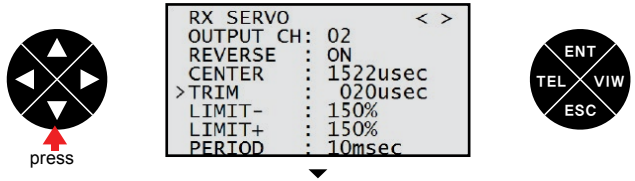
the servo trim can be set. Press DOWN button to access to TRIM entry then press ENT button to highlight the default value -000usec. Press UP/DOWN button to program the desired value and then press ENT button to remove the highlight.

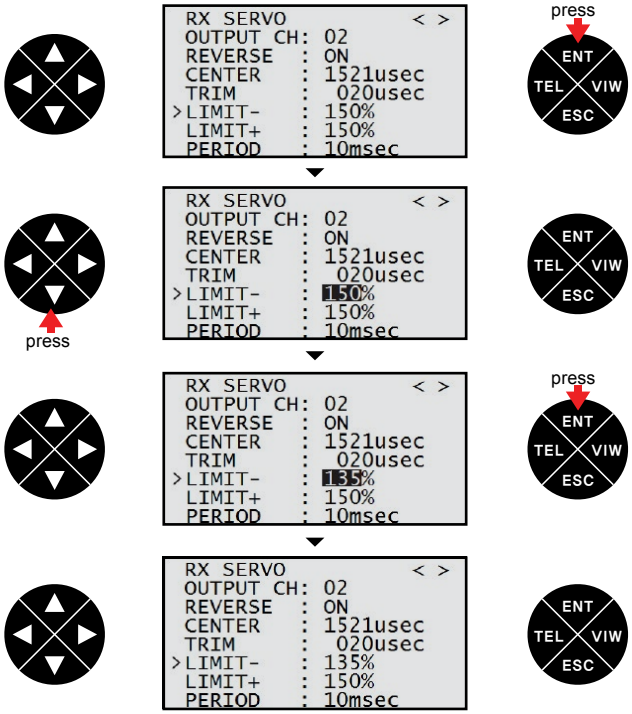




- LIMIT + / -

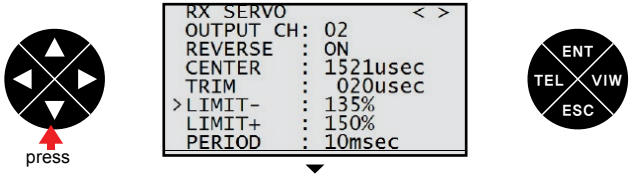
The maximum value for each direction can be programmed so that the maximum servo travel limit of the connected servo is adjusted. The default value is 150% but the servo travel range is limited to 100% that is programmed at SERVO EPA of transmitter so the servo limit is not operated at 150% ~ 100%, but operated at below 100%. If SERVO EPA of transmitter is set to 150%, the LIMIT value can be set below 150%. Press DOWN button to access to LIMIT+/- line then press ENT button to highlight the default value 150%.
Press UP/DOWN button to program the desired value and then press ENT button to remove the highlight.

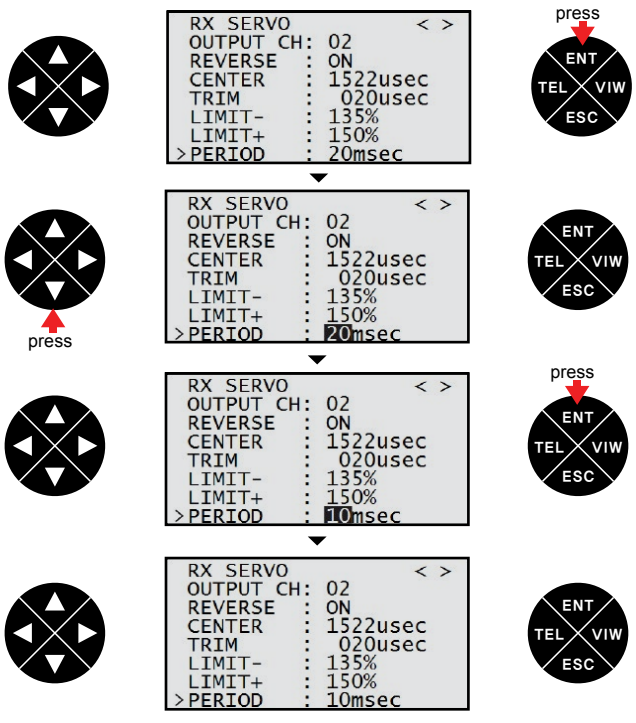




- PERIOD

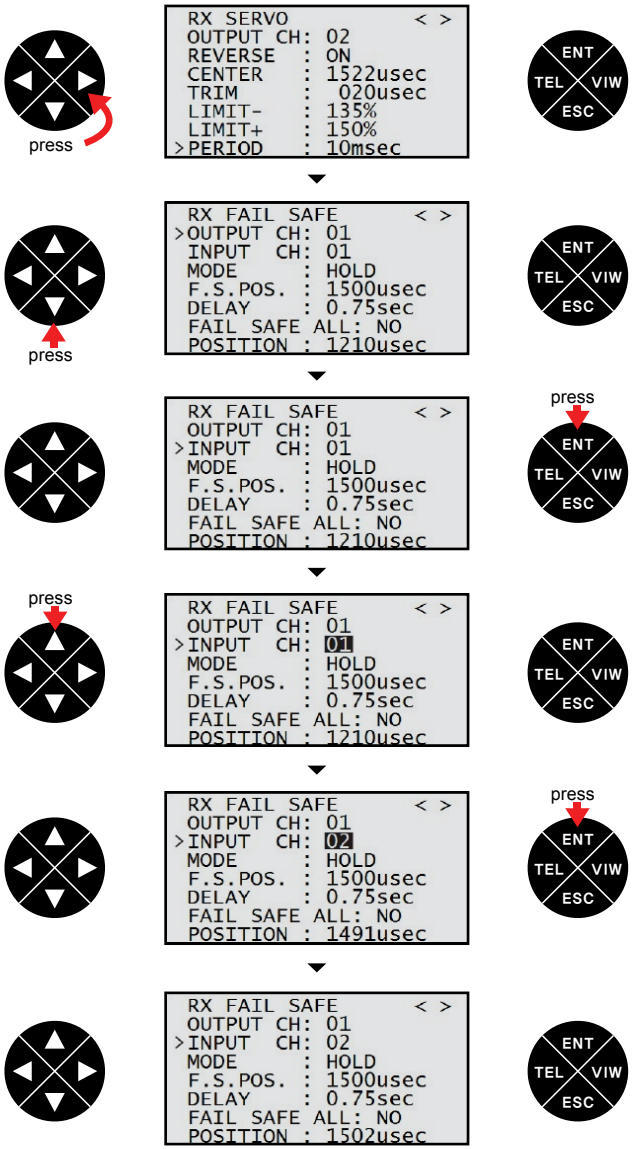
The servo response time for transmitter throttle can be adjusted. All channels that servo connected are applied separately. Press DOWN button to access to PERIOD line then press ENT button to highlight the default value 20msec. Press UP/DOWN button to set 10msec or 20msec and then press ENT button to remove the highlight.





16-3. RX FAIL SAFE

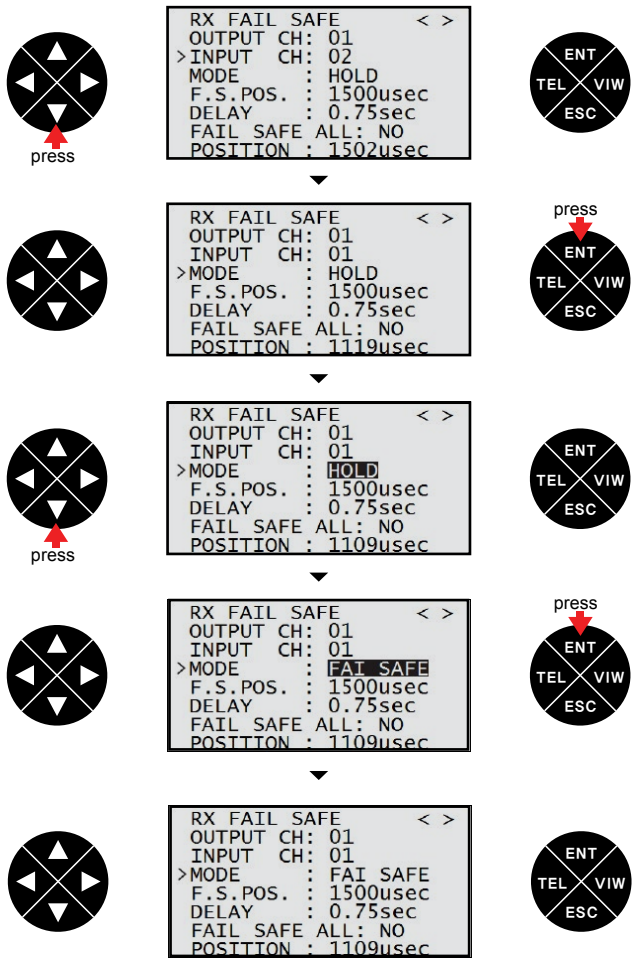
OUTPUT CH (receiver)/ INPUT CH (transmitter): It is used to perform the programming setup of transmitter channel that is bound to receiver. The default setup is that each channel 1,2,3,4,5,6 of receiver is connected to the same channel 1,2,3,4,5,6 of transmitter. In case that R16, 16 channel receiver, is bound to mz-12, 6 channel transmitter, this function is very useful. For example, 4 aile, 4 flap are used in aircraft, 1~4 channels can be set to aile and 5~8 channels can be set to flap and then other channels can be set to elev or rudd. Press the direction button at EX SERVO mode to go to RX FAIL SAFE mode. OUTPUT CH line has been selected at RX FAIL SAFE mode. Press ENT button to highlight the default value 1. Press UP/DOWN button to select the desired channel and then press ENT button to remove the highlight. Press DOWN button to access to INPUT CH line. Press ENT button to highlight the default value 1. Press UP/DOWN button to select the desired channel that is connected INPUT CH and then press ENT button to remove the highlight.



