8UAPS / 8UAFS

8 CHANNEL RADIO CONTROL SYSTEM

INSTRUCTION MANUAL

INTRODUCTION

Thank you for purchasing a Futaba® 8Usuper series digital proportional R/C 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, your hobby dealer, or Futaba.

Owner.s. Manual

This manual is not just a translation and has been carefully written to be as helpful to you, the new owner, as possible. There are many pages of setup procedures, examples, and trimming instructions. If you feel that any corrections or clarifications should be made, please jot them down on a piece of paper and send them to the factory. Due to unforeseen changes in production procedures, the information contained in this manual is subject to change without notice.

Application, Export, and Reconstruction

1. This product may be used for model airplane or surface use if on the correct frequency.
The product described in this manual is subject to regulations of the Ministry of Radio/Telecommunications and is restricted under Japanese law to such purposes.
2. Exportation precautions
(a) When this product is exported from Japan, its use is to be approved by the Radio Law of the country of destination.
(b) Use of this product with other than models may be restricted by Export and Trade Control Regulations. An application for export approval must be submitted.
3. Modification, adjustment, and replacement of parts
Futaba is not responsible for unauthorized modification, adjustment, and replacement of parts of this product.

The Following Statement Applies to the Receiver (for U.S.A.)

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, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

The RBRC™ Seal (for U.S.A.)

The RBRC™ SEAL on the (easily removable) nickel-cadmium battery contained in Futaba products indicates that Futaba Corporation of America is voluntarily participating in an industry program to collect and recycle these batteries at the end of their useful lives, when taken out of service within the United States. The RBRC™ program provides a convenient alternative to placing used nickel-cadmium batteries into the trash or municipal waste which is illegal in some areas.
Futaba Corporation of America's payments to RBRC™ makes it easy for you to return the spent battery to Futaba for recycling purposes. You may also contact your local recycling center for information on where to return the spent battery. Please call 1-800-8-BATTERY for information on Ni-Cd battery recycling in your area. Futaba Corporation of America's involvement in this program is part of its commitment to protecting our environment and conserving natural resources.

NOTE: Our instruction manuals need to encourage our customers to return spent batteries to Futaba or a local recycling center in order to keep a healthy environment.
RBRC™ is a trademark of the Rechargeable Battery Recycling Corporation.

Meaning of Special Markings

Pay special attention to the safety at the parts of this manual that are indicated by the following marks.

⚠DANGER Procedures which may lead to a dangerous condition and cause death or serious injury to the user if not carried out properly.

⚠WARNING Procedures which may lead to a dangerous condition or cause death or serious injury to the user if not carried out properly, or procedures where the probability of superficial injury or physical damage is high.

⚠CAUTION Procedures where the possibility of serious injury to the user is small, but there is a danger of injury, or physical damage, if not carried out properly.

Symbol: ⃠ ; Prohibited ❗ ; Mandatory

⚠WARNING To ensure the safety of yourself and others, please observe the following precautions:

Ni-cd Battery

❶ **Charge the Batteries!** Don't forget to recharge the batteries before each flying session. Plug in the charger that comes in this system and hook up the transmitter and airborne batteries the day before a planned flying session. A low battery will soon die causing loss of control and a crash. When you begin your flying session, reset your 8Usuper's built-in timer, and during the session pay attention to the duration of usage.

❶ **Quit flying long before your batteries become low on charge.** On-field charging of your batteries with a field charger is not recommended. Overcharging the Ni-Cd batteries with a fast-charger may cause overheating and a premature failure.

Flying field

We recommend that you fly at a recognized model airplane flying field. You can find model clubs and fields by asking your nearest hobby dealer, or contacting the Academy of Model Aeronautics.

❶ **Always pay particular attention to the flying field's rules, as well as the presence and location of spectators, the wind direction, and any obstacles on the field. Be very careful flying in areas near power lines, tall buildings, or communication facilities as there may be radio interference in their vicinity. If you must fly away from a club field, be sure there are no other modelers flying within a two-mile range, or you may lose control of your aircraft.**

On the flying field

❶ **Before flying, be sure that the frequency you intend to fly with is not in use, and secure any frequency control device (pin, tag, etc.) for that frequency before turning on your transmitter. Never believe that it's possible to fly two or more models on the same frequency at the same time. Even though there are different types of modulation (AM, FM, PCM), only one model may be flown on a single frequency.**

To prevent possible damage to your radio gear, turn the power switches on and off in the proper sequence, given below.

❶ **When you are ready to fly your model, move the throttle stick to the low speed position, or do whatever is necessary to command your motor NOT to run. Then, you may turn on the transmitter power followed by the receiver power. When you have finished flying, begin by turning off the receiver power, then turn off the transmitter power.** If you do not follow these procedures, you may damage your servos or control surfaces, flood your motor, or in the case of electric-powered models, the motor may unexpectedly turn on and cause a severe injury.

We recommend that you range-check your system before each flying session.

❶ **Before starting the engine, fully extend the transmitter antenna, power up the transmitter and receiver, and check to be sure that the servos follow the**

movement of the sticks. If a servo operates abnormally, don't attempt to fly until you determine the cause of the problem.

❶ **Finally, before starting the engine, be sure to check that the transmitter model memory is correct for the chosen model, and (for PCM receivers only) that the fail safe system functions properly when the transmitter is shut off.**

❶ **While you're getting ready to fly, if you place your transmitter on the ground, be sure that the wind won't tip it over.** If it is knocked over, the throttle stick may be accidentally moved causing the engine to race.

❶ **Before taxiing, be sure to extend the transmitter antenna to its full length.** A collapsed antenna will reduce your flying range and cause a loss of control. It is a good idea to avoid pointing the transmitter antenna directly at the model, since the signal is weakest in that direction.

⃠ **Don't fly in the rain!** Water or moisture may enter the transmitter through the antenna or stick openings and cause erratic operation or loss of control. If you must fly in wet weather during a contest, be sure to cover your transmitter with a plastic bag or waterproof barrier.

TABLE OF CONTENTS

TRANSMITTER

The versatile FP-T8UAFS/T8UAPS PCM1024 multi-function 8-channel transmitter may be used with any Futaba PCM1024 receiver! In addition, your system will work with Futaba FM/PPM receivers when you select the FM transmission option. The large liquid-crystal display panel allows rapid data input into its easy-to-read LCD display. To allow efficient programming, all of the transmitter's functions have been separated into Basic Menu and Advanced Menu functions.

The 8UA transmitter has electronic trims so that rapid yet precise trim adjustment is possible while flying. These exclusive trims are designed to that when the trim lever is activated, trim movement accelerates, and in addition, each trim's sensitivity may be programmed to match the model or control. For convenience, the location of the trim is constantly displayed on the LCD panel.

The 8UA system comes complete with programming for ACRO (aircraft), HELISWH1/SWH2/SWH4/SR-3/SN-3 (helicopter), or GLID1FLP/2FLP (sailplane) mixing and can accommodate virtually any model configuration. The compact, ergonomically-designed transmitter holds completely independent memories for eight different models. [For modelers requiring additional storage, memory for another eight models can be added using the DP16K CAMPac (available separately). You may also easily transfer your model data to another T8UA/T8UH transmitter plugging your CAMPac into the other transmitter. The data pack does not require any battery backup and can be stored indefinitely.]

The 8UA features a new stick design which provides an improved feel. The sticks' length and tension may be adjusted. Switches are provided for dual rate (D/R), programmable mixers (PMIX), and other functions, and the location of the switches can be changed electronically to suit your own preferences. For those learning to fly, the transmitter has "buddy-box" capability and the training channels can be selected by the instructor. [The trainer cord is sold separately.]

Standard programming features include servo reversing for all channels, ATV on all channels, dual rates, exponential, throttle cut, electronic subtrim on all channels, and fail safe on all channels (PCM transmission only). An alphabetic name may be used for each model stored in the eight model memories.

The 8UA features a number of special mixing features applicable to all types of flying models. For aircraft, there are extensive preprogrammed mixing features: aileron differential, flaperon, V-tail, elevon, airbrake (with delayed elevator), elevator→flap, snap roll in 4 directions, throttle→needle (with acceleration), idle-down, engine starting, and second aileron switching. Helicopter features include throttle and pitch curve settings, hovering pitch and throttle, revolution mixing, delay, offset, invert, throttle needle, gyro mixing, and governor mixing. Special sailplane features for single and dual flap servos include flap→aileron, aileron→flap, elevator→flap, aileron differential, butterfly mixing, camber control, and start (launch) and speed presets.

If you plan to fly sailplanes extensively, you may wish to buy the 8UH (helicopter) system, since its three-position switch is on the top left of the transmitter, while for the 8UA (aircraft) system, the three-position switch is on the top right.

R148 RECEIVER

The R148 eight-channel receiver included with your system is a high-sensitivity narrow-band, dual conversion receiver. Not much larger than a pack of gum, it weighs just 1.07 oz yet provides superior range and performance.

SERVOS

The S3001 servo includes a ball bearing and provides 60° of travel in a rapid 0.22 second, along with a rated torque of 41.7 oz-in. The S148 servo is a standard servo with similar torque rating and transit speed in a slightly lighter package.

CONTENTS AND TECHNICAL SPECIFICATIONS, AIRCRAFT VERSION (T8UAPS and T8UAFS Series)

Specifications and ratings are subject to change without notice.

Your 8UAPS (PCM) or 8UAFS (FM) system includes the following components:

- 8UA Transmitter, including RF module
- R148DP/DF Receiver, R138DP/DF, or R149DP Receiver
- Servos, four S148 , four S3001, one S3001, or four S9001, with mounting hardware and servo arm assortment
- Switch harness
- Aileron extension cord

Transmitter T8UAFS/T8UAPS (Aircraft Version)

Operating system: 2-stick, 8 channels, PCM1024 system
Transmitting frequency: 29, 35, 36, 40, 41, 50, 60 or 72 MHz bands
Modulation: FM/PPM or PCM, switchable
Power supply: 9.6V NT8S600B Ni-Cd battery
Current drain: 250 mA

Receiver R148DP/DF (PCM or FM Dual conversion)

Receiving frequency: 29, 35, 36, 40, 41, 50, 60 or 72 MHz bands
Intermediate freq.: 10.7 MHz and 455 kHz
Power requirement: 4.8V Ni-Cd battery
Current drain: 14 mA
Size: 2.19 x 1.00 x 0.89" (55.5 x 25.5 x 22.5 mm)
Weight: 1.07 oz (30.4 g)

Servo S148 (Standard)

Control system: Pulse width control, 1.52 ms neutral
Power requirement: 4.8V (from receiver)
Output torque: 41.7 oz-in (3.0 kg-cm)
Operating speed: 0.22 sec/60°
Size: 1.59 x 0.78 x 1.41" (40.4 x 19.8 x 36 mm)
Weight: 1.5 oz (42.5 g)

Servo S3001 (Standard, ball-bearing)

Control system: Pulse width control, 1.52 ms neutral
Power requirement: 4.8V (from receiver)
Output torque: 41.7 oz-in (3.0 kg-cm)
Operating speed: 0.22 sec/60°
Size: 1.59 x 0.78 x 1.41" (40.4 x 19.8 x 36 mm)
Weight: 1.59 oz (45.1g)

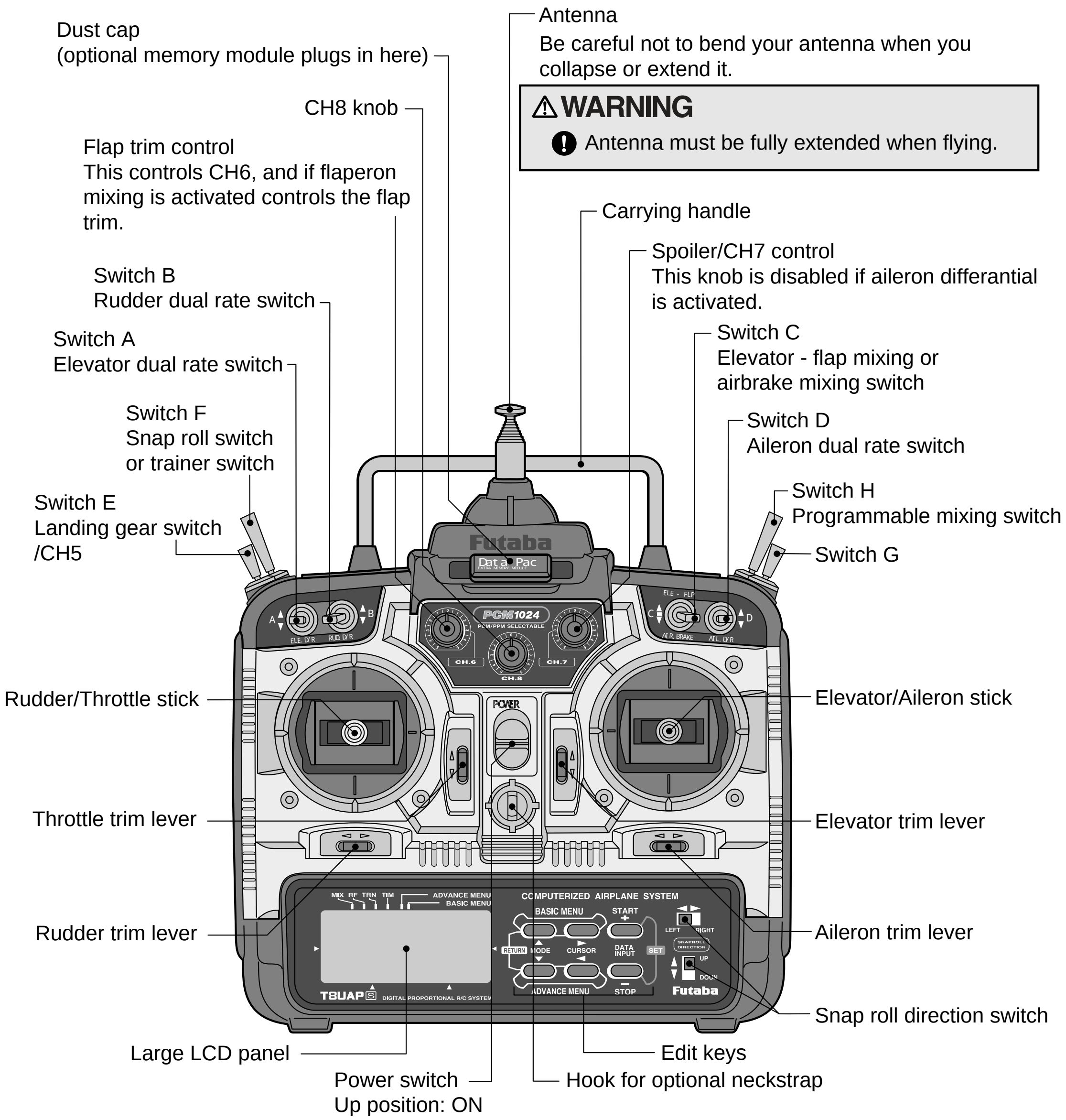
The following additional accessories are available from your dealer. Refer to a Futaba catalog for more information:

- Memory module – the optional DP-16K CAMPac doubles your model storage capability (to 16 models from 8) and allows you to transfer programs to another 8UA transmitter.

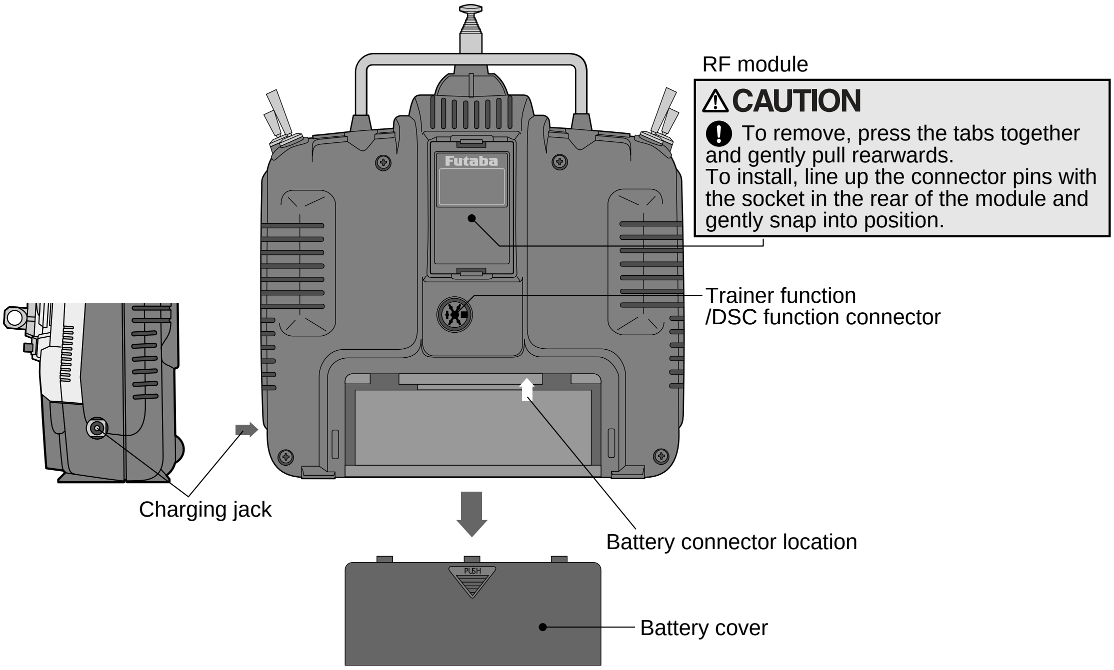
- Transmitter battery pack – the NT8S600B transmitter Ni-Cd battery pack may be easily exchanged with a fresh one to provide enough capacity for extended flying sessions

- Trainer cord – the optional training cord may be used to help a beginning pilot learn to fly easily by placing the instructor on a separate transmitter. Note that the 8UA transmitter may be connected to another 8UA system, as well as to any F5, Skysport, Super 7, or 9Z series transmitter.

- Neckstrap – a neckstrap may be connected to your 8UA system to make it easier to handle and improve your flying precision, since your hands won't need to support the transmitter's weight.



This figure shows the default assignments for a Mode 2 system as supplied by the factory. You can change many of the switch positions or functions by selecting a new position within the setting menu for the function you wish to move.



NOTE: If you need to remove or replace the transmitter battery, do not pull on its wires to remove it. Instead, gently pull on the connector's plastic housing where it plugs in to the transmitter.

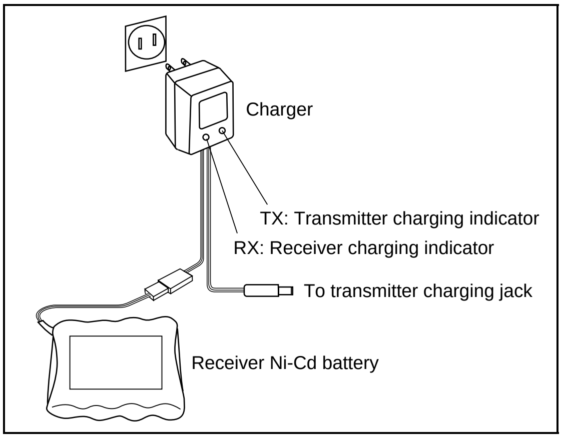
SWITCH ASSIGNMENT TABLE

The factory default functions activated by the switches and knobs for a Mode 2 transmitter are shown below. Note that some of the functions will not operate until activated in the mixing menus. In general, functions for a Mode 1 transmitter reverse the E and G switches.

Switch / Knob	ACRO	GLID	HELI
Switch A	Elevator Dual Rate	Elevator Dual Rate ↓ = Butterfly on	Elevator Dual Rate ↓ = PMIX-1, 2 on
Switch B	Rudder Dual Rate	Rudder Dual Rate	Rudder Dual Rate
Switch C	↑ = ELE→FLP on center/↓ = Idle-down ↓ = Airbrake on	↑ = ELE→FLP on center/↓ = Idle-down ↓ = PMIX-5 on	CH 7
Switch D	Aileron Dual Rate	Aileron Dual Rate	Aileron Dual Rate
Switch E	Landing Gear	GLID1FLP: Gear	fwd = Throttle Hold
Switch F	Snap Roll/Trainer	Trainer	Trainer
Switch G	↓ = PMIX-5 on	back = Speed forward = Start (Launch)	Idle-up
Switch H	↓ = PMIX-1, -2, -3 on	↓ = PMIX-1, -2, -3 on	Inverted/CH5
CH6 knob	Flap (Flap trim if FLPRON on)	GLID1FLP: Flap (Flap trim if FLPRON on) GLID2FLP: Camber (Flap trim if FLP-AI off)	Hovering Pitch
CH7 knob	Spoiler (disabled if AI-DIF on)	Spoiler (disabled if AI-DIF on)	Hovering Throttle
CH8 knob	CH8	CH8	CH8

Charging. Your. System.s. Batteries

1. Connect the transmitter charging jack and airborne Ni-Cd batteries to the transmitter and receiver connectors of the charger.
2. Plug the charger into a wall socket.
3. Check that the charger LED lights. The batteries should be left on charge for about 15 hours when recharging the standard NR-4J and NT8S600B Ni-Cd batteries.

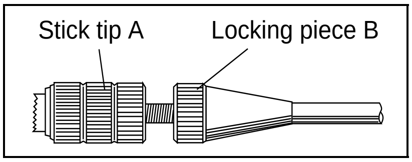


⚠CAUTION

use of a fast charger may damage the batteries by overheating and dramatically reduce their lifetime.

❶ **You should fully discharge your system's batteries periodically to prevent a condition called "memory."** For example, if you only make two flights each session, or you regularly use only a small amount of the batteries' capacity, the memory effect can reduce the actual capacity even if the battery is fully charged. You can cycle your batteries with a commercial cycling unit, or by leaving the system on and exercising the servos by moving the transmitter sticks. Cycling should be done every four to eight weeks, even during the winter or periods of long storage. Keep track of the batteries' capacity during cycling; if there is a noticeable change, you may need to replace the batteries.

Adjusting the length of the non-slip control sticks



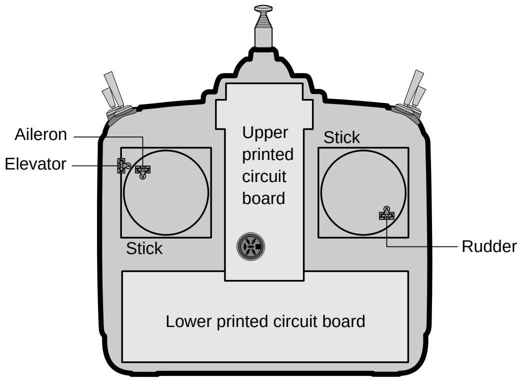
You may change the length of the control sticks to make your transmitter more comfortable to hold and operate. To lengthen or shorten your transmitter's sticks, first unlock the stick tip by holding locking piece B and turning stick tip A counterclockwise. Next, move the locking piece B up or down (to lengthen or shorten). When the length feels comfortable, lock the position by turning locking piece B counterclockwise.

Stick lever tension adjustment

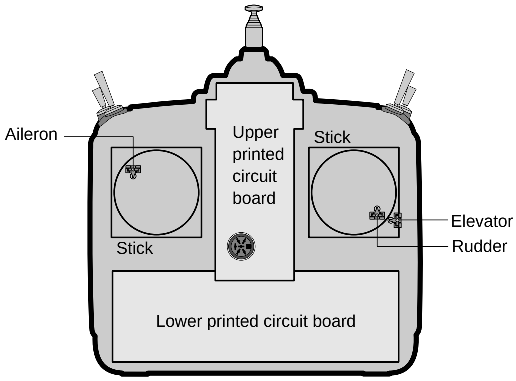
You may adjust the stick tension of your sticks to provide the "feel" that you like for flying. To adjust your springs, you'll have to remove the rear case of the transmitter. First, pop off the battery cover on the rear of the transmitter. Next, unplug the battery wire, and remove the battery and RF module from the transmitter. While you're removing the RF module, pay attention to the location of the pins that plug into the back of the module. Next, using a screwdriver, remove the four screws that hold the transmitter's rear cover into position, and put them in a safe place. Gently ease off the transmitter's rear cover. Now you'll see the view shown in the figure below.

Using a small screwdriver, rotate the adjusting screw for each stick for the desired spring tension. The tension increases when the adjusting screw is turned clockwise, and decreases for counterclockwise motion.

When you are satisfied with the spring tensions, you may close the transmitter. Check that the upper printed circuit board is on its locating pins, then very carefully reinstall the rear cover being careful thread the RF module connector pins through the hole in the case and not to bend them. When the cover is properly in place, tighten the four screws.



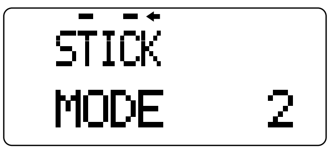
Mode 2 transmitter with rear cover removed



Mode 1 transmitter with rear cover removed

Changing. the. 8UA. transmitter.s. mode

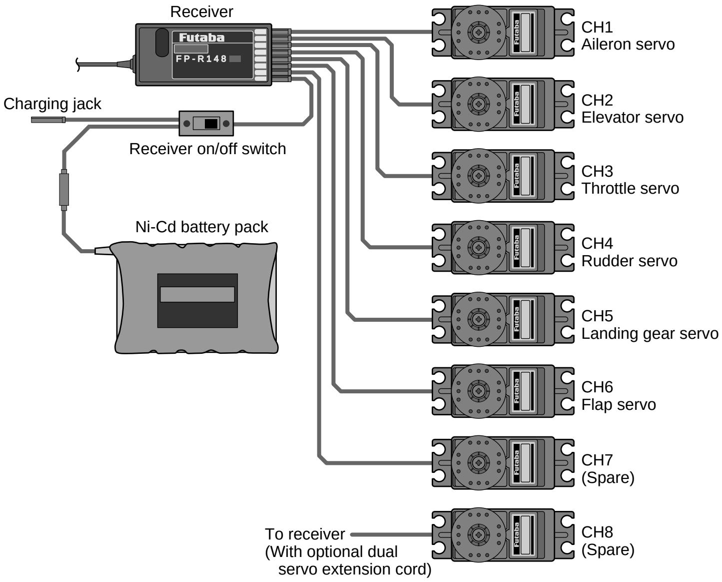
If you wish to change the mode of the transmitter, say from mode 1 to mode 2, turn on the transmitter holding the two MODE buttons down. You'll see a display "STICK MODE X," where X is a number representing the current transmitter mode. Press the plus (+) or minus (–) DATA INPUT key to change the mode number as desired. You'll see the effect of you changes when you next turn on your transmitter. In some cases, you'll have to swap the throttle detent mechanism with the elevator centering mechanism. This can be done by Futaba.



Receiver output channel	Aircraft (ACRO)	Glider (GLID1FLP /GLID2FLP)	Helicopter (HELI)
1	Right aileron (combined R. flap + aileron*)	Right aileron	Aileron
2	Elevator	Elevator	Elevator
3	Throttle	Motor/Speed Control	Throttle
4	Rudder	Rudder	Rudder
5	Landing Gear	Right Flap	Gyro sensitivity
6	Left aileron (combined L. flap + aileron*)	Left flap (Left aileron*)	Pitch
7	Spare	Left aileron Left aileron†	Spare
8	Spare	Spare	Spare

Multiple entries indicate that the servo function varies with the selected programming (*=FLPRON mode, †=AI-DIF mode). Outputs with no mixing functions are shown first.

The diagram below shows the default connections in the ACRO mode.



Receiver Notes

⚠**CAUTION**

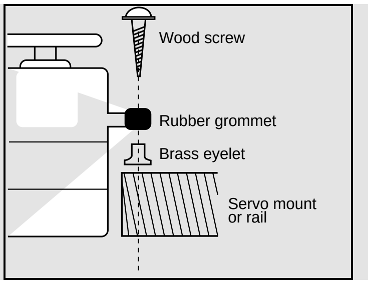
vertical fin, and let the excess length trail behind the aircraft.

❗ **When you insert servo or battery connectors into the receiver, note that each plastic housing has an alignment tab. Be sure the alignment tab is oriented properly before inserting the connector. To remove a connector from the receiver, pull on the connector housing rather than the wires.**

❗ **If your aileron servo (or others) are too far to plug into the receiver, use an aileron extension cord to extend the length of the servo lead.** Additional extension cords of varying lengths are available from your hobby dealer or Futaba.

⚠**CAUTION** While you are installing the battery, receiver, and servos into your model's fuselage, please pay attention to the following guidelines:

Servo Mounting



❶ **Use the supplied rubber grommets when you mount each servo. Be sure not to overtighten the screws.** If any portion of the servo case directly contacts the fuselage or the servo rails, the rubber grommets will not attenuate vibration, which can cause mechanical wear and servo failure.

Servo Throw

❶ **Once you have installed the servos, operate each one over its full travel and check that the pushrod and output arms do not bind or collide with each other, even at extreme trim settings.** Check to see that each control linkage does not require undue force to move (if you hear a servo buzzing when there is no transmitter control motion, most likely there is too much friction in the control or pushrod). Even though the servo will tolerate loads, any unnecessary load applied to the servo arm will drain the battery pack quickly.

Switch Harness Installation

❶ When you are ready to install the switch harness, remove the switch cover and use it as a template to cut screw holes and a rectangular hole slightly larger than the full stroke of the switch. Choose a switch location on the opposite side of the fuselage from the engine exhaust pipe, and pick a location so that it can't be inadvertently turned on or off during handling or storage. Install the switch so that it moves without restriction and "snaps" from ON to OFF and vice versa.

Receiver Antenna

It is normal for the receiver antenna to be longer than the fuselage.

⊘ **DO NOT cut it or fold it back on itself** – cutting or folding changes the electrical length of the antenna and may reduce range. Secure the antenna to the top of the vertical fin, and let the excess wire length trail behind. You may run the antenna inside of a *non-metallic* housing within the fuselage, but range may suffer if the antenna is located near metal pushrods or cables. Be sure to perform a range check before flying.

Receiver Vibration and Waterproofing

The receiver contains precision electronic parts. Be sure to avoid vibration, shock, and temperature extremes.

❶ **For protection, wrap the receiver in foam rubber or other vibration-absorbing materials.** It's also a good idea to waterproof the receiver by placing it in a plastic bag and securing the open end of the bag with a rubber band before wrapping it with foam. If you accidentally get moisture inside the receiver, you may experience intermittent operation or a crash.

Airplane Frequencies

The following frequencies and channel numbers may be used for flying aircraft in the United States:

72 MHz band

Ch . No.	MHz	Ch . No.	MHz
11	72.010	36	72.510
12	72.030	37	72.530
13	72.050	38	72.550
14	72.070	39	72.570
15	72.090	40	72.590
16	72.110	41	72.610
17	72.130	42	72.630
18	72.150	43	72.650
19	72.170	44	72.670
20	72.190	45	72.690
21	72.210	46	72.710
22	72.230	47	72.730
23	72.250	48	72.750
24	72.270	49	72.770
25	72.290	50	72.790
26	72.310	51	72.810
27	72.330	52	72.830
28	72.350	53	72.850
29	72.370	54	72.870
30	72.390	55	72.890
31	72.410	56	72.910
32	72.430	57	72.930
33	72.450	58	72.950
34	72.470	59	72.970
35	72.490	60	72.990

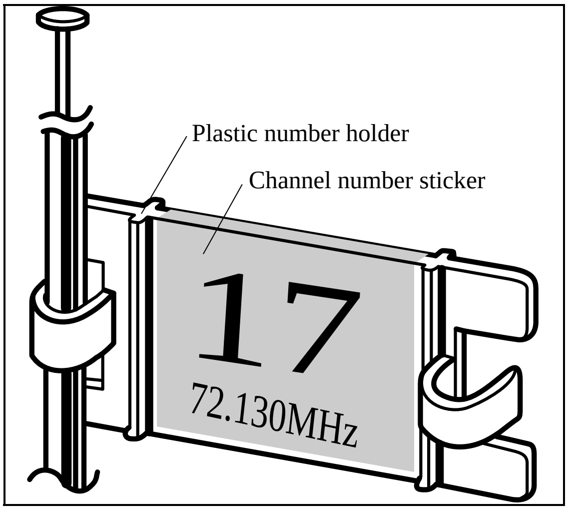
50 MHz Band (Amateur license required)

00	50.80	01	50.82
02	50.84	03	50.86
04	50.88	05	50.90
06	50.92	07	50.94
08	50.96	09	50.98

⚠CAUTION

Installing your frequency number indicator:

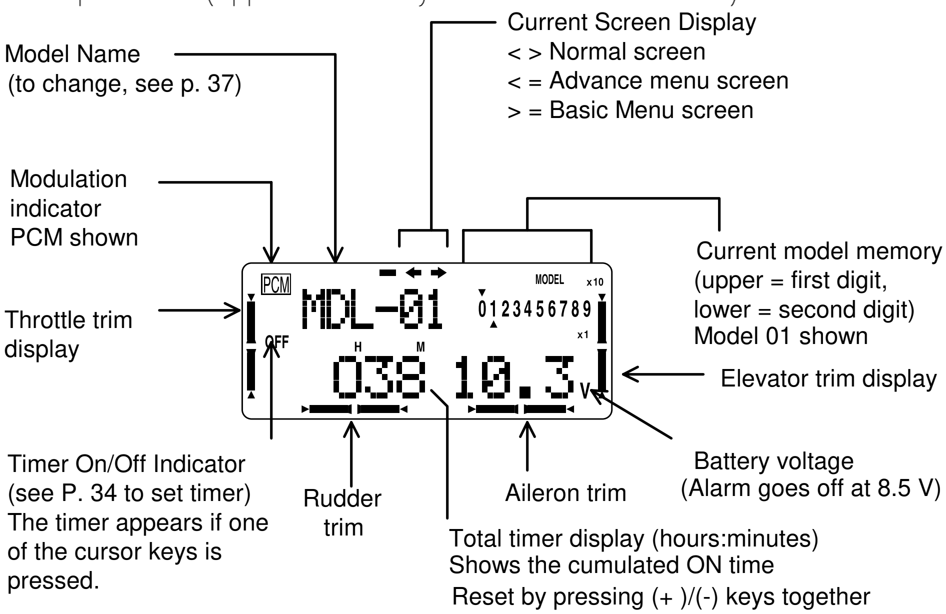
❶ **It's very important that you display your transmitting channel number at all times.** To install your indicator, peel off the channel number's backing sheet, and carefully stick the numbers to both sides of the number holder. Now you can snap the number holder onto the lower portion of the antenna as shown in the figure – use the clip that fits more snugly on your antenna. You may wish to cut off the other, unused clip on the indicator.



