

Precision Aerobatics

Extra MX

by Clarence Boudville

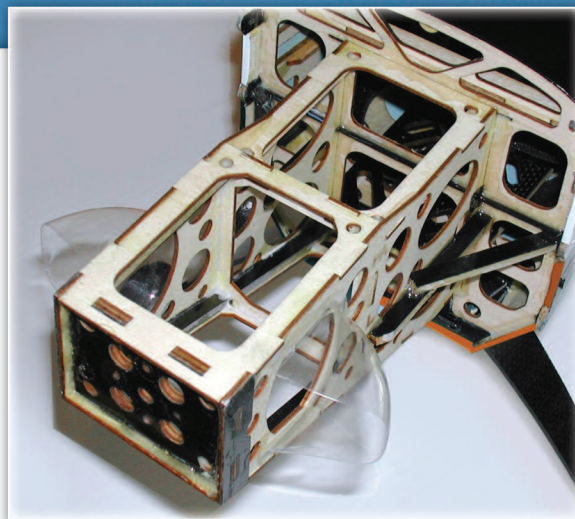
I have always had a keen interest in 50 class EP models but had held back on making the step. This was primarily due to the relatively high capital investment to achieve good performance. The biggest deal breaker for me was the fact that most 50 class EP models dictated the absolute need for costly high powered drive systems.



50 size models usually require 5 or 6 cell pack which are quite expensive and won't fit into my smaller models. So on the one hand these packs are used less frequently and on the other hand due to the relative high cost, one could usually only afford a couple of them. The result is that these larger models tend to be flown less frequently than they should otherwise. This makes for a poor investment in my book.

Up to this point, it had appeared that power hungry drive systems were the last word in large EP models and anyone making the step will have little choice but to put up with the high investment, constraints and limitations. When it comes to large EPs, I felt like a pig in a slaughterhouse but all that was about to change after a sneak peek into PA's crystal ball.

Synonymous with PA's out-of-the-box creativity, I wasn't at all surprised to hear about their radical approach to their latest flagship, the 58" PA Extra MX. It runs on only two 3S 2200mAh packs plugged in series. Humble packs which most EP modellers already have and thus gives practically anyone the opportunity to step into the 50 class domain without the need to heavily invest and better still; without the need to make a huge compromise on per-



formance. There was no hidden cost of dedicated chargers or packs and THIS was exactly what I was looking for.

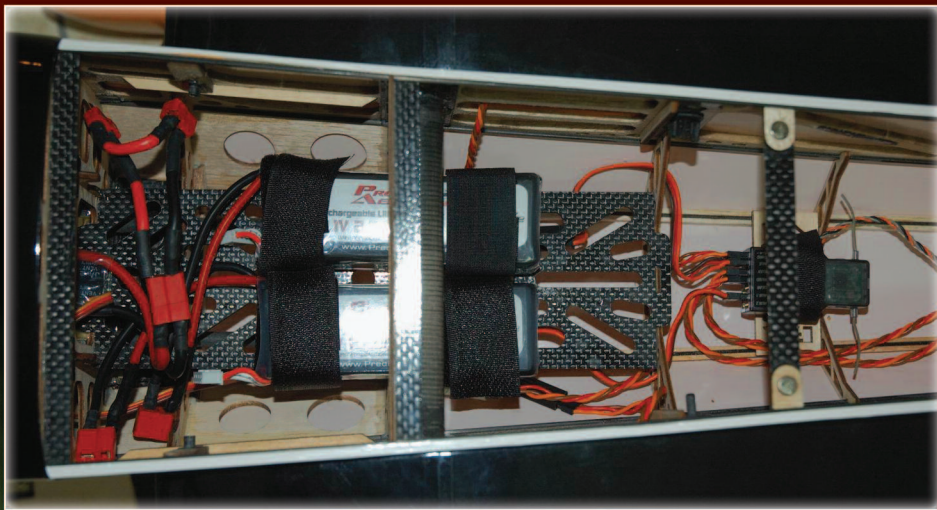
First Impression

A year before the launch of the MX, PA sent me a prototype Thrust 50 and enticed me to give it a spin. I installed it into my 54" Hyperion Yak 54e and thoroughly abused it in the air. Although

my Yak weighed in at 5lb (2.23 kgs), the Thrust 50 performed amazingly well. There was absolutely no lack of power and it felt very lively with almost unlimited verticals on the APC 15x8E. Almost a "nitro-like" experience with generous amount of punch I might add. My own static bench test indicated it produced about 1300W of power with whopping 10lb of thrust, thus giving my Yak a 2:1 power to weight ratio, essential for good 3D performance. I was happy to note that an average 5 minute flight only drew about 1412mAh from my 2200mAh pack in spite of pushing my Yak hard. This was like driving an eco-friendly NOX equipped Japanese super car!

I chuckled at the thought that I could never achieve that sort of performance with my excessively leaned out OS70 Ultimate powered H9 Funtana 40 on the APC 14x4W and 15% nitro back then.