- MODE

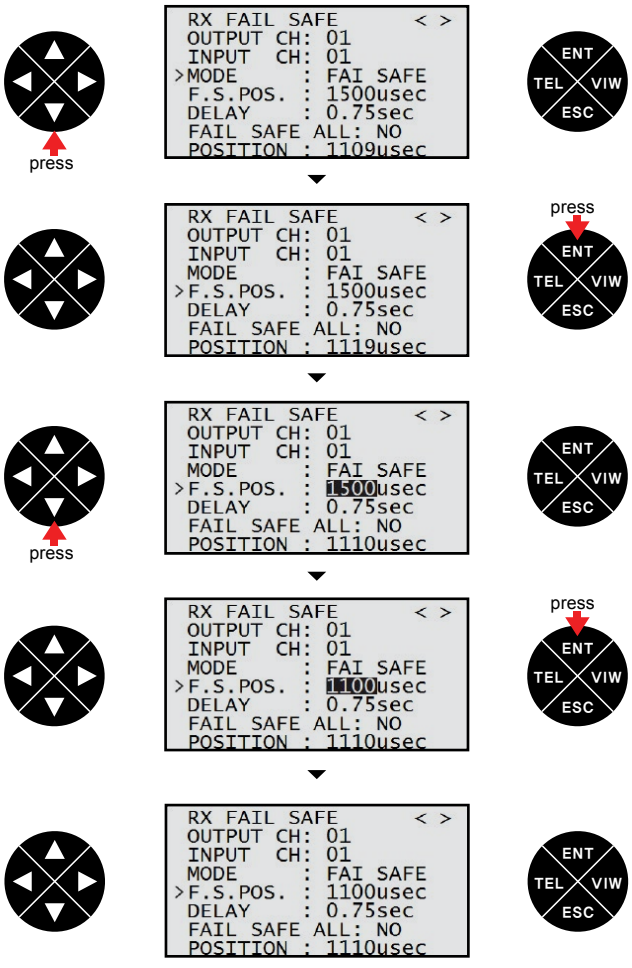
It is failsafe mode and HOLD/ FAIL SAFE/ HOLD are available.

Press DOWN button to access to MODE line then press ENT button to highlight the default value HOLD. Press UP/DOWN button to select the desired value then press ENT button to remove the highlight.



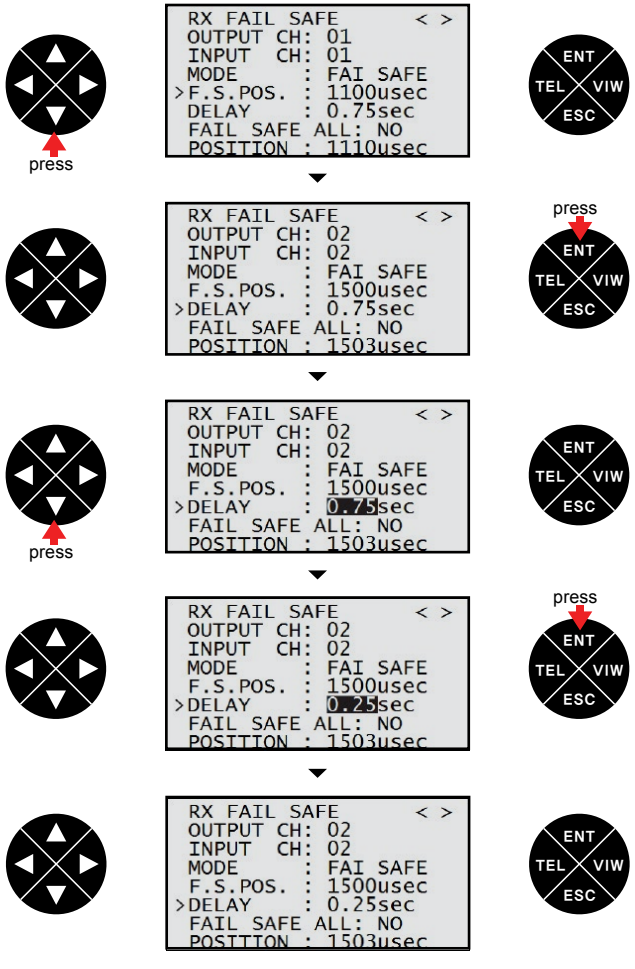
- F.S.POS.

It is used to set fail safe position at the desired channel that you select on OUTPUT CH. Press DOWN button to access to F.S. Pos line then press ENT button to highlight the default value 1500usec. Press UP/DOWN button to select the desired value then press ENT button to remove the highlight.



- DELAY

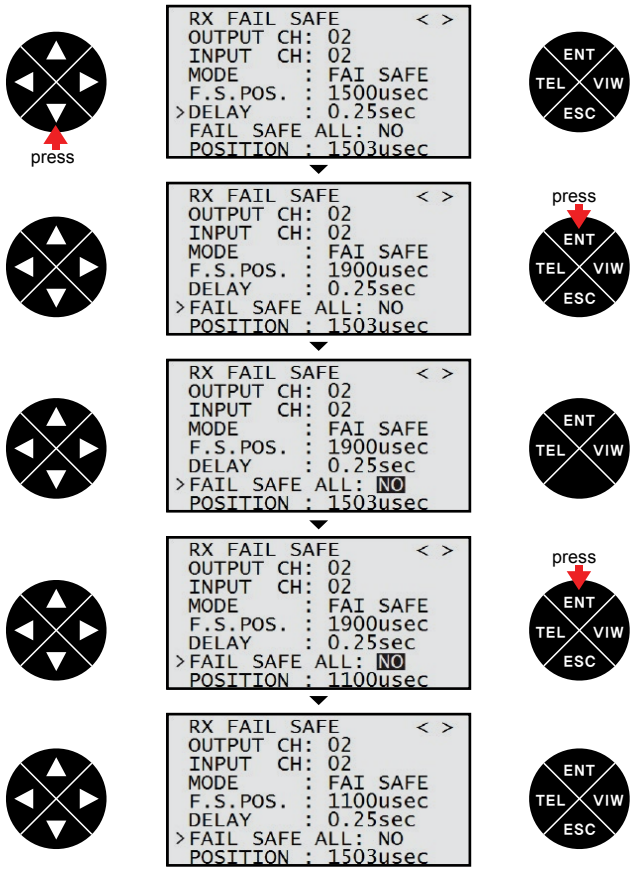
This function allows you to set the time that failsafe takes to start under failsafe situation Press DOWN button to access to DELAY line then press ENT button to highlight the default value 0.75sec. Press UP/DOWN button to select the desired value then press ENT button to remove the highlight.



- FAIL SAFE ALL

It is used when you change failsafe position value of all channels. You need set all channels to FAIL SAFE to use this function.

Press DOWN button to access to FAIL SAFE ALL line then press ENT button to highlight the default value NO. Move and hold transmitter throttle at the desired position then press ENT button, the failsafe value corresponding to throttle position is set. After setup FAIL SAFE ALL, if you need to check whether the fail safe function is normal worked, turn off both of transmitter and receiver's power then servos should be operated to the preset failsafe.



- POSITION

It indicates the operating range of throttle at OUTPUT CH.

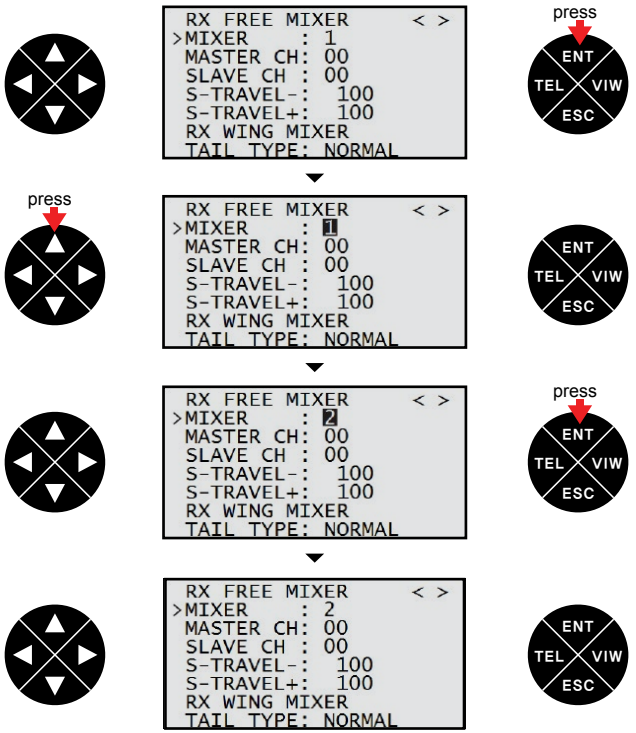
16-4. RX FREE MIXER

This function allows you to perform the FREE MIXER programming setup.

