PA Katana MD Review

by Clarence Boudville

Being already well into my second PA Katana Mini and still enjoying every minute of it, the news of a recently launched larger sibling was certainly met with great excitement. What little that I could manage to glean from PA's website was that the larger PA Katana MD was not merely a scaled up copy of its little sibling in verbatim but a totally re-engineered machine that incorporates many design features that were once exclusive to only giant scale aircraft. I was only a mouse click away from owning one and as you may guessed, I clicked the proverbial "Add To Cart" button before the webpage could even fully load itself on screen.

Sibling rivalry. Sizing up the Katana brothers.

First Impressions

If there was ever a Guinness book of record for unpacking parcels, I probably broke it that morning! Wow, the yellow scheme embellished with the black CF (carbon fibre) texture looks simply superb and I can honestly say that the photographs on the website did not do justice to it. It looks a heck of a lot better in the flesh.

The first thing after unpacking the airframe that caught my eye was the canopy. It was smooth and appeared to have no seams where the canopy met the upper deck of the fuselage. Upon removing the canopy, held in place by 4 strong magnets, I was delighted to see that the canopy was essentially moulded from a single piece of clear plastic and painted over to exactly match the yellow covering and henceforth explain the smooth seamless look. Very nice indeed!

Peering into the fuselage revealed the brilliant use of carbon fibre reinforcements, logically placed in strategic locations to provide added rigidity without sacrificing weight. It had carbon fibre rods embedded in the wood stringers running the entire length of the fuselage along with carbon fibre cross braces that felt very stiff when I attempted to twist it, and that meant very precise handling in the air.

I was astonished to note the carbon fibre trays for the battery, rudder servo as well. To the side of the fuselage, there is a pair of wing tube supports where the carbon fibre wing tube intersects the fuselage to provide a solid, flex free structure again prompting precise handling. The laser cut balsa-ply structural panels were so well designed and I was pleased to note that the designers have taken the extra steps to minimize excess weight. I thought to myself that the attention to detail in weight management was brilliant on the designer's part and I certainly appreciated the preinstalled Velcro strap on the receiver tray which is especially tricky to install considering the confines of a built-up fuselage. The tray itself is adequately sized to accommodate most compact sized receivers.

Leaving the fuselage aside, the wings were put under scrutiny and I was impressed at what I saw already attached to the wings. The ailerons are already preinstalled and a complete departure from the run of the mill CA hinges that most of us are familiar with. These ailerons were specially built into a tunnel without the need to manually seal the hinge gaps, reminiscent of a full scale aircraft. The pre-built ailerons had massive 3D throws, and travel on both were silky smooth.

Moving on to the horizontal tail feathers, the massive elevator spots a single piece counter balanced elevator with a carbon fibre stiffener pre-installed at the joiner for added rigidity to resist the most aggressive vertical pull up with-

out roll coupling, which I usually dish out. Highly essential if precision flying is desired as well as eliminating the unpredictable and alarming roll over during an emergency pull up and the impending smashing date with Miss Ground!

Next came the visual inspection of what's bundled in the hardware package. It contained carbon fibre horns, pre-installed Kevlar pull-pull cables, carbon fibre rudder servo horns, pushrods and a multitude of essential metal fasteners of various sizes. What caught my attention was the unusual looking plywood plate, that turned out at the end of the day, to be a deflection gauge. Wow! This is the first time I have ever seen a deflection gauge bundled with a model of this size.

The pre-painted fibreglass cowl colour matched to the fuselage was indeed a work of art. Test fitting the cowl to the fuselage revealed that the black lateral stripe was in precise alignment with the carbon fibre scheme black stripes running the length of the fuselage, something that I have only seen on a top dollar all composite models.

The Build

Considering that so much of the work has already been done at the factory, the build has been pretty much a walk in the park and with a well written and intuitive pictorial installation manual; it should be a fairly easy task for most average modellers with prior experience of building a few balsa ARFs. PA have certainly gone the extra mile to take so much of the laborious building out of the Katana MD and this has made it a fun and easy task.

The Thrust 30 motor, runs cool and is highly efficient.

