

I think you beginner guys have to know something about acro and level mode:

In LEVEL mode, the stick controls the ANGLE of the quad. If PIDs are well tuned (they are, using stock quads) level mode reacts fast. The quad is supposed to reach the new selected angle as fast as possible.

In ACRO mode (some guys call it also rate mode) you control the RATE that is used to reach the new position.

An example: You fly level, hover in front of you. Slamming the stick left and right you can see the quad slamming left and right (Full right means max angle to right)

Same example on Acro, at low rates (1 beep at stock TX): Slamming the stick left and right does not do much, but you are able to hover with it. In high rates, the quad does similar movements than in level mode. BUT: You don't control the angle, you control the rate of how fast the quad rotates around the selected axis (e.g. aileron) So a full right stick at low rates does (depending on what you selected in config.h) e.g. 180 degrees per second. Half right stick does 90 degrees and so on.

That means: If you fly at low rates, you can't easily catch the quad if you did steer wrong because the rate with which the quad changes its angle is too slow. The problem is if you are at higher rates, it's not easy to do precise enough inputs with stock tx to not overshoot while just hovering.

There you go with some expo. It makes the input nonlinear, so e.g 30% stick result in 10% steering the quad. but: 70% stick do 90% at the quad, that's what it makes hovering possible on high rates.

I'd recommend 60% expo at high rates (means 0.6) and rates like stock firmware has. You could play a little with the high rates, factor 2 is stock IIRC, tune it maybe down to 1.5.

Hope it's a little clearer now!

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