- MIXER

It is use to select the mixer number that you want to use

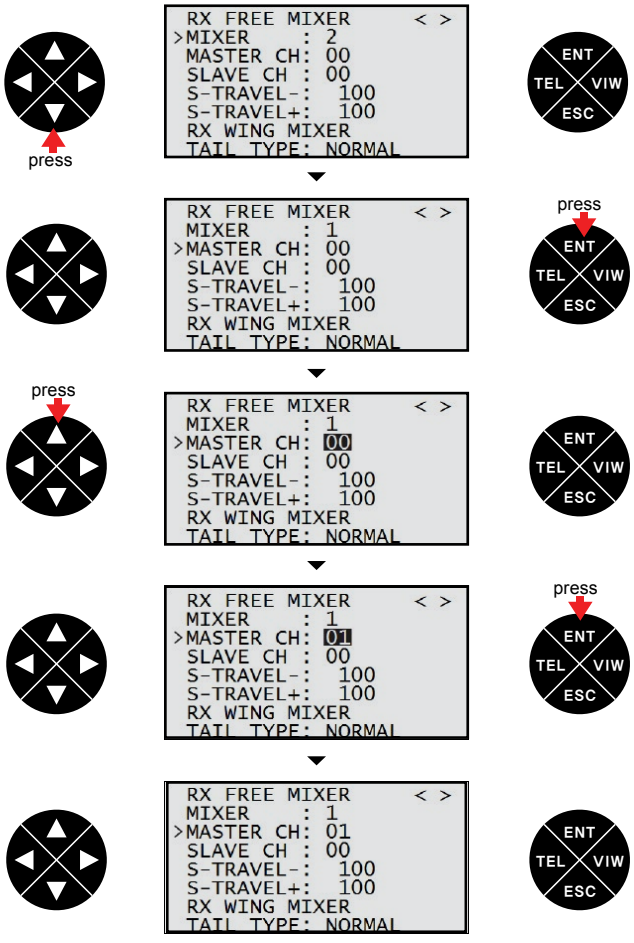
Press ENT button to highlight the default value 1 then press UP/DOWN button to select the desired channel. Press ENT button to remove the highlight. 5 mixers from 1 to 5 are available.



- MASTER CH

Master CH in FREE MIXER can be selected.

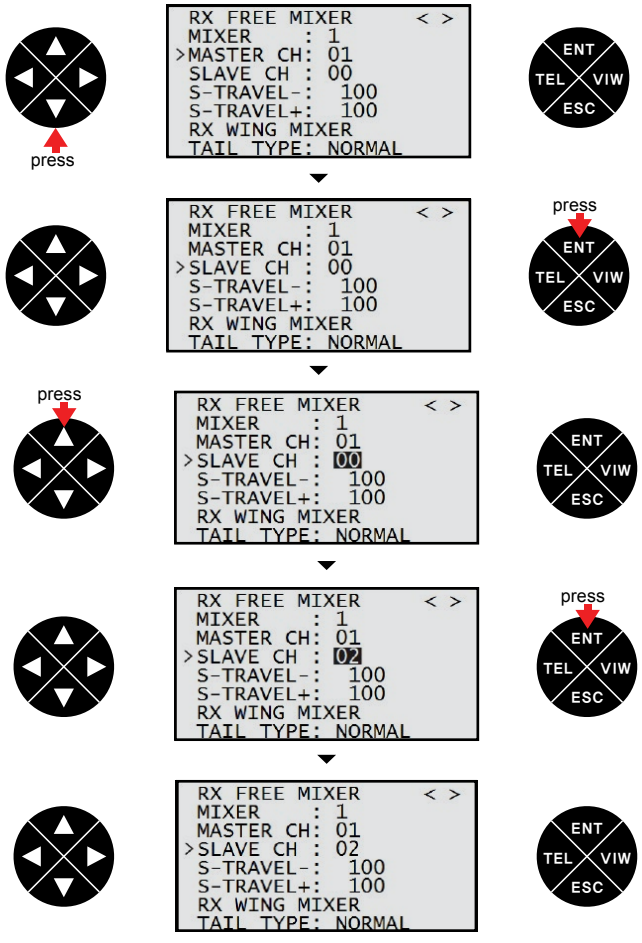
Press DOWN button to access to MASTER CH line then press ENT button to highlight the default value 00. Press UP/DOWN button to select the desired channel then press ENT button to remove the highlight.



- SLAVE CH

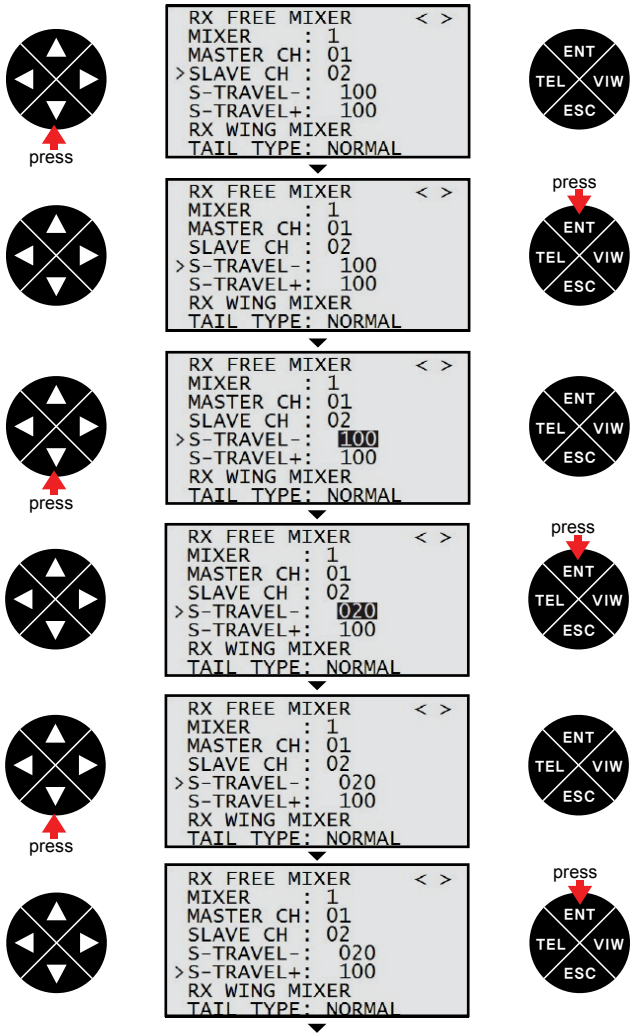
Slave CH in FREE MIXER can be selected.

Press DOWN button to access to SLAVE CH line then press ENT button to highlight the default value 00. Press UP/DOWN button to select the desired channel then press ENT button to remove the highlight.



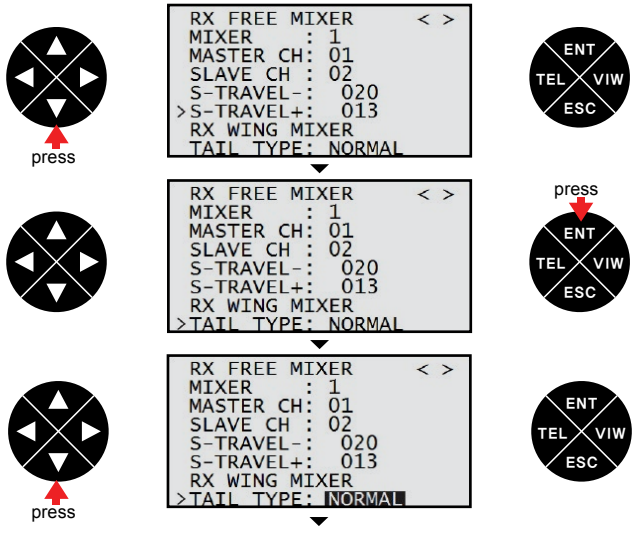
- S-TRAVEL + / -

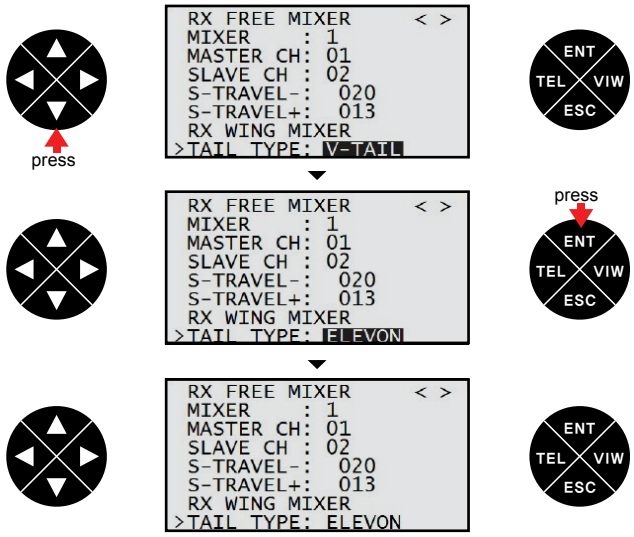
The maximum servo travel that is connected to slave channel can be programmed. Press DOWN button to access to S- TRAVEL+/- line then press ENT button to highlight the default value 00. Press UP/DOWN button to select the desired channel then press ENT button to remove the highlight.



- RX WING MIXER TAIL TYPE

This function is used to set the proper tail type. You may select one type of Normal, V-Tail, Elevon can be selected depending on the model type. Press DOWN button to access to RX WING MIXER TAIL TYPE line then press ENT button to highlight the default value NORMAL. Press UP/DOWN button to select the desired type then press ENT button to remove the highlight.