TRANSMITTER DISPLAYS & BUTTONS

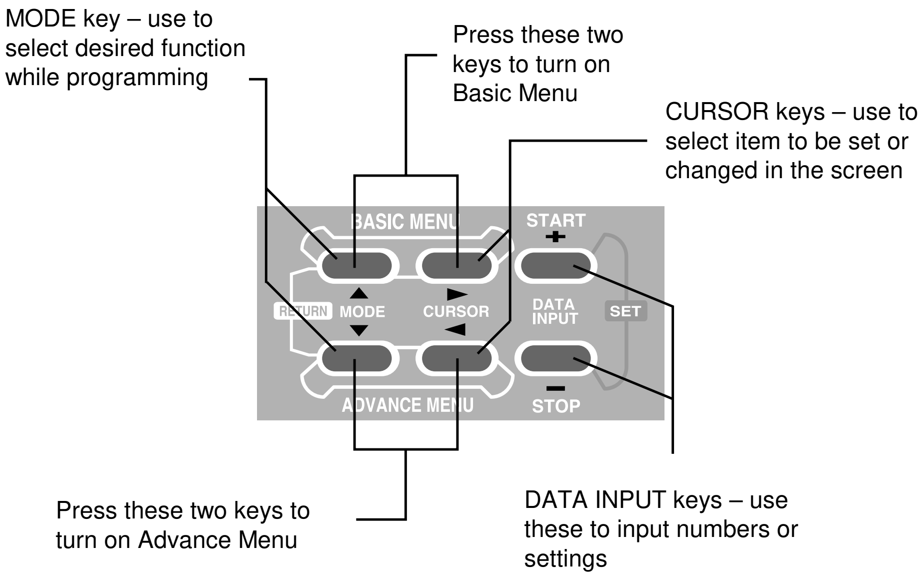
When you first turn on your transmitter, a confirmation beep sounds, and the screen shown below appears. Before flying, or even starting the engine, BE SURE that the model name appearing on the display matches the model that you are about to fly! If you don't, servos may be reversed, and travels and trims will be wrong, leading to an immediate crash.

Startup Screen (appears when system is first turned on)



Note: trim display can be displayed in reverse video (see page 39)

Edit keys



An alarm or error indication may appear on the display of your transmitter for several reasons, including when the transmitter power switch is turned on, when the battery voltage is low, and several others. Each display has a unique sound associated with it, as described below.

BACKUP ERROR

Warning sound: Beep beep beep beep (repeated)

The BACKUP ERROR warning occurs when the transmitter memory is lost for any reason. If this occurs, all of the data will be reset when the power is turned on again.

⚠WARNING

⃠ **DO NOT FLY when this message is displayed** – all programming has been erased and is not available. Return your transmitter to Futaba for service.

MODEL SELECTION ERROR

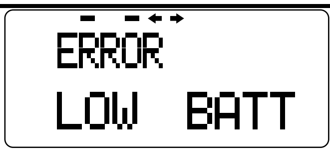
Warning sound: Beep beep beep beep beep (repeated 3 times)

The MODEL SELECTION warning is displayed when the transmitter attempts to load a model memory from a memory module that is not currently plugged into the transmitter. When this occurs, model No. 01 is automatically loaded.

⚠WARNING

⃠ **Do not fly until the proper model is loaded into memory!** Reinsert the memory module, and recall the desired setup using the model select function.

LOW BATTERY ERROR



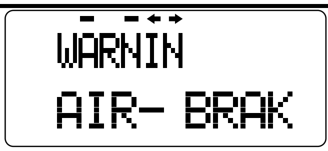
Warning sound: Beep beep beep — (beeping does not stop until transmitter is turned off)

The LOW BATTERY warning is displayed when the transmitter battery voltage drops below 8.5V.

⚠WARNING

❶ **LAND YOUR MODEL AS SOON AS POSSIBLE BEFORE LOSS OF CONTROL DUE TO A DEAD BATTERY.**

MIXER ALERT WARNING



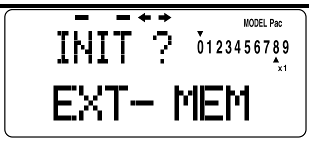
Warning sound: beep beep beep beep beep space (repeated)

The MIXER ALERT warning is displayed to alert you whenever you turn on the transmitter with any of the mixing switches active. This warning will disappear when the offending switch or control is deactivated. Switches for which warnings will be issued at power-up are listed below:

ACRO: Throttle cut, idle-down, snap roll, airbrake
GLID: Butterfly, throttle cut, idle-down
HELI: Throttle cut, inverted, throttle hold, idle-up

(Operation when switch OFF does not stop the mixing warning)
When the warning does not stop even when the mixing switch indicated by the warning display on the screen is turned off, the functions described above probably use the same switch and the OFF direction setting is reversed. In short, one of the mixings described above is not in the OFF state.
In this case, reset the warning display by pressing (+)/(-) keys simultaneously. Then change one of the switch settings of the mixings duplicated at one switch.

MEMORY MODULE INITIALIZE DISPLAY



This warning appears when an [optional] **CAM**Pac memory module is used in the transmitter for the first time. When the Plus (+) DATA INPUT key is pressed, initialization of the module begins, after which the memory module can be used. Once the module is initialized, the display will not appear again.

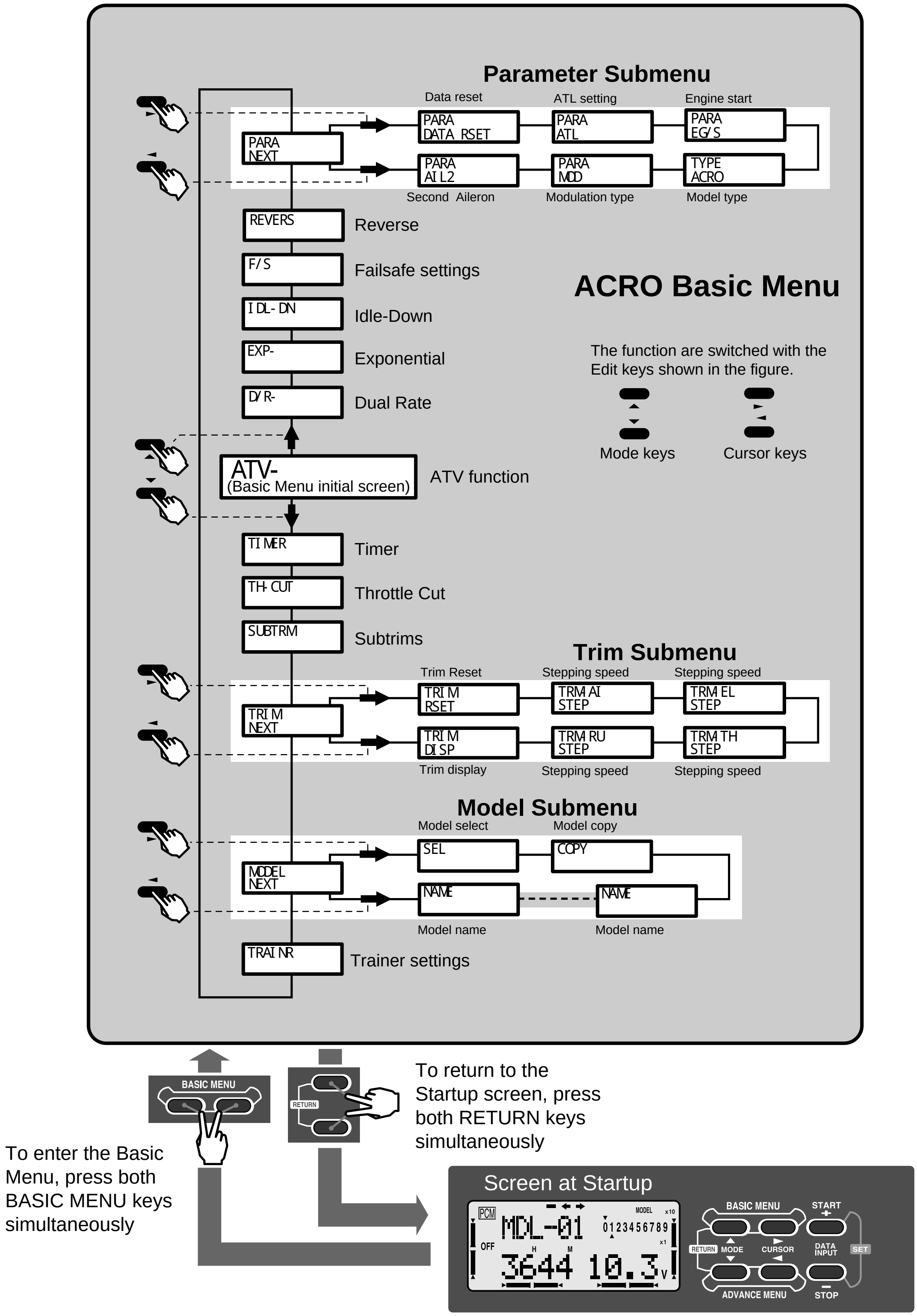
RF MODULE WARNING

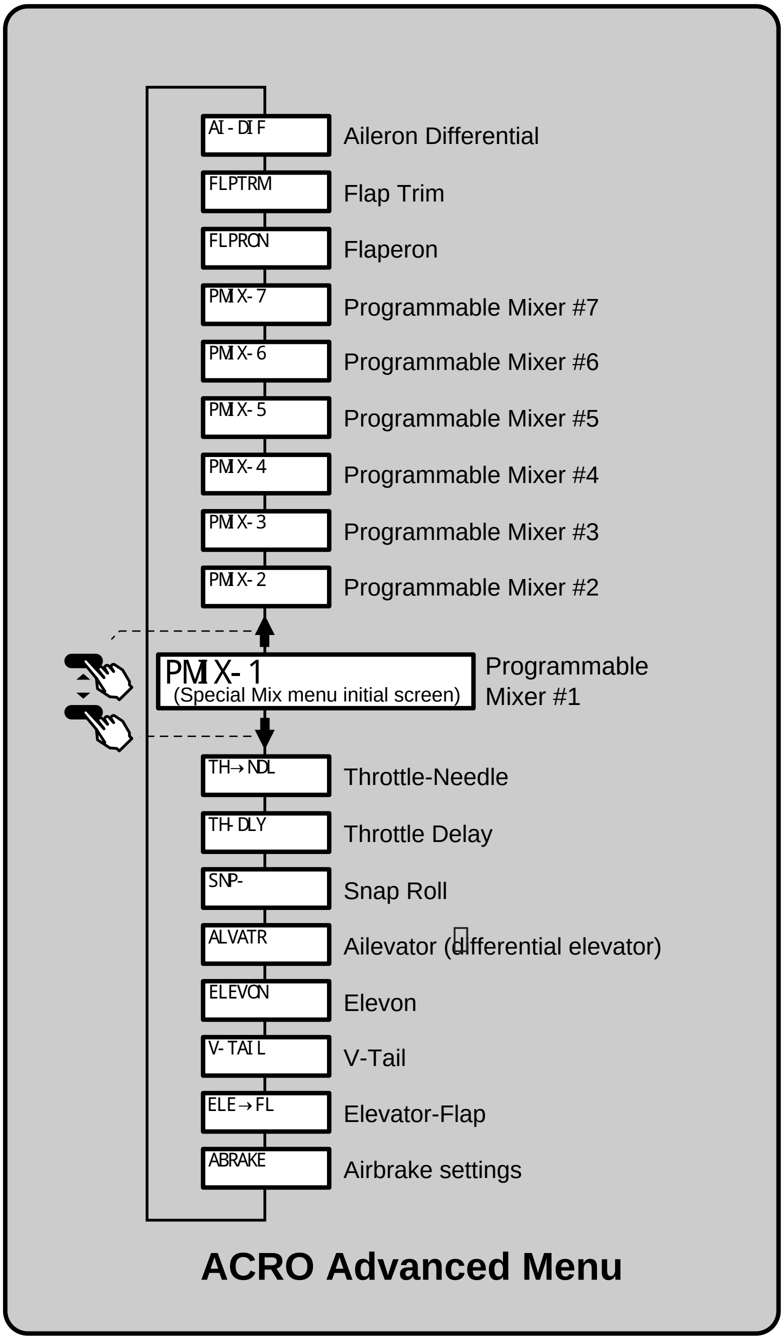
Warning sound: A single beep

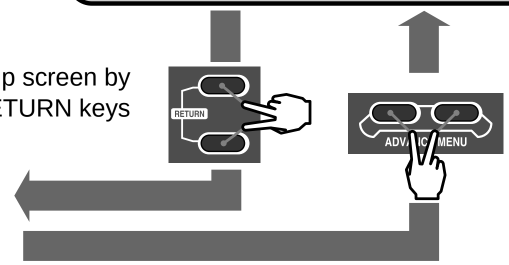
This single beep lets you know that the RF module is not installed in the transmitter.

*Pages 19 to 40 describe the Basic Menu functions for fixed-wing aircraft. **Please note that all of these Basic Menu functions are the same for aircraft (ACRO setup), sailplanes (GLID1FLP/2FLP setups), and helicopter (HELISWH1/SWH2/SWH4/SR-3/SN-3) setups as well.**

MAP OF ACRO AIRCRAFT FUNCTIONS







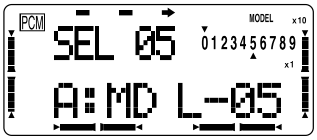
Return to Startup screen by pressing the RETURN keys simultaneously.

Go to the Special Mix Menu by pressing both these keys simultaneously.

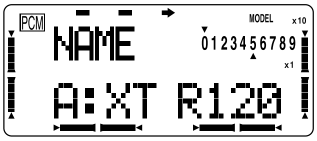
AIRCRAFT SETUP INSTRUCTIONS (GENERAL 120 CLASS STUNT PLANE)

The aircraft setup procedure presented below uses a F3A-class model as an example. You may use a similar procedure to set up your own model, but your setting's numbers and percentages will probably be different.

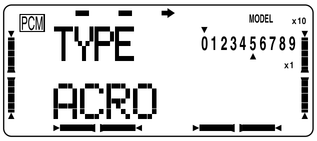
1. Enter the Model Select menu (MODEL) by pressing the two BASIC keys, then pressing one of the MODE keys until "MODEL" appears. Press the right (>) CURSOR key to get to the model select function (SEL) and choose a vacant model memory with the plus (+) and minus (–) keys. Select it by pressing both the DATA INPUT keys at once. The following instructions refer to memory #5.



2. Press the right (>) CURSOR key twice to get to the model name function (NAME, p. 37). Use the CURSOR and DATA INPUT keys to spell out the name that you wish to appear on the screen, one letter at a time.

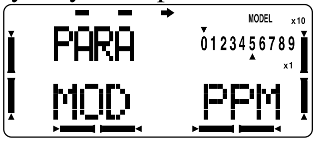


3. Enter the Parameter (PARA, p. 31) menu by pressing the down MODE key twice. Use the left (<) CURSOR key to select the model type (TYP) function and verify that ACRO (aircraft) is selected. (If it isn't, select ACRO by pressing the plus or minus DATA INPUT keys until it appears, then pressing both DATA INPUT keys to select it.)

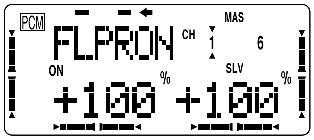


WARNING: selecting a different model type will erase the settings in the model memory. BE SURE you're in the correct model memory before selecting a new model type.

If necessary, go to the modulation (MOD, p. 34) menu to select the proper mode of transmission (F is for FM/PPM transmission, and C is for PCM). This should be set to match your receiver. If you make a change, it won't take effect until you cycle the power off and on again.



4. Next, turn on the Flaperon function (FLPRON, p. 45) in the Advance Menu.
To do this, press both ADVANCE buttons simultaneously, then press the MODE button until "FLPRON" appears in the display. Activate by pressing the plus (+) DATA INPUT key ("ON" should appear flashing in the display.

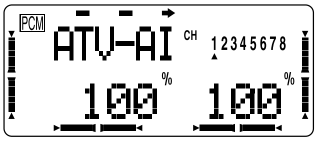


Connect the right aileron servo to receiver CH1 and the left aileron servo to receiver CH6.

Note that you can get differential by adjusting the up and down motion of the two servos in the FLPRON menu. If you don't need the flap effect, you can use the AI-DIFF menu (and plug the servo into the receiver CH7 output.

5. Check that each servo moves the proper direction. The aileron servos should move in opposite directions for aileron stick motion, and the same direction for flap control. If not, use the Reversing function (REVERS, p. 30) in the Basic Menu to set the proper throw directions for each servo. Also check elevator, rudder, throttle, gear, and any other servos.

6. Set the basic travels with the ATV function in the Basic Menu (ATV, p. 26).



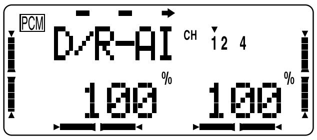
Aileron settings: the left and right aileron travel should be limited to roughly 9/16" (14-15 mm). If necessary, adjust CH1 and CH6 with the ATV function. Choose a location on the servo arm so that the throw is adjusted in the 90-100% range.

Elevator setting: adjust the elevator travel to roughly 9/16" (15 mm) with the ATV function.

Rudder setting: adjust the rudder travel to roughly 45 degrees in the left and right directions with the ATV function.

7. Dual Rate setting (D/R, p. 26)

Adjust the servo motions with the D/R function (in the Basic menu).



Aileron Dual Rates: adjust the aileron travel to roughly 7/16" (11 mm). You may also wish to adjust EXP so that its rate is -20 to -30% to soften things around neutral.

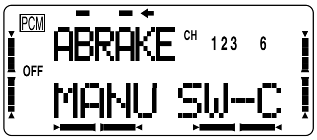
Elevator D/R: adjust the up side to 15/32" (12 mm) and the down side to 17/32" (13 mm). EXP should be -15 to -20%.

Rudder: adjust the left and right travel to 40 to 45 degrees. EXP should be about -20%.

8. Airbrake (ABRAKE, Advance menu, p. 47): an airbrake effect is obtained by raising both ailerons and adding elevator to trim. This high-drag configuration assists landings in small airfields. It is possible to loose some aileron effectiveness so test the airbrake effect at altitude before trying it on a landing approach. You should spend some time fine adjusting the elevator travel so that there is no trim change with the application of airbrakes.

The rates may vary considerably for different models, but for initial settings choose the flap rate to be (+)50-55% for both CH1 and CH6. The ELE rate should be set to -7% - -10%.

We recommend that you select the Manual mode. The default airbrake switch is SW(C), lower position ON. Move SW(C) to the lower position and verify its operation.



9. Snap Roll (SNP, p. 50, Advance Menu)

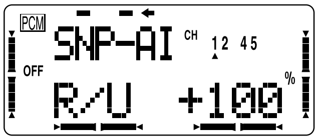
Activate the Snap Roll function by pressing the plus (+) DATA INPUT key.

Set the deflection rate for each switch position. Be sure that the direction of motion of each control is correct.

Aileron: 80 - 100%

Elevator: 90 - 110%

Rudder: 60 - 70%

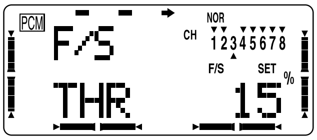


We recommend that you activate the safety switch. This stops your model from snap rolling if the landing gear are not retracted, so you don't accidentally snap while taking off or landing.

If your aircraft snaps poorly, increase the deflection of the elevator and rudder. Note that some models don't snap even when the control deflections are increased. This may caused by too far forward center of gravity, or by the characteristics of the airplane.

10. Failsafe settings: we recommend that you set the Fail Safe function (F/S, p. 29) to move the throttle to idle if interference is experienced.

Note that the failsafe function only operates in the PCM transmission mode.



11. Now take advantage of your system's other great programming capabilities. You may set such functions as Throttle→Needle and Throttle delay to improve engine response, and couple elevator to flaps for tighter corners in the elevator-to-flap mixer (ELE→FL, p. 48). You may want to use programmable mixers to get rid of unwanted tendencies (for example, pitching up during knife-edge flight. Finally, if you have dual elevator servos, you can turn on the Ailevator function (ALVATR, p. 49) to increase roll authority in low-speed maneuvers. The sky's the limit — enjoy!

Pattern Aircraft Flight Trimming Chart

The following chart may be used to systematically set up and trim a model for straight flight and aerobatic maneuvers. Please note that for best results, trimming should be done in near-calm conditions. Before you decide to make a change, be sure to try the test several times before making adjustments. If any changes are made, go back through the previous steps and verify that they are not also affected. If they are, make further adjustments as necessary.

To test for _	Test Procedure	Observations	Adjustments
1. Control neutrals	Fly the model straight and level	Use the transmitter trims for hands-off straight & level flight.	Change electronic subtrims or adjust clevises to center transmitter trims.
2. Control throws	Fly the model and apply full deflection of each control in turn	Check the response of each control • Aileron high-rate: 3 rolls in 4 seconds; low-rate: 3 rolls/6 sec • Elevator high-rate: to give a smooth square corner; low-rate gives approx. 130 ft diameter loop • Rudder: high-rate 30-35° for stall turns; low rate maintains knife-edge	Change ATV (for high rates), and Dual Rate settings (for low rates) to achieve desired responses.
3. Decalage	Power off vertical dive (crosswind if any). Release controls when model vertical (elevator trim must be neutral)	A. Model continues straight down B. Model starts to pull out (nose up)? C. Model starts to tuck in (nose down)?	A. No adjustment B. Reduce incidence C. Increase incidence
4. Center of Gravity	Method 1: Roll into near vertically-banked turn. Method 2: Roll model inverted	A1. Nose drops B1. Tail drops A2. Lots of forward stick (down elevator) required to maintain level flight B2. No forward stick (down elevator) required to maintain level flight, or model climbs	A. Add weight to tail B. Add weight to nose
5. Tip weight (coarse adjustment)	Fly model straight & level upright. Check aileron trim maintains level wings. Roll model inverted, wings level. Release aileron stick.	A. Model does not drop a wing. B. Left wing drops. C. Right wing drops.	A. No adjustment B. Add weight to right tip. C. Add weight to left tip.
6. Side Thrust & Warped Wing	Fly model away from you into any wind. Pull it into a vertical climb, watch for deviations as it slows down.	A. Model continues straight up. B. Model veers left C. Model veers right D. Model rolls right	A. No adjustment B. Add right thrust C. Reduce right thrust D. Put trim tab under left wing tip *
7. Up/Down Thrust	Fly the model on normal path into any wind, parallel to strip, at a distance of around 100 meters from you (elevator trim should be neutral as per Test 3). Pull it into a vertical climb & neutralize elevator	A. Model continues straight up B. Model pitches up (goes toward top of model) C. Model pitches down (goes toward bottom of model)	A. No adjustment B. Add down thrust C. Reduce down thrust
8. Tip weight (fine adjustment)	Method 1: fly the model as per Test 6 and pull into a reasonably small diameter loop (one loop only) Method 2: fly the model as per Test 6 and then push into an outside loop (one only, fairly tight)	A. Model comes out with wings level B. Model comes out right wing low C. Model comes out left wing low	A. No adjustment necessary B. Add weight to left tip C. Add weight to right tip

To test for _	Test Procedure	Observations	Adjustments
9. Aileron differential	Method 1: fly model toward you & pull into a vertical climb before it reaches you. Neutralize controls, then half-roll the model.	A. No heading changes B. Heading change opposite to roll command (i.e. heading veers left after right roll) C. Heading change in direction of roll command	A. Differential settings OK B. Increase differential C. Decrease differential
	Method 2: fly model on normal pass and do three or more rolls	A. Roll axis on model centerline B. Roll axis off to same side of model as roll command (i.e. right roll, roll axis off right wing tip) C. Roll axis off to opposite side of model as roll command	A. Differential settings OK B. Increase differential C. Decrease differential
	Method 3: fly the model straight and level and gently rock the aileron stick back and forth	A. Model flies straight ahead without yawing B. Model yaws away from roll command (i.e. right roll, yaw left) C. Model yaws towards roll command (i.e. right roll, yaw right)	A. Differential settings OK B. Increase differential C. Decrease differential
10. Dihedral	Method 1: Fly the model on normal pass and roll into knife-edge flight; maintain flight with top rudder (do this test in both left & right knife-edge flight) Method 2: Apply rudder in level flight	A. Model has no tendency to roll B. Model rolls in direction of applied rudder C. Model rolls in opposite direction in both tests	A. Dihedral OK B1. Reduce dihedral B2. Use mixer to produce aileron opposing rudder travel (start with 10%) C1. Increase dihedral C2. Mix ailerons with rudder direction 10%
11. Elevator alignment (for models with independent elevator halves)	Fly the model as in Test 6 and pull up into an inside loop. Roll it inverted and repeat the above by pushing it up into an outside loop.	A. No rolling tendency when elevator applied B. Model rolls in same direction in both tests — halves misaligned. C. Model rolls opposite directions in both tests. One elevator half has more throw than the other (model rolls to side with most throw).	A. Elevators in correct alignment B. Either raise one half, or lower the other C. Reduce throw on one side, or increase throw on the other.
12. Pitching in knife-edge flight	Fly the model as in Test 10	A. There is no pitch up or down B. The nose pitches up (the model climbs laterally) C. Nose pitches down (model dives laterally)	A. No adjustment needed B. Alternate cures: 1) move CG aft; 2) increase incidence; 3) droop ailerons; 4) mix down elevator with rudder C. Reverse 'B' above

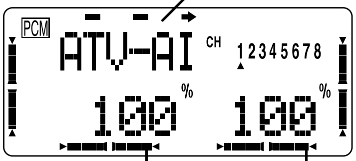
*Trim tab is 3/16" x 3/4" x 4" trailing edge stock, placed just in front of aileron on bottom, pointed end forward.

ATV — Adjustable Travel Volume

The ATV function is used to set the travel of each servo in both directions. At a 100% setting, the throw of the servo is approximately 40° for channels 1 – 4 and approximately 55° for channels 5 – 8. Reducing the percentage settings reduces the total servo throw in that direction. The ATV menus should be set to prevent any servo binding at extreme travel.

Setting ATV on your system:

Channel display



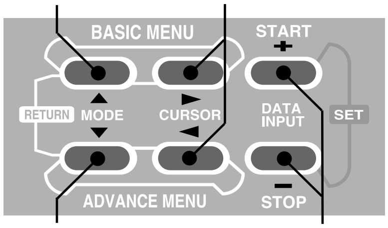
Left/up servo throw
Range: 30 - 140%.

Right/down servo throw
Initial value=100%

The blinking item is what is being set.

To D/R function

These keys are used to select the channel to be set in ATV.



To TIMER function

Data input keys

You can reset to the initial values by pressing the (+) and (-) keys simultaneously.

- Aileron travel setting: push the aileron stick to the right and set the amount of servo throw with the (+)/(-) keys. Move to the left side and
- Elevator adjustment: push the elevator stick down and set the amount of servo throw with the (+)/(-) keys. Repeat with up elevator.
- Adjust the following channels (if used) in a similar fashion (don't forget to set both directions): Throttle, Rudder, Landing gear, Flap, CH7,

Channel display No.	Channel Name	No.	Channel Name
CH1	AI = Aileron	CH5	GE = Landing gear, GY = Gyro, 5 = Channel 5
CH2	EL = Elevator	CH6	FL = Flap, PI = Pitch
CH3	TH = Throttle, AB: Air brake	CH7	Channel 7
CH4	RU = Rudder	CH8	Channel 8

D/R — Dual Rates

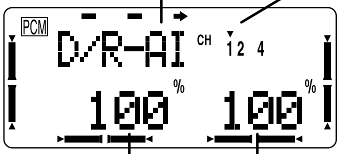
You can use D/R dual rate settings to reduce (or increase) the servo travels by flipping a switch, or they can be engaged by any stick position. The travel reduction or increase for the ailerons, elevator, and rudder may be controlled by this menu.

The default locations of the Dual rate switches (factory settings) are as follows: aileron: Switch D; elevator: Switch A; rudder: Switch B.

You may select your own positions for the switches. You may also program your system so that the dual rates are automatically activated when you move any stick past a certain position.

Channel display: AI = Aileron, EL = Elevator, RU = Rudder

Indicates top or bottom switch position (top shown)



(The value of the stick adjusted by stick operation blinks.)

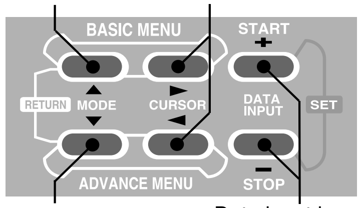
Range: 30 - 140%.
Initial value=100%

1. Aileron adjustment: place the aileron D/R switch and stick in the direction you want to adjust and set the rate with the (+)/(-) keys.
2. Elevator: place the elevator D/R switch and stick in the direction you want to set and adjust with the (+)/(-) keys.
3. Rudder: put the rudder D/R switch and stick in the direction you want to adjust and set with the (+)/(-) keys.

• If you're unhappy with your set value, you may return to the default value by pressing the (+) and (-) keys simultaneously.

To EXP function

These keys are used to move through items 1-6 in this menu.

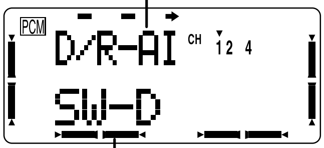


To ATV function

Data input keys

You may wish to select "STK-x" when you want to have the dual rate turn on and off according to the position of the stick. This is effective during stall turns and other maneuvers.
After you have selected the "STK-x" menu, hold the stick at the position you wish to switch dual rates.
Next, store the position by pressing the (+) and (-) keys simultaneously.
This will change the stick position blinking numbers. Check that the dual rate is switching by moving the stick. The little arrow should move from one side to the other.

Channel display

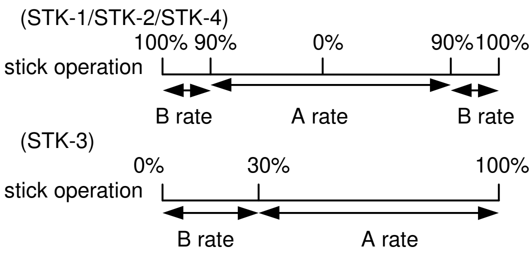


D/R switch display
(SW-A, SW-B, SW-D, SW-E for helicopters, STK-1, STK-2, STK-3, STK-4)

4. Select Aileron D/R switch with the (+)/(-) keys.
5. Select the Elevator D/R switch with the (+)/(-) keys.
6. Select the Rudder D/R switch with the (+)/(-) keys.
You can put all three rates on a single switch.
See notes to right about stick switch setting.

The blinking item is what is being set.

STK-1:Aileron stick
STK-2:Elevator stick
STK-3:Throttle stick
STK-4:Rudder stick



EXP — Exponential Settings

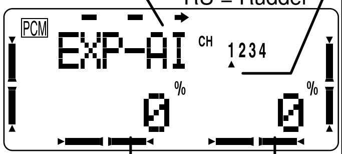
Exponential settings may be used to change the response curve of the servos to make flying more pleasant. You can make the servo movement less or more sensitive around neutral for aileron, elevator, throttle, and rudder. It can also be set for each side of the dual rate switches. Negative exponential (–) makes the servo movement around the stick neutral less sensitive and positive (+) makes the servo movement more sensitive.

For throttle, exponential is applied from the end of travel rather than for neutral like the other controls. When the "–" side is increased, the idle sensitivity decreases and the high throttle sensitivity increases. This is best understood by experimenting with a servo.

Setting Exponential Values

Channel display: AI = Aileron, EL =Elevator, TH = Throttle, RU = Rudder

Indicates top or bottom D/R switch position (bottom shown)



(The value of the stick adjusted by stick operation blinks.)

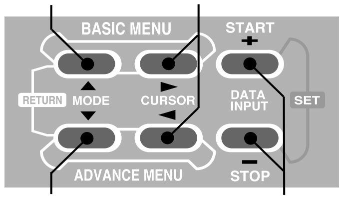
Range: -100% to +100%.
Initial value=0%

1. Aileron EXP adjustment: place the aileron D/R switch and stick in the direction you want to adjust and set the EXP value with the (+)/(-) keys.
2. Elevator: place the EL D/R switch and stick in the desired direction and adjust EXP with the (+)/(-) keys.
3. Repeat above procedure with Throttle and Rudder.

• If you're unhappy with your set value, you may reset to 0% by pressing the (+) and (-) keys simultaneously.

To IDL-DN function

These keys are used to move through the items in this menu.



To D/R function

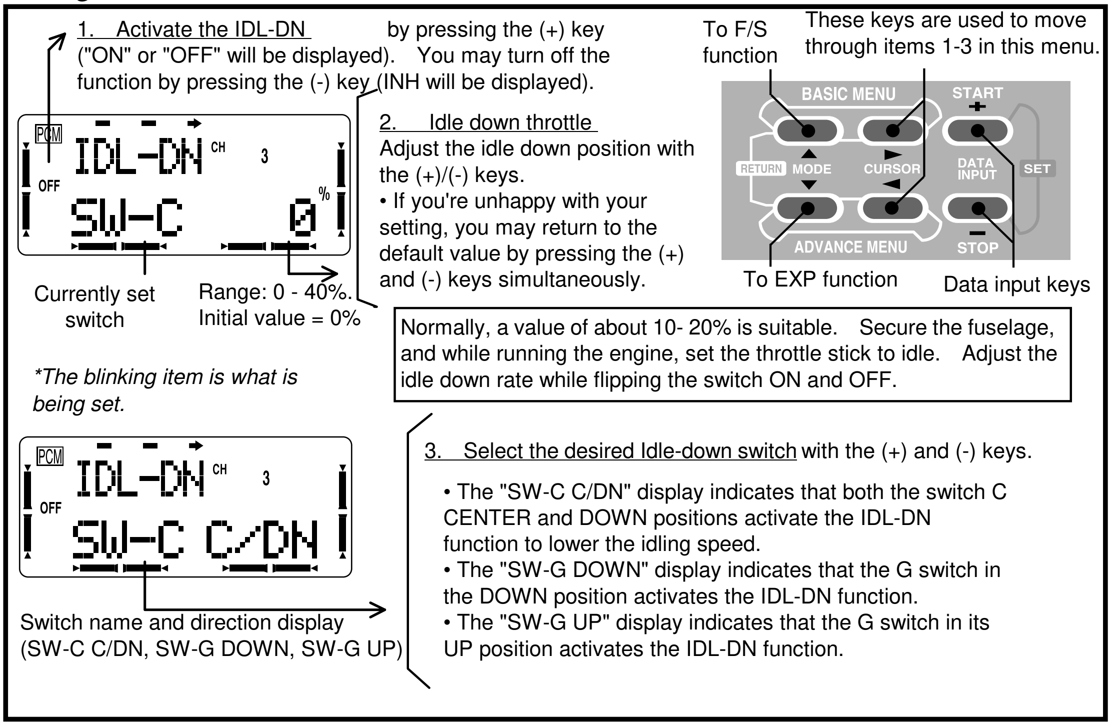
Data input keys

The blinking item is what is being set.

