A Bigger, Better, Precision Aerobatics Katana!?

YES PLEASE!!!

by Brett Mezen

Review kindly supplied by Airborne Magazine.

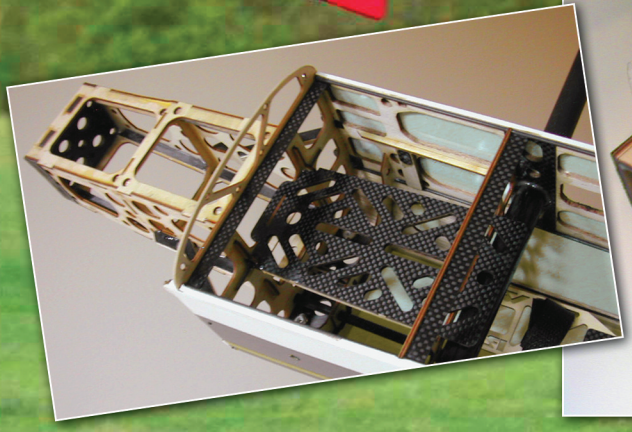
I had only been in this hobby a short time when I walked into my local hobby store and there hanging from the ceiling was the most beautiful plane I had ever seen...

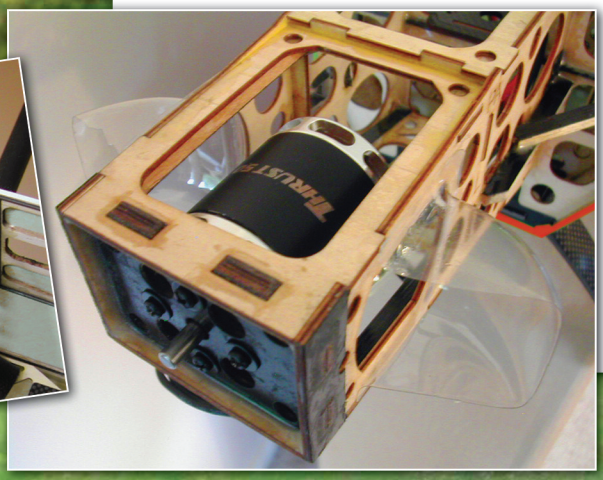
I asked the shop owner what it was and he told me it was a Precision Aerobatics Katana MD, all ready to fly and kitted out with Precision Aerobatics integrated performance air-frame drive system (iPAs), and was for sale. I wanted that plane BAD and a month or so later I bought it. It flew just like it looked, fast and sexy and it had me trying my hand at some primary 3D flying. I loved it and since then have purchased another one as well. But like all good things it left me wanting more, so when Shaun Vanunu, PA's chief designer and co-owner told me he was designing a Katana MX he certainly got my attention.