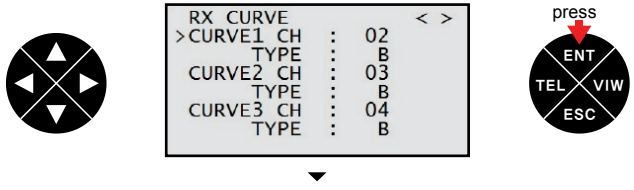


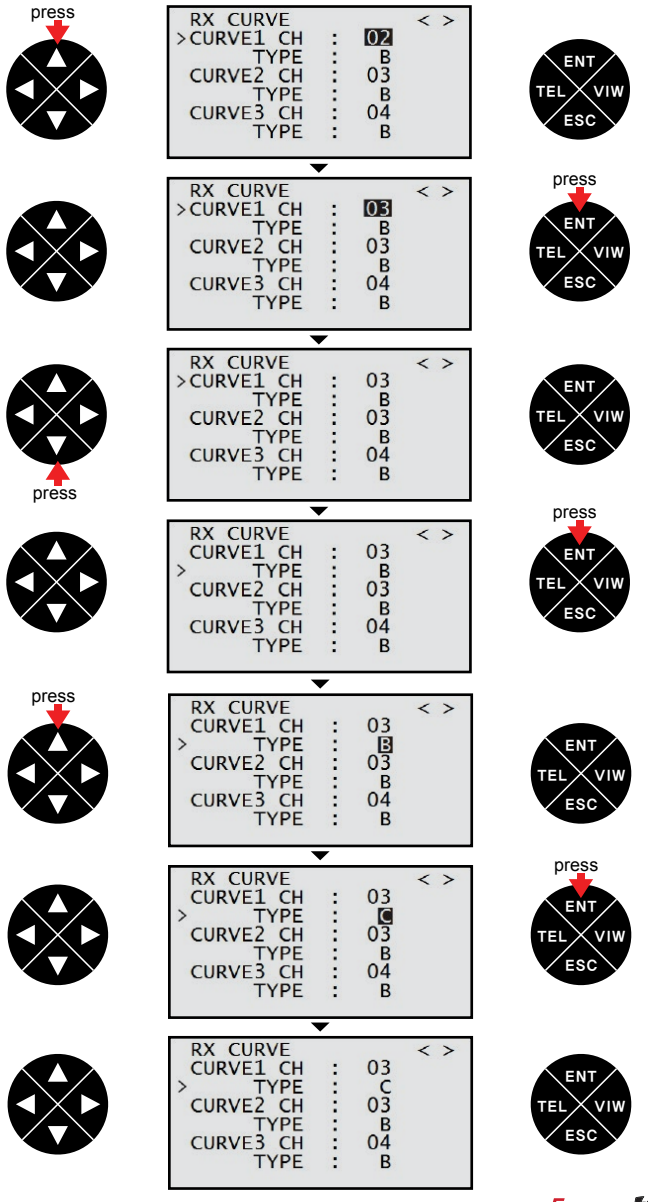


16-5. RX CURVE

Perform the exponential programming setup at RX CURVE mode. You may program the exponential value of channel 2,3,4. The default setup is B curve that leads Servo responds proportionally depending on transmitter throttle movement. A curve leads that Servo responds sensitively and C curve leads that Servo responds softly.

Press ENT button to access to highlight the default channel 20 on CURVE 1 CH line then press UP/DOWN buttons to select the desired channel. The default setup is CH2 AILE, CH3 ELEV, CH4 RUDD. Press ENT button to remove the highlight and press UP/DOWN button to access TYPE line. Press ENT button to highlight the default value B then press UP/DOWN buttons to select one of A, B, C. CURVE2 and 2 can be set in the same method with CURVE1.

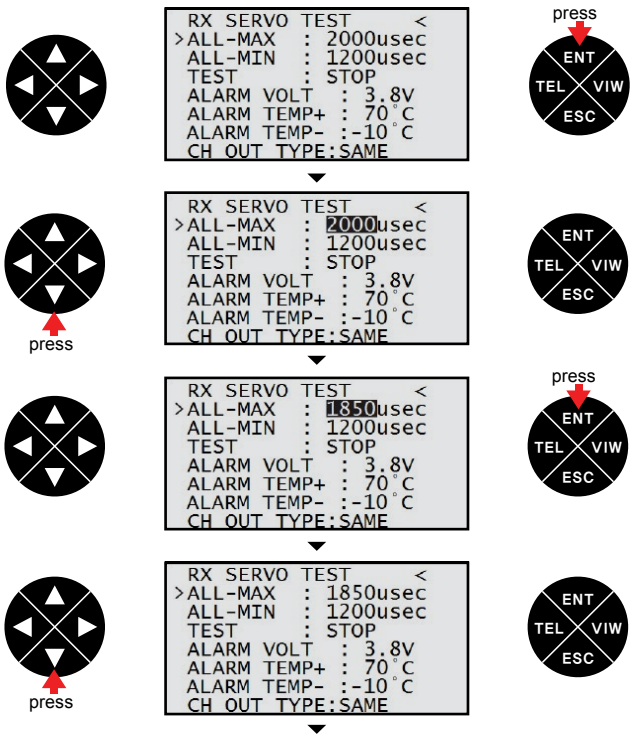


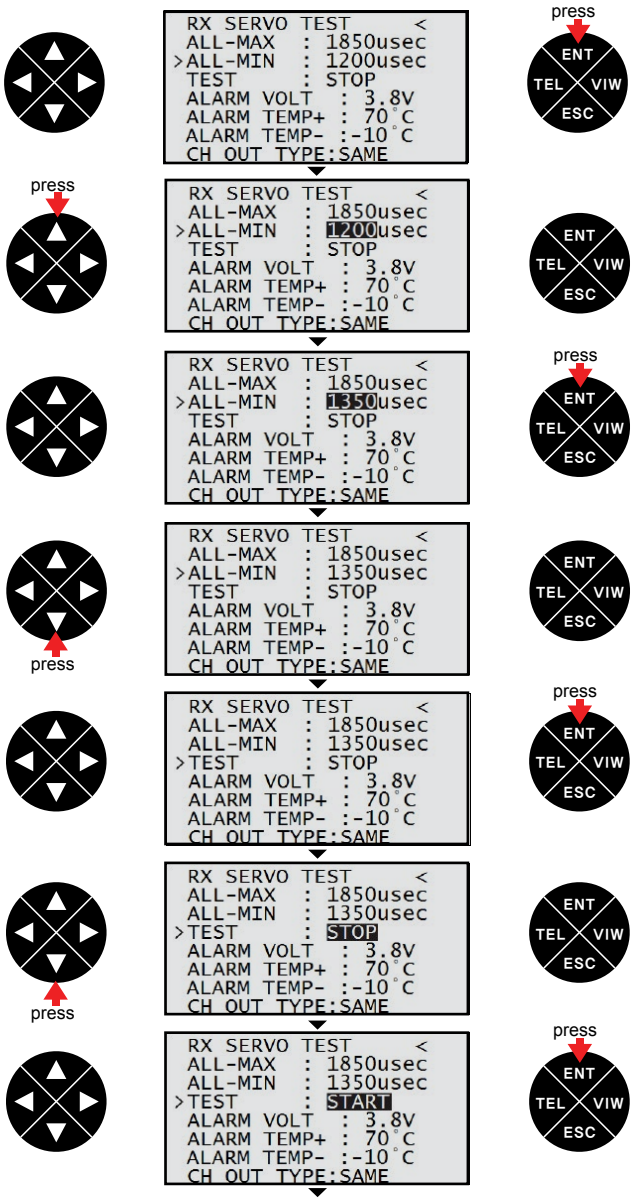


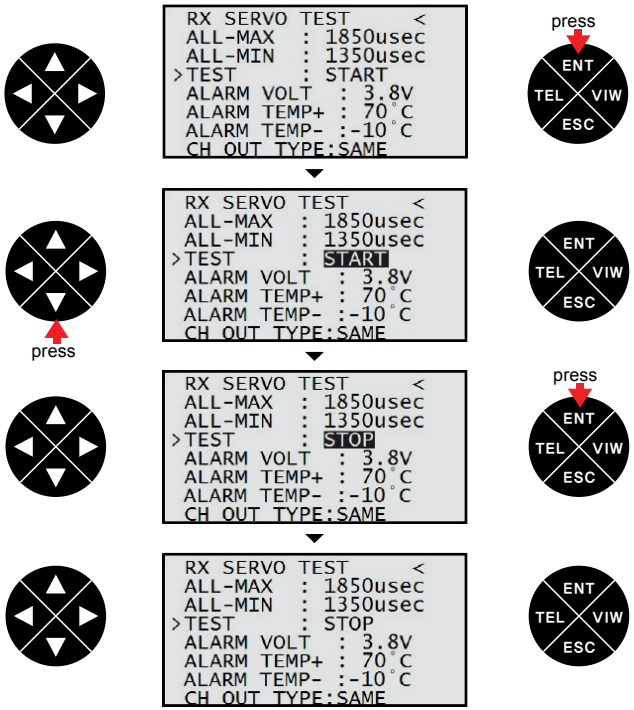
16-6. RX SERVO TEST

It used to perform servo test and program the voltage of receiver power, the max/min temperature of receiver CH OUT TYPE of receiver. Press UP/DOWN buttons to select the desired line and press ENT button then the default value is highlighted. Press UP/DOWN buttons to set the desired value and press ENT button to remove the highlight.

