

Flight Modes Explained

Originally Posted by **LenAlessi** showthread.php?p=29129183

FLIGHT MODES - Simple version - one 3-position switch = 3 Flight Modes

What is a Flight Mode? A Flight Mode represents an aircraft configuration (DR/Expo, programmed mixes, aileron differential, flap system, gyro system, etc.) that assists the pilot and the aircraft in performing a specific type of flight/maneuver. In other words, it reduces pilot workload by allowing changes to the aircraft configuration using a single switch.

The Objective of programming Flight Modes is to provide the ability to flip a switch to select a collection of settings that make it easy to fly the airplane or perform a particular maneuver. Perhaps the simplest way to grasp Flight Modes is to think in terms of 3 basic flight regimes; Take-Off, Fly and Land.

TAKE_OFF

For Take-Off the pilot can assign a set of DR/EXP curves that are best suited to the aircraft while taking off. A particular flap setting (take off flaps) can be assigned to the Take-Off Flight Mode. A particular Gyro Gain setting can be assigned to the Take-Off Flight Mode providing a higher gain to help the aircraft track straight down the runway. Trims (Ail, Ele, Rud) can also be assigned which is very handy when using Flaps or other controls that can cause the aircraft trim to change. If trims are Flight Mode dependent then after takeoff the normal trims are used to trim the airplane. The next time you select the Take-Off Flight Mode the aircraft will be in trim. Same holds true for the Fly and Land Flight Modes - once trimmed for a Flight Mode the radio remembers the trims for each Flight Mode and the next time that Flight Mode is selected the aircraft will be in trim.

FLY

For the Fly Flight Mode the pilot may select reduced DR settings as control surfaces become more responsive at speed and the aircraft may become overly sensitive if the DR rates are set too high or the EXP set too low. Flaps would be retracted to the normal flying position and Gyro gain would be reduced so as to not cause oscillations at high speeds.

LAND

Another set of DR/EXP settings to help with landing - perhaps more EXP on the elevator to help "grease it in". Higher Gyro Gain to help with holding heading at lower speeds in cross winds. Full landing flap deflection with elevator compensation to prevent ballooning.

Ok - so how does all this happen? It's actually very simple. It's simple because once you enable Flight Modes for a particular model almost every feature in the radio provides the option to assign that feature (or settings within that feature) to 1 or more Flight Modes. For instance, if the aircraft is equipped with flaps the Flap System allows for choosing a switch to select 3 different flap positions and corresponding elevator compensation (remember Take-Off flaps, Fly flaps and Land flaps). If FM is chosen as the switch to operate the flaps then 1 of the 3 flap positions can be selected in each Flight Mode. The Gyro system also

allows for selecting a switch to control gyro gain - if FM is selected as the switch then a different gain setting can be set for each Flight Mode. As each function is programmed it can be assigned to 1 or more flight modes. As more functions are programmed (Trims, DR/EXP, Flaps, Gyro, Program Mixes, Differential, Throttle Curve, Sequencer, etc) and the settings assigned to Flight Modes the pilots workload becomes less and less because it's all happening by moving a single 3-position switch !
Hope this helps someone.

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From RCGroups:

Go to the Flight Mode screen. Select the switch(es) you want to define the flight mode.

If you want to change the mapping of positions to modes, you can do that from the NEXT screen.

Go to the Spoken Flight Mode screen to name them and associate speech with them.

Now when you are selecting a switch for things like rates, expo, and mixes, tell it to use the Flight Mode switch (it's right at the beginning of the roller list).
It works the same way in planes, gliders, and helis.

Andy