# Introduction to Multirotor Control

DAS
MULTI

There are significant differences between how multirotors utilizing GPS Position and Altitude Hold are controlled compared to those featuring only 3 or 6-axis stabilization. Unless otherwise specified, this program's control descriptions will apply to a typical entry level multirotor featuring strictly 6-axis stabilization, on low rates (beginner mode), in zero wind. When describing the control techniques used to maneuver a GPS equipped multirotor, it is always assumed that the GPS Position and Altitude Hold are active. The point is, if they're available, and the heli doesn't prohibit using them right away, it only makes sense to take advantage of those capabilities. Of course, if the GPS capability is not active (manual mode), then the strictly 6-axis rules apply.

From a hovering standpoint, the biggest difference hovering a strictly 6-axis multirotor is that it requires constant corrections and attention to making small/brief control inputs to avoid over-controlling. Conversely, a heli utilizing GPS Position and Altitude Hold requires very few, if any, corrections to maintain a stationary hover, as well as resists over-controlling.

From a maneuvering standpoint, maneuvering a strictly 6-axis multirotor is a bit like balancing a marble on a sheet of glass. I.e., After initiating any movement left or right, forward or backward, the heli will tend to continue moving, at least for a short while. And if any control inputs are held in, the heli's movement will tend to escalate faster and faster. Therefore, to avoid over-controlling, pilots must use small brief "bump" inputs to gently nudge or coax the heli in the direction they want it to go. The 6-axis stabilization technology will then try to slow or reverse the movement upon centering the control stick, but more often than not, it's up to the pilot to control where it stops and whether it stays there. Conversely, a GPS equipped multirotor is steered like a car, i.e., all the pilot has to do is continue to hold the control input in the corresponding direction that he or she wants the heli to go. And to stop the movement, the pilot only has to relax the control stick back to center.

From a flying standpoint, anyone who can pilot a basic 6-axis multirotor can be confident that transitioning to a more sophisticated GPS equipped heli will prove much easier, and thus enable you to take on new ventures, such as capturing better video, etc..

All that said, there is a strong argument for learning to hand-fly an entry level 6-axis multirotor as the best way to prepare for flying a more substantial GPS equipped multirotor, both to improve your odds of success, and to be ready to hand-fly in case the GPS technology fails or can't be fully relied upon.

BUMP

Bump Right
Return to neutral
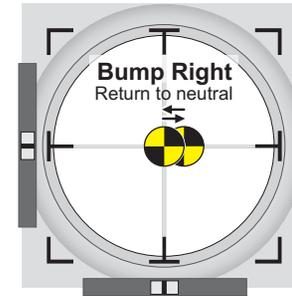
Unlike multirotors with active GPS aided stabilization, multirotors with strictly 3 or 6-axis stabilization need to be controlled with small brief bump inputs to avoid over-controlling.

BUMP

Push forward
Return to neutral

A-7   KPTR: Basic 6-axis helis require continuous pilot input, so the transition to a hands-off GPS equipped heli will feel easy.