



## Reflex XTR RC Flight Simulator

by Francis DiNovio



**Please Note:** Every effort was made to obtain monitor photos that were in focus. But the screen resolution is so high, the photo quality so good, on this simulator, that perfectly focused photos would most times “strobe” placing obscuring lines in the picture. The XTR simulator has great, in-focus graphics that monitor photos just cannot capture. The photos had to be just slightly out of focus to eliminate the strobe effect. We will keep trying to update the photos to make them clearer, but thought you would like to know about this excellent simulator despite the sometimes less than perfect pictures we took.

As an instructor who can, unfortunately, remember the bad old days when a student pilot’s first feel for RC flight happened only with that first touch of the transmitter sticks (and no buddy boxes anywhere), I know that RC flight simulators have progressed to the point where they can help the student RC pilot learn faster and more safely.

That is not to say that RC simulators can train a student without real-world flight experience with an instructor. They can’t and are not intended for that either. In the real world, things happen quickly, the airplane gets too far away during an eye blink, incorrect banking happens at the worst possible moment and engines sometimes just stop turning. The real world is a wonderful place to live and to fly, but it doesn’t have a reset button that I can find. And sometimes real people, as well as real model airplanes, can be hurt when student pilots fly solo before it is time.

Instead, RC flight simulators speed the learning process. With enough flight hours spent in the electronic skies, a student RC pilot will develop a better understanding of what is happening while gaining some experience handling an airplane. These skills will carry over into the real world, making learning faster and less prone to problems.

That is, this will happen if the simulator being used has very realistic flight simulation abilities. The simulator must accurately portray not only RC flight’s general characteristics but those of individual models as well. This realism is the best of both “worlds” and the new Reflex XTR RC Flight Simulator has both qualities in abundance.

“XTR” stands for “:neXt To Reality.” No, I don’t know why they didn’t call it “NTR” except that NTR could be a radio station and doesn’t have the “X” sound that means so much in aviation.

Whatever the name, this simulator has a lot of realism that will help every RC pilot improve their skills.

### **The Mechanics**



Photo 1

The simulator itself comes in a very small square box just large enough to enclose the CD disk itself. The only contents are the disk and the transmitter connector cord. The idea is to use your own transmitter to make the simulator as “real” as possible. Spring tensions and travel movements are then identical to your transmitter since it is being used. However, it is a good idea, if your transmitter has multiple model memory, to assign one model memory to the simulator since travel adjustments, trim settings and servo directions will vary.

The transmitter must have a trainer or Direct Servo Controller (DSC) port. If not, it can not be used with this simulator. Fortunately, almost all modern transmitters have such a port. The transmitter’s modulation, the way it sends out its signals, must either be PPM or able to be set as PPM. PCM modulation will not work with this, or most other, simulators.

There are different simulator versions depending on the transmitter to be used. The only difference is the transmitter end of the USB connector cable. Mine was set for JR and I used a JR 8103 transmitter. Adaptor cables for all transmitters are available if I ever want to try a different brand with the XTR.

If your transmitter has all of the above, then you are ready to take to the virtual skies. Well, you will also need a computer and color monitor. The Reflex XTR will work with Windows 98, 98SE, ME, 2000 or XP. The basic hardware requirements are a Pentium P4, or equivalent, running at 1200 MHz or faster. RAM must be at least 256 MB and the hard disk needs 1 GB of free space. Of course, there must be a CD-ROM or DVD drive and a USB 1.1 or 2.0 Port available. The video card needs at least 32 MB memory and be capable of accelerated 2x performance. Complete requirements are listed at [www.support@reflex-sim.de](mailto:www.support@reflex-sim.de)

The simulator loaded and ran perfectly on my computer running XP using a 3.0 GHz processor, 1 GB of RAM and a Legacy video card (best as I can tell as I am not much of a computer person).

Other than how to load it, there are no instructions packaged with the XTR. Instead, there is a comprehensive XTR Home Page with all types of information and helpful suggestions. Pressing F1 also gets you a comprehensive “help” section from the CD. The Model Rectifier Corporation’s Home Page (<http://www.modelrectifier.com>) also has instructions and even offers free updates. There are several updates available that add slope soaring (the only simulator I know that does this) plus extra competition helicopter flying sites and numerous new aircraft.