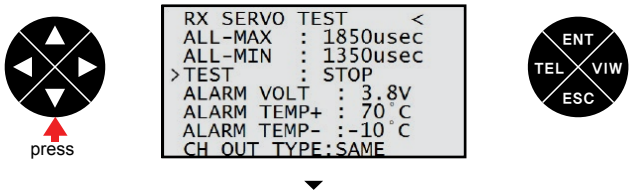
- ALL MAX
  The maximum servo travel can be decided for servo test
- ALL Min
  The minimum servo travel can be decided for servo test
- TEST
  You may start or stop servo test

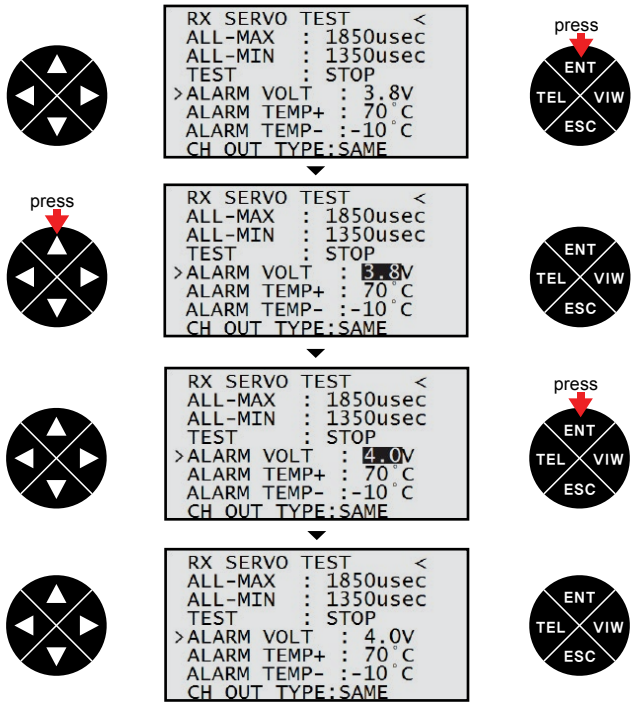




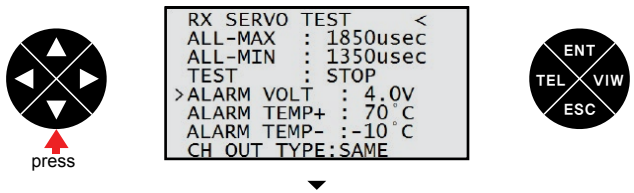


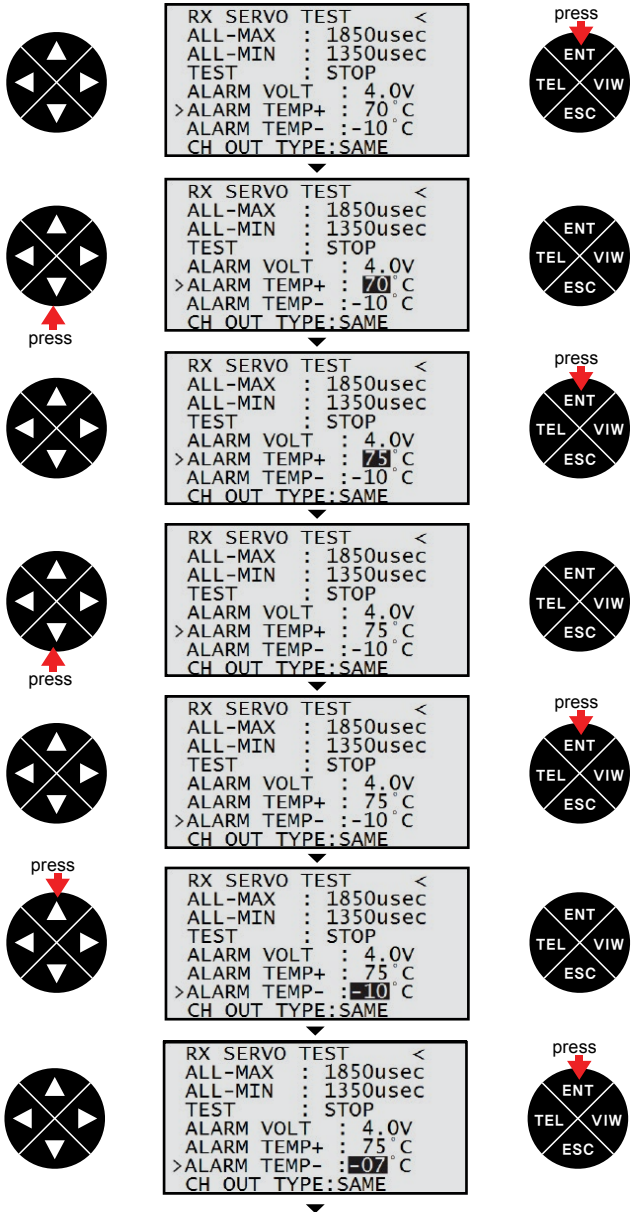
- ALARM VOLT : Low voltage warning
If receiver voltage is out of the preset voltage, transmitter repeats a beep warning. Press DOWN buttons to access to ALARM VOLT and press ENT button then the default value 3.8V is highlighted. Press UP/DOWN buttons to set the desired value and press ENT button to remove the highlight.

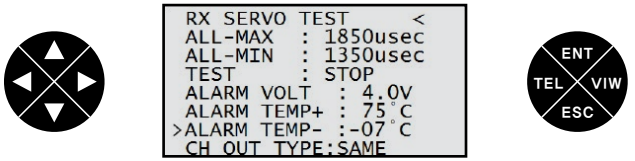




- ALARM TEMP + / - : Temperature warning
If receiver temperature is out of the preset temperature, transmitter repeats a beep warning. Press DOWN buttons to access to ALARM TEMP and press ENT button then the default value is highlighted. Press UP/DOWN buttons to set the desired value and press ENT button to remove the highlight.







CH OUT TYPE

You may decide the signal output type of receiver. 5 types of ONCE / SAME / SUMO12/ SUMI / SUMD HD12 are available.

- ONCE

It is use for analogue servo. If ONCE is selected, PERIOD on RX SERVO is set to 20msec automatically.

- SAME

It is use for digital servo. If SAME is selected on CH OUT TYPE line, you need to set PERIOD on RX SERVO to 10 ~ 20msec. when analogue servo is used, 20mse should be set.

- SUMI

Receiver get the signal of the receiver performed the SUMO programming setup then outputs the signal

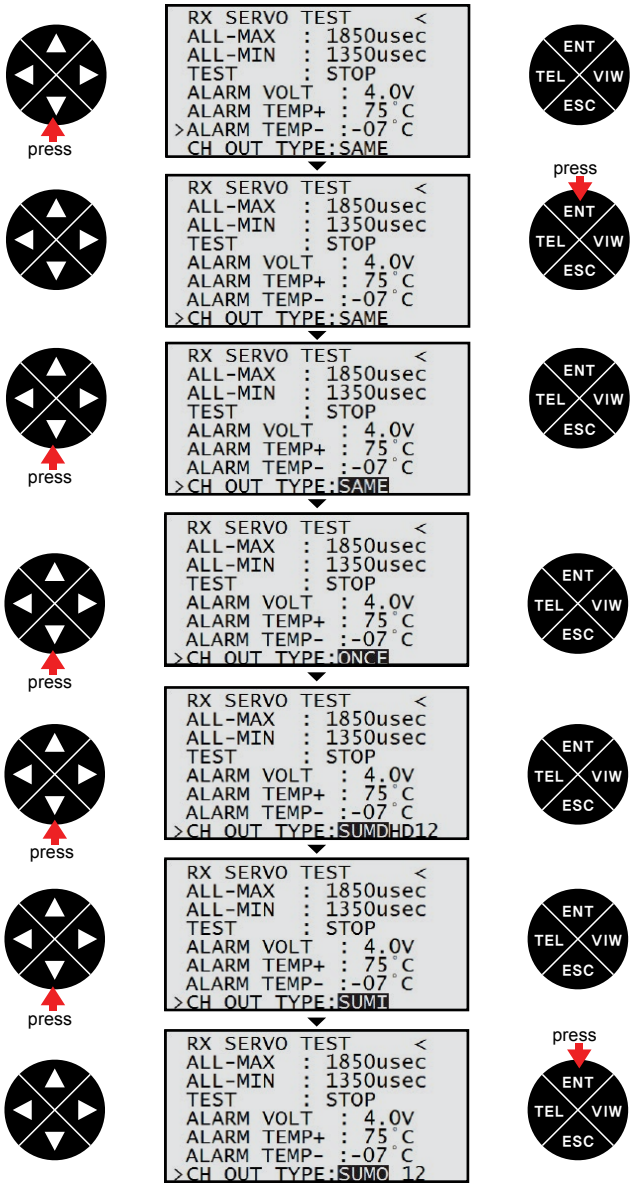
- SUMD HD

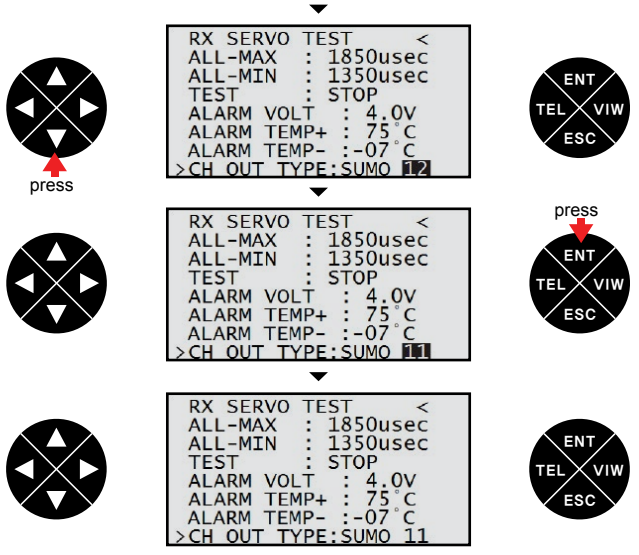
The digital output signal of all channels in receiver is outputted from the selected channel. It is used to the product that needs the receiver digital signal such as Power box and Flybarless system. The factory default for SUMD HD output channel is the last channel of receiver and you may change it.

- SUMO

Only the selected channel outputs the signal of all channels of receiver. In case that 1 receiver is set to SUMO and the other receiver is set to SUMI and then they are connected in ex code, the receiver set to SUMI outputs the signal came from the receiver set to SUMO. The final channel of receiver is set to SUMO output channel, but you may change to the desired channel.