IDL-DN — Idle Down Function

The Idle Down function lowers the engine idling speed when either the airbrake switch (SW C) or landing gear switch (SW G) is activated. This function may be used whenever you wish to raise the engine idling speed to prevent the engine from stalling, and to lower the engine idling speed for landing.

Setting the IDL-DN function



F/S — Fail Safe Function (PCM mode only)

The Fail Safe function is used to prescribe what the PCM receiver will do in the event radio interference is received. In this menu, you may select from one of two options of operation for each channel. The "NORM" (normal) setting holds the servo in its last commanded position, while the "F/S" (Fail Safe) function moves each servo to a predetermined position. The default setting is NORM (normal) for all channels.

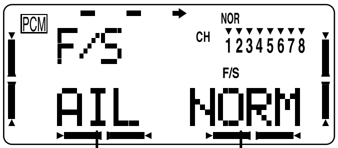
The use of the fail safe function is recommended from the standpoint of safety. You may wish to set the throttle channel so that the engine idles when there's interference. This may give enough time to fly away from and recover from the radio interference. If you choose to specify a failsafe setting, the fail safe data are automatically transmitted once each minute.

Battery Failsafe

Your system provides a second safety function called Battery Failsafe. When the airborne battery voltage drops below approximately 3.8V, the battery fail safe function moves the throttle to a predetermined position.

When the battery failsafe function is activated, your engine will move to idle (if you haven't set a position) or a preset position. You should immediately land. You may temporarily reset the failsafe function by moving the throttle stick to idle, at which time you'll have about 30 seconds of throttle control before the battery function reactivates.

Setting the Failsafe Function



Channel display

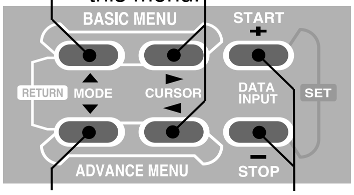
"NORM" or Failsafe position (NORM shown)

**The blinking item is what is being set.*

1. Aileron fail safe setting
Select the Failsafe function for CH1 by pressing the (-) key. Next, hold the aileron stick in the position you want to memorize and set the position by pressing the (+) and (-) keys simultaneously. (If you wish, you may return to the NORM position by pressing the (+) key)
2. Set the following channels in the same manner: CH2 = Elevator, CH3 = Throttle, CH4 = Rudder, CH5 = Landing gear, CH6 = Flap, CH7, CH8

To REVERS function

These keys are used to set failsafe for channels 1-8 in this menu.



To IDL-DN function

Data input keys

The initial setting for all channels is "NORM". When failsafe mode is turned on, the initial position settings are 50% for throttle and 0% for the other channels.

When you choose the failsafe mode, check that your settings are correct by turning off the transmitter power switch and verifying that the servos move to the settings that you chose. Be sure to wait at least one minute after turning on the transmitter and receiver power before turning off the transmitter.

Channel display

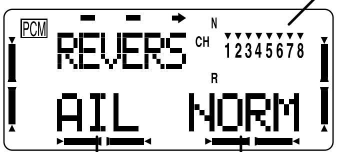
No.	Channel Name	No.	Channel Name
CH1	AI = Aileron	CH5	GE = Landing gear, GY = Gyro, 5 = Channel 5
CH2	EL = Elevator	CH6	FL = Flap, PI = Pitch
CH3	TH = Throttle, AB: Air brake	CH7	Channel 7
CH4	RU = Rudder	CH8	Channel 8

REVERS — Servo Reversing

The servo reverse function may be used when you need to change the direction that a servo responds to a control stick motion. When you use this function, BE SURE THAT YOUR CONTROL IS MOVING THE CORRECT DIRECTION. If you are using Advance Menu functions, set correct travels in the REVERS menu first, before setting up the Advance Menu.

Reversing Servos

Indicates NORM or REVERS throw setting



Channel display

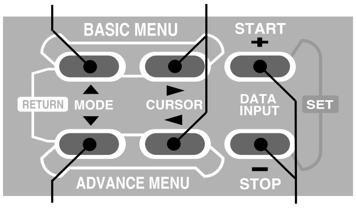
NORM or REV display indicates travel setting

**The blinking item is what is being set.*

1. Aileron setting
Select "NORM" or "REV" with the (+)/(-) keys.
2. Repeat above procedure to reverse channels 2-8 as necessary:
2 = Elevator
3 = Throttle
4 = Rudder
5 = Landing gear
6 = Flap
7 = CH7
8 = CH8

To PARA function

These keys are used to reverse channels 1-8 in this menu as needed.

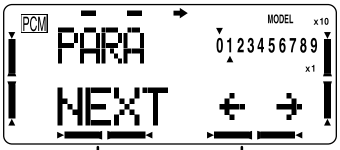


To F/S function

Data input keys

PARA — Parameter Menus

The parameter function includes a number of submenus that are used to input basic model data settings. This is best understood by viewing the menu structure on p. 16.

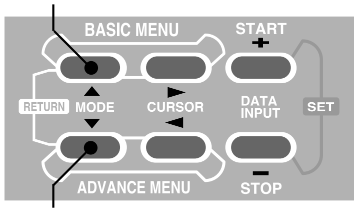


"NEXT" indicates that there is a group of submenus in the PARA function .

Use the (>)/(<) keys to move to the other submenus within the PARA function.

PARA includes five functions:
- Data reset
- ATL
- Engine starter
- Model type
- Modulation.

To TRAINR function

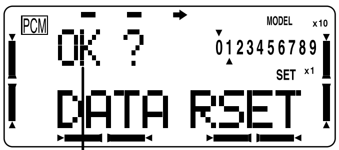


To REVERS function

DATA RSET — Data Reset (PARA Function)

The Date Reset function is used to clear out an existing set of model data. This may be used to input new model settings into a memory used for another model. It resets all data to initial values.

Resetting the memory

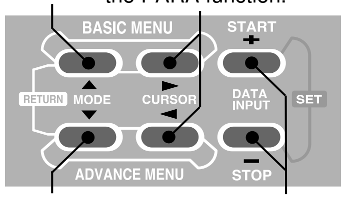


Confirmation message "OK?"

MODEL DATA RESET
Press both the (+) and (-) keys simultaneously. The confirmation message "OK?" is displayed at the top left corner of the screen. When both (+) and (-) are pressed simultaneously again, the reset process is begun. After a beep, beep, beep tone is sounded, a continuous beeeeep tone indicates that the reset is complete.

To TRAINR function

These keys are used to move through submenus in the PARA function.



To REVERS function

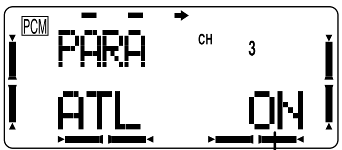
Data input keys

To protect you against inadvertently resetting a model memory, a double setting (double push) system is used. If the (-) key is pressed to halt resetting after the confirmation message is displayed, the display returns to its original screen, and no changes are made.

NOTE: The existing modulation, model type, and trim display method settings are not reset. If the power switch is turned off while a reset is underway, the data may not be reset.

ATL — Adjustable Travel Limit (PARA Function)

The ATL trim function enables the trim lever to function only at the throttle stick idle position and disables trim at high throttle, where it prevents pushrod jamming due to trim changes made at idle.



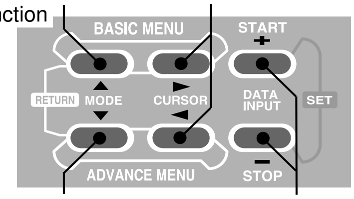
Current setting (ON or OFF displayed). Initial value: ON.

ATL ON/OFF setting

Select ON or OFF with the (+) and (-) keys.

These keys are used to move through submenus in the PARA function.

To TRAINR function



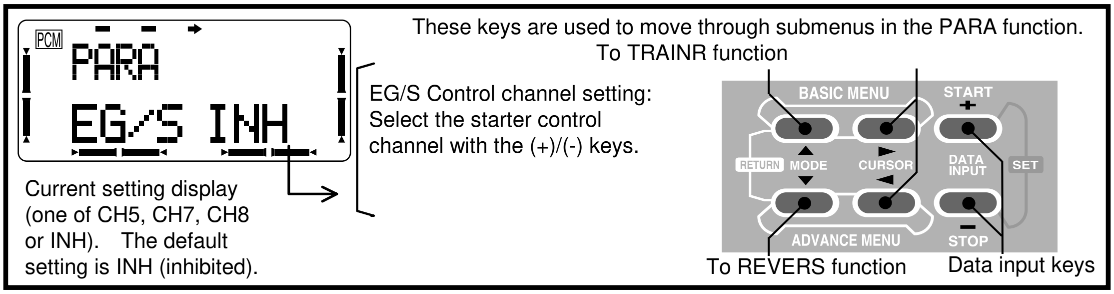
To REVERS function

Data input keys

EG/S — Engine Starter (PARA Function)

The Engine Start function activate a switch which turns the (on-board) engine starter on and off with switch H. The engine starter and snap roll functions cannot be used simultaneously.

SETTING METHOD



TYPE — Model Type (PARA Function)

This function is used to select the type of model to be programmed in the current model memory. You may select from aircraft (ACRO), gliders with one or two flap servos (GLID1FLP, GLID2FLP), and helicopters of five swash types (HELISWH1/SWH2/SWH4/SR-3/SN-3).

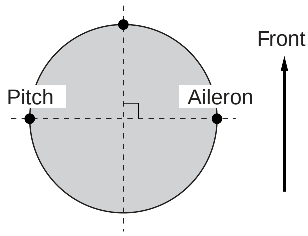
Swashplate Type Setting Procedure

HELISWH1 Type

This type's helicopter has independent aileron and elevator servos linked to the swashplate. Most kits are HELISWH1 type.

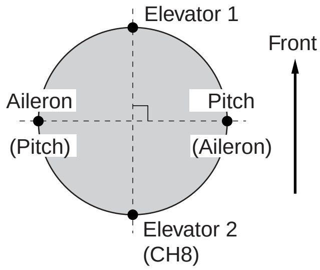
HELI SWH2 Type

Use SWH2 mixing when the pushrods are positioned as shown in the figure. Elevator operates with a mechanical linkage.
With Aileron inputs, the aileron and pitch servos tilt the swashplate left and right;
With Pitch inputs, the aileron and pitch servos raise the swashplate up and down.

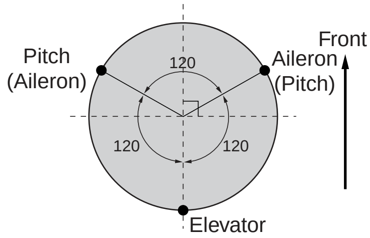


HELI SWH4 Type

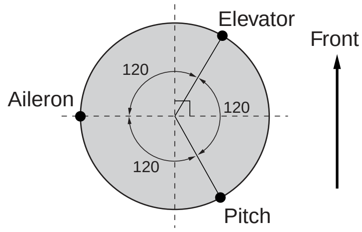
If the servo inputs are located as shown, use SWH4 Mixing.
With Aileron inputs, the aileron and pitch servos tilt the swashplate left and right;
With Elevator inputs, the servos tilt the swashplate fore and aft;
With Pitch inputs, all four servos raise the swashplate up and down.



HELI SR-3 Type
If the servo inputs match the figure, use SR-3 Mixing.
With Aileron inputs, the aileron and pitch servos tilt the swashplate left and right;
With Elevator inputs, the three servos tilt the swashplate fore and aft;
With Pitch inputs, all three servos raise the swashplate up and down.

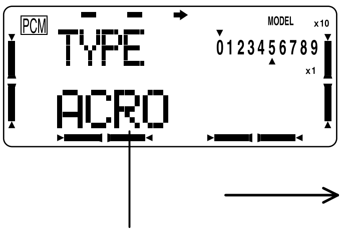


HELI SN-3 Type
Use SN-3 Mixing if the servo inputs match the figure.
With Aileron inputs, the three servos tilt the swashplate left and right;
With Elevator inputs, the elevator and pitch servos tilt the swashplate fore and aft;
With Pitch inputs, all three servos raise the swashplate up and down.



Use the reversing function (REV) as necessary to get the proper aileron, elevator, and pitch operations.

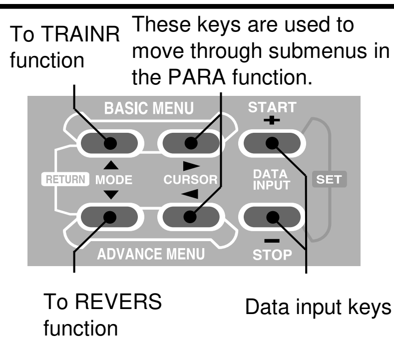
SETTING METHOD



Type display
(ACRO, GLID1FLP, GLID2FLP, HELISWH1,HELISWH2, HELISWH4, HELISR-3, or HELISN-3)

NOTE: If the power switch is turned off while a TYPE change is underway, the data may not be reset.

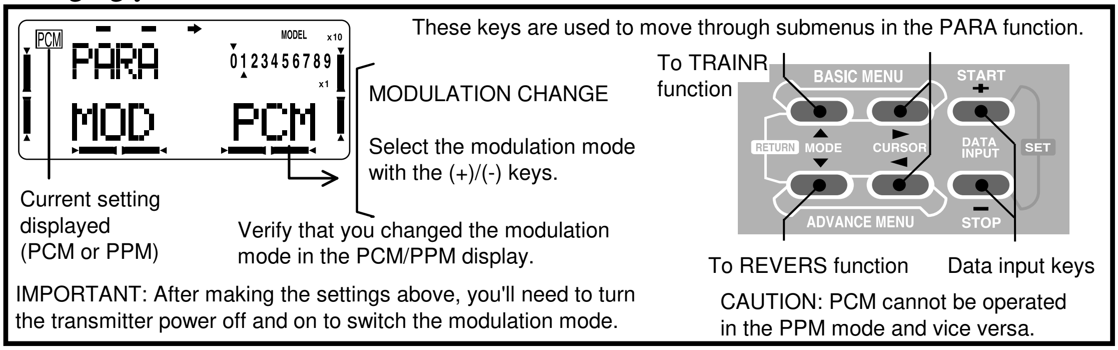
MODEL TYPE CHANGE:
Select Model Type with the (+)/(-) keys – the type name flashes on and off. Next, press the (+)/(-) keys simultaneously. At this point, an "OK?" confirmation message is displayed. If you press the (+)/(-) keys simultaneously again, the model type change is started. A continuous beep indicates completion.
*NOTE: if you change the model type, you'll lose the contents of the memory. To halt model type change after the confirmation message is displayed, press the (-) key. This will returns you to the original screen.



MOD — Modulation Select (PARA Function)

The Modulation menu is used to select the PCM or PPM mode of transmission, to match the receiver being used (PCM = Pulse Code Modulation, and PPM = Pulse Position Modulation). When using an FM receiver, you should select the PPM mode. Note that you have to turn your transmitter on and off before a modulation change becomes effective.

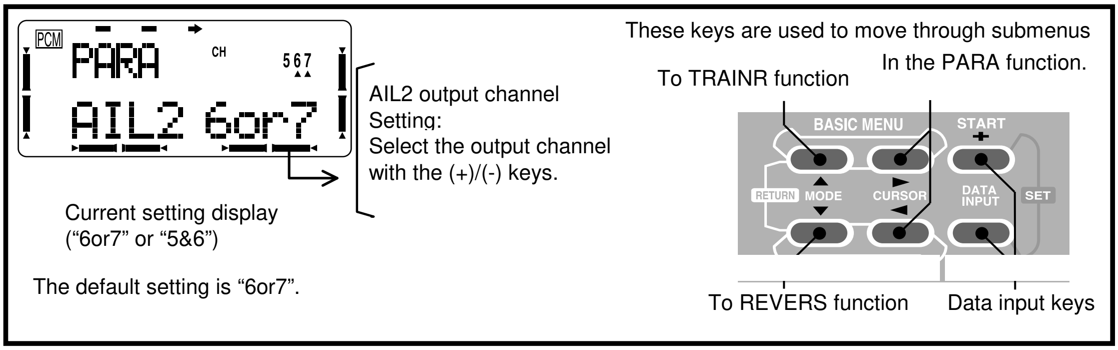
Changing your transmitter's modulation



AIL2–Second Aileron (PARA Function)

AIL2 outputs the second aileron to channel 5. (In the "ACRO" and "GLID1FLP" modes.) A mode that outputs second aileron to channel 6 or 7 ("6or7"), the same as normal, or a mode that outputs second aileron to channels 5 and 6 ("5&6") can be selected. When using the flaperon or aileron differential function with a 5-channel receiver, select the "5&6" mode.

SETTING METHOD



TRAINR — Trainer Functions

The Trainer function is used to train novice pilots using an optional trainer cord connecting two transmitters. The instructor may choose that all channels be controlled by the student, or that certain designated channels be operated by the student and the remainder by the instructor. Pulling on Switch F allows the student to control the selected channels on the model. You may use your 8UA transmitter with any transmitter of the SKYSPORT, Super 7, or 1024Z series of transmitters. Simply plug the optional trainer cord (sold separately) into the trainer connection on each transmitter. Note that when the trainer function is active, the snap roll function is automatically deactivated.

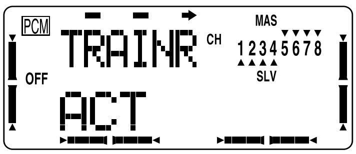
Trainer function operation modes:
"FUNC": When the trainer switch is ON, the channel set to this mode can be controlled by the student by using the mixing set at the instructor's transmitter.
"OFF": The channel set to this mode cannot be controlled by the student even when the trainer switch is ON. The set channel can be controlled by the instructor only.
"NORM": When the trainer switch is ON, the channel set to this mode can be controlled by the student. The set channel is controlled according to the contents set at the student's transmitter.

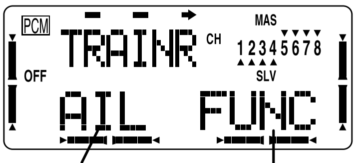
Examples:
When the stick channel is set to the "FUNC" mode, helicopter stick operation practice is possible even with a 4VF transmitter (4 channels for aircraft).
The practice channel matched to the student level can be set to the "NORM" mode and the other channels can be set to the "OFF" mode and controlled by the instructor.

A few important precautions:
- NEVER turn on the student transmitter power. Collapse the student’s antenna.
- ALWAYS set the student transmitter modulation mode to PPM.
- BE SURE that the student and instructor transmitters have identical trim and control motions. Verify by switching back and forth while moving the control sticks.
- FULLY extend the instructor’s antenna.
- Always remove the student transmitter RF module (if it is a module-type transmitter).

Setting up Trainer mode

1. ACTivate the TRAINR function by pressing the (+) key. (INH the function with the (-) key.)





Channel display

Current setting display (FUNC, OFF, NORM)

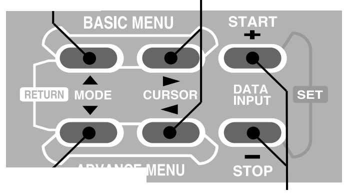
This menu appears when turning individual channels on and off

2. Aileron setting
Select "FUNC", "OFF", or “NORM” with the (+)/(-) keys.

3. Elevator - Channel 8 are set similarly.

These keys are used to move through channels 1-8 in this menu.

To MODEL function

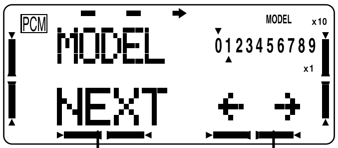


To PARA function

Data input keys

MODEL — Model Functions

The Model function includes a number of submenus that are used to manage the model memory. This may be better understood by viewing the menu structure on p. 20.



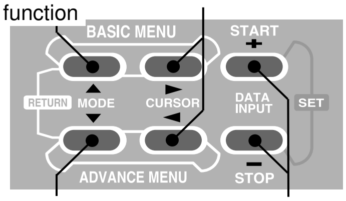
"NEXT" indicates that there is a group of submenus in the MODEL function .

These keys are used to move through submenus in the MODEL function.

To TRIM function

Call the function in the MODEL submenu with the (>)/(<) keys.

MODEL functions
• Model Select
• Model Copy
• Model Name



To TRAINR function

Data input keys

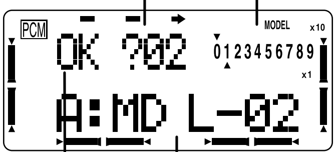
SEL — Model Select (Model Function Submenu)

The Model Select function allows you to choose from all of the different sets of model data stored in the transmitter (eight models can be stored within the transmitter, and data for eight additional models may be selected from the optional DP-16K CAMPac memory module, which is sold separately). The SEL function is used to select the model memory set to be loaded. If you select a model from the memory module, the letters "PAC" on the display will flash on and off.

Choosing another model memory to load

Model no. to be loaded

Model No.



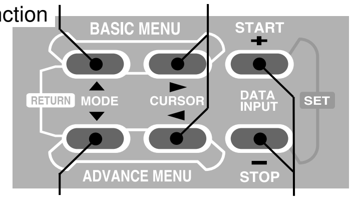
Confirmation message "OK?"

Name of model to be loaded is "MDL-02."

These keys are used to move through submenus in the MODEL function.

To TRIM function

MODEL CHANGE
Select the model with the (+) and (-) keys. When you have the right number, press the (+) and (-) keys simultaneously. The confirmation message "OK?" is displayed.



To TRAINR function

Data input keys

When the (+) and (-) keys are simultaneously pressed again, the new model memory is selected. At the same time, the model number display changes. you don't wish to change models, press the (-) key to halt model change after the confirmation message. The display then returns to its original

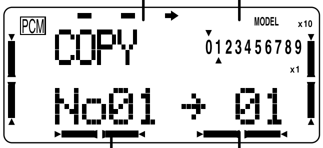
COPY — Copy Menu (Model Function Submenu)

The COPY function is used to copy the current model data into another model memory, which may either be inside the transmitter, or in the optional DP-16K CAMPac memory module. This function is handy to use to start a new model that's similar to one you have already programmed, and is also handy for copying the current model data into another model memory as a backup. If the data are stored in the memory module, you can easily transfer the settings to friend's transmitter, which will save a lot of programming time.

Copying from one model memory to another

Model no. to be loaded

Model No.

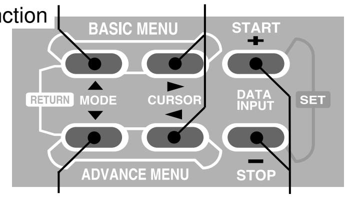


Source to copy FROM (current model settings in memory #1)

Copy destination (currently memory 01. Press the (+) or (–) keys to change the number displayed. "SET" will flash.)

These keys are used to move through submenus in the MODEL function.

To TRIM function



To TRAINR function

Data input keys

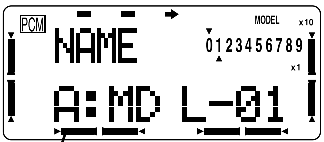
MODEL DATA COPY
Select the destination model number with the (+) and (-) keys. When you have the right number, press the (+) and (-) keys simultaneously. The confirmation message "OK?" is displayed.
When the (+) and (-) keys are simultaneously pressed again, copying begins. A continuous tone sounds when the copying is completed. (If you don't wish to copy models, press the (-) key to halt copying after the confirmation message. The display then returns to its
CAUTION: if power is turned off before the end of the continuous tone, data will not be copied.

NAME — Model Name (MODEL Function)

The NAME function may be used to assign the current model memory a name. The model name makes it a lot less confusing since you can easily tell your model memories apart. The name of the model that you assign is displayed at the top left corner of the startup screen. The name can be up to six characters long, and each of the characters may be alphanumeric, space, or symbols (see list below).

The default names assigned by the factory are in the "A:MDL-01" (Model 01) form. Note that the model type is displayed as the single character that appears before the model name on the screen. The code used is A = ACRO (aircraft), H = HELI (helicopter), G = GLID (glider)

Model Naming Instructions

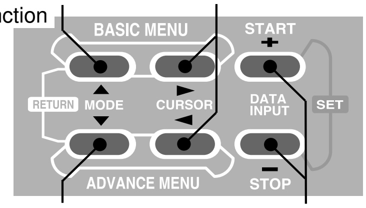


Model name
(6 characters or less;
current name = "MDL-01")
Indicates ACRO model type

Allowed Characters
ABCDEFGHIJKLMNOPQRSTUVWXYZ
äöü(space)!"#$%&'()
*+,-./0123456789

These keys are used to move through submenus in the MODEL function.

To TRIM function



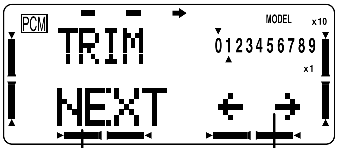
To TRAINR function

Data input keys

MODEL NAME ENTRY
Select the desired character by pressing the (+) and (-) keys. When you have the right one, press the (>) key to move to the next character.
Again hold down the (+) or (-) key until the desired character appears at the next slot.
Complete the model name by repeating this sequence to the end of your name or six characters, whichever is less.

TRIM — Trim Settings

The FP-8UAP has digital trims which are different from conventional mechanical trim sliders. Each trim control is actually a two-direction switch. Each time the trim switch is pressed, the trim is changed a selected amount. When you hold the trim lever, the trim speed increases. The current trim position is graphically displayed on the screen. The Trim function includes a number of submenus that are used to manage the trim options. This may be better understood by viewing the menu structure on p. 20.



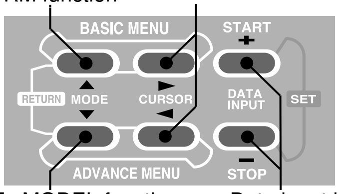
"NEXT" indicates that there is a group of submenus in the TRIM function .

These keys are used to move through submenus in the TRIM function.

To SUBTRM function

Select the desired function in the TRIM submenu with the (>) and (<) CURSOR keys.

TRIM functions:
- Trim Reset
- Trim Step Rate
- Trim Reverse Display



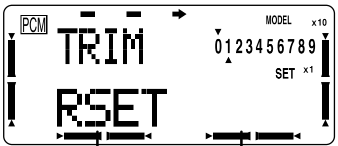
To MODEL function

Data input keys

RSET — Trim Reset (TRIM Function Submenu)

The Trim Reset function electronically centers the trims to their default values. Note that the subtrim settings and the trim step rate are not reset by this command.

Resetting trims

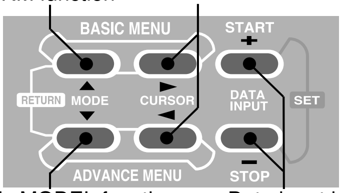


If any trim is not centered, the "RSET" flashes.

These keys are used to move through submenus in the TRIM function.

To SUBTRM function

To Reset Trim, press the (+) and (-) keys simultaneously. When you do, "RSET" stops flashing.



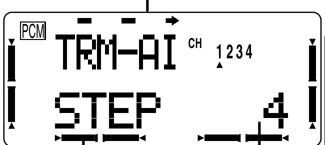
To MODEL function

Data input keys

STEP — Trim Step (TRIM Function Submenu)

The Trim Step menu may be used to change the rate at which the trim moves when the trim lever is activated. It may be set to a value ranging from 1 to 40 units, depending on the characteristics of the aircraft. Most ordinary aircraft do well with their trim step rate set to about 2 to 10 units.

Channel being set

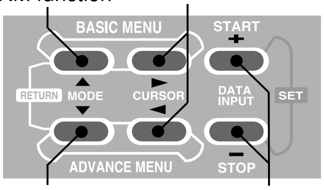


Step rate
Range: 1 - 40
Factory setting: 4

These keys are used to move through submenus in the TRIM function.

To SUBTRM function

SETTING TRIM STEP RATE
Use the (+) and (-) keys to set the aileron trim step rate. When done, select elevator trim with the (>) key. Again use the (+) and (-) keys to set the elevator trim step rate



To MODEL function

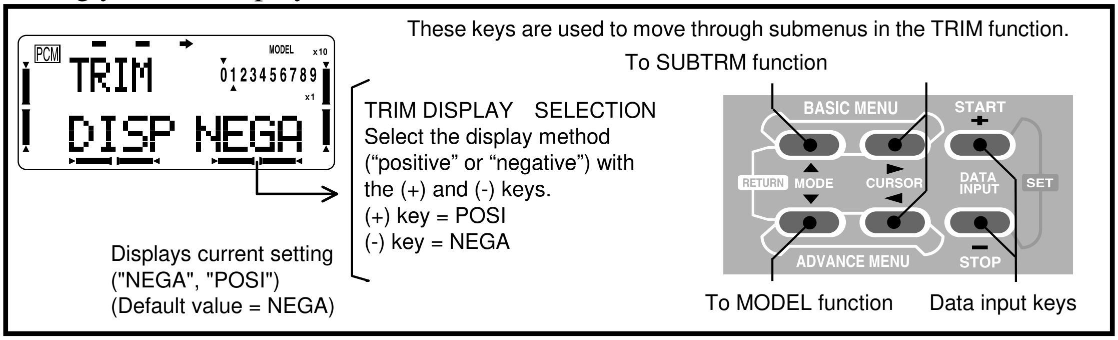
Data input keys

You can set the throttle and rudder trims in a similar fashion. If you're unhappy with your settings, you may return to the default value by pressing the (+) and (-) keys simultaneously.

DISP — Trim Reverse Display (TRIM Function Submenu)

The DISP function swaps the black and white displays in the graphic trim position display shown on the screen. We suggest you try both settings and see which one is better for you. (The reverse display is not affected by the Data Reset command.)

Setting you trim displays

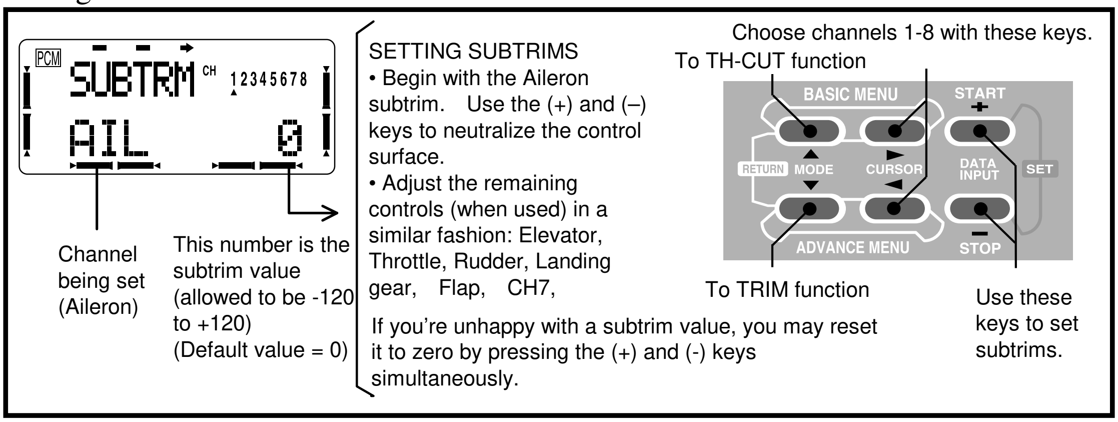


SUBTRM — Subtrim Settings

The Subtrim menu is used to make small changes or corrections in the neutral position of each servo. We recommend that you center the digital trims before making subtrim changes, and that you try to keep all of the subtrim values of as small as possible. Otherwise, when the subtrims are large values, the servo's range of travel is restricted.

The recommended procedure is as follows: zero out both the trims (TRIM RSET menu) and the subtrims (this menu). Next, mount the servo arms and set up your linkages so that the neutral position of the control surface is as close to where it should be as possible. Finally, use a small amount of subtrim to make fine corrections.

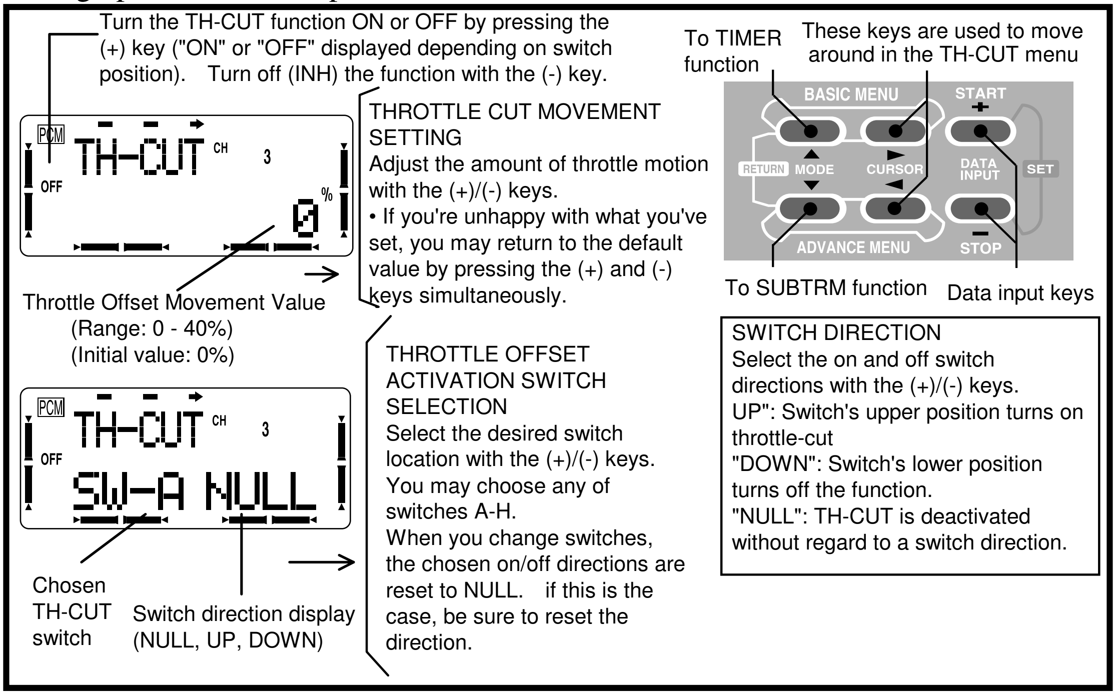
Setting Subtrims



TH-CUT — Throttle Cut Function

The Throttle Cut function provides you an easy way to stop the engine by simply flipping a switch with the throttle stick at idle, which commands the throttle servo to move a prescribed amount. The amount of movement is largest at idle and disappears at high throttle. Both the switch's location and activation direction may be chosen by the owner.