The landing gear and horizontal and vertical surfaces are simple to install. I have opted not to install the optional CF wheel pants until after the KMD has undergone its check ride.

The motor mount is quite an innovative departure from the average ARFs I have seen and built in the past. Built considerably stronger, it spots three carbon pins that will prevent any chances of the motor mount ripping out and a pre-drilled carbon front plate securely mating in a tongue and grove fashion on all four sides of the frame. It will take a lot to ever rip a motor out of this baby. PA does not do anything without a reason, and if their motor mount is this strongly built, they must surely know something I didn't at the time about the power of their motor. I will surely find out soon enough!

Next on the build agenda were the CF rods for the ailerons which are pretty simple to install. I used a timesaving technique that involves first, snipping about 5mm off the supplied heat shrink tube that will be used to temporarily hold the metal Z-bend and CF rod in place. This allows easy alignment and adjustments to be made prior to tacking with CA.

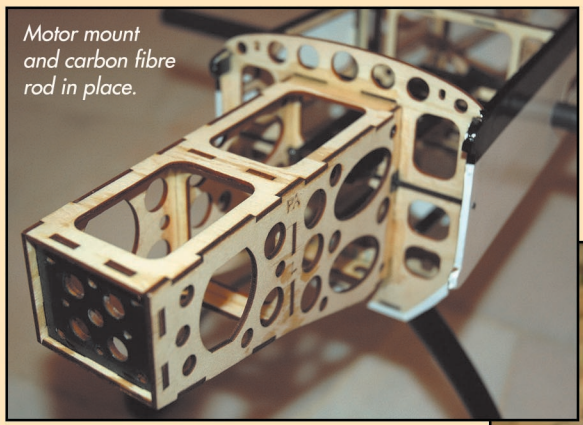
Installation of the shiny, cool looking, PA Thrust 30 power plant came next. The PA Thrust 30 is simply a work of art befitting the PA Katana MD itself and reminded me of high quality custom made helicopter upgrade parts, (the kind that has that special ability to transform your cash into CF the moment you step into a hobby shop!). Gleaned from the PA website, the PA Thrust 30 is said to be a revolutionary new motor specifically engineered incorporating their RotorKool technology for exceptional cooling and efficient running along with an ability to turn a prop one size larger than most motor in its class, and hence the plan to fly the PA Katana MD with an APC 13X6.5E for the test flight.

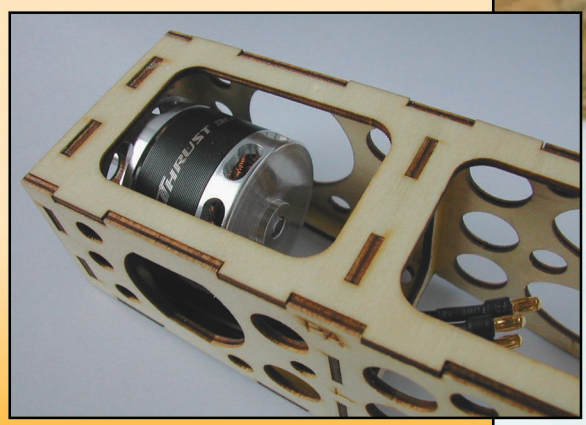
The motor mount had all the mounting and ventilation holes pre-drilled and mounting the motor was only a matter of securing 4 bolts. No messy drilling and thrust line adjustments whatsoever. With the supplied air scoops installed, the PA Thrust 30 will be running much cooler and last longer than most motors currently available.

The installation of the Rudder servo and Kevlar Pull-Pull went without a hitch. A CF extended rudder horn was also included in the box and gave more than adequate throws. The installation of the electronics and the cowl followed and the PA Katana MD was ready for the final phase of the build, the radio setup.