Press DOWN buttons to access CH OUTPUT TYPE and press ENT button then the default value SAME is highlighted. Press UP/DOWN buttons to set the desired value and press ENT button to remove the highlight. When you select SUMO 12 and SUMD HD12 and try to select the different output channel, press ENT button to move the highlight to 12 then press UP/DOWN button to select the desired channel. Press ENT button to remove the highlight.

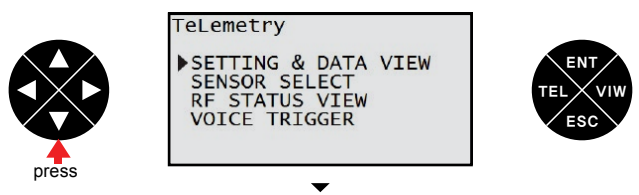


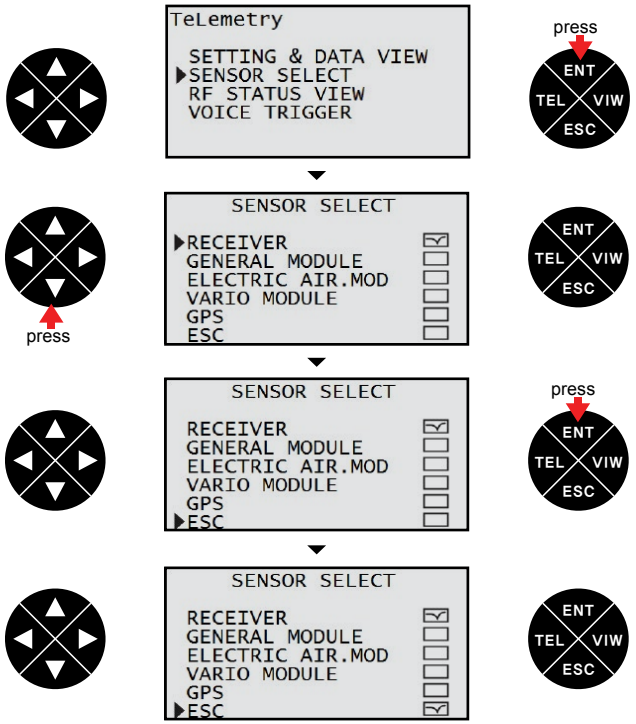


17. SENSOR SELECT

It is used to program telemetry sensor that is connected to HoTT receiver. The sensor should be connected to the telemetry pin of receiver to use voice function, warning and the telemetry data information.

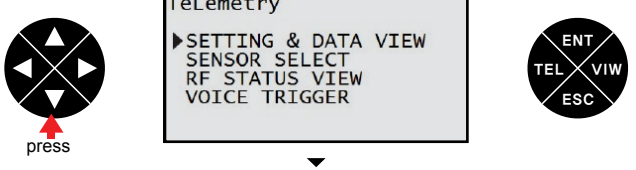
Press DOWN buttons to go to SENSOR SELECT line and press ENT button to access the function. Press DOWN button to select one of RECEIVER, GENERAL MODULE, ELECTRIC AIR.MOD, VARIO MODULE, GPS, ESC and press ENT button to mark the box. The marked function is activated.

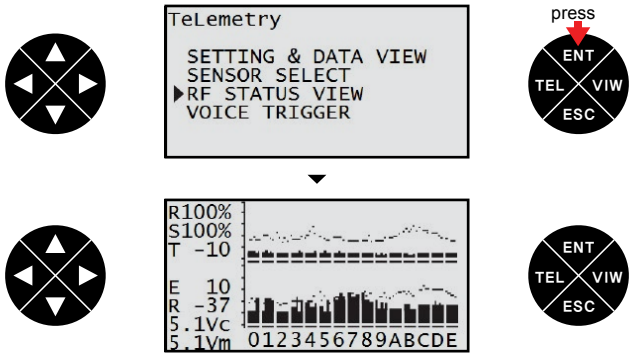




18. RF STATUS VIEW

It shows RF status between transmitter and receiver through telemetry function.
Press DOWN button to go to RF STATUS VIEW line and press ENT button to access to RF STATUS VIEW mode. You may check RF status at this screen.

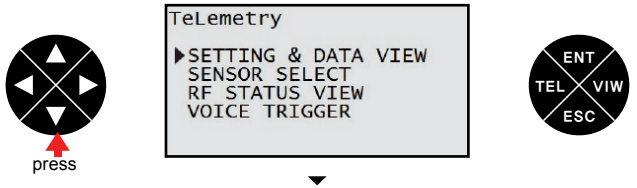


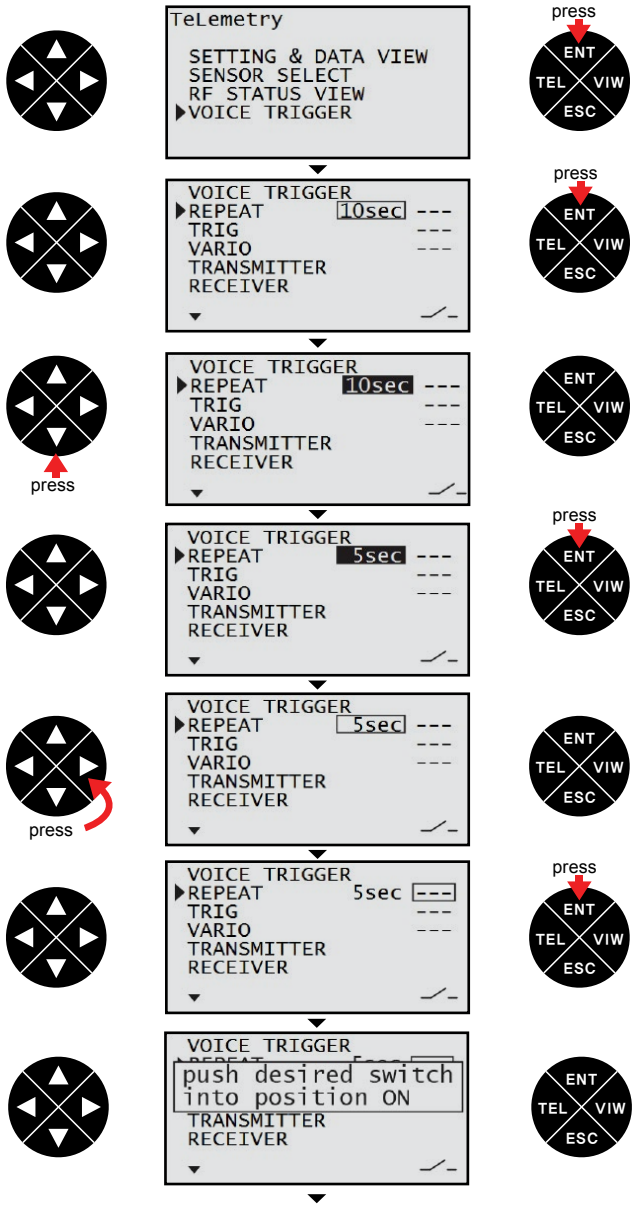


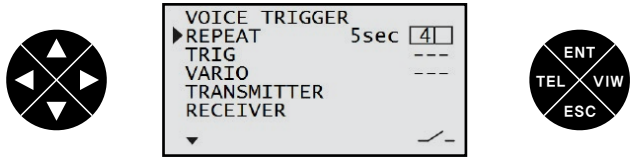
19. VOICE TRIGGER

It is used to program the sensors related with voice function. The default article REPEAT, TRIG, VARIO, TRANSSMITTER, RECEIVER are available and the optional sensors could be attached. If the optional sensor is connected, it is need to add the function for the optional sensor at SENSOR SELECT mode then VOICE TRIGGER article is created. The useable sensors are GENERAL MODULE, ELECTRIC AIR MODULE, VARIO MODULE, GPS, AIR ESC.

- REPEAT
You may set the time and switch and if the switch is on, one of voice functions is repeated for the setting time. Press DOWN buttons to go to VOICE TRIGGER line and press ENT button then the default value 10sec on REPEAT is highlighted. Press UP/DOWN buttons to set the desired value and press ENT button to remove the highlight. Press the direction button to highlight the hyphen mark then press ENT button. The popup message “push desired switch into position on” is appeared. Operate the switch to be used as REPEAT on/off, that switch is designated as REPEAT on/off. After all process, REPEAT function is operated when the switch is on.



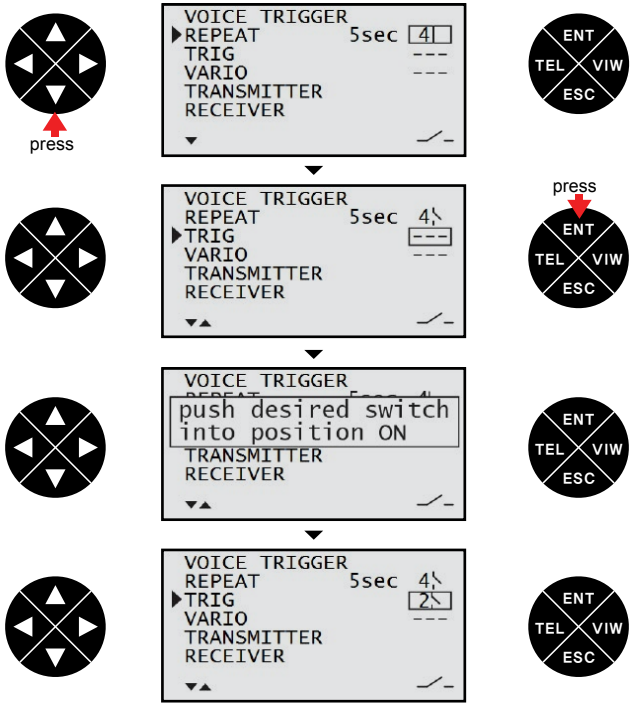




- TRIG

You may designate the switch for the voice functions of transmitter and receiver and the voice functions are changed in turn whenever the switch is on/off. Press DOWN buttons to access to TRIG and press ENT button then the popup message “push desired switch into position on” is appeared. Operate the switch to be used as TRIG on/off, that switch is designated as TRIG on/off. After all process, the next voice function is accessed whenever the switch is on.