Setting up Throttle Cut Operations



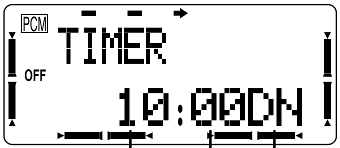
TIMER — Timer (Stopwatch Function)

The Timer Menu controls an electronic clock that may be used to keep track of time remaining in a competition task window, flying time on a full tank of fuel, amount of time on a battery, etc. The timer's settings may be set independently for each model, and is automatically updated each time the model is changed. The timer can be set to count up to 59 minutes 59 seconds.

You may choose either a count-down or count-up timer mode. When the timer switch is turned on, the down timer starts from the chosen time and displays the amount of time remaining. If the timer exceeds the time setting, it continues to count and displays a minus sign (–) in front of the numbers. The count up timer starts at 0 and displays the elapsed time. In either timer mode, the timer beeps once each minute. During the last ten seconds, there's a beep each second.

The timer screen can be easily displayed or cleared by pressing the CURSOR key at the startup screen when the transmitter power is turned on. The timer is started by the plus (+) key and stopped by the (–) key. When the DATA INPUT "+" and "–" keys are pressed simultaneously, the timer is reset. If the DATA INPUT keys (+ and –) are pressed simultaneously after the timer is started, the timer is reset, but continues to count up or down. The starting and stopping switches may be chosen among any of Switch A — Switch H, activated by the throttle stick (STK-3) or activated by the power switch (POWER SW). The ON and OFF directions can also be freely selected except the power switch. Using the throttle stick is particularly convenient if you're keeping track of fuel remaining, or for an electric, how much battery is left. Regardless of which switch is chosen, the timer can also be turned on and off with the DATA INPUT keys.

Using the 8UA Timer Function



Timer's minute setting

seconds setting

Timer Type display (UP or DN)

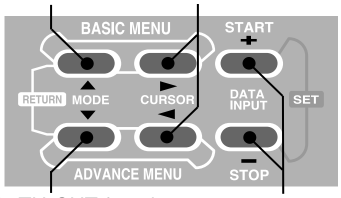
Timer Minutes Setting
Set the minute display with the (+)/(-) keys.

Timer Seconds Setting
Press the right (>) key, then use the (+)/(-) keys to set the seconds.

Count Up or Down Selection
Again press the right (>) key, then select the type of timer with the (+)/(-) keys.

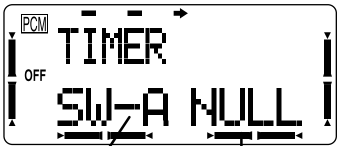
To ATV function

These keys are used to move around in the TIMER menu



To TH-CUT function

Data input keys



Switch display (SW-A-H and STK3)

Switch direction display (NULL, UP, CNTR, DOWN)

Timer Switch Selection
Select the desired switch location with the (+)/(-) keys. You may choose any of switches A-H, throttle stick(STK-3), or power switch (POWER SW). When you change switches, the chosen on/off directions are reset to NULL. If this is the case, be sure to choose the directions you want.

Switch Direction Selection
Select the on and off switch directions with the (+)/(-) keys.
UP = Switch's upper position turns on the fnction.
DOWN = Switch's lower position turns on the function.
CNTR = Switch's center position (if any) turns on the function
NULL = Switch not used

If you want motion of the throttle stick to activate the timer (STK-3), you'll need to set the ON-OFF stick position and direction for the stick to turn the timer on and off as follows:

1. First, position the throttle stick so that it's in the location where you want to have the timer switch on and off.
2. Next, press both of the (+)/(-) keys simultaneously to make the transmitter memorize the location.
3. Now you'll choose which side of the set point is on, and which side is off. If you want to turn on the timer at the hight throttle stick position, press the (+) key. If you want to turn on the timer at the low throttle stick position, press the (-) key. After you choose the direction, an up or down arrow is displayed at the top (high) or bottom (low) side of "3" at the top right corner of the display, to confirm the switching direction you have chosen. Move the throttle stick back and forth to confirm that the timer starts and stops as desired.

AIRCRAFT (ACRO) ADVANCE MENU FUNCTIONS

The next section of this manual, pages 43 to 51, describe how to use the functions in the ADVANCE MENU with the aircraft (ACRO) model mode. Some of these functions are also used with glider model modes (GLID1FLP, GLID2FLP).

PMIX-1-7 — Programmable Mixers 1-7

Your 8UA system contains seven separate programmable mixers with unique mixing capabilities. You may use mixing to correct bad tendencies of the aircraft during aerobatics, and to make operation more pleasant. Besides mixing between arbitrary channels, the mixers may be linked with the Advance menus in the 8UA. They can also be set to provide fixed offsets. You may select which switch activates your mixers. The method to be used to program mixers is given for Mixer #1, but Mixer #2-5 may be programmed in an identical fashion. Mixer #6-7's mixing rate can be set with a 5-point curve.

The Link function is used to 'link' programmable mixers with other mixing menus. For example, you might wish to use a PMIX to provide rudder→aileron mixing for better knife-edge flight in a model with flaperons using the Flaperon (FLPRON) mixing function. With two aileron servos plugged into receiver channels CH1 and CH6, mixing only appears at the CH1 aileron when rudder is commanded. When the Link function is turned on, this situation is easily corrected, and mixing is applied to both CH1 and CH6.

The trim selection option allows you to choose whether the trim from the master also affects the slave channel. The offset function lets you offset the mixing curve for the slave channel relative to the master channel, a feature which is handy for mixing with non-centering functions such as throttle or knobs as the master channel.

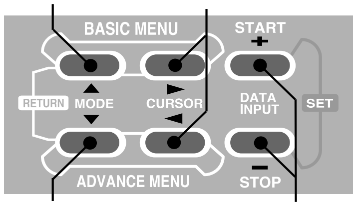
Switch selection: you may choose an ON/OFF switch for each of the programmable mixers from the eight switches A - H. In addition, the throttle stick (CH3) may be used to turn the programmable mixers ON and OFF.

Using the Programmable mixers

1. Activate the Programmable Mixer
Press the (+) key to activate the PMIX-1 function ("ON" or "OFF" will be displayed, depending on the ON/OFF switch's position). Use the (-) key to INHibit the mixer.)

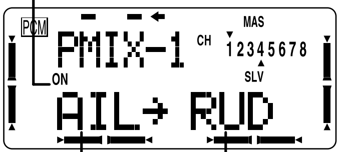
To PMIX-2 function

These keys are used to move around in the PMIX-1 menu



To TH-NDL function

Data input keys



Master channel (control that applies mixing)

Slave channel (channel which *receives* mixing)

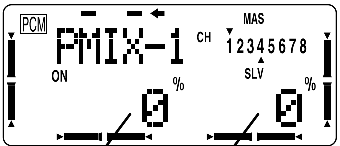
2. Master channel setting
Select the master channel with the (+)/(-) keys (the master is the one that *sends* the mixing).
If you select "OFS" for the master channel, the numerical mixing rate setting affects the slave side only, providing a fixed offset.

3. Slave channel setting
Select the slave channel (the one that *receives* the mixing) with the (+)/(-) keys.

Default Mixing Setup
When you begin programming a model, the mixers are set up as follows (of course, you may change these default settings):

PMIX-1: AIL>RUD
PMIX-2: ELE>FLP
PMIX-3: FLP>ELE
PMIX-4: THR>RUD
PMIX-5: RUD>AIL
PMIX-6: AIL>ELE
PMIX-7: ELE>THR

(Mixer# 1-5 only)



Mixing rate (left or up)

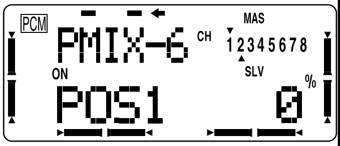
Mixing rate (right or down)

Range: -100 to +100%
(Initial value: 0%)

4. Mixing rate setting
Move the master control in the direction you want to adjust, and one of the mixing rate displays will flash. Set the mixing amount with the (+)/(-) keys. Note that you can set the mixing rate individually for each side of the mix (left/right or up/down).
You may reset the rate to zero by pressing the (+)/(-) keys simultaneously. If the amount of mixing is set to 0%, no mixing will occur.

(See following page for input 5-point curve values. (Mixer#6-7)

(Continued from preceding page)



Set rate

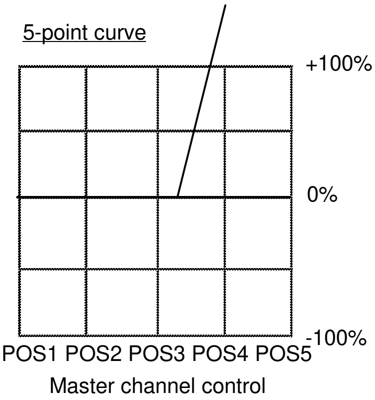
Range:-100 to +100%
(Initial value: 0%)

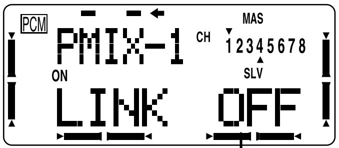
(Mixer# 6-7 only)

4. Input 5-point curve values

Select the curve position “POS1” with the CURSOR keys and set the rate with the (+)/(-) keys.

-If you’re unhappy with what you’ve set, you may return to the default value by presing the (+) and (-) keys simultaneously.

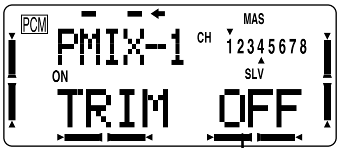




Link function ON/OFF indicator

5. Link function setting

Turn the Link function ON or OFF with the (+)/(-) keys. When the Link function is ON, ">" is displayed after the slave channel on the screen.

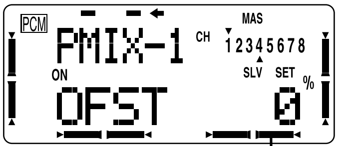


Trim ON/OFF indicator

(Mixer# 1-5 only)

6. Trim setting

This couples the master channel's trim with the slave function. Select ON/OFF with the (+)/(-) keys.

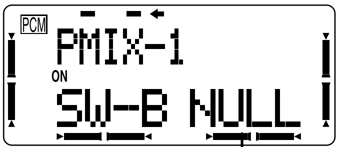


Displays offset position

(Mixer# 1-5 only)

7. Offsetting neutral mix point

If you want the mix to occur somewhere besides master neutral, hold the master channel control in the desired position, and store the offset position by pressing the (+)/(-) keys simultaneously.



Current on/off switch

Displays ON/OFF switch direction

8. Switch selection

Choose the desired mixer ON/OFF switch with the (+)/(-) keys.

9. ON/OFF Direction

Set the ON/OFF directions with the (+)/(-) keys.

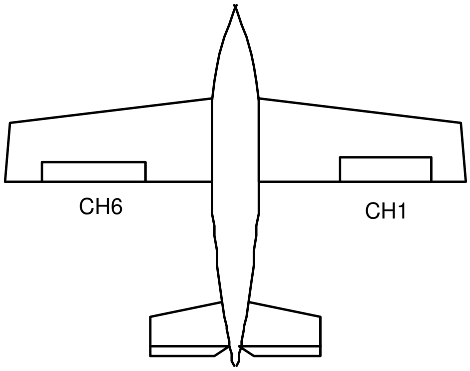
NULL = Normal operation regardless of switch setting
UP = Switch upper or rear position turns on the function
CNTR = Center position of 3-position switch turns on the function
DOWN = Switch lower or forward position turns on the function

UP/C = Uper and center position of 3-position switch turn on the function.

C/DN = Center and lower position of 3-position switch turn on the function.

• If you select "STK-3" to turn mixer on and off, you’ll need to set the switching position and direction. To do so, first position the throttle stick where you want switching to occur. Next, enter the stick position into memory by pressing the (+)/(-) keys simultaneously. (a percentage will be displayed on the screen.
If you want mixing turned on at the high throttle side of the set position, press the (+) key. If you want mixing on at the low throttle side, press the (-) key. An arrow is displayed above or below the small "3" at the right top corner of the screen to verify proper switching direction.
When you think you're done, move the throttle stick and check if programmable mixing switches on and off in accordance with your settings.

FLPRON — Flaperon Mixing

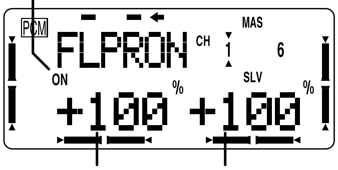


The Flaperon mixing function uses two servos to individually control two ailerons, combining the aileron function with the flap function. For a flap effect, the ailerons can be raised and lowered simultaneously. Of course, aileron function, where the two controls move in different directions, is also performed. The up and down travel of the left and right ailerons can be adjusted independently, so you can also get a differential effect. Left and right flap travel can be adjusted individually. You can combine the Flaperon function with the airbrake function, to get steep descents without building up airspeed, which is very convenient for small or narrow fields. To take advantage of the flaperon mixing function, you'll need to connect the right aileron servo to CH1 (AIL) and the left aileron servo to CH6 (FLP).

NOTE: Only one of the three functions flaperon, aileron differential, or elevon can be used at a time. All three functions cannot be activated simultaneously. The last function activated overrides the others.

Setting up the Flaperon function

Turn the FLPRON function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.



Amount of aileron travel for left aileron stick

Amount of aileron travel for right stick

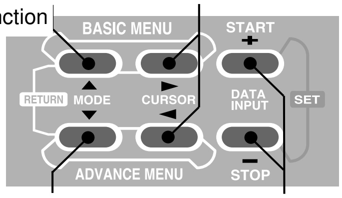
Range: -120 to +120%)
(Initial setting +100%)

2. Right aileron adjustment
Move the aileron stick in the direction you want to adjust and set the value with the (+)/(-) keys.

3. Left aileron adjustment
Again move the aileron stick in the direction you want to adjust and set the value as before.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

To FLPTRM function

These keys are used to move around in the FLPRON menu

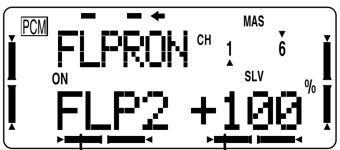


To MIX-7 function

Data input keys

When you move the control below	CH1 servo functions as	CH6 servo functions as
Aileron stick	Right aileron	Left aileron
Flap control knob	Flap 2	Flap 1

You must have a Flap trim that is not zero to adjust flap travels.



Flap being adjusted (FLP2 or FLP1)

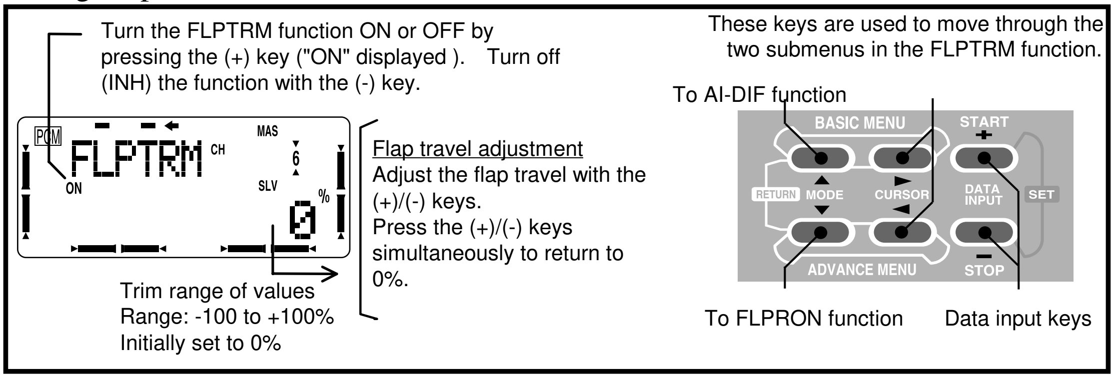
Servo travel rate
(Range: -120 to +120%)
(Initial setting +100%)

4. Flap 2 adjustment
Adjust flap 2 with the (+)/(-) keys.
5. Flap 1 adjustment
Adjust flap 1 with the (+)/(-) keys.
Note: use the FLP1 and FLP2 settings to match flap travels on both sides. Then use FLPTRM to set the total throw you want.

FLAPTRM — Flap Trim (Camber)

The Flap Trim function is used to specify the amount of flap travel (or camber, if on a sailplane setup). If flaperon (FLPRON) mixing is active, FLAPTRM is automatically turned on. You should match the travel of both flaps before using this function to set the total amount of flap throw. The amount depends on the model, but for sailplanes a small amount (less than 10%) is preferred, since too much camber produces excessive drag. Don't use more than about 1/16" travel up or down (some airfoils, such as the RG-15, should be flown with NO reflex).

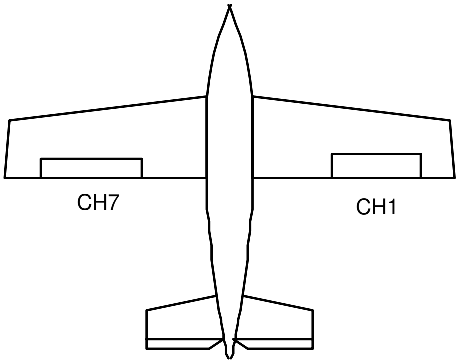
Setting Flap Trim function



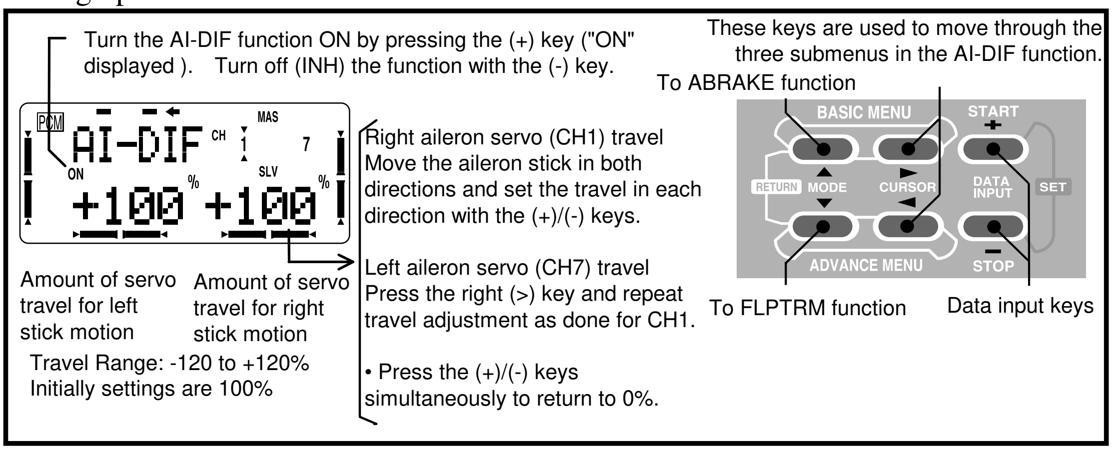
AI-DIF — Aileron Differential

The differential function allows you to program the amount of 'up' aileron travel independently from the amount of down travel when you have two servos plugged into the receiver (right aileron = CH1/AIL and left aileron = CH7).

NOTE: Only one of the three functions aileron differential, flaperon, or elevon can be used at a time. The last function activated overrides the others. If you need both flaperons and differential, activate the FLPRON function and in its menu set different up and down aileron travels to provide differential.



Setting up aileron differential in AI-DIF



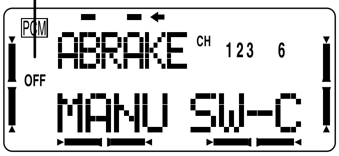
ABRAKE — Airbrake Function

The ABRAKE function simultaneously drops the flaps and moves the elevator, and may be used to make steep descents or limit airspeed in dives. Airbrakes can be activated in a proportional manner by moving the throttle stick, or you may choose to move all the controls to the defined positions by flipping switch C. If you choose to operate it by throttle stick motion, you'll need to set the stick position for it to be activated. You can suppress sudden changes in your model's attitude when airbrake is activated by setting the delay ("DLY") item, which slows down the elevator response.

When the FLPRON function has been selected, the travel of the ailerons when the airbrake is operated can be independently adjusted for the servos plugged into CH1 and CH6. When AI-DIFF function is used, the travel for CH1 and CH7 may be adjusted. Normally both ailerons are raised in the airbrake mode, and the elevator motion is selected to maintain trim when the ailerons rise.

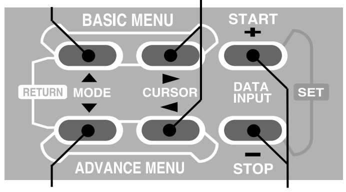
Setting up Airbrake function

1. Turn the ABRAKE function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.



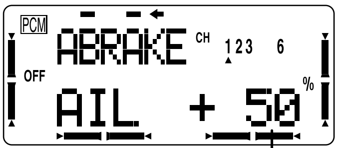
These keys are used to move through the seven submenus in the ABRAKE function.

To ELE-FL function



To AI-DIF function

Data input keys



Channel whose throw is being set:
AIL = Aileron (shown)
FLP = Flap
ELE = Elevator

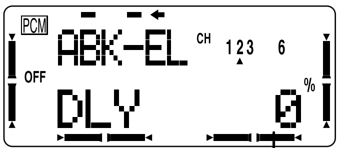
Servo travel
Range: -100 to +100%
Initial values:
AIL, FLP=+50%
Elevator = -20%

2. Set Aileron travel setting
Input the travel you'd like with the (+)/(-) keys.

3. Set Flap travel
Input travel with the (+)/(-) keys.

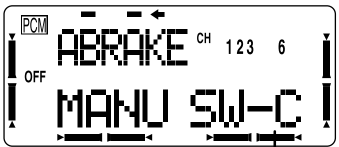
4. Set Elevator travel
Input travel with the (+)/(-) keys.

- Press the (+)/(-) keys simultaneously to return to the initial value for the control.



Elevator delay value
Range: 0 - 100%
Initial setting = 0%

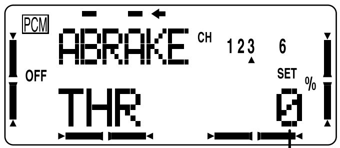
5. Set Elevator delay rate
- Adjust the elevator delay with the (+)/(-) keys.
- A 100% delay produces full elevator throw in about one second
- Press the (+)/(-) keys simultaneously to return to 0%.



Switch type display
MANU = Controlled by manuallly-actuated switch
LIN = Controlled linearly by throttle stick

6) Airbrake control selection
Select the control whose motion you want to use to turn the airbrake mixing on and off with the (+)/(-) keys.
If you choose MANU, *you'll need to continue as shown to the right.*

Set Throttle position
(a throttle on/off position must be set if you use the linear (LIN) airbrake mode).



Throttle position
Range: 0 - 100%
Initial value: 0%

7. Enter Throttle position
The throttle position you set becomes the starting point for air brake operation. The servo motions increase linearly when the throttle stick passes this position.

Move the throttle stick to the desired airbrake on/off position. Enter the position into memory by pressing the (+)/(-) keys simultaneously.

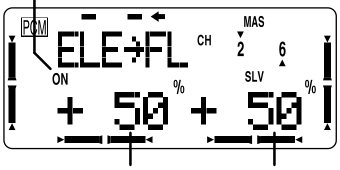
You can disable the airbrake mixing with Switch C during LIN mixing.

ELE→FL — Elevator-to-Flap Mixing

Elevator-to-flap mixing makes the flaps drop or rise whenever the elevator stick is moved. It is most commonly used to make tighter "pylon" turns or squarer corners in maneuvers. In most cases, the flaps droop (are lowered) when up elevator is commanded.

Setting Elevator-to-Flap Mixing

Turn the ELE-FL function ON or OFF by pressing the (+) key ("ON" or "OFF"displayed). Turn off (INH) the function with the (-) key.



Flap travel due to DOWN Elevator stick

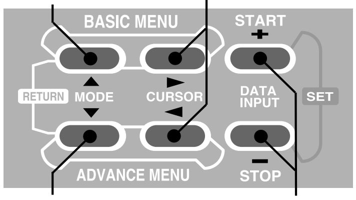
Flap travel due to UP Elevator stick

Allowed flap travel
Range: -100 to +100%
Initially set to 50%

Flap UP and DOWN travel input
Push the elevator stick in the direction you want to adjust and set the desired travel with the (+)/(-) keys.
Press the (+)/(-) keys simultaneously to reset to 50%.

These keys are used to move through the two submenus in the ELE-FL function.

To V-TAIL function



To ABRAKE function

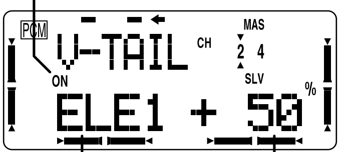
Data input keys

V-TAIL — V-Tail Mixing

V-tail mixing is used with V-tail aircraft so that both elevator and rudder functions are combined for the two tail surfaces. Both elevator and rudder travel can be adjusted independently on each surface. Because they share receiver outputs, Elevon and V-Tail mixing cannot be activated simultaneously.

Setting up V-Tail mixing

1. Turn the V-TAIL function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.



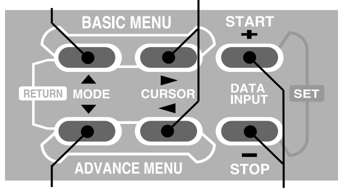
Travel being set:
ELE1
ELE2
RUD2
RUD1

Servo travel
Range: -100 to +100%)
Initial values:
RUD1, RUD2, ELE1 = +50%
ELE2 = -50%

2. Set elevator travel for CH2 servo with the (+)/(-) keys.
Repeat for:
3. CH4 servo elevator travel (ELE2)
4. CH2 servo rudder travel (RUD2)
5. CH4 servo rudder travel (RUD1)

These keys are used to move through the five submenus in the V-TAIL function.

To ELEVON function



To ELE-FL function

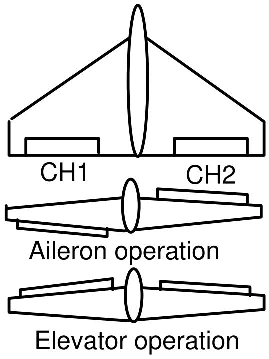
Data input keys

Stick Command	Receiver Output CH2	CH4
Elevator	ELE1	ELE2
Rudder	RUD2	RUD1

Be sure to move the elevator and rudder sticks continually while checking the servo motions. If a large value of travel is specified, when the rudder and elevator sticks are moved at the same time, the servo travel may be large, and controls may bind or run out of travel.

ELEVON — Elevon Mixing

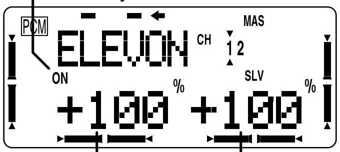
The Elevon function should be used with delta wings, flying wings, and other tailless aircraft whose layouts combine the aileron and elevator functions, and requires one servo for each elevon. The aileron and elevator response of each servo can be adjusted independently. Connect the right aileron to receiver CH1/AIL and the left aileron to CH2/ELE.



NOTE: The elevon, flaperon, aileron differential, and ailevator functions cannot be activated simultaneously. The function activated last has priority.

Setting up elevon mixing

1. Turn the ELEVON function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.



Amount of aileron travel for left aileron stick

Amount of aileron travel for right stick

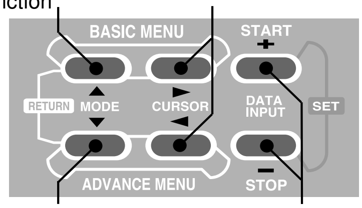
Range: -120 to +120%)
(Initial setting +100%)

2. Right aileron adjustment
Move the aileron stick in the direction you want to adjust and set the value with the (+)/(-) keys.

3. Left aileron adjustment
Again move the aileron stick in the direction you want to adjust and set the value as before.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

To ALVATR function

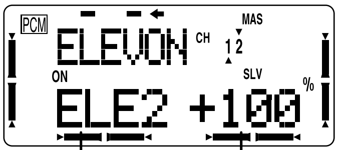
These keys are used to move through the FIVE submenus in the ELEVON function.



To V-TAIL function

Data input keys

When you move the control below	CH1 servo functions as	CH6 servo functions as
Aileron stick	Right aileron	Left aileron
Elevator stick	ELE 2	ELE 1



Elevon being adjusted (ELE2 or ELE1)

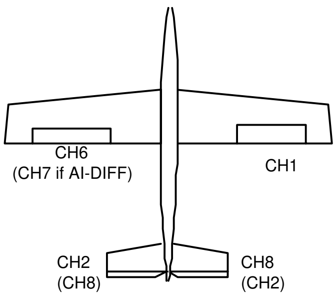
Servo travel rate
Range: -120 to +120%
(Initial value +100%)

4. CH1 servo elevator rate adjustment (ELE2). Adjust ELE2 with the (+)/(-) keys.
5. CH2 servo elevator rate adjustment (ELE1). Adjust ELE1 with the (+)/(-) keys.
• Return to the default value by pressing the (+) and (-) keys simultaneously.

Be sure to move the elevator and aileron sticks continually while checking the servo motions. If a large value of travel is specified, when the aileron and elevator sticks are moved at the same time, the servo travel may be large, and controls may bind or run out of travel.

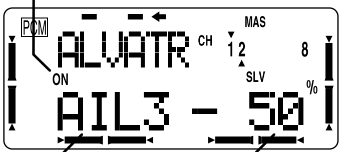
ALVATR — Ailevator Mixing

The Ailevator mixing function allows you to connect two servos to the receiver that operate two independent elevator control surfaces together as elevators and differentially as ailerons. This may be used to get more realistic flying properties with jet fighters and similar aircraft. You may also use this mixing to drive dual elevator servo without differential. The elevator and aileron travel can be adjusted independently. The two elevator servos must be plugged into the receiver CH2 and CH8 outputs. NOTE: Ailevator mixing cannot be activated simultaneously with the throttle→needle mixing function, because they use the same receiver channels.



Setting up dual elevator servos

1. Turn the ALVATR function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.



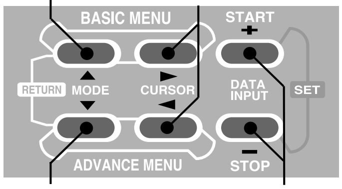
Setting items: AIL3, AIL4, ELE2, ELE1

Servo travel: Range: -100 to +100% (Initial values set to AIL3 = -50%, AIL4 = -50%, ELE2 = -100%, ELE1 = +100%)

2. CH2 tail servo aileron travel adjustment (AIL3): enter the desired value with the (+)/(-) keys.
3. CH8 tail servo aileron travel adjustment (AIL4): adjust and set the value as before.
4. CH8 tail servo elevator rate adjustment (ELE2) Adjust the rate with the (+)/(-) keys.
5. CH2 tail servo elevator rate adjustment (ELE1)
• Return to the default by pressing the (+) and (-) keys simultaneously.

To SNP function

These keys are used to move through the five submenus in the ALVATR function.



To ELEVON function

Data input keys

**If you want elevator function only, set the "AIL3" and "AIL4" travel rates to 0.*

Be sure to move the elevator and aileron sticks continually while checking the servo motions. If a large value of travel is specified when the aileron and elevator sticks are moved at the same time, the servo travel may be large, and controls may bind or run out of travel.

When you move the control below	CH2 servo functions as	CH8 servo functions as
Aileron stick*	AIL3	AIL4
Elevator stick	ELE1	ELE2

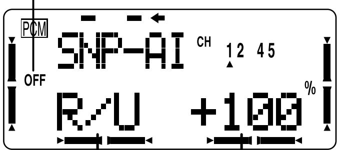
SNP — Snap Roll

This function may be programmed so that you may execute snap rolls by flipping a switch. You may select any of four roll directions using switches on the front panel of the transmitter, and can set up a safety switch to prevent accidental snap rolls while the landing gear is down, even if you accidentally activate the snap roll switch. You cannot do snaps while using the trainer function.

SETTING METHOD

1. Turn the SNP function ON by pressing the (+) key
Turn off (INH) the function with the (-) key.
Move the transmitter front panel snap roll direction switch to the direction you want to set

Channel display



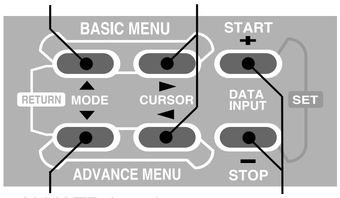
Direction switch combination (R/U, R/D, L/U, L/D)

Servo travel (Range: -120% to +120%)

2. Aileron travel setting (-AI displayed).
Set the travel with the (+)/(-) keys.
3. Elevator travel setting (-EL displayed).
Set the travel with the (+)/(-) keys.
4. Rudder travel setting (-RU displayed)
Set the travel with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

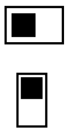
To TH-DLY function

These keys are used to move through the five submenus in the SNP function.

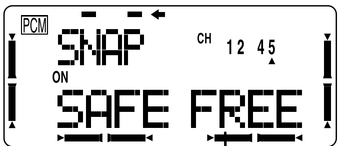


To ALVATR function

Data input keys



Snap roll direction switch
R/U = Right + up snap roll
R/D = Right + down snap roll
L/U = Left + up snap roll
L/D = Left + down snap roll



Safety switch setting display

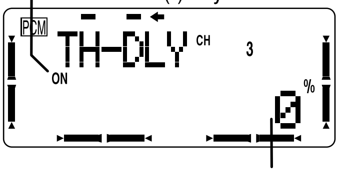
5. Select safety switch
Select the safety switch with the (+)/(-) keys.
• The safety switch is turned on and off with the landing gear switch. When "ON" is chosen, the safety mechanism is activated for the direction the landing gear switch is set at that time. Snap rolls will not be commanded even if the snap roll switch is turned on. When the landing gear switch is moved to the opposite position, the display will change to "OFF" and snap rolls may be commanded.
When the safety switch is set to "OFF", the safety mechanism operates in the direction opposite that when the switch was set to "ON". If it is set to "FREE", the safety mechanism does not operate regardless of the switch direction, and snaps can be commanded regardless of the gear position.