### **Simulator Characteristics**



Photo 2



Photo 3

But the basic simulator already has a wide variety of airplanes and helicopters. It also has some very attractive German flying sites. The graphic resolution of these fields is amazing. They are picture quality, maybe better. It is just like being there as even the bare areas in the grass runways and the different weeds among the grass are clearly visible. One part of a runway even needs the grass cut a little shorter as some of the smaller airplanes have trouble in the slightly higher grass there.



Photo 4

That is just how real this simulator's graphics are. The sun can get pretty glaring at times. Unfortunately, sunglasses don't help with this problem so don't fly directly into the sun. Monitor photos were made more difficult as the airplanes are sunlit, with sometimes darker shadowy sides, and often cast strong shadows (photo 4).

Of course, all parameters, weather, wind, aircraft performance, control responsiveness, relative viewpoints and even movie parameters are fully adjustable. Just about every variable can be individually set and controlled by the pilot.

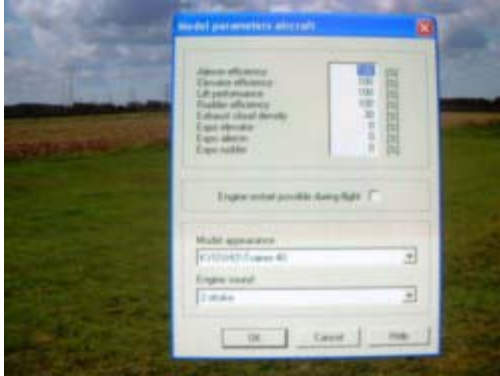


Photo 5



Photo 6

The XTR uses the Windows format to make these adjustments featuring a variety of different “settings” boxes as photos 5 and 6 show. The airplane’s response to every control input can be adjusted as can the efficiencies of its various control surfaces. Click on these two photos to enlarge them and you will notice that even the probability of an in-flight engine failure can be programmed! The pilot’s point of view can vary from any field location to one that rotates, or promenades as the XTR calls it, according to the flight path.

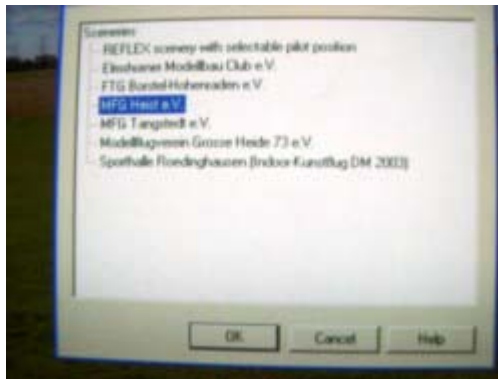


Photo 7

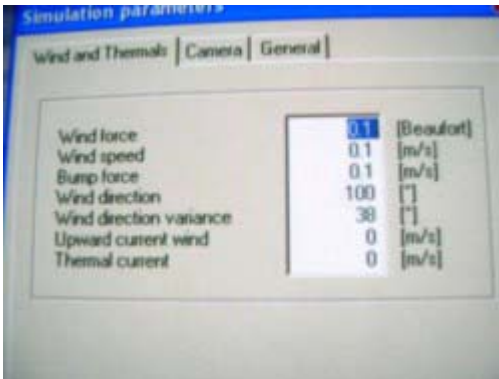


Photo 8

Once the airplane’s parameters are set, choose the field (photo 7) and then change it to suit your simulator mission. If you want to practice crosswind landings, then set the wind direction between 20 to 45 degrees to the runway direction. You can even add gusts, “bumps” (thermals), and adjust the wind to change slightly during the flight. That sounds fairly realistic to me as the wind always shifts during my real-world flights. *(Ed. Note: Since it only seems to happen to Francis and not to anyone else, I think it is his hands shaking on the transmitter that are causing those unexplained “wind shifts”.)*