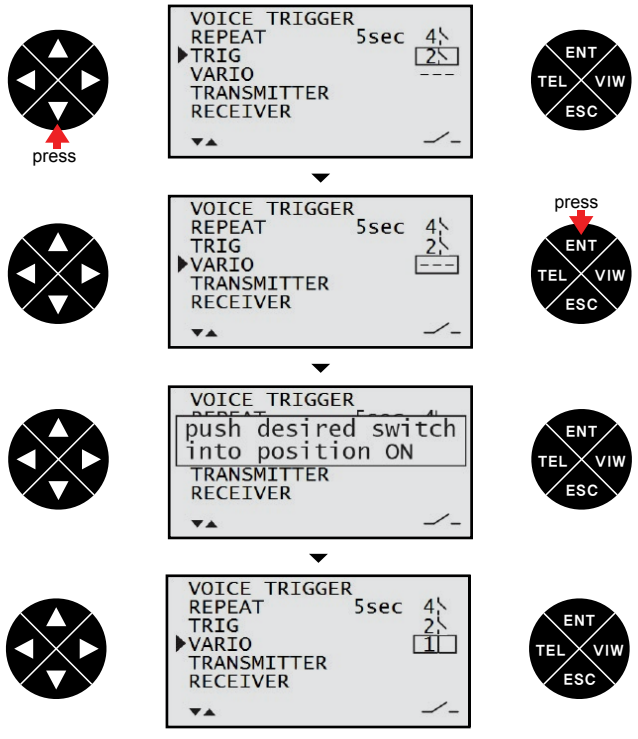
If the switch that has spring such as S2 is designated as TRIG switch, on/off function is operated simultaneously so it is very convenient.



- VARIO

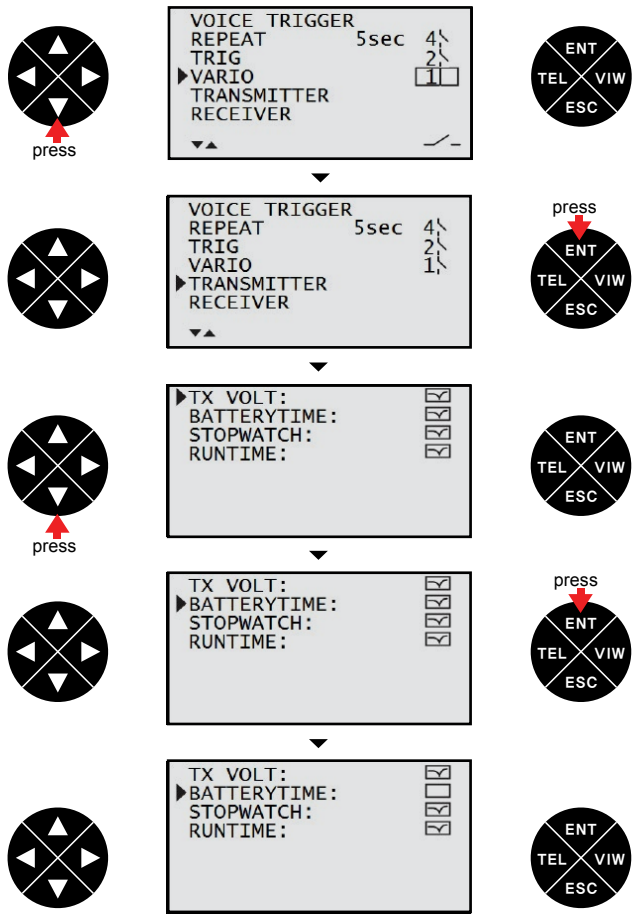
You may set the on/off switch of vario module for voice function.

Press DOWN buttons to access to VARIO and press ENT button then the popup message “push desired switch into position on” is appeared. Operate the switch to be used as VARIO on/off, that switch is designated as VARIO on/off. Voice function is operated when the switch is on.



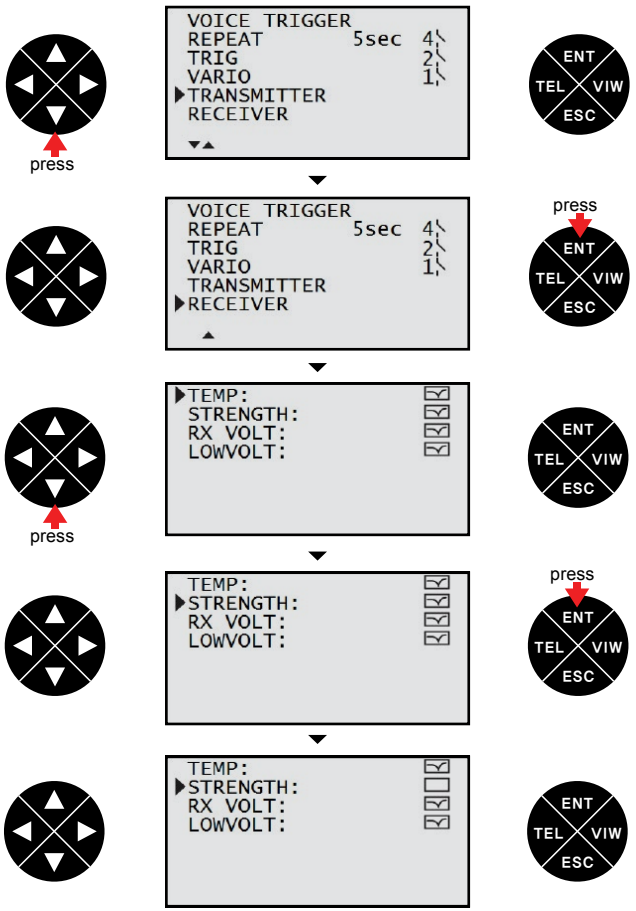
- TRANSMITTER

You may program the telemetry voice function of transmitter, TX VOLT, BATTERY TIME, STOPWATCH, RUNTIME, Press DOWN buttons to go to TRANSMITTER line and press ENT button to access TRANSMITTER setup mode. All voice function of TX VOLT, BATTERY TIME, STOPWATCH, RUNTIME have been set to use. Press the direction button to select the desired line and press ENT button to unmark the box if you don’t want to use voice function for the desired line.

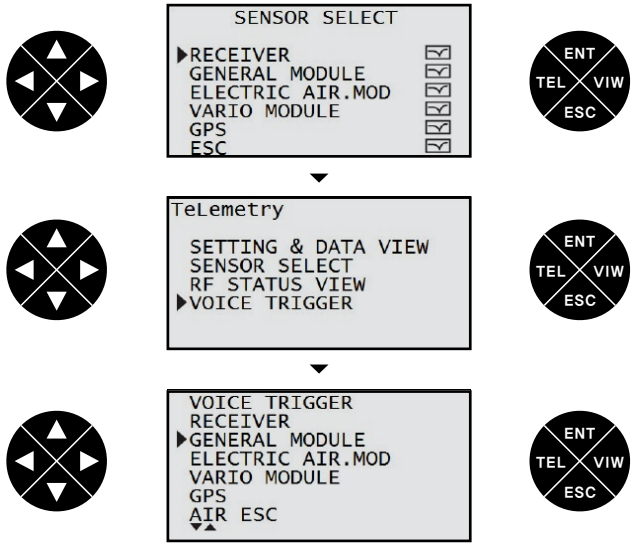


- RECEIVER

You may program the telemetry voice function of receiver, TEMP, STRENGTH, RX VOLT, LOWVOLT, Press DOWN buttons to go to RECEIVER line and press ENT button to access to RECEIVER setup mode. All voice function of TEMP, STRENGTH, RX VOLT, LOWVOLT have been set to use. Press the direction button to select the desired line and press ENT button to unmark the box if you don't want to use voice function for the desired line.

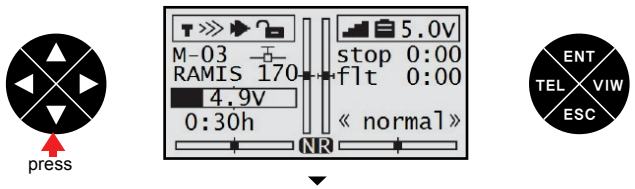


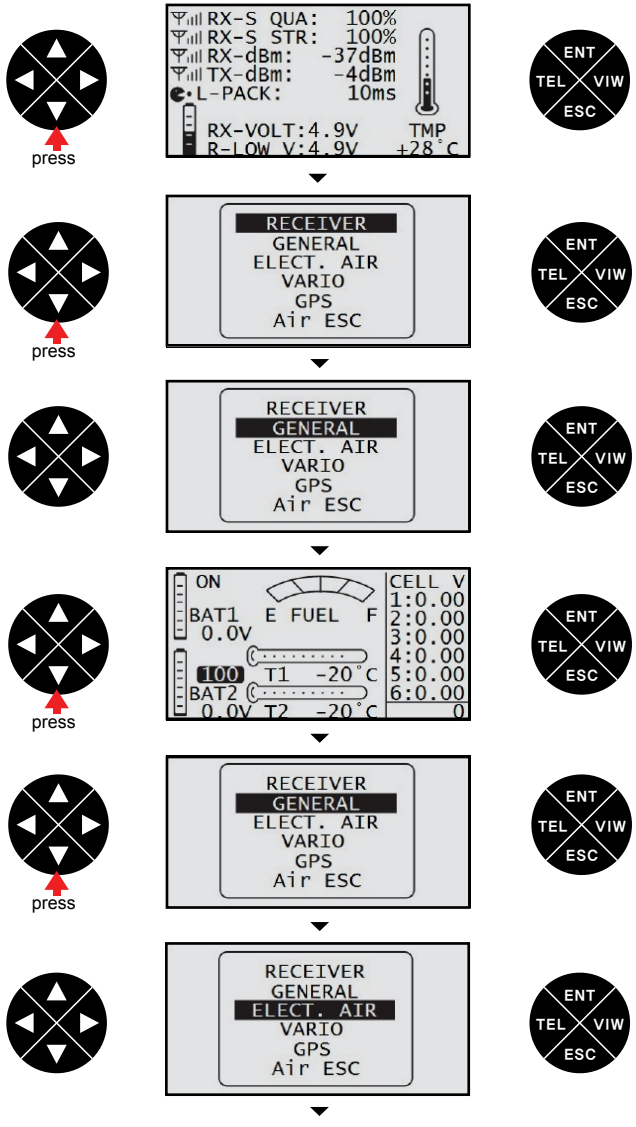
- If the optional sensors are attached, the telemetry voice functions of an attached optional sensors can be programmed. It is need to add the function for the optional sensor at SENSOR SELECT mode then VOICE TRIGGER article is created. Below is the example that VOICE TRIGGER article is created.