TH-DLY — Throttle Delay

The Throttle Delay function is used to delay the response of the throttle servo to simulate the slow response of a turbojet engine to throttle control. A 40% delay setting corresponds to about a one second delay, while a 100% delay takes about eight seconds to respond.

Setting Throttle delays

Turn the TH-DLY function ON by pressing the (+) key ("ON"displayed). Turn off (INH) the function with the (-) key.

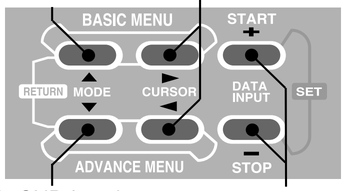


Throttle delay display
Delay range: 0 to +100%
Initially set to 0%

2. Delay rate setting
Set the amount of delay with the (+)/(-) keys. A 40% value delays the response by 1 second. (You may reset to zero by pressing the (+)/(-) keys simultaneously.)

These keys are used to move through the two submenus in the TH-DLY function.

To TH-NDL function



To SNP function

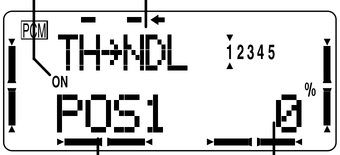
Data input keys

TH→NDL — Throttle Needle Mixing

The throttle needle mixing function is used to control the motion a second servo connected to the mixture control system of an engine (needle valve or other mixture adjustment) relative to throttle stick movement. The throttle needle servo connects to receiver CH8, and the CH8 control knob adjusts the high throttle mixture. An acceleration function moves the engine mixture control when the throttle is moved. This function cannot be used simultaneously with the Ailevator function.

SETTING METHOD

1. Turn the TH-NDL function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.



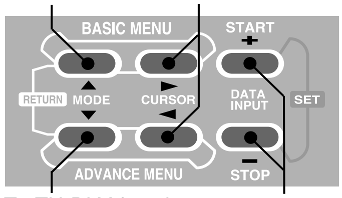
Point No. (POS1 - POS5)

Travel rate (Range: 0 - +100%)

2. Input 5-point curve values
Move the throttle stick to the position you want to set (the adjustment point is displayed at the bottom left corner of the screen) and set the rate with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously. Initial values:
POS1 = 0%
POS2 = 25%
POS3 = 50%
POS4 = 75%
POS5 = 100%

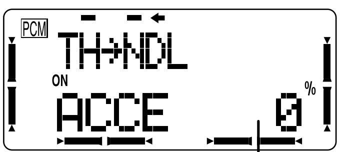
To PMIX-1 function

These keys are used to move through the three submenus in the TH-NDL function.



To TH-DLY function

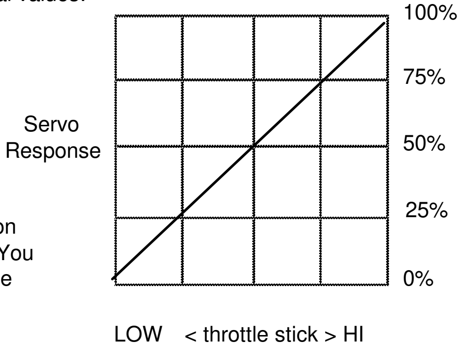
Data input keys



Travel rate
Range: 0 to +100%
(Initial setting = 0%)

3) Acceleration function setting
Input the desired acceleration level with the (+)/(-) keys. You can reset it to the initial value by pressing the (+)/(-) keys simultaneously.

5-point curve

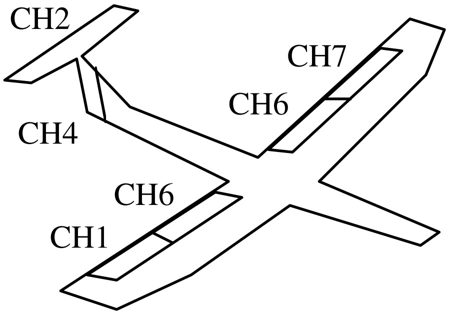


GLIDER (GLID1FLP/2FLP) ADVANCE MENU FUNCTIONS

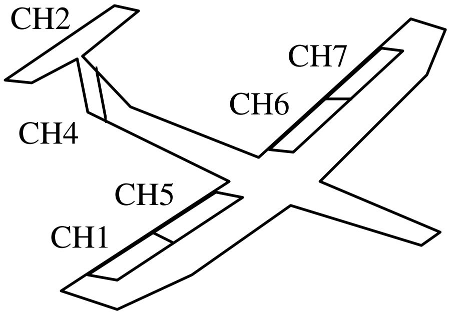
The pages in the glider Advance Menu section describe the additional special mixing functions that only are available when the two glider (GLID1FLP, GLID2FLP) model types are selected. The GLID1FLP menu is intended for sailplanes with one or two aileron servos, and a single flap servo (or two connected with a y-connector), while the -2FLP configuration is for dual flap servos that can act oppositely as ailerons. Note that for some aerobatic and slope gliders, the ACRO menus may be more appropriate to use, as they provide snap rolls.

For an explanation of the other Advance Menu functions available in the GLID menus, refer to the aircraft (ACRO) Advance Menu section, p. 43 to 51.

If you wish to have the three-position switch controlling Normal, Start, and Speed on the left-hand side of the transmitter, you should purchase the 8UH Helicopter system. The 8UA system places it on the right-hand side.

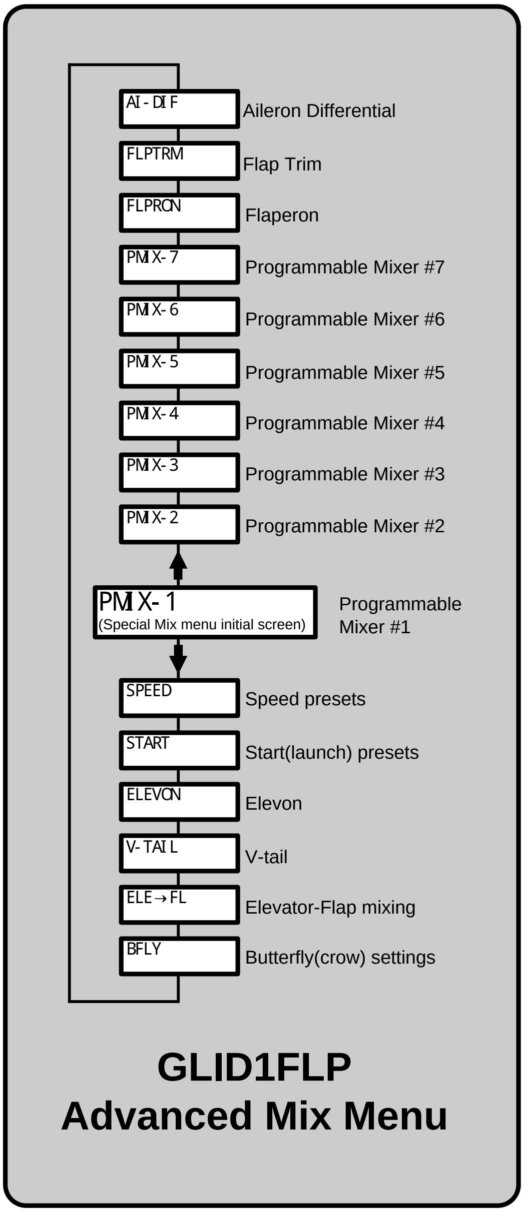


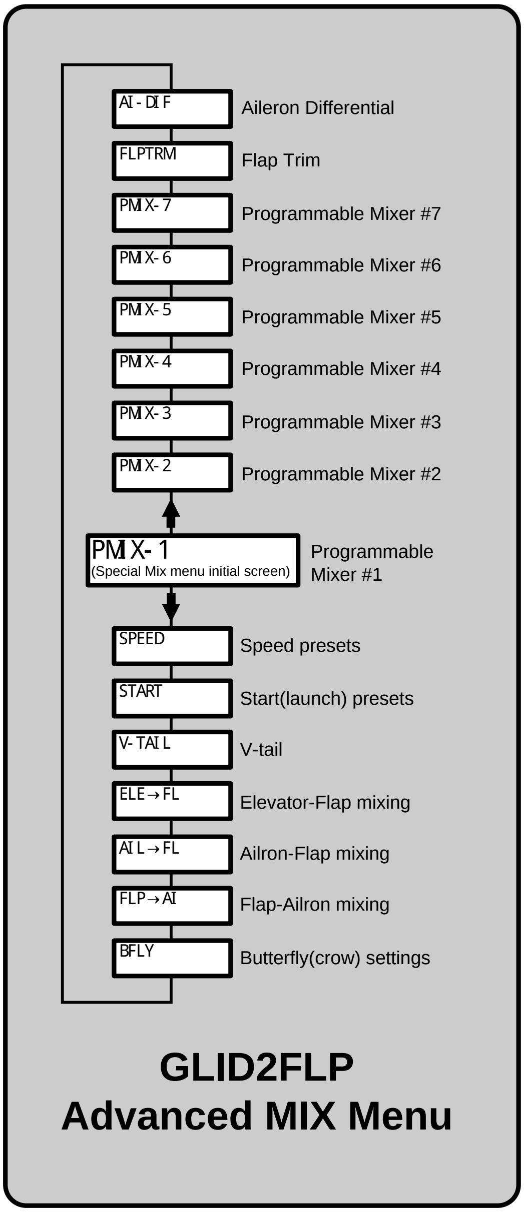
Glider 1FLP Configuration



Glider 2FLP Configuration

The Advanced Menus for the GLID1FLP and GLID2FLP are shown below. The Basic Menu for both of these model types is identical to that shown for aircraft (ACRO) on p. 20.

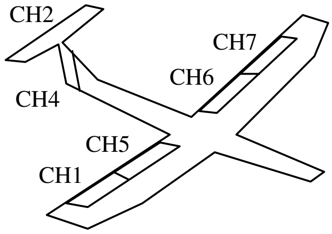




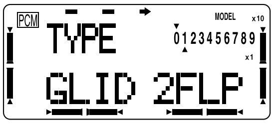
GLID-2FLP SETUP INSTRUCTIONS (TWO AILERON & TWO FLAP SERVOS)

1. Before you begin, be sure that all of your aileron and flap servos are plugged into the proper receiver channels. This example assumes that you are using model memory #3.

CH1 — Right aileron
CH2 — Elevator (or first half of v-tail)
CH3 — (not used)
CH4 — Rudder (or second half of v-tail)
CH5 — Right Flap
CH6 — Left Flap
CH7 — Left Aileron

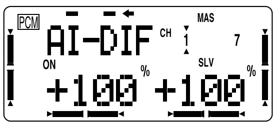


2. Enter the BASIC SETUP mode by pressing the two BASIC buttons simultaneously. Press the UP or Down mode keys until you get to the PARA menu. Press the left CURSOR button to advance to TYPE setup, which should display GLID2FLP. If it doesn't, then press either of the DATA INPUT buttons until the words GLID 2FLP are displayed. Press both the DATA INPUT buttons to activate the mode. "OK ?" will appear flashing in the upper left of the display. Pressing both the DATA INPUT buttons again will lock in the selected mode. **CAUTION**: AS SOON AS YOU SWITCH THE MODEL MODE, SOME OR ALL OF THE DATA EXISTING IN THE CURRENT MODEL MEMORY WILL BE ERASED! (The other seven memories will not be affected.)

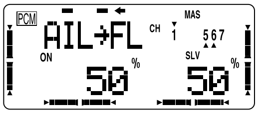


3. Do not worry that the servos may not be moving the proper direction now. We will first activate all the special mixes necessary, and later go to the reverse menu to correct any reversed servo responses (if necessary).

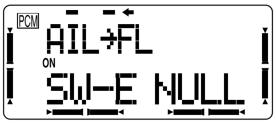
Press the ADVANCE buttons to get to the Advance Menus. This is where are the sailplane-specific mixers are located. Press either of the MODE keys to get to the aileron differential (AI-DIF) settings menu. Activate this mode by pressing the plus (+) DATA INPUT key (the 'ON' symbol will be flashing). This makes the second aileron servo (CH7) operate. Ignore the number settings for now.



4. Move to Aileron→Flap menu (AIL-FL, p 61). Activate it by pressing the Plus (+) DATA INPUT key ('ON' should be flashing). Use the Right (>) CURSOR key to get the left-hand number flashing, then use the plus (+) DATA INPUT key to set a value of 50%. Move the aileron stick to get the other number flashing, and set to the same number. You can increase this setting later if you need more maneuverability, such as for a slope racer or F3B model.

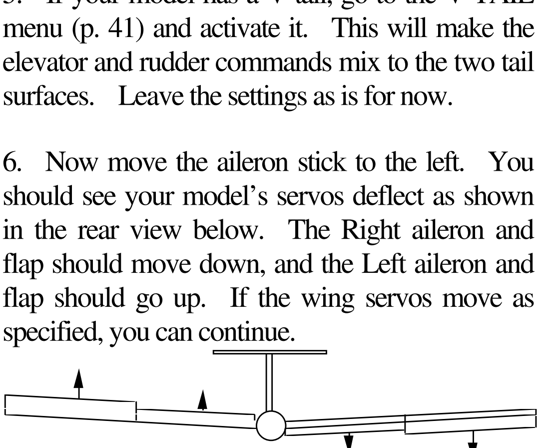


Now you may choose whether you want this mix always on or switchable. By hitting the Right (>) CURSOR key, you will see a display indicating Switch E controls this function, and the setting of the switch. NULL means always on, UP means on when Switch E is up, and DOWN means on when Switch E is down. We recommend leaving it in the NULL position; you can change the switch setting by pressing the (+) or (–) DATA INPUT keys.



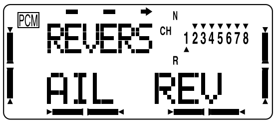
5. If your model has a V-tail, go to the V-TAIL menu (p. 41) and activate it. This will make the elevator and rudder commands mix to the two tail surfaces. Leave the settings as is for now.

6. Now move the aileron stick to the left. You should see your model's servos deflect as shown in the rear view below. The Right aileron and flap should move down, and the Left aileron and flap should go up. If the wing servos move as specified, you can continue.

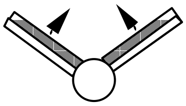


REAR VIEW OF MODEL WITH LEFT AILERON COMMAND

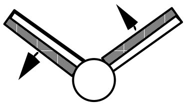
Reverse any of CH1, 5, 6, and 7 by moving to the appropriate channel number with the right or left CURSOR keys, then pressing the minus (–) or Plus (+) DATA INPUT key to reverse or unreverse the channel. Be sure you get the aileron response in the picture.



Next, move the elevator stick and be sure that the elevator moves the correct directions. Reverse CH 2 if necessary. Similarly check the response of the rudder (CH4). If you have a V-tail, you should get the following response for rudder and elevator commands:



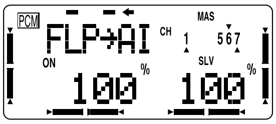
Up elevator command



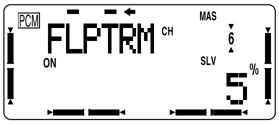
Left Rudder command

7. Double-check to make sure all the servos move the correct way! Then, go to the ATV menu and specify the maximum servo throws while moving all the controls. Spend some time getting the correct motions in this step.

8. Move to the flap→aileron (FLP→AI, p. 60) menu, and activate by pressing the Plus (+) DATA INPUT key. Use a setting of 100% so the motion of all four wing servos is the same with flap and aileron horns that are the same length. If the horn lengths differ (hopefully in pairs) you can use a number either greater or less than 100% depending on the length ratio. The camber changing is done by turning the leftmost knob on the top center of the transmitter (CH. 6 flap trim knob).

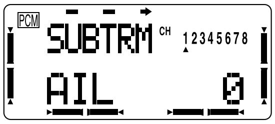


9. To set the amount of camber-changing across the wing, go to the flap trim menu (FLPTRM, p. 39) and activate it by pressing the Plus (+) DATA INPUT key. Set it to a small number (about 5%), or set it to zero if you want no camber-changing (this may be changed later for more travel). For cruising, you'll want no droop at all, but for slow-speed thermalling, you may want to droop the trailing edge a bit. Use the flap trim setting to get the desired amount of camber. No more that about 1/8" (3 mm) is all that is needed for most models.



Note that the motion dictated by the Camber knob (CH. 6 flap trim knob) goes into both positive and negative camber from the neutral point, unless you set the F→A offset (see previous step). Also, note that if you don’t set a small number or leave it inhibited (its default condition), you get HUGE motion of the trailing edge. You can set the approximate neutral point by matching the notch on the front of the knob with the slot in the knob holder.

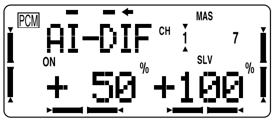
10. Put the camber knob (CH. 6 flap trim knob, on the top left of the transmitter) where you want it to be for normal flight, and make sure that the travel you desire is the right direction from that point. Be sure to center all of the trims, and get all of the servo arms to be near neutral. Use the clevises to get as close as you can. This way you won't run out of subtrim authority. Now set all the subtrims (SUBTRM, p. 39) to the desired neutral locations.



You can set the neutrals for the ailerons and flaps by using the foam wing beds or matching up with the rest of the wing. Don’t use the fuselage airfoil (if any) as these are often not aligned properly. Set the elevator incidence per the plans/instructions, and center the rudder.

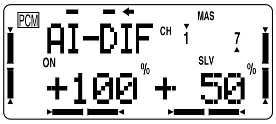
11. Go back to differential (AI-DIF) and set to get more 'up' throw than 'down' on the ailerons. For starters, use a down travel of about 50% of the up travel. Your model may have different plus and minus signs depending on the servo orientations. Note that you set the right aileron’s travel in both directions (move stick to change flashing display), then go to the left aileron’s menu and repeat inputting values.

CH 1 (right) aileron:



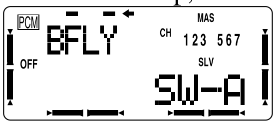
Right aileron down travel Right aileron up travel

CH 7 (left) aileron:

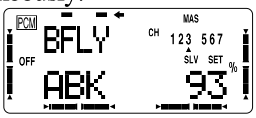


Left aileron up travel   Left aileron down travel

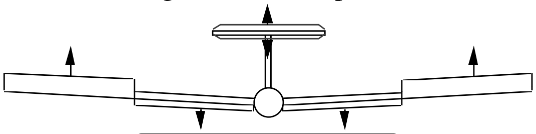
12. Set up the butterfly (also referred to as "crow") function for glide path control and precise spot landings. The ailerons go up and the flaps drop with movement of the throttle stick. Turn on the BFLY function (p. 59) by pressing the Plus (+) DATA INPUT KEY. The 'ON' display will be flashing unless switch A is up, then OFF will flash.

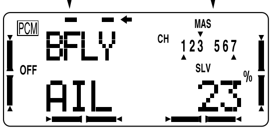


First set the Butterfly function activation point. Hit the Left (<) CURSOR key one time to get to the BFLY offset setting menu. Now move the throttle stick to where you want the function to begin. (we recommend having the throttle stick all the way up for normal flight, and have the BFLY function "kick in" about 3 clicks from top. This way, if you accidentally jog the throttle stick a bit, you won't activate the butterfly function.) Enter your position by pressing the two DATA INPUT keys simultaneously.

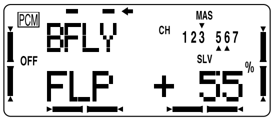


Next, hit the right (>) button until the AIL setting menu appears. Input a 25% value for the ailerons. Move the throttle stick and be sure the ailerons go UP with butterfly (see figure below). If they don't, change the sign of the number you've chosen (this may depend on servo orientation). You'll probably want 1/4 to 1/3 of aileron travel so you'll have plenty of roll authority while on approach in full butterfly command. Notice that you set the throw for both ailerons at the same time: this is the reason to have identical control arm lengths and neutral positions.

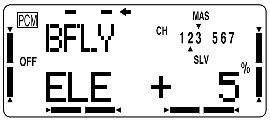




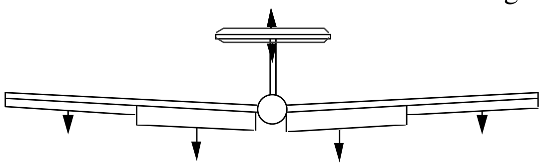
Hit the (>) CURSOR key once and input the throw for the flaps. Move the throttle stick and be sure the flaps DROP with butterfly. If they don't, change the sign (this again may depend on servo orientation). You want as much flap motion as possible — 90° is great if you can get it. Like the ailerons, you set both flap offsets at the same time.



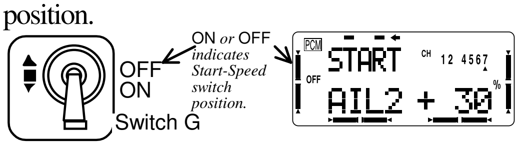
Use zero or very little elevator compensation until you fly and determine what is needed: if the model pitches up with butterfly, add down elevator compensation and vice versa. Make only small changes in compensation because it has a big effect on trim. Refer to the sailplane trimming chart for more details.



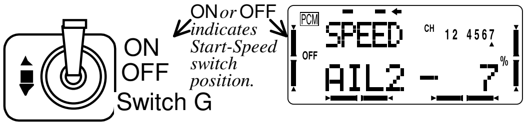
13. Set up the START (launch, p.62) preset for high launches so that the flaps drop slightly lower than the ailerons to reduce tip-stalling tendencies. Recommended settings are 30%, 0%, 40%, 40%, 30%. Increase the up-elevator preset in small increments until the plane launches as steeply as you like; add down elevator if the model weaves back and forth or is hard to control (remember to use the rudder stick, or rudder coupling, during the launch). A well-trimmed model may actually have some down elevator mixed in for launching.



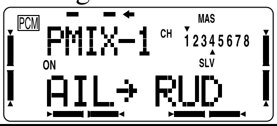
Remember that to get the START function to turn on, you have to flip the START/SPEED switch (Switch C, over the right-hand stick) to its lower position.

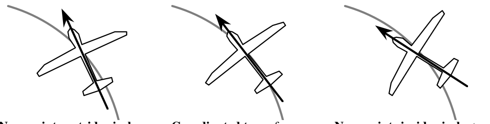


14. You may also set up the speed mode presets (SPEED, p. 63) for high-speed cruise between thermals. Reflex (raise) the entire trailing edge no more than 1/16" (1.5 mm), or you'll gain more drag than penetration ability. Use no more than 5 or 10% for initial setup.



15. You can add aileron-rudder coupling (1-4 mixing is set up in PMIX-1, p. 43) for coordinated turns. This setting is highly dependent on the model configuration. Usually only a small amount of rudder is needed, especially if a large amount of differential is present, so start out with 10–15%. Carefully observe the direction of the fuselage relative to the thermal turn the model is making. If the nose points towards the inside of the circle, the coupling is too high, and if it points towards the outside of the circle, you need more coupling. When everything is set properly, the fuselage will be tangent to the thermal turn circle.





Nose points outside circle: increase coupling and/or differential

Coordinated turn: fuse lines up with turn direction (don't change anything!)

Nose points inside circle: too much coupling or differential. Reduce one or both.

While you are flying, watch for trim changes during launch and butterfly control actions and set the compensations to cancel them out.

You can also add other mixing types such as elevator-to-flap mixing (ELE-FL, p. 48) to make better pylon turns. You may wish to refer to the sailplane trimming chart following. Whatever you do, Enjoy!

Sailplane Trimming Chart

The chart on the next page describes the procedures that may be followed when trimming a new sailplane. The flights for trimming must be made in near-calm conditions, and should be repeated several times before making adjustments.

One of the most critical steps is the center-of-gravity (CG)/decalage testing (Step 3). Decalage is a fancy way of describing the relative positions of the wing and horizontal tail. Although the control neutrals have been set in Step 1, there are differing combinations of elevator trim and CG that produce stable flight. In general, you get better performance by moving the CG aft, but at the same time you reduce the stability and make the model more difficult to fly, or make it so that constant attention is required. Moving the CG aft lessens the download on the model's tail and in some cases produces an *upload*, which means the wing and tail are working together and not against each other as they do with a forward CG. Many contest flyers use a CG position located between 35 and 40% of the *mean* wing chord, which is near the aft limits for stability. A nose-heavy model will be easier to fly but will lack the performance of the aft-CG model.

You should also set differential and/or rudder coupling carefully. Incorrect settings will result in needless increased drag, and may be checked fairly easily. If you practice keeping the fuselage straight while gently rocking the wings back and forth, you'll learn how to coordinate turns and won't need coupled rudder any more. You can also learn about the proper amount of differential or rudder coupling by studying the figures of the model circling.

Whatever you do, be sure to spend a lot of time trimming your sailplane. If you have a nearby slope, practice flying on very light days, where you can just barely keep the model airborne. It is under these conditions that you learn if your model is really trimmed properly.

SAILPLANE TRIMMING CHART ©1995 by Don Edberg (all rights reserved)

To test for _	Test Procedure	Observations	Adjustments
1. Model Control Neutrals	Fly the model straight and level	Adjust the transmitter trims for hands-off straight & level flight, no camber control.	Change electronic subtrims and/or adjust clevises to center transmitter trims.
2. Control Throws Note: be sure all aileron & flap horn pairs have matching angles	Fly the model and apply full deflection of each control in turn. Camber control in neutral (setup 6 & 9).	Check the model's response to each control input. Set flaps for as much down flap as possible in glide path control (90° is good) <5° reflex needed.	• Aileron & elevator rates: set for desired authority • Rudder: set for max throw • Set flap motions in Steps 4, 5, & 9.
3. Decalage & Center of Gravity (Note: this is an iterative procedure, depends on desired handling characteristics. Aft CG = less stability but better performance)	Trim for level glide. Enter 45° dive (across wind if any). Release controls when model vertical. CAUTION: beware of airspeed & flutter.	A. Does the model continue its dive without pulling out or diving? B. Does the model start to pull out (nose up)? C. Does the model start to tuck in (nose down)?	A. No adjustment B. Reduce incidence (add down elevator) and/or reduce nose weight C. Increase incidence (add up elevator) or add nose weight)
4. Butterfly Glide Path Control Settings (Part 1) Note: be sure all aileron & flap horn pairs have matching angles.	Fly the model and apply full deflection of glide path control (usually throttle stick). Observe any pitch changes.	A. Nose drops, up elevator required for level flight B. No pitch change C. Tail drops, down elevator required to maintain level flight	A. Several options: 1) more up elevator mixing; 2) reduce aileron reflex*; 3) increase flap motion* B. No adjustment C. Reverse of A
4. Butterfly Glide Path Control Settings (Part 2)	Fly the model and apply full glide path control. Observe any roll motion.	A. Model rolls to right when glide path control (throttle stick) activated B. No roll motion C. Model rolls to left	A. Mix in less right & more left aileron reflex with throttle motion B. No adjustment C. Reverse of A
5. Differential/Coupled Rudder setting	Fly the model and apply alternating left & right aileron commands. Observe path of fuselage line (p. 51).	A. Model yaws to right with left aileron and vice versa B. Fuselage traces straight line C. Model yaws to left with left aileron and vice versa	A. Increase differential and/or amount of rudder coupling B. No adjustment C. Reduce differential and/or amount of rudder coupling
6. Camber (full wing aileron & flap droop or reflex) setting	Put the model in a straight glide passing in front of you. Apply camber control.	A. Model slows down & stalls or sinks rapidly B. Model slows *slightly* C. Model speed unchanged	A. Reduce amount of droop B. No change needed C. Increase droop amount
7. Launch Settings (Part 1)	Switch to Launch mode. Launch the model & observe climb angle and required control inputs	A. Shallow climb angle; lots of up elevator required B. Model climbs steeply with little control input needed C. Too steep climb, weaves back & forth, down elevator required	A. Move towhook rearwards <u>small amount</u>, increase up elevator preset <u>a little</u> B. No adjustment C. Move towhook forward, increase down elevator preset
8. Launch Settings (Part 2)	Switch to Launch mode. Launch the model & observe climb angle and required control inputs	A. Model banks left on tow B. Model climbs straight ahead with no roll input needed C. Model banks right on tow D. Model tip stalls to one side	A. Reduce left ail & flap droop or increase right ail & flap droop B. No adjustment C. Reverse of A above D. Be sure droop same on both sides. Increase aileron droop or decrease flap droop (no typo)
9. Speed Settings	Switch to speed mode (entire TE reflexed *slightly*, no more than 1/16" or 1.5 mm)	A. Nose drops B. No pitch change C. Tail drops	A. Increase up elevator preset B. No adjustment C. Reverse of A
10. Elevator-to-Flap Coupling Setting	Fly model at high speed, bank & pull up	A. Model keeps speed B. Model slows down	A. Increase down flap B. Decrease down flap

*Note: Swept wing planform may cause opposite reactions, so experiment until proper behavior is attained.

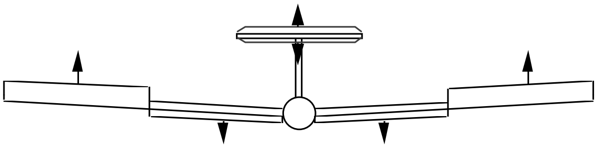
BFLY — Butterfly Mixing ("Crow")

The Butterfly mixing function – sometimes called "crow" – is used for glide path control for landing or for limiting speed when in a dive. Butterfly mixing is controlled with the throttle stick and raises the ailerons and lowers the flaps (two aileron servos are required, using CH1 and CH7, and the same setting applies to both, so horns must be identical). Butterfly will work with either one or two flap servos. All of the servos move linearly with throttle stick motion.

Butterfly mixing can generate a change in pitch, so the elevator may be adjusted to compensate. Sudden changes in pitch can be suppressed by setting the delay ("DLY") item at the elevator: a 100% delay means that the elevator takes about two seconds to go to full travel.

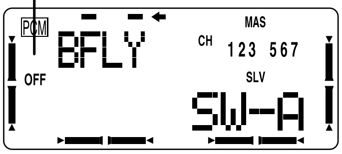
Butterfly mixing is manually turned on and off with Switch A. If you turn on the transmitter, and there's a beeping sound, it could be your butterfly activation switch is in the ON position.

At the throttle stick "idle" position, butterfly mixing has maximum throws. [If you wish to move the ATL to the high throttle end, turn on the transmitter holding the two MODE buttons down (or the two BASIC or two ADVANCE MENU buttons). You'll see a display "STICK MODE x." Press the lower MODE button to get to the "TH-FNC" display. Now press the minus (–) DATA INPUT key to reverse the throttle function. You may need to reverse the signs on some mixers after you perform this operation, which applies to all model memories.]



Butterfly mixing programming

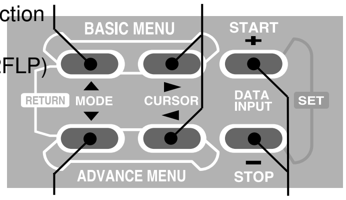
1. Turn the BFLY function ON by pressing the (+) key ("ON" or "OFF" displayed depending on SW-A position). Turn off (INH) the function with the (-) key.



Shows that switch A turns the BFLY function on and off.

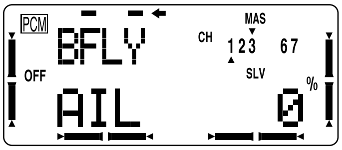
These keys are used to move through the six submenus in the BFLY function.

To ELE-FL function (GLID1FLP) or FLP-AI (GLID2FLP)



To AI-DIF function

Data input keys



Channel whose throw is being set:
AIL = Aileron (shown)
FLP = Flap
ELE = Elevator

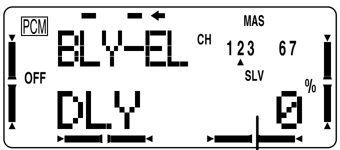
Servo travel
Range: -100 to +100%
Initial value: 0%

2. <u>Set Aileron travel setting</u>
Input the travel you'd like with the (+)/(-) keys.

3. <u>Set Flap travel</u>
Input travel with the (+)/(-) keys.

4. <u>Set Elevator travel</u>
Input travel with the (+)/(-) keys.

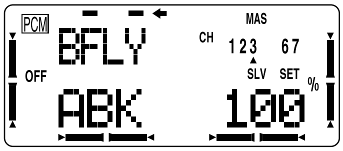
• Press the (+)/(-) keys simultaneously to return to the initial value for the control.



Elevator delay value
Range: 0 - 100%
(Initial value = 0%)

5. <u>Set Elevator delay rate</u>
• Adjust the elevator delay with the (+)/(-) keys.
• A 100% delay produces full elevator throw in about one second
• Press the (+)/(-) keys simultaneously to return to 0%.

Set Throttle position
(a throttle on/off position must be set if you use the linear (LIN) airbrake mode).



Throttle stick position for BFLY begin:
Range: 0 - 100%
(Initial value: 0%)

6. <u>Enter Throttle position</u>
The throttle position you set becomes the starting point for butterfly mixing. The servo motions increase linearly when the throttle stick passes this position towards "low throttle."

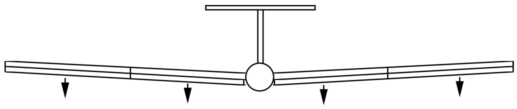
Move the throttle stick to the desired butterfly on/off position. Enter the position into memory by pressing the (+)/(-) keys simultaneously.

FLP→AI: Flap→Aileron Mixing

Flap→aileron mixing is used to change the camber (the angle of the ailerons and flaps) over the entire wing, which produces less drag than just dropping the flaps by themselves. When you have Elevator→Flap mixing activated along with Flap→Aileron mixing, the entire trailing edge droops or reflexes with elevator stick motion.

You can program an offset of the flaps as described in step 3 below, but we suggest leaving this at zero initially.

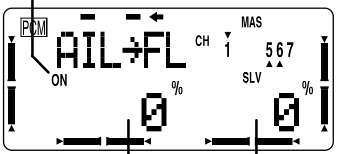
Switch "D" is programmed to turn this function on and off, but you can have the function always on if you like by selecting the NULL direction.



Flap→aileron mixing

Setting up Flap→Aileron mixing

1. Turn the FLP>AI function ON or OFF by pressing the (+) key ("ON" or "OFF" displayed depending on switch D's position). Turn off (INH) the function with the (-) key.