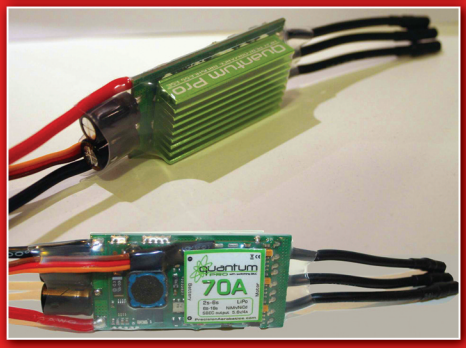
Introduction

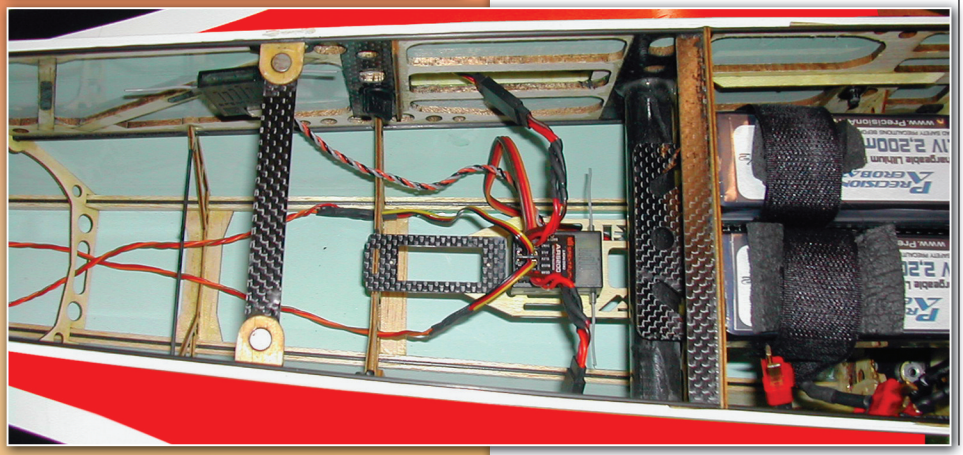
I will confess that before it was released to the public I was lucky enough to see Shaun flying one of the Katana MX prototypes at his testing facility. I was impressed with both Shaun's flying and the way it looked and flew, but what really got me that day was a small notebook Shaun had with him at the time. You see he was testing the C of G and a few other things on that day and while he was flying I managed to get a peek inside the notebook. It contained page upon page of notes, tips, measurements etcetera relating to his test flights and this made me realise just how much work goes into designing and testing a top quality air-frame like the Katana MX.

In addition to being upsized, the Katana MX is also the second "Next Generation" plane from Precision Aerobatics. The Next Generation range started with the Bandit and now continues with the Katana MX. What does PA mean by Next Generation? Well using advancements in aerodynamic design, and custom aero foils, these planes fly the book! So instead of having to choose a plane that is either slow with good 3D capabilities or one that flies fast and aggressive, you can now have both in one airframe. PA says the Next Gen airframes will sustain more energy when flown at higher speeds making tumbling, consecutive aerobatics and exotic freestyle manoeuvres smooth and with plenty of momentum. Nevertheless, they can also be flown just as well when slowed right down for the most demanding 3D and high angle of attack moves. As I own a Bandit I can confirm that it does exactly that, but as the saying goes "bigger flies better" so I was expecting BIG things from the Katana MX.









The Kit

Speaking of big things it all starts with the box. At 1431mm (56 in) long, this is not a small plane and is about 5 inches longer than the Extra MX. But with a wingspan of 1448mm (57 in) the Katana MX is one inch narrower than the Extra.

Opening the box reveals that all parts are individually wrapped in plastic bags and taped down securely and as it is double boxed, it should survive couriers or the postal system and arrive in great condition.

If you have never seen a Precision Aerobatics model before, do yourself a favour and have a look at some of the technical videos on their website. Their airframes incorporate a building technique which PA calls FibreFusion® where they combine the standard balsa and ply you would expected in a model, with carbon fibre in a way that uses the strength of each material to make the airframe as light but as strong as possible. You can certainly notice the lightness as you unpack each part and I can personally vouch for the ruggedness of these airframes. Another thing to notice as you unwrap the wings and tail surfaces, is the size of the control surfaces which are huge. The use of carbon fibre continues throughout the airframe and accessories including the wing tube, incidence pins, aileron hinges, landing gear, motor mounting plate, landing gear mounting plate, control horns and more. The carbon fibre pushrods use German made ball links and CNC machined clevises which will ensure free, smooth, slop free linkages and are all supplied in the kit.

Another thing I love about PA planes is the aileron hinging method. The ailerons have a carbon fibre tube leading edge which fits into a concave recess in the wing trailing edge where they are hinged. This is all done at the factory and assures the ailerons have a huge range of smooth movement and are totally sealed, allowing the most efficient airflow over the wing. The elevator and rudder are attached using standard CA Mylar hinges, but also supplied in the kit are strips of covering cut to size which are ironed into the gap between the control surfaces and the stabilisers, again resulting in the most aerodynamic efficiency and shows PA has thought of everything.

The huge canopy is totally pre-made and uses rare earth magnets to stay attached to the fuselage but is still easy enough to remove. The inner fuselage is huge and uncluttered giving easy access to the radio gear, batteries, or for tightening or loosening the supplied thumb bolts for wing attachment.