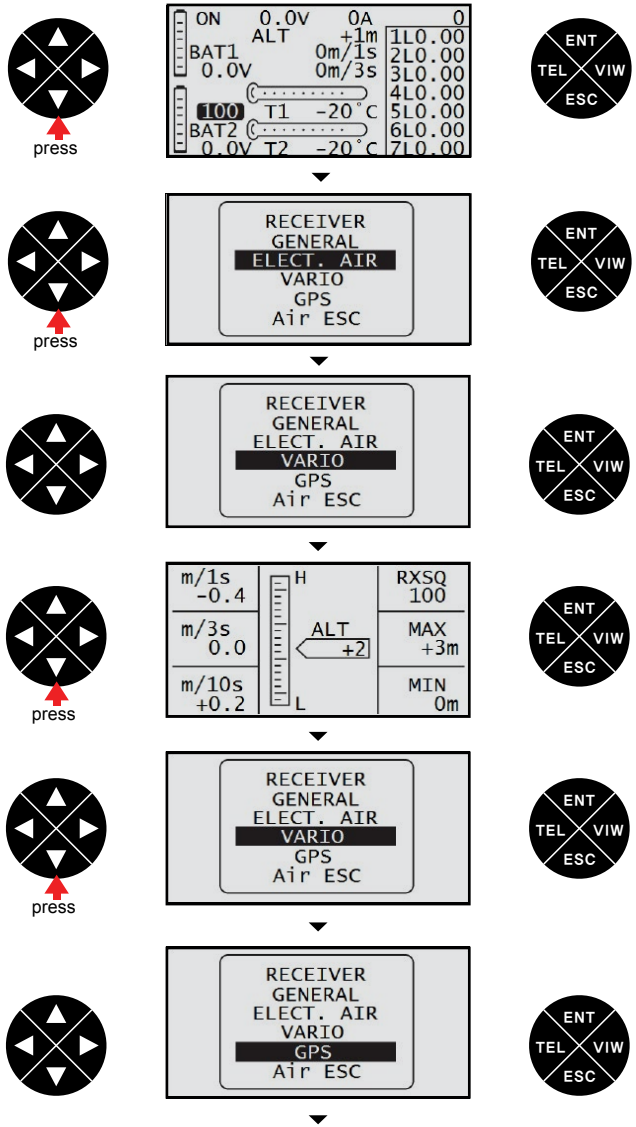


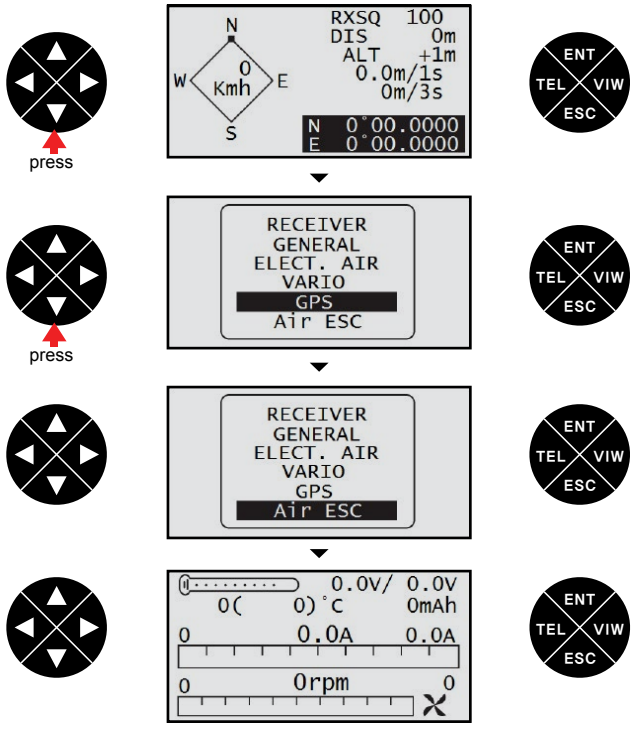
20. The Programming Setup For Telemetry Sensors

Press the direction button on transmitter home screen to go to receiver telemetry screen. Connect the optional sensors to receiver then press UP/DOWN button to check and program the desired optional sensors.




press
RX-S QUA: 100%
RX-S STR: 100%
RX-dBm: -37dBm
TX-dBm: -4dBm
L-PACK: 10ms
RX-VOLT:4.9V
R-LOW V:4.9V
TMP
+28°C
ENT
TEL
VIW
ESC
RECEIVER
GENERAL
ELECT. AIR
VARIO
GPS
Air ESC
ON
BAT1
0.0V
E FUEL F
100
T1 -20°C
BAT2
0.0V T2 -20°C
CELL V
1:0.00
2:0.00
3:0.00
4:0.00
5:0.00
6:0.00
0


press
ON 0.0V 0A 0
ALT +1m
BAT1 0m/1s
0.0V 0m/3s
100 T1 -20°C
BAT2
0.0V T2 -20°C
1L0.00
2L0.00
3L0.00
4L0.00
5L0.00
6L0.00
7L0.00
ENT
TEL
VIW
ESC
RECEIVER
GENERAL
ELECT. AIR
VARIO
GPS
Air ESC
m/1s
-0.4
m/3s
0.0
m/10s
+0.2
H
ALT
+2
L
RXSQ
100
MAX
+3m
MIN
0m



• Safety Approval

Declaration of Conformity
(in accordance with ISO/IEC 17050-1)

CE 0678

Product(s): Graupner mz-12 Transmitter

Item Number(s):
Equipment class: 2
The objects of declaration described above are in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC:

EN 62479:2010
EN 60950-1:2006/A11:2009/A1:2010/A12:2011
EN 301 489-1 V1.9.2
EN 301-489-17 V2.2.1
EN 300 328 V1.7.1

• FCC Information

Product(s) : Graupner mz-12 Transmitter

Contains FCC ID: SNL-36204210
FCC 47 CFR PART 15B

Product(s) : Graupner HoTT GR-16(L) (8 channels) Receiver

FCC ID :
ZKZ-33508
FCC 47 CFR PART 15C

• FCC Statement

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.
2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

• NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

• FCC radiation exposure statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

• KC Information

Product(s) : Graupner mz-12 Transmitter

- KCC인증번호: KCC-RRM-sjr-16005100, KCC-CRM-sjr-36204210
- 방송통신위원회고시 제2013-01호 "무선설비규칙"
- 방송통신위원회고시 제2012-102호 "신고하지 아니하고 개설할 수 있는 무선기기"

-KN 301 489-1:2009
-KN 301 489-17:2009
-KN 61000-4-2:2008
-KN 61000-4-3:2011

Product(s) : Graupner HoTT GR-16(L) (8 channels) Receiver

- KCC인증번호: KCC-CRM-sjr-16003120
- 방송통신위원회고시 제2013-01호
- 방송통신위원회고시 제2012-102호 "신고하지 아니하고 개설할 수 있는 무선기기"

국립전파 연구원의 전자파 적합등록을 획득하였습니다.
(This product is certified and registered from Korean National Radio Research Agency.)

• Caution

- This equipment's aerial must be at least 20 cm from any person when the system is in use. We therefore do not recommend using the equipment at a closer range than 20cm.
- Ensure that no other transmitter is closer than 20cm from your equipment, in order to avoid adverse effects on the system's electrical characteristics and radiation pattern.
- The radio control system should not be operated until the Country setting has been set correctly at the transmitter. This is essential in order to fulfill the requirements of various directives - FCC, ETSI, CE, KC and etc. Please refer to the instructions for your particular transmitter and receiver for details of this procedure.
- Check all working systems and carry out at least one full range check on the ground before every flight, in order to show up any errors in the system and the models programming.
- Never make any changes to the programming of the transmitter or receiver whilst operating a model.

• ENVIRONMENTAL PROTECTION NOTES

This product must not be disposed of with other waste. Instead, it is the user's responsibility to their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the produce

Graupner HoTT

HOPPING.TELEMETRY.TRANSMISSION

mz-12 HoTT

Optimized 6CH Digital Proportional System

mz-12 radio is used for both airplane and helicopter, so this radio is ideal for intermediate users.
You can experience various high features with user friendly operation. In addition, this radio also contains Graupner/SJ HoTT system which allows you to get all proper data in real time.

- Large graphic LCD supports very neat and high quality screen with user friendly interface.
- Enable to read and hear (built in earphone) various telemetry data simultaneously in real time during flight
- Capable of expanding up to 8 channels using to 2 digital channels.
- Supports 5 wing types/ 3 tale types for airplane and 6 swash types for Helicopter