Aileron mix from flaps

Flap neutral position

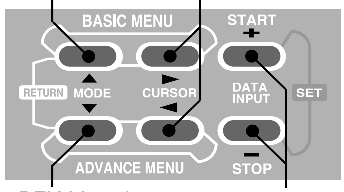
Range: -100 to +100%
(Initial value: 0%)

2. Aileron travel rate setting
Adjust the amount of aileron travel compared to flap motion with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

3. Flap neutral position offset
Turn the CH6 knob in the desired offset direction. Memorize the amount of offset by pressing the (+)/(-) keys simultaneously.
(Suggest leaving 0% initially)

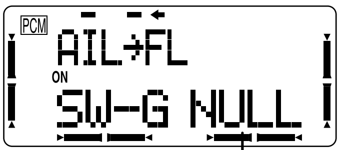
These keys are used to move through the four submenus in the FLP-AI function.

To AI-FLP function



To BFLY function

Data input keys



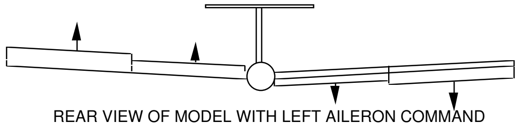
Switch direction display
(NULL, UP, DOWN)

4. Activation Switch Direction/Disabling
Select the desired direction for Switch D to turn the function on and off with the (+)/(-) keys.
"UP" = Upper position turns on FLP-AI mixing
"DOWN" = Lower position turns on FLP-AI mixing
"NULL" = FLP-AI mixing is always on; switch disabled.

AIL→FL — Aileron→Flap Mixing

Aileron-to-flap mixing is used to improve the roll rate and to reduce the wing's induced drag during rolls and banking maneuvers by operating the flaps differentially as ailerons. The function may be turned on and off by switch "G", or it may be always on.

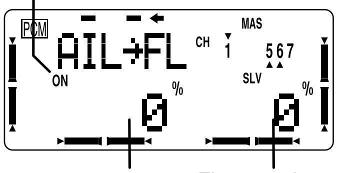
For normal flying, a value of about 50% is often used. But for slope racing or F3B models in speed runs, you may wish to use a larger value approaching 100%.



Aileron→flap mixing

Setting up aileron-to-flap mixing

1. Turn the AIL-FL function ON or OFF by pressing the (+) key ("ON" or "OFF" displayed depending on switch G's position). Turn off (INH) the function with the (-) key.



Flap travel commanded by Left aileron stick

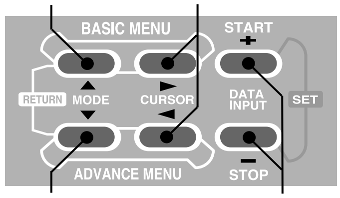
Flap travel commanded by Right aileron stick

Range: -100 to +100%
(Initial value: 0%)

2. Flap travel setting
Push the aileron stick in the direction you want to adjust and adjust the flap amount with the (+)/(-) keys. Repeat for other aileron stick position.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

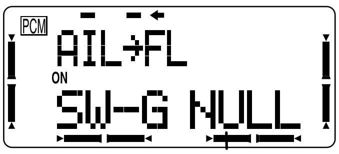
To ELE-FL function

These keys are used to move through the three submenus in the AIL-FL function.



To FLP-AI function

Data input keys



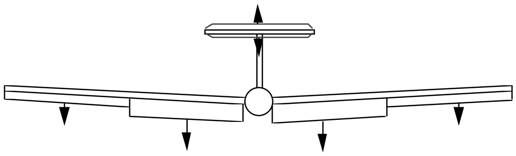
Switch direction display (NULL, UP, DOWN)

3. Activation Switch Direction/Disabling
Select the desired direction for Switch G to turn the function on and off with the (+)/(-) keys.
"UP" = Upper position turns on AIL-FL mixing
"DOWN" = Lower position turns on AIL-FL mixing
"NULL" = AIL-FL mixing is always on; switch disabled.

START — Start (Launch) Presets

The Start function is used to offset the aileron, elevator, and flap servos to the position that provides maximum lift during launch. Normally the ailerons and flaps are drooped about 20-30°, with the flaps drooped slightly more to prevent tip-stalling on tow. The elevator neutral can also be offset in order to trim out any pitch changes caused by the flap and aileron presets. This function is activated by flipping switch G to the aft position.

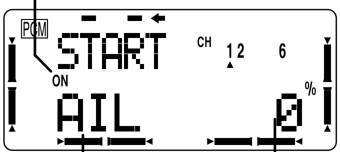
If you wish to have the three-position switch above the left-hand stick (position E), you should purchase the 8UH system.



START (launch) presets

Inputting the Start (Launch) presets for your model

Turn the START function ON by pressing the (+) key ("ON" or "OFF" displayed depending on Switch G position). Turn off (INH) the function with the (-) key.



Channel being offset for START

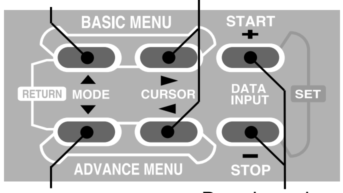
Servo offset
Range: -100 to +100%
Initially set to 0%

2. Aileron 1 offset
Input the desired Aileron 1 offset with the (+)/(-) keys.
3. Elevator offset
Input the desired Elevator offset with the (+)/(-) keys.
4. Flap offset*
Input the desired Flap offset with the (+)/(-) keys.
5. Aileron 2 offset
Input the desired Aileron 2 offset with the (+)/(-) keys.

(You may reset to zero by pressing the (+)/(-) keys simultaneously.)

These keys are used to move through the five submenus in the START function.

To SPEED function



Data input keys

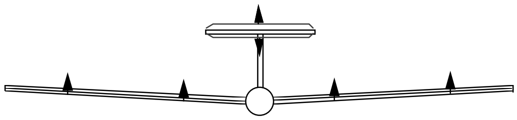
To ELEVON function (GLID1FLP) or V-TAIL (GLID2FLP)

*The GLID 2FLP menu for START has separate Flap 1 and Flap 2 offsets.

SPEED — Speed presets

The Speed function is used to offset the aileron, elevator, and flap servos to the position that provides maximum drag for cruise and high-speed flight. Normally the ailerons and flaps are raised about 3-5°. Some airfoils, notably the RG-15, actually have higher drag with reflex, so Speed function should not be used with this section and other similar ones. The elevator neutral can also be offset in order to trim out any pitch changes caused by the trailing edge reflex. This function is activated by flipping switch G to the forward position.

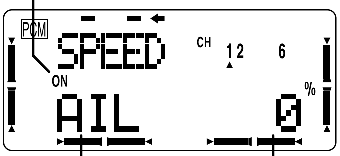
If you wish to have the three-position switch above the left-hand stick (position E), you should purchase the 8UH system.



Speed presets

Inputting the Speed presets for your model

Turn the SPEED function ON by pressing the (+) key ("ON" or "OFF" displayed depending on Switch G position). Turn off (INH) the function with the (-) key.



Channel being offset for START

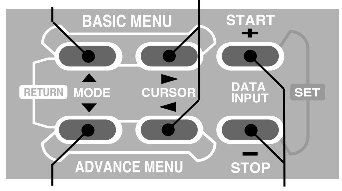
Servo offset
Range: -100 to +100%
Initially set to 0%

2. Aileron 1 offset
Input the desired Aileron 1 offset with the (+)/(-) keys.
3. Elevator offset
Input the desired Elevator offset with the (+)/(-) keys.
4. Flap offset*
Input the desired Flap offset with the (+)/(-) keys.
5. Aileron 2 offset
Input the desired Aileron 2 offset with the (+)/(-) keys.

(You may reset to zero by pressing the (+)/(-) keys simultaneously.)

These keys are used to move through the five submenus in the SPEED function.

To PMIX-1 function



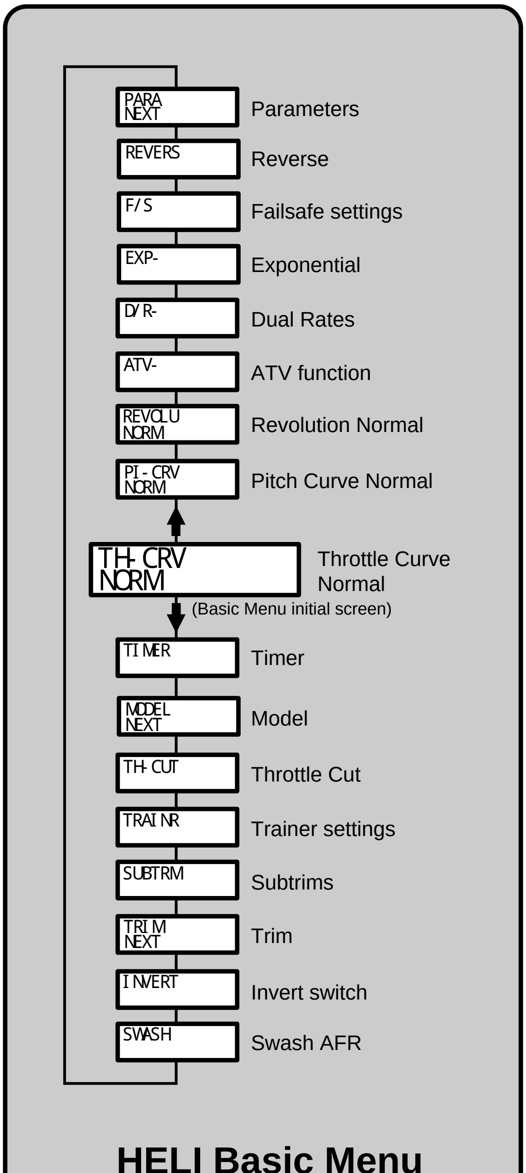
To START function

Data input keys

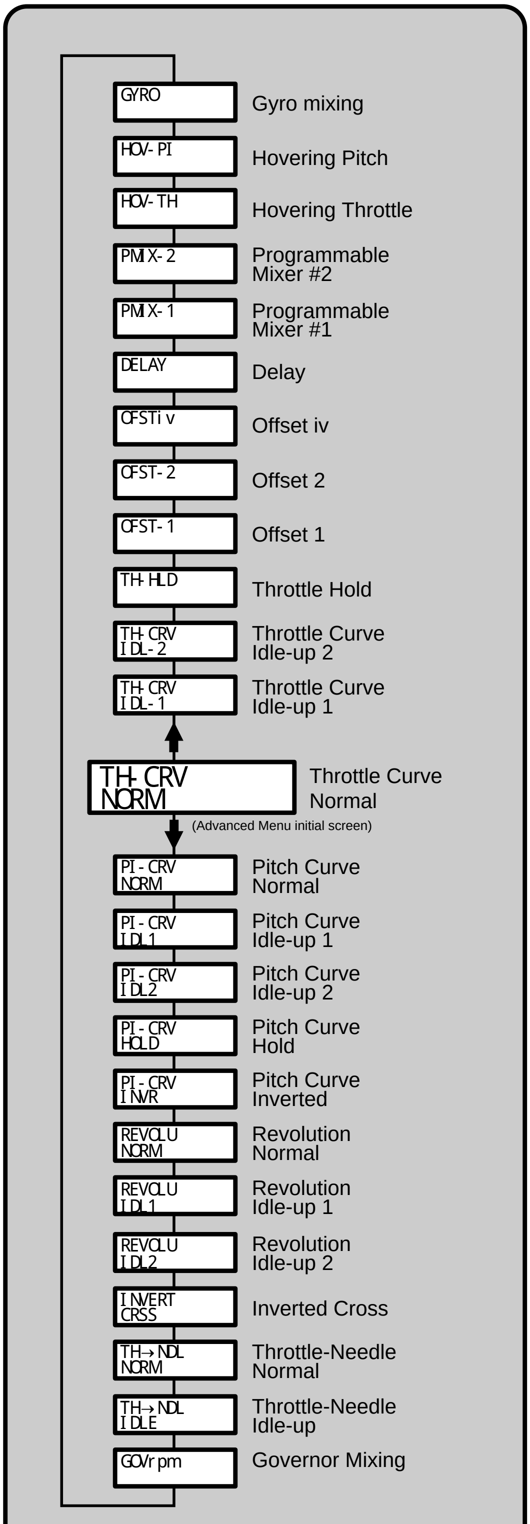
*The GLID 2FLP menu for SPEED has separate Flap 1 and Flap 2 offsets.

The following section (pages 65 – 75) describes how to use the helicopter-specific Basic Menu functions for helicopters (model types HELISWH1, HELISWH2, HELISWH4, HELISR-3, HELISN-3). The functions of the other Basic Menu items are contained in the aircraft (ACRO) section, pages 26 – 40.

The helicopter Advanced Function section begins on page 77.



HELI Basic Menu



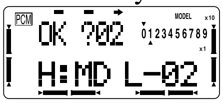
HELI Advanced Menu

HELICOPTER SETUP INSTRUCTIONS

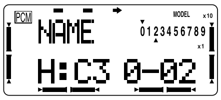
The following example shows how the T8U may be programmed for a contest helicopter model. The settings presented here are for a typical model. Your model's settings are likely to vary from these, but the procedures given will still be applicable.

1. Memory Selection

Use the Model menu Select function [MSL] to select a model memory. Choose the Helicopter Setup using the SEL function from Model menu. CAUTION: if you select a new type of model, you'll loose all the data already in the model memory. This example assumes you're using model memory 2.



2. Name your model using the Model Name [MNA] function in the model menu.



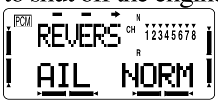
3. Hook up controls. In the helicopter, hook up the aileron, elevator, throttle, and rudder servos in accordance with the model's instructions or plans.

4. Plug Servos Into Receiver.

CH1 ....Aileron
CH2 ....Elevator
CH3 ....Throttle
CH4 ....Rudder
CH5 ....(spare)
CH6 ....Pitch
CH7 ....Gyro Sensitivity
CH8 ....(spare)

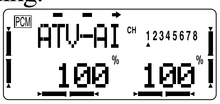
5. Set Servo Throw Direction

Check the proper direction of throw for each servo. Use the Reversing Function [REV] in the Basic menu to set proper throw directions. Reverse channels as necessary to correct throws. Set up the carburetor pushrod so that the carb may be fully closed to shut off the engine.



6. Servo Travel

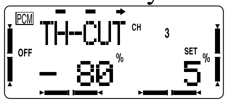
Use the ATV command to limit servo travels to prevent binding.



7. Throttle Cut Setting

After a flight, use the Throttle Cut function to kill your engine with the trainer switch. There is no need to fumble with trim, and the idle trim position will never be lost.

Enter the TH-CUT settings in the Basic menu, and set the desired switch (we recommend using the trainer switch F, in the down or momentary position). Move the throttle stick a few clicks above idle, then press the (+)/(–) keys simultaneously to memorize the position. This makes it so the engine cut function will only operate when the throttle is below the set point, so the engine can't inadvertently be shut off in flight.

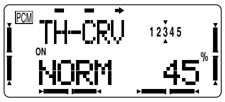


Adjust the throttle servo motion so that when activated, the carburetor is fully closed and there is no binding in the throttle pushrod.

Normal Flight Programs

Continue within the Basic functions menu to set up the Normal flight settings (see the menu structure on p. 65 for more info):

8. Throttle Curve-Normal



Go to the Throttle Curve [TH-CRV NORM] function. Input the throttle curve to the values shown in the table below:

Point	1	2	3	4	5
Setting (%)	0	25	45	75	100

You'll want to set the throttle so it's about half open at Point 3. The throttle responds a bit slower than linear near center, and then the response rate approaches linear at both ends.

9. Pitch Curve Normal

Move to the pitch curve function [PI-CRV NORM] from the model menu. For a semi-symmetrical rotor blade with no twist, the pitch angle should vary from -4° to +12°. We recommend setting the hovering pitch to +4.5°.

Move the hovering pitch knob (CH6) and the hovering throttle knob (CH7) to the center

positions (if these functions are activated in the Advance Menu, the knobs may be moved in flight to make adjustments). Next, input pitch curve data so that the normal pitch used in hovering varies between -2.5° and +10°.

The pitch angle should be set so that the high throttle pitch rate is large. This provides high collective sensitivity to help cope with windy conditions.

The following values are recommended starting points for the pitch curve:

Point	1	2	3	4	5
Setting (%)	15	25	55	75	90
Blade pitch	-2.0°		+4.5°		+10°

10. Revolution Mix Setting

Revolution mixing uses the tail rotor to suppress the torque reaction of the main rotor due to changes in collective pitch. Call up the REVOLU NORM Menu. Input the values as follows:

Point	1	2	3	4	5
Setting (%)	-25	-12	0	+12	+25

FLIGHT CONDITION SWITCHING

Your system is already programmed to have settings for Idle-up 1 [IDL1], Idle-up 2 [IDL2], and Throttle Hold [HOLD] in addition to the normal flight condition [NORM]. The menus for these added flight conditions are contained in the Advance Menus. Refer to the menu structure on p. 65 for more info.

The position and ON direction of each flight condition call switch are set as follows:

•Normal [NORM] – for hovering. Operation when all switches OFF.

• Idle-up 1 [IDL1] – for 540° stall turns, looping, rolling stall turns. ON at Switch G center position

• Idle-up 2 [IDL2] – for rolling aerobatics. ON at Switch G forward position.

• Throttle Hold [HOLD] – for autorotation. ON at Switch E forward position.

We recommend that you fly the model and adjust trims and control responses to your liking in hover before setting up another flight condition.

To set the condition data for each flight condition, be sure that you call the appropriate condition by turning on the correct switch (as given above). Double-check to be sure that you are setting the menu you desire.

As mixes are switched on or off, HOLD has highest priority, followed by IDL2, IDL1, and NORM.

Idle-Up 1 Settings

The settings for IDL1 conditions are among those contained in the Advance menus (see the menu structure on p. 65 for more info).

11. Throttle Curve Setting: move to the TH-CRV IDL1 menu and activate it. Change the Idle-up 1 throttle curve points to the values shown below:

Point	1	2	3	4	5
Setting (%)	57	55	57	75	100

12. Pitch Curve Setting. Move to the PI-CRV IDL1 menu and activate. The Idle-up 1 pitch curve should use the same curve as the normal condition except with the maximum high throttle pitch angle between 8° to 10°, depending on the engine used.

Point	1	2	3	4	5
Setting (%)	10	25	50	65	80
Blade pitch	-2.5°		+4.5°		+8°

13. Idle-up 1 Revolution Setting:

These settings are used in 540° stall turns, looping, and rolling stall turns and are set to be straight ahead when the model is pointing directly into or away from the wind. Move to the REVOLU IDL1 menu and input the following values:

Point	1	2	3	4	5
Setting (%)	-20	-10	0	+10	+20

Idle-Up 2 Settings

The settings for IDL2 conditions are also among those contained in the Advance menus (see the menu structure on p. 65).

14. Throttle Curve Setting: move to the TH-CRV IDL2 menu and activate with the (+) key. Input the trial throttle curve points as shown below:

Point	1	2	3	4	5
Setting (%)	60	60	60	75	100

15. Pitch Curve Setting. Step through the menu to the PI-CRV IDL2 menu. Set the pitch curve as follows:

Point	1	2	3	4	5
Setting (%)	5	25	50	65	80
Blade pitch	-3°		+4.5°		+8°

16. Idle-up 2 Revolution Setting:

These settings are used in rolls. Move to the REVOLU IDL2 menu and try out the following values for the rudder mixing curve:

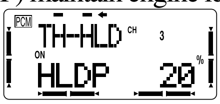
Point	1	2	3	4	5
Setting (%)	-20	-10	0	+10	+20

Throttle Hold Settings

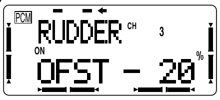
The settings for HOLD conditions, to be used for Autorotation, are also among those contained in the Advance menus (see the menu structure on p. 65).

17. Revolution Throttle Hold Setting:

TH-HLD sets throttle position near idle and keeps the model pointed straight ahead during autorotation. Move to the Throttle Hold menu and activate by pressing the (+) key, then set switch G to the forward position. Set the hold position (HLDP) maintain engine idling.



Next, move to the rudder offset setting and set OFST to keep the tail rotor pitch angle to nearly 0°, since there is no torque. Your numerical value may vary from those shown.



18. Pitch Curve Setting. Move to the PI-CRV HOLD menu and activate. During autorotation, high pitch is used at both the HIGH and LOW sides, so set the HIGH and LOW rates to their maximum values: 0 and 100% respectively.

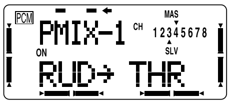
Point	1	2	3	4	5
Setting (%)	0	25	50	65	100
Blade pitch	-4°		+4.5°		+12°

19. Rudder→Throttle Mix Setting

Rudder→Throttle mixing is useful for hovering eight, nose-in circle, Top Hat, Pirouette, and other aerobatics. It is normally set up so that rotor speed is maintained to keep altitude constant when the rudder stick is operated at half-throttle.

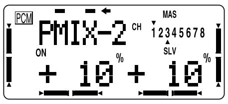
For helis with normal rotor rotation, commanding right rudder should increase throttle slightly, while using left rudder should decrease throttle slightly.

To set this feature, use one of the PMIX mixers. Press the (+) button to activate it, and set master = Rudder, slave = Throttle. Input the value for left at -10%, and the right value to +10%. Adjust values to suit.



Another use for a programmable mixer

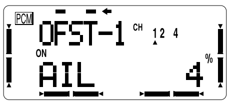
The main rotor's RPM can decrease due to increased loads whenever full cyclic control is used, like when doing a roll. To help keep the RPM up, you can use a mixer with Master = AIL, Slave = THR. About 10% mixing is a good starting point for both directions.



20. Trim Offset Setting

The Trim Offset menus may be adjusted for Idle-up 1 and Idle-up 2. Aileron, elevator, and rudder trims may be offset to different positions so that the model flies straight ahead during normal flight.

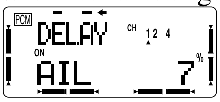
If you find you need some trim offsets in IDL1 or IDL2, call up whichever of the OFST-1 or OFST-2 menus you need. Recommended settings for aileron and elevator offsets are small, from 6% to 10% or as needed.



Rudder offset is set by the Revolution Throttle Hold function set previously, so is not included in this menu.

21. Delay Settings

Delay settings are used to prevent sudden trim changes due to different settings in different flight conditions. You can set different delays for aileron, elevator, and rudder. The delays you set apply to all flight conditions. We recommend trying very small values for the initial settings, say 5 - 10%. A 25% delay is about a half-second transit time between neutral settings.



You may use the Hovering Pitch and Hovering Throttle functions for fine trimming changes due to humidity, etc.

This concludes the example setup procedure for helicopters. Be sure to browse through the pages following this example to see what other menus are available for helicopters, such as Hovering Throttle and Pitch knobs, OFST, ACC, DELAY, and INVERT CROSS. You may use a mixer to adjust gyro sensitivity, or to enhance flight capabilities or to correct a response you don't like. Again, we recommend you set up and trim in the Normal flight condition before setting up the alternate flight modes.

Helicopter Flight Trimming Chart

This procedure assumes helicopter is trimmed for hovering. Trimming must be done in near-calm conditions. Repeat tests several times before making adjustments. If any changes are made, go back over the previous steps and verify, or further adjust as necessary.

To test _	Test Procedure	Observations	Adjustments
1. Revo mixing — Up settings (Part 1)	Fly the model straight and level into the wind at 100 ft altitude, lower pitch to 0°	Observe rotation as copter descends A. No rotation B. Model rotates counterclockwise C. Model rotates clockwise	A. None B. Add right rudder trim C. Add left rudder trim
2. Revo mixing — Up settings (Part 2)	Bring the copter into hover, add full pitch and ascend 75 ft	Observe rotation as copter ascends A. No rotation B. Model rotates counterclockwise C. Model rotates clockwise	A. None B. Increase UP revo mix C. Decrease UP revo mix
3. Revo Down mixing settings	Begin Down Revo mixing with same number as UP mix. From inverted flight (top of loop, or mid-point of roll, or inverted part of split-S), add full negative pitch	Observe rotation as copter ascends A. No rotation B. Model rotates clockwise C. Model rotates counterclockwise	A. No adjustment B. Increase Down revo mix C. Decrease Down revo mix

TH-CRV — Throttle Curve (Normal)

The throttle curve normal function is used to input the normal (NORM) throttle curve, which is usually not a linear response to throttle stick motion. The normal throttle curve is the basic throttle curve intended for flight around hover. Together with the pitch curve (normal), the throttle curve is adjusted for best climb at a fixed engine RPM. You can program a 5-point throttle curve to get the best engine response relative to throttle stick motion. Each point of the curve can be adjusted over a range of 0% to 100%.

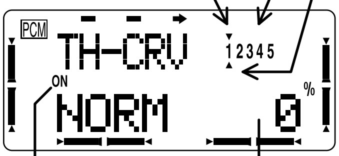
There are three throttle curves in your transmitter: normal (NORM), idle-up 1 (IDL1), and idle-up 2 (IDL2), but only the basic normal throttle curve is displayed in the Basic Menu. The normal curve can be seen and programmed in either the Basic or Advance Menus, but the others are only accessible in the Advance menu.

Setting the Normal throttle curve

Top arrow indicates the current stick position (2 arrows means it's between points)

Curve points 1-5

The bottom arrow shows the point on the five-point curve currently being set.



Curve Name Display (NORM)

Curve Point Value (Range: 0 - +100%)

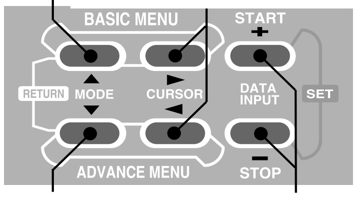
*The Throttle Curve Normal function is normally on.

The blinking item on the setting screen is the current setting item.

1. Turn the TH-CRV function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.
2. Input 5-point curve values
Move the lower arrow to the position you want to set with the CURSOR keys (the curve point is displayed below the numbers 1-5, and the current throttle position is above the numbers). Set the curve value with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.
Initial values:
POS1 = 0%
POS2 = 25%
POS3 = 50%
POS4 = 75%
POS5 = 100%

To PI-CRV function

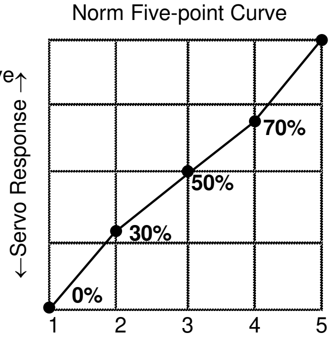
These keys are used to move through the five submenus in the TH-CRV function.



To TIMER function

Data input keys

Example Throttle Curve
Norm Five-point Curve



PI-CRV — Pitch Curve (Normal)

The Normal pitch curve function contained in the Basic Menu sets the normal (NORM) curve. The Normal pitch curve is the basic pitch curve for flight near hover. Together with the normal throttle curve, the normal pitch curve is adjusted for best vertical performance at a constant engine speed. You can program the response over a 5-point curve so that you may choose the best rotor pitch angle relative to throttle stick movement. Each of the five points can be adjusted over a 0% to 100% range.

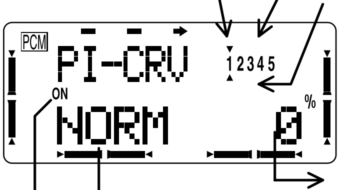
The T8U system helicopter programs contain five pitch curves: normal, idle-up 1 (IDL1), idle-up 2 (IDL2), hold (HOLD), and inverted (INVR). The basic normal pitch curve is the only one displayed in the Basic Menu, but all of the pitch curves can be viewed in the Advance menu. The Normal curve is the same in both the Advance and Basic Menus.

Setting the Normal Pitch Curve

Top arrow indicates the current stick position (2 arrows means it's between points)

Curve points 1-5

The bottom arrow shows the point on the five-point curve currently being set.



Curve Name Display (NORM)

Curve Point Value (Range: 0 - +100%)

The Pitch Curve Normal function is on at startup.

The blinking item on the setting screen is the current setting item.

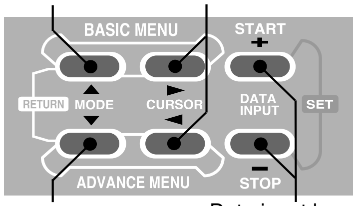
1. Turn the PI-CRV function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.
2. Input 5-point curve values Move the lower arrow to the position you want to set with the CURSOR keys (the curve point is indicated by the arrow below the numbers 1-5, and the current throttle position is above the numbers). Enter the desired curve value with the (+)/(-) keys.

• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

Initial values:
POS1 = 0%
POS2 = 25%
POS3 = 50%
POS4 = 75%
POS5 = 100%

To REVOLU function

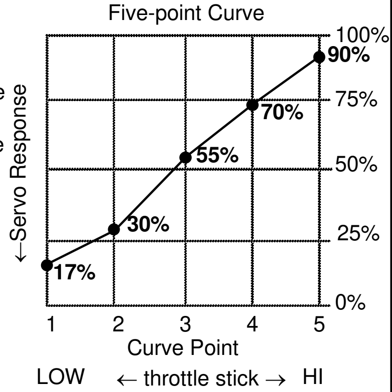
These keys are used to move between the five points in the PI-CRV function.



To TH-CRV function

Data input keys

Example Pitch Curve-Norm Five-point Curve



REVOLU — Revolution Mixing (Normal)

The Normal revolution function mixes pitch commands into rudder in order to suppress the torque generated by changes in the main rotor's pitch angle. Three are three different settings of revolution mixing available: normal (NORM), idle-up 1 (IDL1), and idle-up 2 (IDL2). Only normal revolution mixing is displayed on the Basic Menu.

The revolution mixing rate can be input on a 5-point curve. For a clockwise-turning rotor, the rudder is mixed in the clockwise direction when pitch is increased; for a counterclockwise-turning rotor, the opposite setting is made. The operating direction setting is changed by changing the signs of the numbers in the curve from plus (+) to minus (–) and vice versa:

Clockwise rotation: -50, -25, 0, +25, +50% from low throttle
Counterclockwise rotation: +50, +25, 0, -25, -50% from low throttle

These numbers are the default initial values. You should replace them with the actual values that work best for your model.

Procedure for adjusting revolution mixing

This procedure assumes that your model is trimmed, and no tail rotor command is needed in hover.

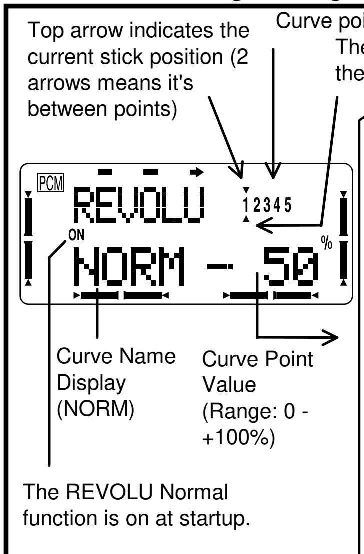
1. Throttle low-side adjustment (between idle and hovering)

Repeatedly takeoff and hover and return to land. Adjust revolution mixing so that raising and lowering the throttle does not cause a sudden fuselage heading change. If the nose points left when landing from hover or when taking off, the low-side mixing rate is too high. If the nose points in the opposite direction, the mixing rate is too small. Note that the nose direction may not become stable when taking off if the helicopter is not steady before takeoff, or if the rotor speed does not rise.

2. Throttle high-side setting (between hovering to high-power climbing)

Apply throttle while hovering to climb and then descend back to hover. Adjust revolution mixing so that the nose does change heading when the throttle is raised and lowered as in the low-side adjustment given above.

Revolution Mixing Setting



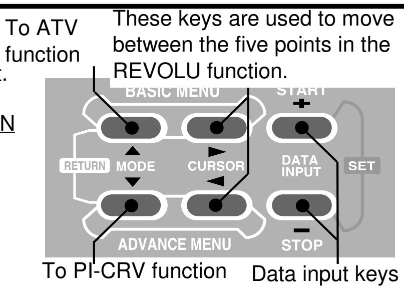
The blinking item on the setting screen is the current setting item.

1. Turn the REVOLU function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.
2. Input 5-point curve values

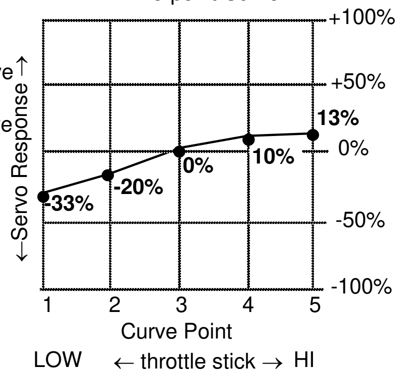
Move the lower arrow to the position you want to set with the CURSOR keys (the curve point is indicated by the arrow below the numbers 1-5, and the current throttle position is above the numbers). Enter the desired curve value with the (+)/(-) keys.

• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

Initial values:
POS1 = -50%
POS2 = -25%
POS3 = 0%
POS4 = +25%
POS5 = +50%

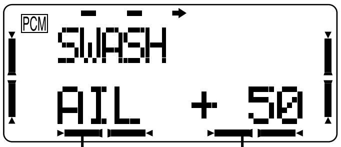


Example Revolution-Norm Five-point Curve



You can use Swash AFR rate settings to reduce (or increase) the function rate when SWH2, SWH4, SR-3, or SN-3 is selected as the swash type. The function rate reduction or increase for the aileron, elevator, and pitch may be controlled by this menu.

Setting Swash AFR rate values



Channel display:
AIL=Aileron
ELE=Elevator
PIT=Pitch

Current function rate

Range:-100-+100%
(Initial value=+50%)

1. Aileron adjustment:
Set the rate with the (+)/(-) keys.

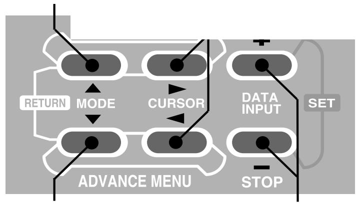
2. Elevator:(except SWH2 type)
Set the rate with the (+)/(-) keys.

3. Pitch:
Set the rate with the (+)/(-) keys.

• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

To INVERT function

These keys are used to move through items 1-3 in this menu.



To PARA function

Data input keys

INVERT — Inverted Flight Function

The Invert function is used to make inverted flight easier. Instead of having to learn to reverse controls mentally, when switch H is moved forward (and the INVERT function is activated), the direction of operation of the elevator, rudder, and pitch servos is reversed. In addition, the pitch servo throw is reduced to about two-thirds of the normal throw.

Before using the INVERT function, be sure that you helicopter is trimmed for good normal flight. You'll need to set up your linkages carefully to use the INVERT function.