It was many months before I received a real shocker from PA. They said the AUW of their prototype to be just a tad over 1.5kg ready to fly! I was dumbstruck because I would have expected a 58" model even by PA's standards to come up to at least 2 kg's. The initial bench test stats I took earlier happily told me that I will be getting almost 3:1 power to weight ratio with



Specifications

Wing Span:	1472mm
Length:	1316.5mm
Wing Area:	721 sq.in
Wing Loading:	12oz/sq.ft
Weight RTF:	1750g
Motor:	PA Thrust 50, 487KV, 279g outrunner and 5mm German prop adapter
ESC:	PA Quantum 65 Electronic Speed control with built-in 4A SBEC
Battery:	2X PA 3S LiPo 2200mAh 20C-40C
Propeller:	VOX 14 x 7 and 15 x 7
Construction:	FiberFusion® Laser Cut Balsa, ply and carbon fibre reinforcement
Skill Level:	Intermediate to Expert 3D/Freestyle/IMAC



the MX, something completely unheard of in a balsa 3D model in any class. This appeared like I will be getting to drive an F1 Ferrari pretty soon and I was really excited at the prospect.

It came the day when my review model finally arrived and naturally, like a kid on his birthday, I simply could not wait to open the box. I was blown away by the sight of the exquisite metallic mango & black finished airframe that came with the colour matched fibreglass cowl and wheel pants. Predictably, I immediately removed all the pieces from protective plastic bag to take a closer look at the inside.

I was impressed to see that PA has used considerably more carbon fibre in the MX than its smaller processors I have flown in the past. It had CF stringers the entire length of the fuselage along with CF on the battery tray, wing attachment and cross braces. The CF landing gear felt stiff and robust, perfect for rough landings. The MX comes with fully airfoiled vertical and horizontal stabilizers and factory pre-assembled ailerons built into the removable two piece wings. There is practically no hinge gap present.

According to PA's website this is quite complex to produce: the ailerons fit into the wing trailing edge tunnels and are glued and pre-aligned in the factory. Despite the laborious production of this design, PA decided to produce the ailerons this way, as it allows perfect aerodynamic flow over the airfoil and results in maximum efficiency of the control surfaces.

I perused the contents of the hardware pack and I was quick to note the gleaming CNC metal clevises, plastic ball links and CF control horns and the optional CF Vortex generators packed separately. I was thoroughly seduced by the "bling"!

The Build

Though extremely excited at this point, I forced myself to refrain from building till I went through the manual. I found the manual to be very comprehensive indeed. It had text complemented with graphics and time saving tips and I can safely attest that any modeller (except a complete blind imbecile) would have absolutely no problems building the MX at a leisurely pace in just three short evenings.

As most parts are already factory pre-built, assembly was quick and easy. I started the build with a customary dry fitting of the airframe to check the fit and for any possible covering warp. The fit was perfect and only once did I need to employ a file to fit the motor box and some light sanding to line the elevator up. Everything else fitted without a hitch and lined up beautifully.

When it came time to commit to glue, I used 30 minute epoxy as recommended in the manual. I would recommend sticking to this for maximum structural integrity; with the benefit of hindsight, this decision has now paid off big time, since all structural components on my MX are still intact after 150 punishing flights to date. This has now given me a lot of confidence to try almost anything in the air without much worry.

The German made ball links and CNC machined aluminium clevises employed for the linkages fitted well and provided slop free mechanics. These clevises are nothing like spring clevises. I spent a little more time aligning the servo arms and then filing the CF rods to the precise length before applying epoxy. Once assembled, I did a pull test on the assembly and it gave me a very confident feeling about its integrity. It also eventually proved to be very robust in flight.

With all the servos installed, I was amazed at the slop free and direct feel it offered. Ball links and metal clevises are certainly the way to go!

With the MX finally built up, I inserted the battery packs and weighed my MX. It came in at an unbelievable 1.76kg! None of my previous smaller "super light" 40 size 3D models ever came close to be below 2kg even after "cheating" with dry fuel tanks!

With all control throws as per the manual, I positioned the battery packs to obtain the recommended "sweet-spot" CG of 118mm and diligently inscribed a mark in the fuselage and I was finally set for the weekend's shakedown.

The Shakedown

With only a very gentle breeze blowing, it was ideal flying weather for stationary torque rolls, hovers and to check its precision flying capabilities. With high rates set, I executed a full power rolling takeoff. It



was exceptionally short and MX went vertically up into a low stable hover transitioning into a nice slow torque roll and then moved into a set of slow harrier rolls. Despite its size, the MX seems to float in the air. I was blown away at how stable it felt and I haven't even trimmed her out yet! I was already grinning from ear to ear since it felt so familiar to the smaller PA models that I have been flying previously. All my prior big plane anxieties melted away and no longer felt intimidated by its size. Advancing the throttle and putting the MX into a straight and level flight, I did a series of upright and inverted level flight and I was really impressed how neutral it felt and proceeded to try a few 4 point and slow rolls. They were easy to get precise and I must admit that I have never managed to do decent 4 point and slow rolls on zero expo with high rates prior to this! For a 3D capable model it exceeded all expectations in the precision department and in my humble opinion would certainly please any IMAC enthusiast.

