Introduction: Practice Smarter, Not Harder

As you no doubt have seen, today's incredible multirotor technology is making it easier than ever before for people to experience the thrill and freedom of piloting their own multirotor R/C helicopter.

While just about anyone can teach themselves to fly most modern multirotors right out of the box, as with everything else, proper training ensures a faster rate of learning, fewer crashes($$), greater safety, and lays the foundation that ultimately translates into more fun and effectiveness over the long term.

From the world leader in radio control flight training, *Multirotor Flight Training* is a complete training system featuring the information and techniques that will enable you to precisely maneuver your multirotor, avoid obstacles, and keep an onboard camera aimed at the objects you intend to film. Whether you therefore aim to fly strictly for fun, or something more, you'll soon have what it takes to get the most out of your multirotor and open up a whole new world of exploration, creativity, and adventure.

Fortunately, today's multirotor pilots have the additional advantage of ultra realistic flight simulators to enable pilots to develop good habits without fear of crashing. The challenge of learning to fly multirotors in the real world stems from the fact that pilots often have to manipulate two or more controls at the same time. A simulator, on the other hand, permits a person to practice individual elements beforehand. Hence, the ability to break the maneuvers apart and learn new maneuvers without apprehension makes sim practice an especially worthwhile investment in both your immediate and long term success.

Of course, sim practice is not mandatory thanks to the stability built into modern multirotors. But, when coupled with a proven training program and good equipment, a sim is certain to make the transition from study to real world flying much more seamless.

+ **=** **Max Success**

About the Manual

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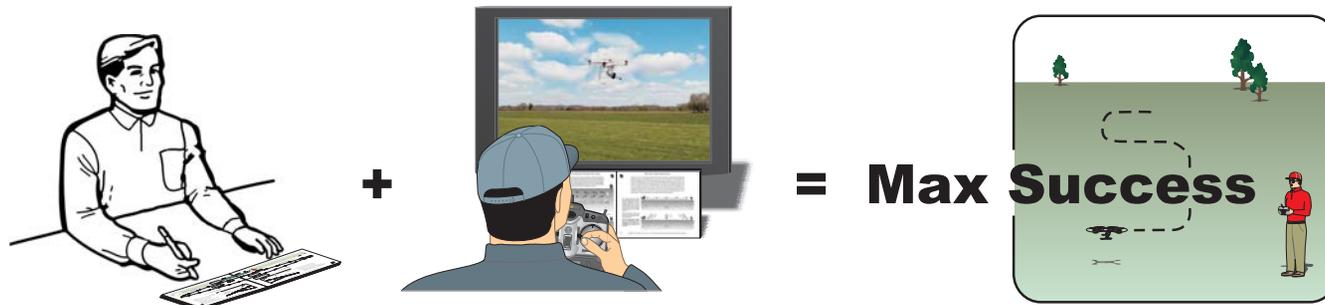
The majority of multirotors today already feature reliable motors, gyros, etc. right out of the box. Plus, the mainstream manufacturers typically provide sufficient setup and operating instructions, so there's no point in repeating that information here. For those who wish to delve further into the technical aspects of the sport, such as performance upgrades, or need specific trouble-shooting help, there are several well established online forums offering a wealth of technical advice:

www.horizonhobby.com • www.phoenix-sim.com • www.flyinggiants.com • www.rcuniverse.com
www.rcgroups.com • www.quadcopterforum.com • www.droneflyers.com • www.rcdiscuss.com

The principle emphasis of this manual is to bring to the forefront the flying techniques and practice schedule that will enable you to get the most out of your simulator and real world stick-time. With that in mind, each page is designed to stand on its own and features a summary Key Point To Remember (KPTR) in order to make the information easier to locate during your training and to aid retention. Note that while each page features detailed text descriptions, the substance can also be quickly derived by scanning the illustrations and associated summary captions if so inclined.

Recognizing that the majority of people using this manual (unlike those who rely merely on trial-and-error) are likely to also appreciate the value of sim practice, the lessons are presented in the context of practicing on a flight sim before putting it all together in the real world. If you're not using a flight sim, the sim training section will serve as additional ground school information that will help you to better understand which objectives should take priority during your first flights.

Altogether, *Multirotor Flight Training* is divided into 3 phases: **Section I** (Ground School) describes the capabilities and tradeoffs to consider when choosing a multirotor for entry level recreational flying or higher quality filming applications, and then outlines the control techniques required to hover and maneuver. **Section II** (Simulator Flight Training) walks you through a complete step-by-step basic flight training program based on the crawl-walk-run system of accelerated training developed during 25+ years of instruction at 1st U.S. R/C Flight School. **Section III** (Real World Flying) describes the tradeoffs to consider when choosing a flying site, the agendas most likely to foster rapid success, and concludes with tips on optimizing a multirotor as a camera platform and FPV (First Person View) procedures.

KPTR: Coupling this program with a flight sim is the most efficient route to get where you want to go.

Multirotor / Drone Operating Rules

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The term "drone" applies to any ground controlled Unmanned Aerial Vehicle/System (UAV/UAS). These include fixed-wing airplanes and single and multirotor helicopters, a.k.a., "quadcopters". Drones are approved for recreational use only. Commercial uses for these vehicles are subject to additional FAA certification. Recreational use is defined as for personal interests and enjoyment. The following safety guidelines are for UAS recreational users as developed by the Academy of Model Aeronautics (AMA) and the Federal Aviation Administration (FAA): http://knowbeforeyoufly.org

Note: All drones above 5 oz. must be registered with the FAA: https://registermyuas.faa.gov

The FAA requests that operators fly no higher than 400 feet and remain clear of any surrounding obstacles when possible. (AMA members are excluded from the 400' height restriction.)

Keep your UAS in eyesight at all times, and use an observer to assist if needed.

Remain well clear of and do not interfere with manned aircraft operations, and you must see and avoid other aircraft and obstacles at all times.

Do not intentionally fly over unprotected persons or moving vehicles, and remain at least 25 feet away from individuals and vulnerable property.

Contact the airport manager or control tower before flying within five miles of an airport.

Do not fly in adverse weather conditions such as in high winds or reduced visibility.

Do not fly under the influence of alcohol or drugs.

Ensure the operating environment is safe and that the operator is competent and proficient in the operation of the UAS's.

Do not fly near or over sensitive infrastructure or property such as power stations, water treatment facilities, correctional facilities, heavily traveled roadways, government facilities, etc..

Check and follow all local laws and ordinances before flying over private property.

Do not conduct surveillance or photograph persons in areas where there is an expectation of privacy without the individual's permission. See AMA's privacy policy:

http://suas.modelaircraft.org/ama/images/sUAS_Safety_Program_web.pdf

AMA
ACADEMY OF MODEL AERONAUTICS
www.modelaircraft.org

FEDERAL AVIATION ADMINISTRATION