You can adjust the pitch curve and cross position setting when this function is ON with the inverted pitch curve (PI-CRV, INVR) and inverted cross position (INVERT, CROSS) menus in the Advance Menu. You can plug your gyro into CH7, and its sensitivity may be controlled by switch C.

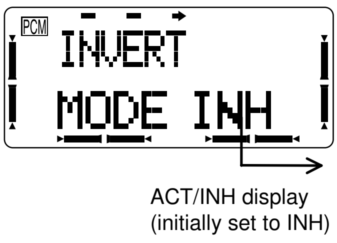
INVERT Function Programming

Turn off the INVERT function (move switch H to the rear position) and select a servo arm that provides the proper negative and positive pitch angles to allow autorotation. Hook up the linkage to the servo.

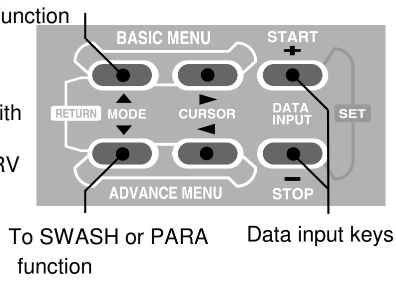
Since the normal flight pitch curve uses NORM, IDL1, IDL2, and HOLD, set up your helicopter for trimmed flight in hover, forward flight, and autorotation. To program the inverted flight pitch, turn on the INVERT function (switch F set to forward position) and activate the pitch curve inverted (PI-CRV, INVR) menu within the Advance Menu to program the pitch. Whenever INVERT is activated, the elevator, flap, and pitch servos respond in the opposite direction to how they respond for forward flight. In addition, elevator and rudder trim is also reversed. The hovering pitch function is active only at the forward flight side.

You can set the inverted cross position at the "INVERT, CRSS" screen within the Advance Menu (see p. 77).

Setting up inverted flight mode



Turn the INVERT function ON by pressing the (+) key ("ACT" displayed). Turn the function off with the (-) key ("INH" displayed).
Both the inverted pitch curve (PI-CRV INVR) and inverted cross position (INVERT CRSS) functions in the Special Mix Menu can be activated simultaneously.



TH-CUT — Throttle Cut

The TH-CUT function is used to kill the engine at the end of a flight. The engine can be stopped with one touch with switch F (the momentary trainer switch is the initial setting, but you may select another). This function eliminates the need to move the trim to kill the engine and then move back to the idling position after each flight. When the throttle stick is lower than the function ON/OFF set point throttle position (normally a little above idle), the TH-CUT function responds to the operation of the switch, and the throttle servo moves to its defined position.

The TH-CUT function will protect you from accidentally shutting off the engine. When the throttle stick is above the set point, the TH-CUT function is not activated even if the throttle cut switch is operated. In addition, you must move the throttle stick back below the set point before the TH-CUT function can be reset, to avoid sudden engine acceleration.

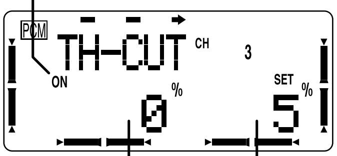
TH-CUT setup

Hook up and adjust the throttle linkage so that full throttle fully opens the carburetor, and use the digital trim to make the engine idle at low throttle. Turn on the throttle cut switch (switch F) and select the amount of offset to be just large enough in the "–" direction (low throttle) to fully close the carburetor.

If you prefer, you may select another switch and ON-OFF direction. For safety, always activate the TH-CUT function and use it.

Setting up the Throttle Cut function

1. Turn the TH-CUT function ON or OFF by pressing the (+) key ("ON" or "OFF" displayed depending on switch F's position). Turn off (INH) the function with the (-) key.



Throttle Offset
Range: -30 to +30%
(Initial setting 0%)

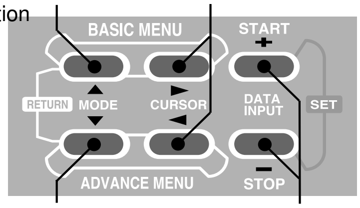
Throttle position
Range: 0 - 100%
(Initial setting 5%)

2. Input throttle offset
Adjust the throttle offset amount with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

3. Throttle-Cut activation position
Hold the throttle stick at the highest throttle location you want to be able to activate TH-CUT (normally set near idle). Memorize the position by pressing the (+)/(-) keys simultaneously.

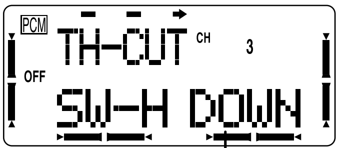
These keys are used to move through the five submenus in the TH-CUT function.

To MODEL function



To TRAINR function

Data input keys



Selected switch

Switch direction display (NULL, UP, DOWN)

4. Activation Switch Selection
Select the switch with the (+)/(-) keys.

5. Switch direction selection
Select the desired direction for the switch to turn the function on and off with the (+)/(-) keys.
UP = Upper position turns on TH-CUT
DOWN = Lower position turns on TH-CUT
NULL = TH-CUT is deactivated

HELICOPTER (HELISWH1/SWH2)
ADVANCE MENU FUNCTIONS

Pages 77 to 90 describe the Advance menu functions for both helicopter model types (HELISWH1, HELISWH2, HELISWH4, HELISR-3, HELISN-3). Helicopter Basic Menus are in pages 70 to 75.

TH-CRV — Throttle Curve (Normal, Idle-Up 1, Idle-Up 2)

You can use Throttle Curve menus to program a five-point curve so that the engine speed responds the way you like relative to movement of the throttle stick. You can set each of the five points over a 0% to 100% range.

There are three throttle curves: normal (NORM), idle-up 1 (IDL1), and idle-up 2 (IDL2). Only the basic normal throttle curve is displayed in the Basic Menu, but all the curves may be programmed in the Advance Menu. For your convenience, the normal curve can be programmed in either the Basic or Advance Menu, and it is automatically updated in both places. Switch G is programmed so that you may change between the normal (NORM), idle-up 1 (IDL1), and idle-up 2 (IDL2) curves.

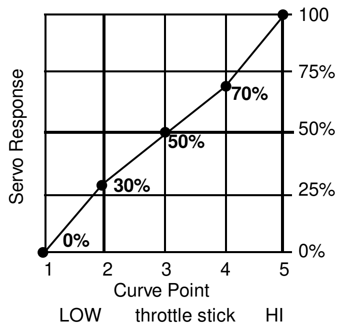
Normal Curve Adjustment Method

The normal throttle curve (TH-CRV NORM) function is used to produce the basic throttle curve for flight near hover. It is used along with the normal pitch curve (PI-CRV NORM) so that the helicopter flies with constant rotor RPM. The normal throttle curve function is ON at startup.

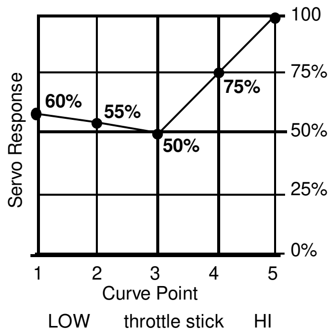
Idle-up 1 and 2 Curve Adjustment Method

The idle-up curves should be programmed so that the engine maintains constant RPM even when the pitch is reduced during flight. The curves should be matched to loops, rolls, and other maneuvers, and are divided into idle-up curve 1 and idle-up curve 2. The TH-CURV functions for IDL1 and IDL2 curves will not operate until the OFST-1 and OFST-2 functions are activated.

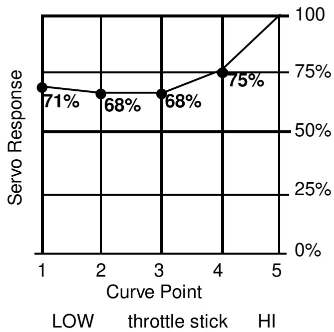
Throttle Curve Norm Example



Throttle Curve IDL1 Example



Throttle Curve IDL2 Example



Inputting the Throttle Curve in Normal, Idle-up 1, and Idle-up 2

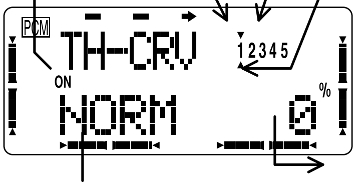
The Throttle Curve Normal function is on at startup.

Top arrow indicates the current stick position (2 arrows means it's between points)

Curve points 1-5

The blinking item on the setting screen is the current setting item.

The bottom arrow shows the point on the five-point curve currently being set.



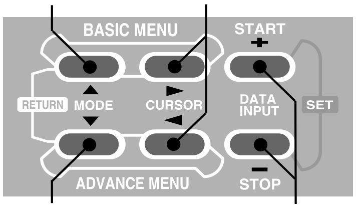
Curve Name Display (NORM)

Curve Point Value (Range: 0 - +100%)
Initial curve settings:
POS1 = 0%
POS2 = 25%
POS3 = 50%
POS4 = 75%
POS5 = 100%

Input 5-point curve values
Move the lower arrow to the position you want to set with the CURSOR keys (the curve point is indicated by the arrow below the numbers 1-5, and the current throttle position is above the numbers). Enter the desired curve value with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

To TH-CRV IDL1 function

These keys are used to move through the five submenus in the TH-CRV function.

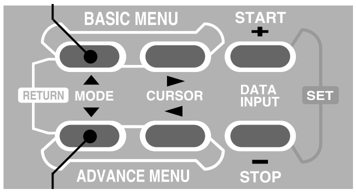


To PI-CRV NORM function

Data input keys

Idle-up 1 Curve Setting
The TH-CRV IDL1 function will not operate until the OFST1 function is activated. This also activates the IDL1 Pitch & REVOLU curve menus. You can activate idle-up 1 and idle-up 2 independently.
The curve setting procedure is the same as normal curve described above.

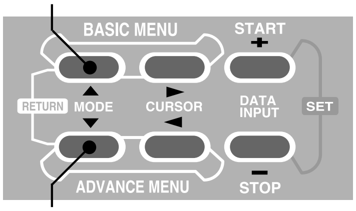
To TH-CRV IDL2 function



To TH-CRV function

Idle-up 2 Curve Setting
The TH-CRV IDL2 function will not operate until the OFST2 function is activated. This also activates the IDL2 Pitch & REVOLU curve menus.
The curve setting procedure is the same as normal curve described above.
You can activate idle-up 1 and idle-up 2 setups independently.

To TH-HLD function



To TH-CRV IDL1 function

CAUTION
Before actually starting the engine, be sure that idle-up switches 1 and 2 are off, and the throttle is set near engine idle.

TH-HLD — Throttle Hold

The Throttle Hold function holds the engine throttle in the idling position and disengages it from the throttle stick, whenever switch E is activated. It is commonly used during autorotation. You can set the throttle position to be held over a -50 to +50% range centered about the throttle idle position. The throttle hold function also includes a rudder offset option.

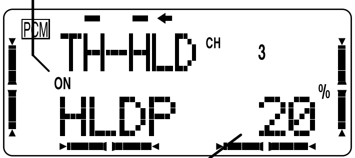
Rudder offset at throttle hold

The rudder offset function contained in throttle hold is used to offset the tail rotor pitch neutral position during autorotation. It is set to keep the fuselage from rotating only when the throttle hold function is active.

You may also input a time delay for the offset to be implemented (to prevent sudden trim changes) in the DELAY menu within Advance menu (page 72).

Setting up Throttle Hold

1. Turn the TH-HLD function ON by pressing the (+) key ("ON" or "OFF" displayed depending on SW-E position). The hovering pitch curve function is also activated.
Turn off (INH) the function with the (-) key.

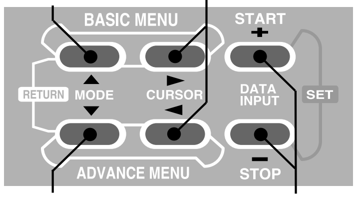


2. Enter Hold position
Adjust the position with the (+)/(-) keys.
• Press the (+)/(-) keys simultaneously to return to 0%.

Hold position
Range: -50% to +50%
(Initial setting = 0%)

These keys are used to move through the four submenus in the TH-HLD function.

To OFST-1



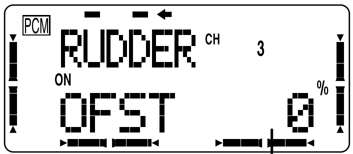
To TH-CRV function

Data input keys

Hooki up the throttle linkage so that the carburetor is opened fully at high throttle, then use the digital trim to adjust the engine idle position. To have TH-HLD maintain idle, move the throttle stick to the idle position, then cycle the hold switch on and off and keep changing the offset value until the servo does not move. When you want TH-HLD to lower the engine idle speed, or you want to stop, input a more negative number.

CAUTION
The throttle hold function has priority over the idle-up function. Be sure that the idle-up and throttle hold switch are off before trying to start the engine.

3. Rudder offset function
First activate by pressing the (+) key ("ON" or "OFF" displayed).
INH the function with the (-) key.



Rudder offset rate
(Range: -100 - +100%)
(Initial value: 0%)

4. Offset rate setting
Entire the desired rudder offset amount with the (+)/(-) keys.

OFST-1-2-iv — Offsets 1, 2 & iv

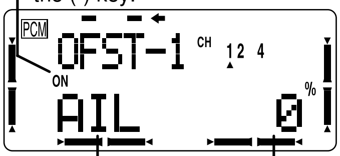
The Offset 1, Offset 2,and Offset iv functions are used to offset (change the neutral position) of the aileron, elevator, and rudder when switch G is used to switch to idle-up 1 (or 2) or switch F is used to switch to inverted flight. This function may be used to automatically change the trim of a helicopter flying at high speed. A clockwise-rotation rotor helicopter tends to drift to the right at high speed, so an aileron offset may be applied to offset the helicopter to the left. You can use the DELAY function to make a smooth transition between the differing neutral settings.

The necessary elevator offset varies with model geometry, so it must be determined by noting pitch changes at high speed. The rudder offset is affected by both revolution mixing (page 72), and trim (overall level movement) with the offset function. When the offset function is ON, also the electronic trim levers will operate, so the trim amount in these flight modes is automatically input to each offset amount.

The activating switches are initially set so that offset 1 and offset 2 are on at the same time as the idle-up 1 and idle-up 2 functions, switched by Switch G. If desired, the offset function ON/OFF operation can be changed to switch C. This may only be done in the OFST-1 menu, and not in the OFST-2 menu.

Setting up Offsets 1, 2, & iv

1. Turn the OFST1, OFST2, or OFSTiv function ON or OFF by pressing the (+) key ("ON" or "OFF" displayed depending on switch G's or F's position). Turn off (INH) the function with the (-) key.



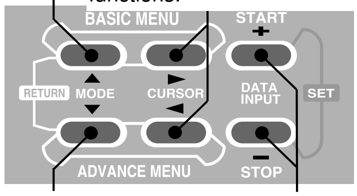
Channel display
AIL = Aileron
ELE = Elevator
RUD = Rudder

Offset amount
Range: -120 to +120%
(Initial value: 0%)

2. Aileron offset
Input the desired Aileron offset with the (+)/(-) keys.
3. Elevator offset
Input the desired Elevator offset with the (+)/(-) keys.
4. Rudder offset*
Input the desired Rudder offset with the (+)/(-) keys.
• If you're unhappy with what you've set, you may reset to zero by pressing the (+) and (-) keys simultaneously.

To DELAY or OFST-2 function

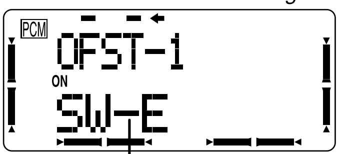
These keys are used to move through the five submenus in the OFST1 & OFST2 functions.



To OFST-1 or TH-HLD function

Data input keys

The screen below only appears in the OFST-1 menu for switch setting.



Switch direction display (SW-E, SW-C modA, SW-C modB)
(Initial value: SW-E)

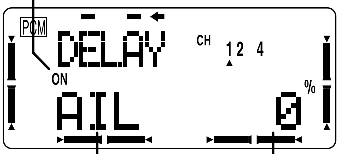
5. Switch direction selection
Select the desired switch and direction for the switch to turn the function on and off with the (+)/(-) keys.
SW-E: Turns OFST1 & 2 on/off at the same time as idle-ups 1 & 2
SW-C modA: Switch C center position turns on OFST-1 and lower position turns on OFST-2
SW-C modB: Switch C center position turns on OFST-1 and upper position turns on OFST-2

DELAY — Delay Function

The Delay function provides a smooth transition between the trim positions whenever offset, revolution mixing, or throttle hold functions are turned on and off. You may set different delay times for aileron, elevator, and rudder. With a 50% delay setting, the servo takes about a half-second to move to its new position, quite a long time. Normally a 10-15% delay is used.

Setting Delays

The Delay function is automatically activated when either Offset, Revolution mixing, or Throttle hold are activated.



Channel display
AIL = Aileron
ELE = Elevator
RUD = Rudder

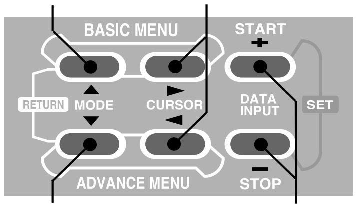
Delay amount
Range: 0 - 100%
(Initial value: 0%)

1. Aileron delay
Input the desired Aileron delay with the (+)/(-) keys.
2. Elevator delay
Input the desired Elevator delay with the (+)/(-) keys.
3. Rudder delay
Input the desired Rudder delay with the (+)/(-) keys.

• If you're unhappy with what you've set, you may reset to zero by pressing the (+) and (-) keys simultaneously.

To PMIX-1 function

These keys are used to move through the three submenus in the DELAY function.



To OFST-2 function

Data input keys

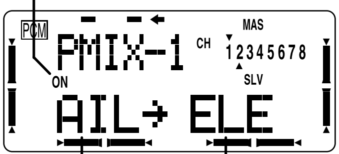
PMIX-1-2 — Programmable Mixers 1-2

In the helicopter mode, your T8UA system contains two separate programmable mixers with unique mixing capabilities. You may use mixing to correct any tendencies of the helicopter during aerobatics that you want to eliminate, making operation more pleasant. Besides mixing between arbitrary channels, the mixers may be linked with the Advance menus in the T8UA, or the mixing curve can be offset relative to the master's neutral. You may select which switch activates your mixers from the eight switches A-G or throttle, and you may choose whether the trim from the master also affects the slave channel.. The Link function is used to 'link' programmable mixers with other mixing menus.

Mixer Initial Settings

The default channels for Mixers 1 & 2 are set to frequently-used mixing combinations as follows: PMIX-1 = AIL→ELE, PMIX-2 = ELE→THR. The programming method is given for Mixer #1; the second mixer may be programmed in an identical fashion.

1. Activate the Programmable Mixer
Press the (+) key to activate the PMIX-1 function ("ON" or "OFF" will be displayed, depending on the ON/OFF switch's position). Use the (-) key to INHibit the mixer.)



Master channel (control that applies mixing)

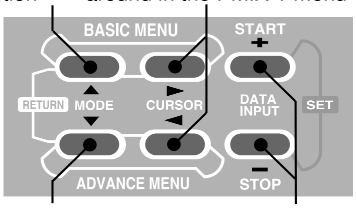
Slave channel (channel which *receives* mixing)

2. Master channel setting
Select the master channel with the (+)/(-) keys (the master is the one that *sends* the mixing).
If you select "OFS" for the master channel, the numerical mixing rate setting affects the slave side only, providing a fixed offset.

3. Slave channel setting
Select the slave channel (the one that *receives* the mixing) with the (+)/(-) keys.

To PMIX-2 function

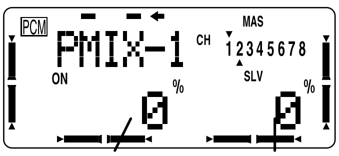
These keys are used to move around in the PMIX-1 menu



To DELAY function

Data input keys

Default Mixing Setup
When you begin programming a model, the mixers are set up as follows (of course, you may change these default settings):
PMIX-1: AIL>ELE
PMIX-2: ELE>THR



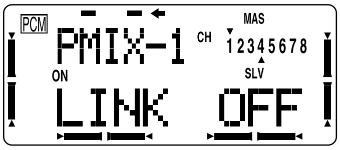
Mixing rate (left or up)

Mixing rate (right or down)

Range: -100 to +100%
(Initial value: 0%)

4. Mixing rate setting
Move the master control in the direction you want to adjust, and one of the mixing rate displays will flash. Set the mixing amount with the (+)/(-) keys. Note that you can set the mixing rate individually for each side of the mix (left/right or up/down).
NOTE: If the amount of mixing is set to 0%, no mixing will occur.
You may reset the rate to zero by pressing the (+)/(-) keys simultaneously.

(Continued from preceding page)



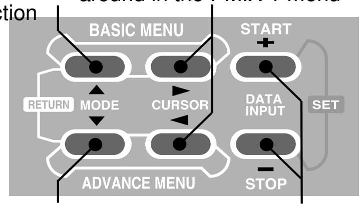
Link function ON/OFF indicator

5. Link function setting

Turn the Link function ON or OFF with the (+)/(-) keys. When the Link function is ON, ">" is displayed after the slave channel on the screen.

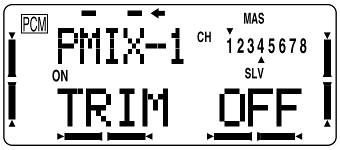
To PMIX-2 function

These keys are used to move around in the PMIX-1 menu



To TH-NDL function

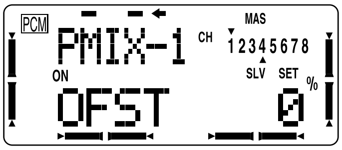
Data input keys



Trim ON/OFF indicator

6. Trim setting

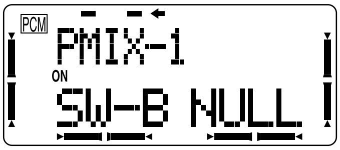
This couples the master channel's trim with the slave function. Select ON/OFF with the (+)/(-) keys.



Displays offset position

7. Offsetting neutral mix point

If you want the mix to occur somewhere besides master neutral, hold the master channel control in the desired position, and store the offset position by pressing the (+)/(-) keys simultaneously.



Current on/off switch

Displays ON/OFF switch direction

8. Switch selection

Choose the desired mixer ON/OFF switch with the (+)/(-) keys.

9. ON/OFF Direction

Set the ON/OFF directions with the (+)/(-) keys.

NULL = Normal operation regardless of switch setting
UP = Switch upper or rear position turns on the function
CNTR = Center position of 3-position switch turns on the function
DOWN = Switch lower or forward position turns on the function

• If you select "STK-3" to turn mixer on and off, you'll need to set the switching position and direction. To do so, first position the throttle stick where you want switching to occur. Next, enter the stick position into memory by pressing the (+)/(-) keys simultaneously. (a percentage will be displayed on the screen.

If you want mixing turned on at the high throttle side of the set position, press the (+) key. If you want mixing on at the low throttle side, press the (-) key. An arrow is displayed above or below the small "3" at the right top corner of the screen to verify proper switching direction.

When you think you're done, move the throttle stick and check if programmable mixing switches on and off in accordance with your settings.

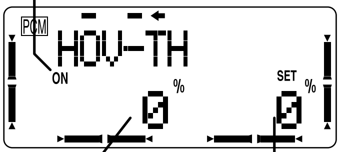
HOV-TH — Hovering Throttle

The Hovering Throttle function may be used to trim the throttle near hover without affecting pitch. Its position can be memorized so that when the model memory is recalled, the original trim is repeated by rotating the knob to its center position.

When the hovering throttle knob is turned clockwise, the engine speed rises and when turned counterclockwise, the engine speed drops. Changes in rotor speed caused by temperature, humidity, or other conditions can be accommodated. When used with the hovering pitch function, more exact trimming is possible.

Working with Hovering Throttle

1. Activate Hovering Throttle Function
Press the (+) key to activate the HOV-TH function ("ON" or "OFF" will be displayed, depending on the IDL-UP switch's position). Use the (-) key to INHibit the mixer.)



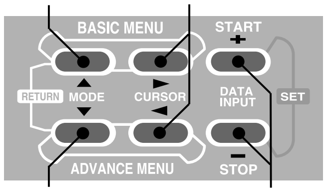
Current trim memory
Range: -100 to +100%
(Initial value: 0%)

Current trim position
Range: -100 to +100%
(Initial value: 0%

2. Trim memory setting
Press the (+)/(-) keys simultaneously to enter the current knob location. When the hovering throttle knob is returned to the center, the trim returns to its position before memorization.
Note that when memorization is repeated with the knob offset from center, the trim value accumulates.
• If you wish to reset to the initial value, make the trim position 0% with the knob and memorize the trim, then return the knob to its center position.

To HOV-PI function

These keys are used to move through the two submenus in the HOV-TH function.



To PMIX-2 function

Data input keys

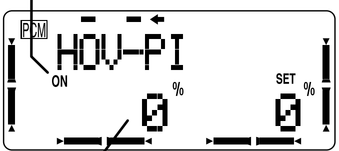
HOV-PI — Hovering Pitch

The Hovering Pitch function may be used to trim the rotor pitch near hover without affecting throttle. Its position can be memorized so that when the model memory is recalled, the original trim is repeated by rotating the knob to its center position.

When the hovering pitch knob is turned clockwise, the rotor pitch increases, and when turned counterclockwise, the rotor pitch decreases. Changes in rotor speed caused by temperature, humidity, or other conditions can be accommodated. When used with the hovering throttle function, more exact trimming is possible.

Using the Hovering Pitch Function

1. Activate Hovering Pitch Function
Press the (+) key to activate the HOV-PI function ("ON" or "OFF" will be displayed, depending on the IDL-UP switch's position). Use the (-) key to INHibit the mixer.)



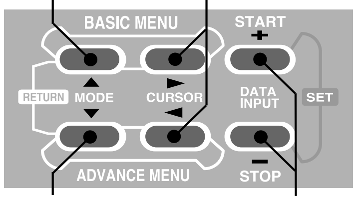
Current trim memory
Range: -100 to +100%
(Initial value: 0%)

Current trim position
Range: -100 to +100%
(Initial value: 0%

2. Trim memory setting
Press the (+)/(-) keys simultaneously to enter the current knob location. When the hovering pitch knob is returned to the center, the trim returns to its position before memorization.
Note that when memorization is repeated with the knob offset from center, the trim value accumulates.
• If you wish to reset to the initial value, make the trim position 0% with the knob and memorize the trim, then return the knob to its center position.

To GYRO function

These keys are used to move through the two submenus in the HOV-PI function.



To HOV-TH function

Data input keys

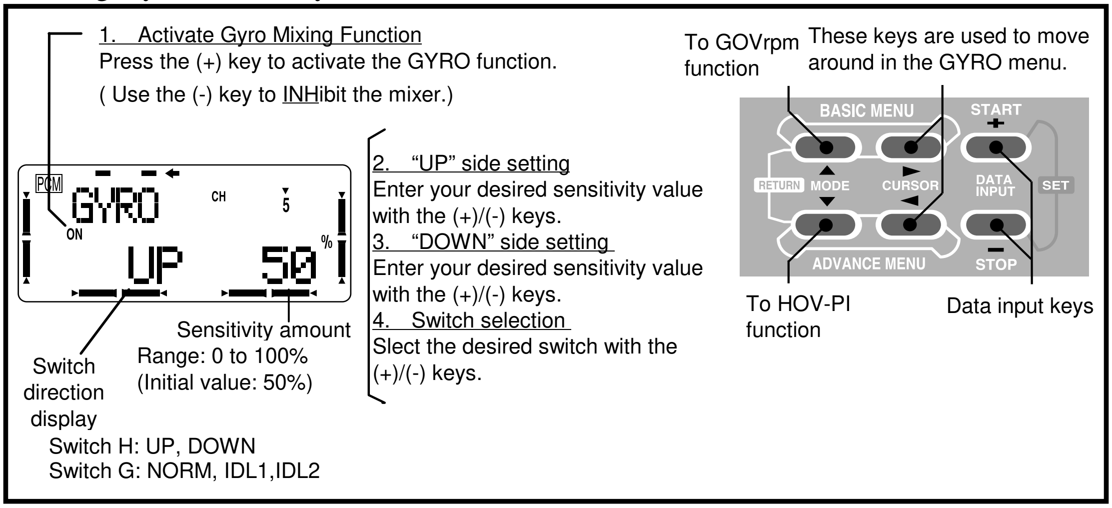
GYRO — Gyro mixing

The gyro mixing function is used to adjust the gyro sensitivity from the transmitter. Use this function by connecting the gyro sensitivity adjustment input connector to the channel 5 output of the receiver. Switch H or switch G (idle-up switch) can be selected, and each direction of the changeover switch can be adjusted.

Switch H: The UP and DOWN sides sensitivity can be adjusted.

Switch G: The NORM, IDL1, and IDL2 sensitivities can be adjusted.

Entering Gyro Sensitivity Values



GOVrpm — Governor mixing

The Governor mixing function is used to adjust the GV-1 (Governor) speed settings (rS1, rS2, rS3) from the transmitter. Whether speed switching and governor ON/OFF are switched using one switch or ON/OFF switching is performed using an independent switch can also be selected. When speed setting control uses CH7 and an ON/OFF switch is used, CH8 can also be used.

When speed and ON/OF are switched using one switch
(Setting example)

Governor Speed	Switch Position (Switch C or G)	Rate (%)	Adjustment from Transmitter
rS1: OFF	UP or NORM	0	Use up to 0% (Governor speed display: "off")
rS2: 1400	CNTR or IDL1	50	Speed adjusted by raising and lowering "50%" rate.
rS3: 1700	DOWN or IDL2	100	Speed adjusted by lowering "100%" rate.

* For instance, rS3 is adjusted by setting the maximum speed used and lowering it from the transmitter.
* For the time being, use the initial rate setting above.
* Since speed adjustment from the transmitter is rate setting, for the actual speed, checking the governor side display and remembering its relationship with the actual speed is convenient.

When governor ON/OFF is controlled using switch B
When governor ON/OFF uses an independent switch, the speed can be adjusted and switched using each position (3 points) of switch C or G.

Caution:

The relationship of the governor speed setting rS1~rS3 and the switch positions conforms to the table above. Since the governor mixing function may not be used or the direction may be different, if this mixing was turned ON, first check the direction.

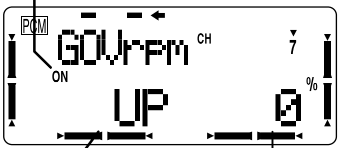
At throttle hold, always check that the governor is OFF. Conversely, when the speed value rises, reverse it as described in "Throttle hold OFF direction selection".

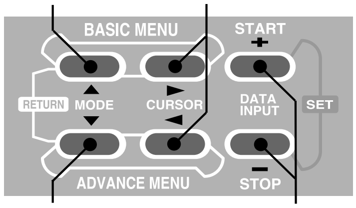
Setting the Governor Mixing Function

1. Activate Governor Mixing Function
Press the (+) key to activate the GOVrpm function.
(Use the (-) key to INHibit the mixer.)

To TH-NDL function

These keys are used to move around in the GOVrpm menu.





To GYRO function

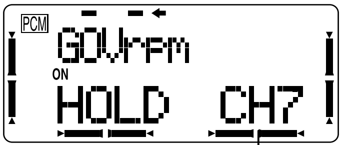
Data input keys

Switch direction display

Speed setting
Range: 0 to 100%
(Initial value:
UP=0%
CNTR=50%
DOWN=100%)

2. "UP" Side Rate Setting:
Enter your desired speed value with the (+)/(-) keys.
3. "CNTR" :
Enter your desired speed value with the (+)/(-) keys.
4. "DOWN":
Enter your desired speed value with the (+)/(-) keys.

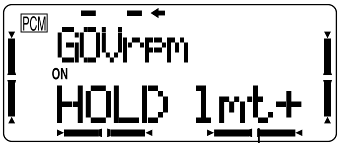
Switch C: UP, CNTR, DOWN
Switch G: NORM, IDL1,IDL2



Channel setting
Range: CH7 or CH8

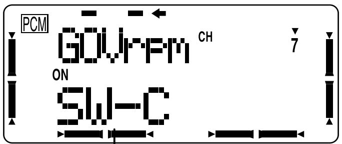
5. ON/OFF Channel Selection
Select the output channel with the (+)/(-) keys.

CH7: CH7 controls the speed and ON/OFF.
CH8: CH8 independently controls ON/OFF.
ON/OFF is performed with switch B.



Current setting
Range: lmt+, lmt-

6. Selection of OFF Direction at Throttle Hold
Operate the (+)/(-) keys in the direction that turns the Governor off at throttle hold operation.



Switch display
Range: SW-C or SW-G

7. Switch Selection
Chose the desired mixer switch with (+)/(-) keys.

TH→NDL — Throttle→Needle Mixing (Normal, Idle)

The Throttle→Needle mixing function is used to control the engine's mixture using a 5-point curve relative to throttle stick movement . The engine must be equipped with a mixture control system, such as needle control or some other mixture adjustment, and the needle servo must be plugged into CH8. The CH8 knob may be used for High-side mixture adjustment when the idle-up (IDLE) function is ON.

You can have independent control of throttle→needle mixing in both the Normal (NORM) and idle-up (IDLE) conditions. The TH→NDL function includes an 'acceleration' function that precedes rapid throttle opening and provides the engine with the best mixture.

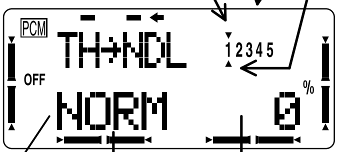
Setting Throttle→Needle Mixing

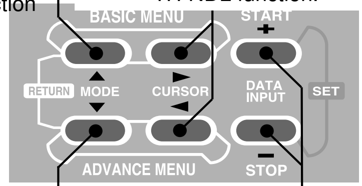
Top arrow indicates the current stick position (2 arrows means it's between points)

Curve points 1-5
The bottom arrow shows the point on the five-point curve currently being set.

To INVERT or TH-NDL NORM function

These keys are used to move around in the TH-NDL function.





To GOVrpm function

Data input keys

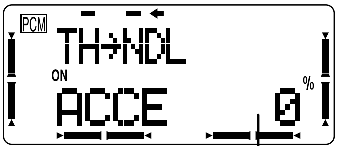
Curve Name Display (NORM or IDLE)

Curve Point Value (Range: 0 - +100%)

Move between the TH-NDL NORM and IDLE screens with the (↑)(↓) keys.

The blinking item on the setting screen is the current setting item.