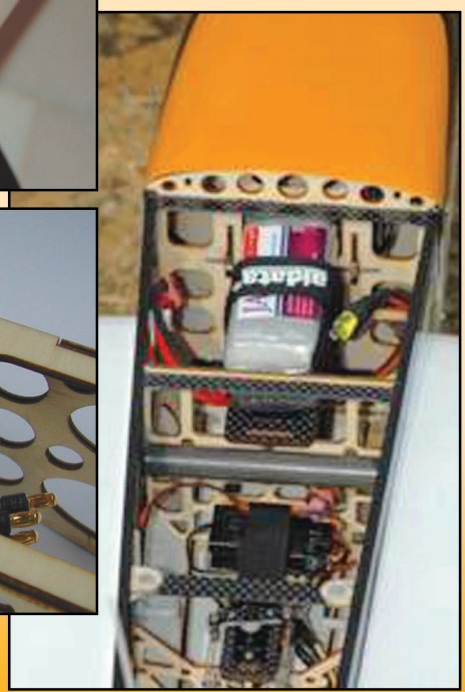
Radio Setup

Here is where I usually deviate from the manual as a matter of preference. The JR PCM9X was set for triple rates, the first two being the recommended high-low conservative rates but I deviated from the recommended +70% expo on the high rates and retained at 30% and the third, my personal preference


Motor mount and carbon fibre rod in place.



Thrust 30 mounted in the unique motor mount.


Avionics in place.

SPECIFICATIONS

Wingspan:	1170 mm
Length:	1140 mm
Wing Area:	500sq.in
Wing Loading:	9.77oz sqft (approx)
AWT:	34oz (approx)
Rec Power Plant:	900-1100kv, A30 class outrunner
Rec Battery:	3S1P, 1800-2200mAh, 20C Lipo
Rec Receiver:	Dual conversion Micro receiver
Rec Servo:	1.5kg cm torque, micro-servos
Rec Prop:	12x6E and 13x6.5E
Type of Construction:	PA FibreFusion: Laser Cut Balsa, ply and carbon fibre
Type of Aircraft:	Advanced Freestyle IMAC (CG Selectable)
Skill Level:	Intermediate to Expert Freestyle IMAC

SETUP USED

Power Plant:	PA Thrust 30, 930KV outrunner (Front mounted)
Battery:	PA 3S LiPo 2200mAh 20C JAS 3S LiPo 2300mAh 20C
Connectors:	Origin Ultra Dean plugs
Servos:	Hitec HS65BB
Electronic Speed Control:	Castle Creations Phoenix 35A programmable brushless ESC
Receiver:	JR 610M with Deans 2 piece Micro Antenna
Radio Gear:	JR PCM 9X
Prop:	APC 13X6.6E

(zero expo) on high rates linked on single three position flight mode switch for convenience and "fumble-free". The bundled deflection gauge was a certainly a welcome sight and since it was there, I decided to go with the recommended throws but opted not to use the expo recommended.

The Check Ride

Saturday arrived and the agonizing wait was over for the check ride, with only a very gentle breeze blowing, it was perfect flying weather for stationary torque rolls and hovers. It just does not get any better than this. Prior to the flight, as usual, I had all intentions to conduct a structured method in flight testing beginning with a conservative rolling take off, level flight to trim and proceed with basic aerobatic manoeuvres, the basic stuff you would read in most reviews. With the sweet sound of the Castle Creations Phoenix 35 ESC arming, I did a quick customary routine pre-flight check. The usual stuff; ailerons; check, rudder; check, elevator; check, German techno trance music blasting at full volume; ….NOT…yaadaa, yaadaa, yaadaa….! I noticed that the low rates appeared a bit too conservative for my liking, especially on the maiden flight where I may need the extra authority to fight for control, juts in case things gets out of hand and proceeded to select Rate 3. It was now time to advance the throttle.

The rolling takeoff was short and the PA Katana MD was quick to get into the air and went straight into a set of beautiful slow high-alpha harrier rolls 'round the field. I levelled her and pulled up vertical to check the power of the PA Thrust 30. Wow, the motor just purred quietly and climbed vertically without hesitation. The Thrust 30 with the 13X6.5E provides ample power with a giant-scale like feel to it. A quick blender and immediately into an inverted elevator and harrier and popping to a hover and torque roll. The entire set of routine was flawless and smooth. I was completely amazed at how easy she handles and that reminded me of the "Easy-to-fly" giant-scale airplanes in the Aerofly Pro Deluxe simulator I have grown so accustomed to over the past year or so. The feel was fantastic, agile, solid, responsive and yet floaty, forgiving and stable. A rare brilliant combination of excellent aerodynamic attributes and a clear testament to the genius behind PA's engineering design.