Switching down to low rates, I explored its precision capabilities further and found that it easily maintained precision flight very well. It does spectacular big air loops and Split-S with the smoothness that I can only relate to 100cc aerobic gassers. On the recommended CG the MX felt very neutral and tracked remarkably well. There was hardly any correction needed to be made to keep on track and gave the feeling as if flying on rails.

Switching back to high rates, it was now time to explore its performance envelope further and I started with a simple KE manoeuvre. The KE was absolutely coupling free. All that is required is a quarter roll and hold the rudder. That's it! This is what I call "user friendly"! Since the KE's were so easy, I kept flying KE circuits and alternating KE figure 8's and then slowing down to see how slow and stable it holds. Its really amazing to see such a big model flying slow and stable KE's! The Quantum 65's silky smooth throttle response made it very easy to fine tune the altitude while flying slow and low. This also makes it very easy to maintain precise altitude while hovering down on the deck. Pushing the throttle on the KE, it did a nice big KE loop with absolutely no tendency to roll out on the down-line. Sweet "Puckerfree" KE loops as I chuckled to myself.

Getting bolder, I began to advance the throt-

tle more to check its high speed performance and I was not disappointed. The powerful Thrust 50 gave me a distinct sense of invigorating energy, something I missed from the days of flying nitro models. In spite of using small packs, it is by no means an underpowered lumbering piece of flying timber but in fact quite the contrary and beyond all expectations of a typical EP model. In fact it was a completely new flying experience for me and I felt revitalized. The rolls were as quick, crisp and precise. It felt very responsive and alive. Coming in low and fast into a vertical climb, it showed off a pretty insane climb rate. It was as if I had afterburners on and it just climb and climb to a point where I had to ease back on the throttle for fear of flying beyond the radio range and descended with a rather long drawn, slow KE spin and exited into an inverted elevator and harrier. The inverted slow harriers were so stable that I felt confident enough to bring it down low and pop into an eyelevel hover as I would with any of my smaller models. Before long I must admit that I totally forgot that I was actually flying a 58" model and in my mind felt as if I am just having fun with one of my smaller models. I did another vertical climb and pushed 3/4 throttle into a very aggressive blender. Wham and my jaw dropped! The blender was wild and recovery was as predictable as any of its siblings. With so much power on tap, I did not find the need to use all the power of the Thrust 50 and I happily flew between 1/2 to 2/3 throttle most of the time. Having said that, the knowledge of having so much reserve power on tap felt extremely comforting. Its definitely as hot as a jar of Jalapeños.

Keeping my flight time at a conservative 6 minutes for the maiden, it was time to land and I did a nice long upright elevator into a harrier spot landing. I was thoroughly impressed that it took the same amount of runway for the roll out as its smaller siblings and equally easy to execute; something virtually impossible with my

54" Yak. As a matter of fact, I have already clocked about 150 flights at the time of writing, and to be honest I have only done 3 conventional landings with the MX. The conventional landing actually felt considerably easier than a .40 size nitro trainer. I am pretty confident that anyone who has mastered spot landings will only need a runway no longer than 3m land the MX. Big as it maybe, this baby packs some serious STOL capabilities that are rare on other similar class models. As such it gives a lot of flexibility on where it could be safely flown.

Don't take my word for it, check out the flying videos in www.precisionaerobatics.com

On subsequent sessions I installed the CF Vortex Generators (also known as Side Force Generators) and found that it actually enhances the stability of harrier and elevators even more. It also gave a bonus of further widening the aerobatic performance on one CG position. In my opinion, I would strongly recommend installing the VG's for anyone who desires flying both precision and 3D on one session.

My Take

The MX engineering design is by far, light years ahead of the rest and in my humble opinion PA's brilliant concept for the MX with its iPAs package represents the absolute panicle in EP technology available off the shelf. Nothing even comes remotely close to matching this level of performance and certainly lives up to its catch phrase:- Beyond the Max!

From what I have experienced thus far, the MX capabilities are only limited by the pilot's proficiency and creativity behind the sticks. Its predictable and easy handling coupled with superior agility and awesome power makes it an extremely formidable unlimited aerobatic model that would easily please intermediate level and experts alike. After 150 flights and given the artistic license, I would dare say Light Years Beyond The Max.

What really impresses me most is the fact that the MX is only PA's first attempt in the 50 class EP category. Not only did they get it right the first time but in fact the MX redefines the entire class and possibly creating a new genre in aerobatics.

Dislikes

PA went as far as designing their own thumb wing bolts – they look cool but I would have to say that they felt a tad soft and could easily shear under excessive force. Also perhaps the manufacturer could include a paper template to help locate slots for the VGs. The Extra MX and all required set up is available from www.PrecisionAerobatics.com.

Call 02 9558 0443 or email info@PrecisionAerobatics.com for more details.