1. Turn the TH-NDL function ON by pressing the (+) key ("ON" displayed). Turn off (INH) the function with the (-) key.
2. Input 5-point curve values
Move the lower arrow to the position you want to set with the CURSOR keys (the curve point is indicated by the arrow below the numbers 1-5, and the current throttle position is above the numbers). Enter the desired curve value with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.
Initial values:
POS1 = 0%
POS2 =25%
POS3 = 50%
POS4 = 75%
POS5 = 100%



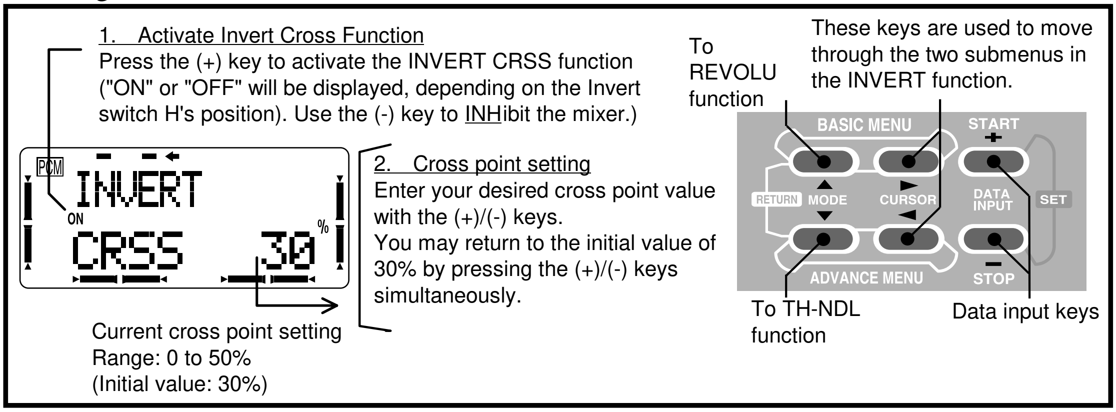
Acceleration amount
Range: 0 to 100%
(Initial value: 0%)

3.Acceleration function setting
Enter the desired acceleration value with the (+)/(-) keys.Return to a 0 % value by pressing the (+)/(-) keys simultaneously.
Acceleration is only mixed in when the throttle is moved towards High. If Throttle Hold is activated, the needle servo moves and acceleration is performed even though the throttle servo is fixed.
Idle-up functions are performed when the throttle curve idle-up function is ACTivated.

INVERT CROSS — Inverted Cross Position

The inverted cross position function sets the point at which low-side pitch is crossed when switching between forward and inverted. It is commonly set to a value of 30%.

Entering Inverted Cross Position



REVOLU — Revolution Mixing (Normal, Idle-Up 1, Idle-Up 2)

Revolution mixing is used to mix pitch→rudder to suppress the torque reaction generated by changes in the pitch and speed of the main rotor. The mixing ratio can be set by a five-point curve.

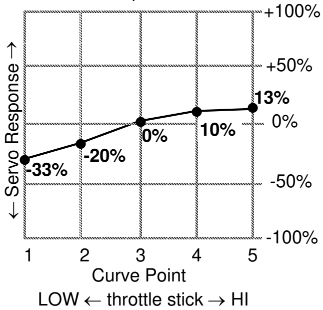
Three are three kinds of revolution mixing: normal (NORM), idle-up 1 (IDL1), and idle-up 2 (IDL2). Only basic NORM revolution mixing is displayed in the Basic Menu, but all the revolution curves are visible in the Advance Menu. If you program the normal curve in the Basic Menu, the same curve is automatically reflected in the REVOLU NORM menu within the Advance Menu, and vice versa.

The REVOLU functions for the IDL1 and IDL2 curves will not operate until the OFST-1 and OFST-2 functions are activated.

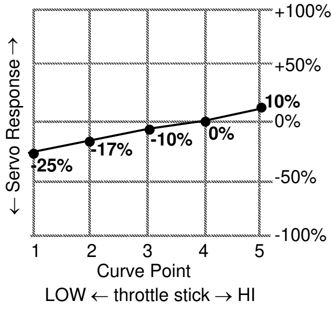
Revolution Mixing for Idle-Up 1&2

These two functions set the mixing rate so that the fuselage direction is straight ahead during high-speed flight. You can set either a curve or offset position to match the helicopter's tendencies. You may also program in reverse rudder mixing for 3D flight.

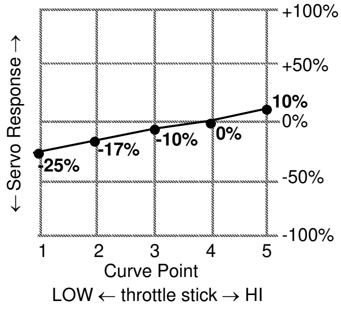
Example Revolution-Norm
Five-point Curve



Revolution IDL1 Curve Example



Revolution IDL2 Curve Example



Inputting Revolution Five-Point Curves

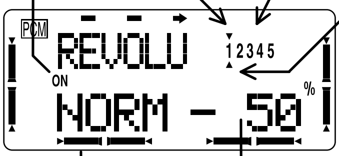
The Revolution Normal function is on at startup.
It can be turned ON/OFF with the (+)/(-) keys.

Top arrow indicates the current stick position (2 arrows means it's between points)

Curve points 1-5

The blinking item on the setting screen is the current setting item.

The bottom arrow shows the point on the five-point curve currently being set.



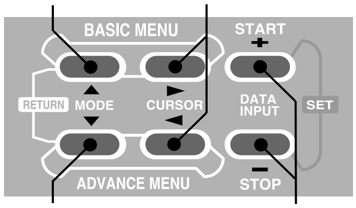
Curve Name Display (NORM)

Curve Point Value (Range: 0 - +100%)
Initial curve settings:
POS1 = 0%
POS2 = 25%
POS3 = 50%
POS4 = 75%
POS5 = 100%

Input 5-point curve values
Move the lower arrow to the position you want to set with the CURSOR keys (the curve point is indicated by the arrow below the numbers 1-5, and the current throttle position is above the numbers). Enter the desired curve value with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

To PI-CRV function

These keys are used to move through the five submenus in the REVOLU function.

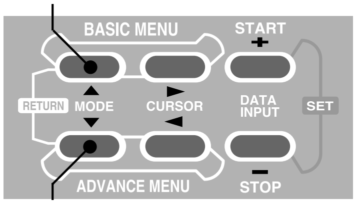


To REVOLU IDL1 function

Data input keys

To REVOLU NORM or IDL1 function

Revolution Idle-Up 1 & Idle-Up 2 Curve Setting
The REVOLU IDL1 &/or IDL2 functions will not operate until the OFST1 and/or OFST2 functions are activated, which also activates the IDL1 & IDL2 Pitch & Throttle curve menus.
You can activate idle-up 1 and idle-up 2 independently.
The curve inputting procedure is the same as normal curve described above.



To REVOLU IDL2 or INVERT function

PI-CRV — Pitch Curve (Normal, Idle-Up1 & 2, Hold, Inverted)

The pitch curve is defined by a 5-point curve so that you may set the best pitch motion relative to throttle stick movement. Each point on the curve can be adjusted over a 0% to 100% range.

The T8U system contains five pitch curves: normal (NORM), idle-up 1 (IDL1), idle-up 2 (IDL2), hold (HOLD), and inverted (INVR). The basic normal pitch curve is the only one displayed in the Basic Menu, but all of the pitch curves can be viewed in the Advance menu. The Normal curve is exactly the same in both the Advance and Basic Menus.

Use the idle-up switch (switch G) to move between Normal, idle-up 1, and idle-up 2. (The PI-CURV functions for IDL1 and IDL2 curves will not operate until the OFST-1 and OFST-2 functions are activated.) Switching to the hold (HOLD) function is performed with switch E. Switching to the inverted (INVR) function is performed with switch H. Note that whenever the hold switch is turned on, it has priority regardless of the idle-up switch position.

Normal Curve Adjustment

The normal (NORM) pitch curve function produces the basic pitch curve for flight near hover. It is set up to provide up and down control at a constant engine speed along with the normal throttle curve.

Idle-Up 1 & Idle-Up 2 Curve Adjustment

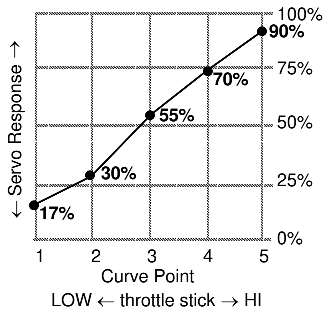
The HI-side pitch curve limits the maximum rotor pitch so that a large load is not applied to the engine. The LO-side pitch curve produces a curve with a minimum pitch of -4°. Idle-up 1 is used for 540° stall turns, looping, and rolling stall turns, while idle-up 2 is used for rolls.

Throttle-Hold Curve Adjustment

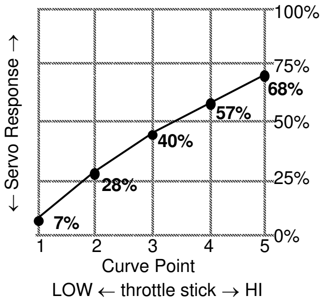
The throttle hold curve is used when performing autorotations, and should provide pitch from -4° to +12°. To get this pitch range, set the HI and LO rates to +100% and -100% respectively.

Examples of these four curves are shown below:

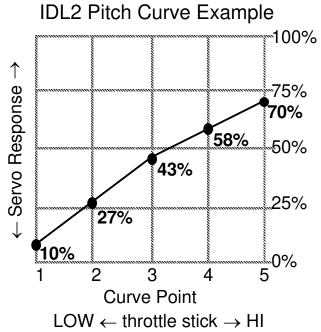
NORM Pitch Curve Example



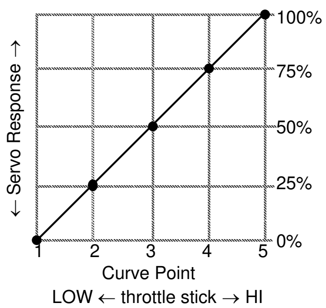
IDL1 Pitch Curve Example



IDL2 Pitch Curve Example



HOLD Pitch Curve Example



SETTING METHOD

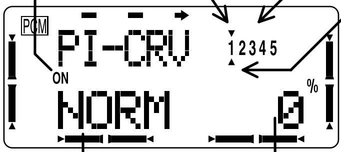
The Pitch Curve Normal function is on at startup.

Top arrow indicates the current throttle stick position (2 arrows means it's between points)

Curve points 1-5

The blinking item on the setting screen is the current setting item.

The bottom arrow shows the point on the five-point curve currently being set.



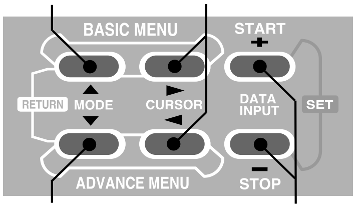
Curve Name Display (NORM)

Curve Point Value (Range: 0 - +100%)
Initial curve settings:
POS1 = 0%
POS2 = 25%
POS3 = 50%
POS4 = 75%
POS5 = 100%

Input 5-point curve values
Move the lower arrow to the position you want to set with the CURSOR keys (the curve point is indicated by the arrow below the numbers 1-5, and the current throttle position is above the numbers). Enter the desired curve value with the (+)/(-) keys.
• If you're unhappy with what you've set, you may return to the default value by pressing the (+) and (-) keys simultaneously.

To TH-CRV function

These keys are used to move between curve points in the TH-CRV function.

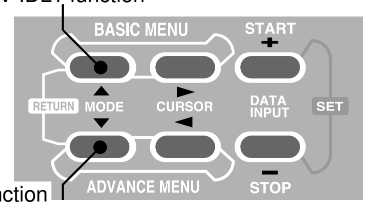


To PI-CRV IDL1 function

Data input keys

To PI-CRV NORM or PI-CRV IDL1 function

Idle-up 1 Pitch Curve Setting
The PI-CRV IDL1 function will not operate until the OFST1 function is activated. This also activates the IDL1 Throttle & REVOLU curve menus. You can activate idle-up 1 and idle-up 2 independently.
The curve setting procedure is the same as normal curve described above.

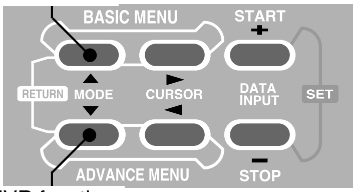


To PI-CRV IDL2 or PI-CRV HOLD function

To PI-CRV IDL2 function

Throttle Hold Pitch Curve Setting
The PI-CRV HOLD function will take data, but will not operate until the throttle hold (TH-HLD) function is activated.

The curve setting procedure is the same as normal curve described above.

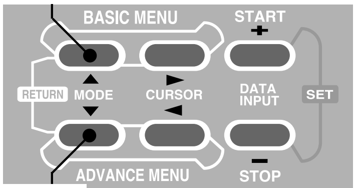


To PI-CRV INVR function

To PI-CRV HOLD function

Invert Pitch Curve Setting
The PI-CRV INVR function will take data, but will not operate until the INVERT function is activated.

The curve setting procedure is the same as normal curve described above.

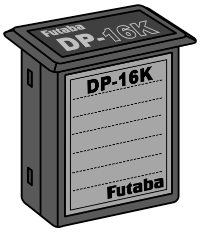


To REVOLU function

CAUTION
Before actually starting the engine, be sure that idle-up switches 1 and 2 are off, and the throttle is set near engine idle.

The setting data for 8 models can be saved in the T8UAPS transmitter itself and the setting data for 8 more models can be saved in the DP-16K CAMPac (Option) removable memory module.

CAMPac initialization
To use the CAMPac with the T8UAPS, the CAMPac must be initialized when the power is turned on for the first time. After the message "INIT? EXT-MEM" appears on the screen when the power is turned on, press the "+" key. This automatically initializes the storage area for 8 models. Further operation is unnecessary.



DP-16K CAMPac (Option)
When using the DP-16K CAMPac, remove the transmitter dust cap and insert the data pack as far as it will go.
Always turn off the transmitter power before inserting or removing the data pack.

Compatibility of 8Usuper Series and old 8U Series transmitter data packs

The data memorized in the data pack using an old 8U Series can be copied to the memory in the body of the 8Usuper Series transmitter. When old data is copied, initialization data for the new functions added with the 8Usuper are added.

(1) Call the copy function in the BASIC menu/MODEL submenu. (Call the "Pac" screen following "COPY" of the function name display at the top left of the screen.)
(2) Select the model No. you want to copy using the + or - key.
(3) Press the + and - keys simultaneously two times. (The data is copied to transmitter side model No. 8.)

However, when data saved for mixing type "H-2" for helicopters using an old model was copied to the T8UAPS transmitter, whereas the aileron and pitch travel in the old setting data is fixed at 60%, both the aileron and pitch initial value settings of the new function (swash AFR function) of the T8UAPS is 50%. Therefore, the travel is reduced by that amount. Readjust after copying the setting data.

All the data memorized in the CAMPac using an old 8U Series can be batch converted to 8USUPER Series transmitter data. However, the converted CAMPac cannot be used with an old 8U Series transmitter.
(1) While pressing the two BASIC menu keys simultaneously, turn on the transmitter power switch. (The conversion function screen is called.)
(2) Press the + key. (Conversion is started and all the models data in the data pack are converted.)

The data memorized in the data pack using the 8USUPER Series cannot be used with the old 8U Series.

Back-up unnecessary

The setting data (transmitter body and CAMPac) are memorized in memory elements that do not require a back-up battery. Therefore, the data can be used while ignoring the back-up battery life. Of course, the setting data is not destroyed even when the transmitter battery is replaced.

GLOSSARY

The abbreviations used with the 8UA are defined below alphabetically. Related pages are given in parenthesis following the definition ().

A

AB, ABK, ABRAKE Airbrake function (47)
ACCE.........................Acceleration function used with special carburetor. (51)
ACRO.........................Acrobatic aircraft menu (26–51)
ACT............................Active: Function will operate if switched on
AI, AIL........................Aileron
AI–DIF ....Aileron differential function creates different up & down travel. (46)
AIL→FL .... Aileron→flap mixing used by gliders to increase roll rate. (61)
AIL2 ....Second aileron output channel switching (34)
ALL ....All
ALVATR......................Ailevator function produces differential elevator movement. (49)
ATL ....Adjustable Travel Limit. Limits throttle trims to only the throttle idle position. (31)
ATV ....Adjustable Travel Volume. Function that adjusts the servo travel at the left and right sides. (26)

B

BFLY..........................Butterfly mixing for gliders (sometimes called ..crow... (59)

C

C/DN ....Center & down position of switch.
camber.....................see FLPTRM
CH5...........................Channel 5.
CH6...........................Channel 6.
CH7...........................Channel 7.
CH8...........................Channel 8.
CNTR.........................Center. Center position of switch.
COPY.........................Data copy: command used to copy one memory to another (36)
crow ....see BFLY
CRSS.........................Cross position. Low side pitch crossing point when inverted flight using a stick is used. (87)

D

D/R............................Dual rate: switch–controlled travel function. (26)
DATARSET..................Data reset: clear model memory (31)
DELAY........................Delay circuit (51,80)
DISP ....Trim display method. (39)
DOWN........................Lower position.

E

EG/S..........................Engine starter. Engine data switch function. (32)
EL, ELE ....Elevator. CH2
ELE→FL....................Elevator →Flap mixing (48)
ELEVON.....................Elevon: function that combines the ailerons and elevators for tailless models. (49)
ERROR......................Error generation. (16)
ERRORBACKUP Backup error. All the programming was lost. When displayed, return transmitter for repair. (16)
ERRORLOWBATT Low battery warning. The battery voltage is unsafe. (16)
ERRORMDLSEL Model selection error. Data pack error display. (16)
EXP ....Exponential. Nonlinear servo response to stick . (28)
EXT–MEM.................External memory (data pack). (16)

F

F/S............................Fail safe function moves servos to preset positions when interference occurs. (29)
FL, FLP.....................Flap. CH6
FLP→AI....................Flap→aileron mixing used by gliders for camber control. (60)
FLPRON ....Flaperon function gives the ailerons a flap function. (45)
FLPTRM.....................Flap trim function; controls camber on gliders (46)
FREE ....Safety mechanism switch not set.

G

GE, GEAR..................Gear. Usually plugged into CH5
GLID1FLP..................Menu for glider with 1 flap servo. (52, 53)
GLID2FLP..................Menu for glider with 2 flap servos. (52, 53)
GOVrpm....................Governor mixing function. (84)
GY, GYR....................Gyro. Usually plugged into CH5
GYRO.........................Gyro mixing function. (84)

H

HELISWH1..................Helicopter swash type 1 menu. (65)
HELISWH2..................Helicopter swash type 2 menu. (65)
HLDP.........................Hold position. Throttle fixed position at throttle hold. (79)
HOLD.........................Throttle hold position when autorotation performed. (79)
HOV–PI.....................Hovering pitch. Pitch trim function near hovering. (83)
HOV–TH ....Hovering throttle. Throttle trim function near hovering. (83)

I

IDL–1........................Idle–up. 1:. use. for. loops,. 540ø. stall. turns,. and. other maneuvers by helicopters
IDL–2........................Idle–up 2: use for rolls and other aerobatics by helicopters.
IDL–DN.....................Idle down function lowers engine idling speed with a switch. (29)
INH ....Inhibit. Function will not operate

INIT............................ Initialize. External memory initialization. (16)
INVERT, INVR........... Inverted flight. (74)

L

L/D........................... Left/down. Snap roll direction switching. (50)
L/U .... Left/up. Snap roll direction switching. (50)
LIN .... Linear. Method of performing mixing by throttle stick. (47)
LINK.......................... Link. Programmable mixing function. (43, 81)
LOCK........................ Lock. Function locked off.

M

MANU .... Manual. Operation by switch.
MOD.......................... Modulation: PCM or PPM (35)
MODEL .... Model function (36)

N

NAME........................ Model name. (37)
NEGA........................ Negative. Screen trim display by reversing black and white. (39)
NEXT< >................. There are additional screens.
NORM....................... Normal. Hovering flight and other normal flight settings.
NULL .... Function is always on, no switching

O

OFF........................... Function off. Switch off.
OFST–1 .... Offset–1. Trim offset by switch. (80)
OFST–2 .... Offset–2. Trim offset by switch. (80)
OK? .... Confirm before action taken.
ON .... Function or Switch in ON position.

P

PARA .... Parameter function. (31)
PCM.......................... Pulse Code Modulation. (34)
PI, PIT....................... Pitch control, usually plugged in CH6
PI–CRV .... Pitch curve. Curve that specifies pitch servo movement by 5 different point locations. (71, 89)
PMIX .... Programmable mixing. Mixing between arbitrary channels. (43, 81)
POS .... Position.
POSI .... Positive. Screen trim displayed by black lines on a white background. (40)
PPM.......................... Pulse Position Modulation, also known as FM (35)

R

R/D .... Right down. Snap roll direction switching. (50)
R/U .... Right up. Snap roll direction switching. (50)
REVERS, REV..Reverse. Servo operating direction switching function. (30)
REVOLU.................... Revolution. Mixing function that cancels the main rotor torque reaction. (72, 87)
RU, RUD .... Rudder. CH4.

S

SAFE..........................Safety switch to prevent unwanted actions, like snap rolls. (50)
SEL............................Select a model number. (36)
SET............................Used to set or enter a stick or knob position.
SNAP, SNP.Snap roll. Switch turns on function that performs snap rolls. (50)
SPEED.......................Speed presets for gliders. (63)
START........................Start (launch) presets for gliders. (62)
STEP..........................Trim step rate: rate at which trim moves when trim held on. (38)
STICK, STK..Stick.
STK–3 ....Throttle stick switches on/off
SUBTRM....................Subtrim function used to adjust servo neutrals. (39)
SW–X........................Switch #X.
SWASH......................Swash AFR function. (73)

T

TH, THR ....Throttle. CH3.
TH–CRV....................Throttle curve. Curve that specifies throttle servo movement by five different point locations. (70, 77)
TH–CUT....................Throttle cut. Engine stop. (40,75)
TH–DLY ....Throttle delay. Function that delays throttle servo operation. (51)
TH–HLD....................Throttle hold. Function that holds the throttle in the idling or stop position. (79)
TH→NDL..................Throttle→needle. Mixing used by special carburetor. (51, 86)
TIMER ....Stopwatch. (40)
TRAINR......................Trainer. Trainer function. (35)
TRIM, TRM.................Trim function. (38)
TYPE..........................Model mixing type. (32)

U

UNLK.........................Unlock.
UP ....Up.

V

V–TAIL.......................V–tail function combines the elevators and rudder. (48)

W

WAIT Wait.
WARNING...Warning display. (16)
WARNING AIR–BRAK Airbrake switch is on.
WARNING BUTTERFLY ....Butterfly switch is on.
WARNING IDLEDOWN Idle–down switch is on.
WARNING IDLEUP Idle–up switch is on.
WARNING INVERTED Inverted switch is on.
WARNING SNAPROLL ....Snap roll switch is on.
WARNING THR–CUT Throttle cut switch is on.
WARNING THR–HOLD ....Throttle hold switch is on.
WARNING TRIMOFST Trim offset switch is on.

AIRCRAFT (ACRO) DATA SHEET

Make a copy before using

Model Name _ _ _ _ _ _

Model Type: ACRO

Modulation PCM FM

BASIC

			CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8
ATV	Adjustable	R/U	%	%	%	%	%	%	%	%
	Travel Volume	L/D	%	%	%	%	%	%	%	%
D/R	Dual Rate	Up	%	%		%				SW
	settings	Down	%	%		%				AIL:
EXP	Exponential	Up	%	%		%				ELE:
	settings	Down	%	%		%				RUD:
IDL-DN	Idle-Down	ACT	INH	setting	%	SW		SW.DR		
F/S	Failsafe	Norm								
		F/S	%	%	%	%	%	%	%	%
REVERSE	Servo reverse		N-R	N-R	N-R	N-R	N-R	N-R	N-R	N-R
ATL	Adj. Travel Limit	ON	OFF							
EG/S	Engine Starter	CH								
AIL2	Second aileron	CH								
TRAINR	Trainer									
STEP	Trim Step									
DISP	Trim Display	NEGA	POSI							
SUBTRM	Subtrims	Value	%	%	%	%	%	%	%	%
TH-CUT	Throttle Cut	ACT	INH	setting	%		SW		SW.DR	
TIMER	Timer Settings	Minute		Second		UP-DN	SW		SW.DR	

ADVANCE

FLPRON	Flaperon	ACT-INH	CH 1	L - AIL %	R - AIL %	CH 6	L - AIL %	R - AIL %	FLP	CH 1 %	CH 6 %	
FLPTRM	Flap Trim	ACT-INH	setting	%								
AI-DIFF	Aileron Differential	ACT-INH	CH 1	L - AIL %	R - AIL %	CH 7	L - AIL %	R - AIL %				
ABRAKE	Airbrake	ACT-INH	Amount	AIL %	FLP %	ELE %	Elevator Delay	%				
ELE-FL	Elev-flap	ACT-INH	UP	%	DOWN	%						
V-TAIL	V-tail mix	ACT-INH	ELE	CH 2 %	CH 4 %	RUD	CH 2 %	CH4 %				
ELEVON	Elevon mix	ACT-INH	CH 1	L - AIL %	R - AIL %	CH 2	L - AIL %	R - AIL %	ELE	CH 1 %	CH 2 %	
ALVATR	Ailevator function	ACT-INH	AIL	CH2 %	CH8 %	ELE	CH2 %	CH8 %				
SNP	Snap Rolls	ACT-INH		R/U	AIL	%	ELE	%	RUD	%		
	in four	On-Off Switch	SW	R/D	AIL	%	ELE	%	RUD	%		
	directions	SAFE		L/U	AIL	%	ELE	%	RUD	%		
		ON-OFF-FREE		L/D	AIL	%	ELE	%	RUD	%		
TH-DLY	Throttle Delay	ACT-INH	Delay setting	%								
TH-NDL	Throttle-needle mix	ACT-INH	5-point travel	P1	P2	P3	P4	P5	Accel. setting	%		
				CH		CH	Amount	Link	Trim	Offset	Switch	SW.DR
PMIX-1	Mixing	ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-2		ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-3		ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-4		ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-5		ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-6		ACT-INH	MASTER	SLAVE	P1 P2	P3 P4	P5	ON-OFF			SW	

GLIDER (GLID) DATA SHEET

Make a copy before using

Model Name _ _ _ _ _ _ Model Type: GLID _ FLP Modulation PCM FM

BASIC

			CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8
ATV	Adjustable Travel Volume	R/U	%	%	%	%	%	%	%	%
		L/D	%	%	%	%	%	%	%	%
D/R	Dual Rate settings	Up	%	%		%				SW
		Down	%	%		%				AIL:
EXP	Exponential settings	Up	%	%		%				ELE:
		Down	%	%		%				RUD:
IDL-DN	Idle-Down	ACT	INH	setting	%	On-Off Switch	SW	Switch Direction		
F/S	Failsafe	Norm								
		F/S	%	%	%	%	%	%	%	%
REVERSE	Servo reverse		N-R	N-R	N-R	N-R	N-R	N-R	N-R	N-R
ATL	Adj. Travel Limit	ON	OFF							
EG/S	Engine Starter	CH								
AIL2	Second Aileron	CH								
TRAINR	Trainer									
STEP	Trim Step									
DISP	Trim Display	NEGA	POSI							
SUBTRM	Subtrims	Value	%	%	%	%	%	%	%	%
TH-CUT	Throttle Cut	ACT	INH	setting	%		SW		SW.DR	
TIMER	Timer Settings	Minute		Second		UP-DN	SW		SW.DR	

ADVANCE

FLPRON	(GLID1F only) Flaperon	ACT-INH	CH 1	L - AIL %	R - AIL %	CH 6	L - AIL %	R - AIL %	FLP	CH 1 %	CH 6 %	
FLPTRM	Camber	ACT-INH	INH	setting	%							
AI-DIFF	Aileron Differential	ACT-INH	CH 1	L - AIL %	R - AIL %	CH 7	L - AIL %	R - AIL %				
BFLY	Butterfly	ACT-INH	Amount	AIL %	FLP %	ELE %	Elevator Delay %		start pt. %			
FLP-AI	(GLID2F only) Flap-ail mix	ACT-INH	Amount	%	Newtral Offset	%	Switch SW	SW.DR				
AIL-FL	(GLID2F only) Ail-flap mix	ACT-INH	Amount	L - AIL %	R - AIL %	Switch SW	SW.DR					
ELE-FL	Elev-flap	ACT-INH	UP	%	DOWN %							
V-TAIL	V-tail mix	ACT-INH	ELE	CH 2 %	CH 4 %	RUD	CH 2 %	CH4 %				
ELEVON	(GLID1F only) Elevon mix	ACT-INH	CH 1	L - AIL %	R - AIL %	CH 2	L - AIL %	R - AIL %	ELE	CH 1 %	CH 2 %	
START	Launch presets	ACT-INH	Amount	AIL 1 %	ELE %	FLP 1 %	FLP 2 %	AIL 2 %				
SPEED	Seed presets	ACT-INH	Amount	AIL 1 %	ELE %	FLP 1 %	FLP 2 %	AIL 2 %				
PMIX-1	Programmable Mixing Mixer #1	ACT-INH	MASTER	CH	SLAVE	CH	Amount %	Link ON-OFF	Trim ON-OFF	Offset %	Switch SW	SW.DR
PMIX-2	Mixer #2	ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-3	Mixer #3	ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-4	Mixer #4	ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-5	Mixer #5	ACT-INH	MASTER		SLAVE		%	ON-OFF	ON-OFF	%	SW	
PMIX-6	Mixer #6	ACT-INH	MASTER	SLAVE	P1 P2	P3 P4	P5	ON-OFF			SW	
PMIX-7	Mixer #7	ACT-INH	MASTER	SLAVE	P1 P2	P3 P4	P5	ON-OFF			SW	

HELICOPTER (HELI) DATA SHEET

Make a copy before using

Model Name ______ Model Type: HELISWH __ Modulation PCM FM

BASIC

			CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8
ATV	Adjustable Travel Volume	R/U	%	%	%	%	%	%	%	%
		L/D	%	%	%	%	%	%	%	%
D/R	Dual Rate settings	Up	%	%		%				SW
		Down	%	%		%				AIL:
EXP	Exponential settings	Up	%	%		%				ELE:
		Down	%	%		%				RUD:
IDL-DN	Idle-Down	ACT	INH	setting	%	SW		SW.DR		
F/S	Failsafe	Norm								
		F/S	%	%	%	%	%	%	%	%
REVERSE	Servo reverse		N-R	N-R	N-R	N-R	N-R	N-R	N-R	N-R
ATL	Adj. Travel Limit	ON	OFF							
EG/S	Engine Starter	CH								
TRAINR	Trainer									
STEP	Trim Step									
DISP	Trim Display	NEGA	POS							
SUBTRM	Subtrims	Value	%	%	%	%	%	%	%	%
TH-CUT	Throttle Cut	ACT	INH	setting	%		SW		SW.DR	
TIMER	Timer Settings	Minute		Second		UP-DN	SW		SW.DR	
SWASH	Swash AFR	AIL: %		ELE: %		PIT: %				

TH-CRV	Throttle Curve NORM		Setting	POS 1 %	POS 2 %	POS 3 %	POS 4 %	POS 5 %				
	IDL-1	ACT-INH	Setting	%	%	%	%	%				
	IDL-2	ACT-INH	Setting	%	%	%	%	%				
PI-CRV	Pitch Curve NORM		Setting	POS 1 %	POS 2 %	POS 3 %	POS 4 %	POS 5 %				
	IDL-1		Setting	%	%	%	%	%				
	IDL-2		Setting	%	%	%	%	%				
	HOLD		Setting	%	%	%	%	%				
	INVERTED		Setting	%	%	%	%	%				
REVOLU	Revolution Mix NORM	ACT-INH	Setting	POS 1 %	POS 2 %	POS 3 %	POS 4 %	POS 5 %				
	IDL-1		Setting	%	%	%	%	%				
	IDL-2		Setting	%	%	%	%	%				
TH-HOLD	Thr. Hold	ACT-INH	HOLD POSITION	%	Rudder Offset							
OFST-1	Offset 1	ACT-INH	Offset	AIL %		ELE %		RUD %				
OFST-2	Offset 2	ACT-INH	Offset	AIL %		ELE %		RUD %				
OFST-iv	Offset iv	ACT-INH	Offset	AIL %		ELE %		RUD %				
DELAY	Delay		Delay	AIL %		ELE %		RUD %				
Programmable Mixing				CH		CH	Rate	Link	Trim	Offset	SW	SW.DR
PMIX-1	Mixer #1	ACT-INH	MASTER		SLAVE		%	On-Off	On-Off	%	SW	
PMIX-2	Mixer #2	ACT-INH	MASTER		SLAVE		%	On-Off	On-Off	%	SW	
INVRT	Invert	ACT-INH	Cross Point	%								
HOV-TH	Hovering Throttle	ACT-INH	Trim Memory	%								
HOV-PI	Hovering Pitch	ACT-INH	Cross Point	%	%							
GYRO	Gyro mixing	ACT-INH	UP: %	DOWN: %		SW						
GOVrpm	Governor mixing	ACT-INH	UP: %	CNTR: %		DOWN: %		CH	Off.DR	SW		
TH-NDL	NORM	ACT-INH	5-point travel	P1	P2	P3	P4	P5	Accel. setting	%		

Throttle–needle mix	IDL–1	ACT–INH	5–point travel	P1	P2	P3	P4	P5	Accel. setting	%	

REPAIR SERVICE

Before you decide to have your system repaired, if there is no apparent physical damage, read this instruction manual again and check to be sure that you are operating the system as it is supposed to be operated. If you are still having trouble, pack up your system in its original shipping materials and send it to your nearest authorized Futaba R/C Service Center.

Be sure to include a note in your package that describes the trouble in as much detail as possible, including:

- Symptoms of the problem, any unusual mounting conditions
- A list of items you are sending, and what you want to be repaired.
- Your name, address, and telephone number.
- When requesting warranty repair, please include the warranty card.

Read the warranty card supplied with your system.

If you have any questions regarding this product, please consult Futaba. The address and telephone numbers of our service center is given below. Telephone inquiries are accepted from 9:00 AM to 5:00 PM weekdays, except on holidays.

Futaba Corporation of America
P.O. Box 19767, 4 Studebaker
Irvine CA 92613-9767

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FAX 1-949-455-9899

MEMO

MEMO