My Katana MX also included the recommended iPAs and the “Bling” kit. These two packages include:

- PA Thrust 50 outrunner motor with RotorKool® Technology
- PA Quantum 70 Pro high performance programmable ESC with SBEC
- German made, CNC machined, precision prop adapter (PA include this adapter i stead of common prop adapters which are usually bundled with motor accessories to avoid performance robbing vibrations and motor mount structural damage)
- Four Hitec 5085 Metal gears servos
- Set of 4 x carbon fibre extended servo arms specifically designed to achieve the desired linkage geometry for full control surface movement.
- Thin gauge twisted light extension lead. PA imports this wire from Germany. Due to its fine high quality strings, it is extremely fle ible preventing RF noises and features low internal resistance
- 15 x 8 VOX wood propeller

The Bling Kit Adds

- 2.17" CF Spinner with CNC machined backplate
- CF vortex generators (this kit includes 20 pieces, all custom made for the Katana MX)
- Carbon fibre wheel pants (to upgrade when your fibreglass ones die after many happy landings)
- Custom made wing bags - to fit the wings with the vortex generators installed - great for storage and transportation

The Build

Okay, let’s clear the workbench as we are going to need some space for this one. I have now built a number of Precision Aerobatics airframes so I’m familiar with the techniques involved. For me this means the build takes around 8 to 10 hours, but I’m a slow builder and I would think if this is your first PA plane and you were keen to get it in the air, you could easily match my times. The Katana MX is no harder to build than other high end ARF’s on the market but PA does have some very specific build techniques to get the best from the airframe. These techniques have been tested over numerous models and they work well. I suggest following the manual closely as it outlines in very fine detail how to put your Katana MX together and includes numerous pictures to go with the descriptions.

I was impressed to see some updates to the manual and build that came about from users posting tips and build ideas in online forums. One of these involves the sealing of the hinge gaps for the elevator which is an easy enough job but due to the covering pattern across the tailplane can be a little tricky. PA supplies the covering strips for this cut to length and ready to go but the black strip needs to be cut to a specific shape to match the pattern. Forums to the rescue, and in the Bandit forum some people said it was much easier to just use black permanent marker for this job. I did it on my Bandit and it’s perfect and easy. I see this tip is now included in the Katana MX manual which shows PA is reading the forums and listening to its customers.

I had to iron down and shrink some covering on the fuselage to get it tight but anyone who has built a balsa plane before knows this is fairly common, especially when you consider these airframes come in a container from overseas and go through all types of humidity and temperature variations. The wings and tail were all drum tight.

The internal wing fitting tubes are carbon fibre and these slide onto the carbon fibre wing spar and then the incidence pins slide into pre-cut holes in the fuselage. It's mentioned in the manual but I will reiterate it here. If the wing tubes don't slide easily onto the spar then lightly sand the spar until they do. When doing this make sure you use breathing protection and are in a well ventilated space. Don't get excited and do a dry run of fitting the wings if they are tight. You will end up with them on the plane and looking great, but when you go to remove them, they won't pull straight off and due to the incidence pins there is no way to rotate or twist them off. Ask me how I know.

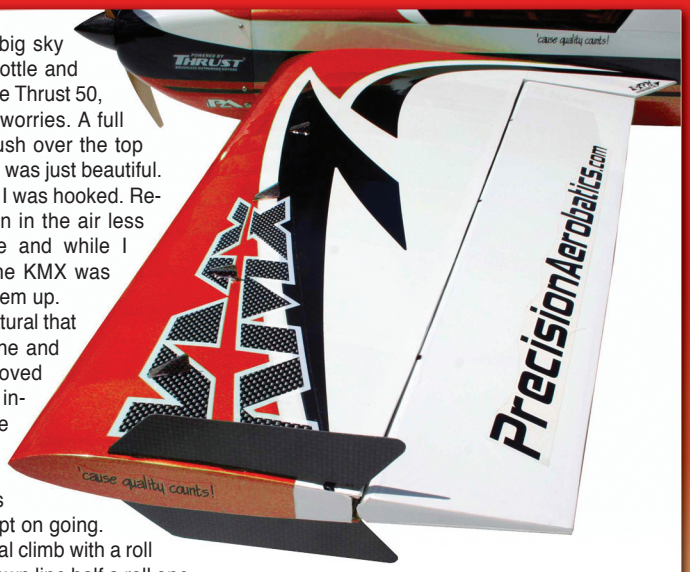
Other than that my build was very easy and resulted in a beautiful, straight red and white Katana MX that I couldn't wait to get in the air.