Resisting the dire urge to just breakout and have fun, I continued on with the flight assessment. Next was the fast knife edge and she executes it perfectly. With only a little rudder input, the knife edge is perfectly straight with absolutely no coupling or tucks and finished off with a knife edge snap, popping up and back down as if on rails and continuing on the knife edge without any hint of snaps. Flying the upright harrier was effortless and the PA Katana MD also excels in this department being able to parachute all the way down to a harrier spot landing. In fact the harrier landings were so good that I never had the chance to execute a normal landing for the remaining 21 test flights done for this review. That maiden flight lasted 9 incredible minutes, the time I initially set on my PCM 9X timer to be on the conservative side of things.

Since all six check flights on Saturday pretty much covered the "serious by-the-book" manoeuvres I had listed in preparation for this review, I pretty much left entire Sunday to venture onto the fun side of things and to see how far the Katana MD could be pushed, or more appropriately as it turned out, how far Katana MD would push me instead. I was pushed pretty far and the PA Katana MD just keeps coming back for more. I have tried almost anything in the book to uncover any hidden bad habits and to my wits end I could not find any, even after 22 flights she is a well natured "Pussy Cat" of an airplane, just sweet, extremely friendly and accommodating.

The manoeuvres go lower and lower pretty quick and in next to no time, she was already performing rudder scrapes, stationary harrier rolls in the wind, and rolling inches above the deck and I finally met up with "Daddy Dumb-Thumbs" (or was it the ground reaching up to grab my baby?) on the last flight. Due to exhaustion and fatigue setting in after 17 intense sessions on a very hot day. I managed to clip the starboard wingtip on the ground and cartwheel, hitting the nose and the Katana landed poised on the gears. I was amazed after the stunt, to find no damage except a slight fracture on the outboard aileron rib (repairable) and immediately took off and flew the rest of the drill. This "Pussy Cat" sure has nine lives, still have eight to go as I chuckled silently at the thought of what just happened.

Flight Test Assessment Rating
Overall Feel Assessment rating
Conclusion

The PA Katana MD turned out to be a fantastic airplane, with all the great aerodynamic attributes others could only wish to attain. It's probably the only aircraft that I have flown so far that I can honestly say that I got fully comfortable with within seconds into the flight as opposed to most that require at least a couple of sessions while others on the extreme cases have actually taken as long as several weeks for me to fully acclimatize.

I have flown many similar airplanes in the past and nothing so far comes even close to the PA Katana MD and true to the KMD's slogan "Redefine Your Limits", it certainly redefined mine, to well beyond my wildest expectations in just 22 short sessions. So, whatever your goals may be, whether it to be a budding intermediate level 3D pilot, an aspiring protÈgÈ, a professional free stylist or a giant scale IMAC contestant, I am truly convinced that the PA Katana MD will certainly be up to the challenge.

The PA Katana MD is simply light years ahead of the rest of the pack and I am certainly excited to see what else is coming out of PA's "Skunkworks" next.

Available from PrecisionAerobatics.com and from your local hobby shops.

THE INITIAL SETUP RATES

Control Surface	Aileron	Elevator	Rudder
Rate 1 (Low)	Dual Rate 50%	Dual Rate 50%	Dual Rate 50%
	Expo 30%	Expo 30%	Expo 30%
	Throw 20deg	Throw 20deg	Throw full travel
Rate 2 (High)	Dual Rate 100%	Dual Rate 100%	Dual Rate 100%
	Expo 30%	Expo 30%	Expo 30%
	Throw 45 deg	Throw 45 deg	Throw full travel
Rate 3	Dual Rate 100%	Dual Rate 100%	Dual Rate 100%
	Expo 0%	Expo 0%	Expo 0%
	Throw 45 deg	Throw 45 deg	Throw full travel
Mixing	None		
Airframe CG	103mm (3D Freestyle)		

Whoops! It was the grounds fault!

Look at all that fabulous, strong and light carbon fibre! Sure beats balsa and ply.