So Is Bigger Better? Yes, Yes & YES!

Maiden morning was windless and sunny – always a good start. While getting ready at the field a few of the guys commented on the MX and what a sexy looking plane it was. A couple of them also picked it up and were amazed at its lightness which is something that always shocks people when they first pick up a Precision Aerobatics plane.

Lined up on the strip in the sun and low rates selected it was time to go. A straight roll down the strip and the Katana MX was airborne in about 5 meters and was pulling up slightly, so I put in a couple of clicks of down trim and a couple of aileron trims as well to get her flying level and hands off. Once I had done that, I wanted to see how smooth it was so I did a couple of low level passes. Let me tell you this is one smooth flyer, I have flown 50cc IMAC planes and the Katana MX feels at least as smooth and stable. I would say it's pushing into the area of pattern planes, so that long tail moment and whatever other magic Shaun did, really works.

I continued to fly some big sky type aerobatics. I added throttle and pulled a vertical line which the Thrust 50, 6s combo handled with no worries. A full roll on the up line then a push over the top and half roll on the down line was just beautiful. A half Cuban 8 followed and I was hooked. Remember the plane had been in the air less than a minute at this time and while I rushed the moves a little the KMX was smooth, accurate and ate them up.



The Katana MX felt so natural that it already had me in the zone and wanting to go harder. I moved into a 4 point roll and the inverted section showed the plane climbing fairly hard which told me I had the CG a little too far back. But I was enjoying it so much I just kept on going. Another arrow straight vertical climb with a roll on the up line, then on the down line half a roll one way, then a full roll the other way. Next was a half loop with half roll at the 9 o'clock and push over the top to a 45 degree down line. WOW!!! The KMX would be an awesome IMAC practice plane and I dare say you could even enter the Basic class with it and do well, it's that accurate.

Well that was the low rate stuff sorted so it was time to see how the KMX would 3D. First up was a deep accurate snap roll then straight into a rolling harrier turn. A couple more snaps and rollers had me smiling even more. What a plane! I tried a couple of hovers, though not too low. Ha! I'm talking under 10ft on the maiden flight. I was that confident with the combination of power and stability that I would be able to get out of any trouble. I also went high and did one of my favourite moves, the knife edge spin. I thought the longer tail moment might make these a bit loopy, but nope it was tight and fast and had the KMX falling like a leaf in autumn.

I finally decided to call landing, remembering I had to slightly adjust the CG, and the Katana MX just greased it on for one of the most perfect landings I could hope for. A phone camera video of my maiden flight can be seen here https://vimeo.com/51834040. You'll see just how smooth the Katana MX was out of the box and how quickly I was comfortable with it.

I got another 3 flights in that morning and by the end I had the Katana MX dialled in and hovering a foot or two off the deck. She torque rolls like a demon and flies the length of the field in knife edge with zero coupling. The Katana MX will lock into the most stable easy to hold harriers you will ever fly; both upright and inverted. Again, that long tail moment just dampens it all out and makes it so easy to hold, yet it doesn't slow down the snaps or tumbles and if you ever wonder why the wall manoeuvre is called that, try it with the Katana MX it is literally like hitting a wall!

Conclusion

Precision Aerobatics call the Katana MX a Next Generation plane, which it is, and I will confirm that bigger does indeed fly better. Their website says "if you loved the Katana MD, you would find the Katana MX simply irresistible" and to top it all off it even fits in my Commodore station wagon with the wings on. Two words... Get One!