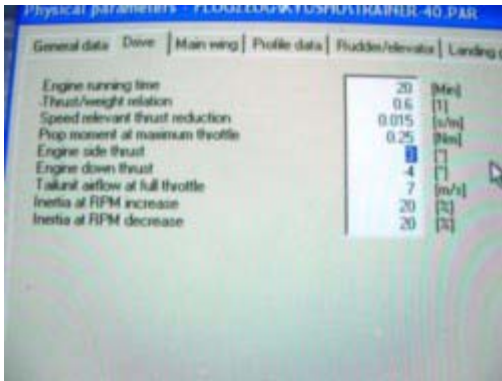


Photo 9

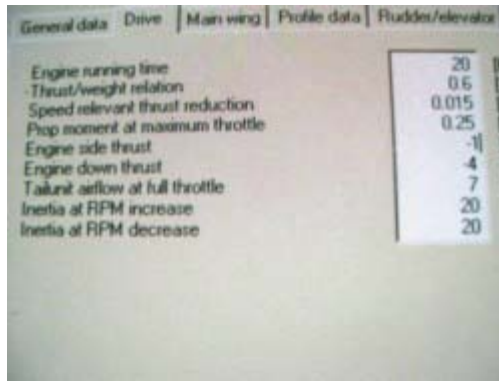


Photo 10

As you see from photo 9, click on it to enlarge, the XTR simulator tracks and uses dozens of aircraft parameters to compute each airplane's performance. All of these multiple parameters are adjustable. While most of us will leave these alone, trusting that the designers got it right (more about that later), there is one parameter that needs changing on every propeller driven airplane in the simulator.

The XTR is a great simulator that was designed in Germany. Many new pilots do not know that most full-size European piston engines rotate in the opposite direction than do the engines in the US. This means that European aircraft pull to the right during takeoff, not to the left as do American airplanes. The pilot must hold left, not right, rudder to maintain a straight run during takeoff and steep climbs. I never knew that European *model* airplanes did the same thing but the XTR airplanes, with their very faithful reproduction of all flight parameters, also pull to the right during takeoffs and steep climbs. Therefore so must the real-world models, in Europe.

While neither direction offers any advantages, a new American pilot learning on the XTR will develop the habit of holding incorrect rudder on takeoffs and in vertical climbs. This habit will need to be relearned once the pilot starts real-world American flying. Fortunately, this fully-adjustable simulator allows the pilot to make this adjustment.

Note the highlighted "3" for the engine side thrust in photo 9. Simply change that to a "-1" for most airplanes (photo 10). For the small electric aircraft, setting this parameter at "-0.5" works better. Viola, all the European airplanes now sport American "colors" and are pulling to the left during takeoff and in verticals. Just save this adjustment for each aircraft and the change remains permanent.

### Really Real Model Flight



Photo 11

I suggest leaving all the other aircraft parameters alone. Why? Because they are extremely accurate as far as I can tell. The aircraft contained in the XTR simulator are not "generic" models.

Each one is a faithful duplicate of an actual model aircraft that is currently being kitted by a particular manufacturer. For example, look at photo 11 and you will see that thirteen Kyosho models are offered, most of them are “scale”, reproductions of full-size airplanes. Each XTR airplane handles exactly as would the Kyosho model.



Photo 12



Photo 13

I know this because I have had the opportunity to fly four of the real-world Kyosho models contained in the XTR simulator. The first one is the truly challenging Gee Bee Z40 shown above. Under its attractive, somewhat innocent looking exterior lurks the knife-wielding star of the next “Halloween” movie. In the real world this is a fun, but truly challenging, airplane to fly.

Tighten a turn, even at near full speed, with the Gee Bee Z40 and it will tuck down into a descending spiral in the direction of the turn. Slow it down and the airplane literally falls out of the sky as the glide ratio resembles an anvil with a rock attached. Try to maintain heading at slow airspeeds and high angles of attack and that tiny rudder allows the airplane to drift off heading on a whim, no matter how “hard over” you put it. It is a challenge just to find the runway and then to keep the nose from trading places with the tail feathers as the airplane tries to flip over. It can be done, but only with an experienced, and sometimes lucky, hand juggling throttle and elevator, plus rudder, during the approach. And guess what. The XTR’s Gee Bee Z40 does all those things *exactly* as does the non-virtual aircraft.



Photo 14



Photo 15

I have also flown the Kyosho AT-6 Texan (photo 14) and have always marveled at its Advanced Trainer-like handling and great “scale” appearance. The airplane is stable in all turns, even steeply-banked at minimum airspeeds, yet performs excellent slow rolls and good sized loops. Because of the large front cowling, the airplane is not fast and maintains a constant airspeed even when pointed downwards (well, almost constant as there is some speed gain but not much). Landings are slow for a scale aircraft and usually easy to perform. [Stall turns](#) are about the Kyosho Texan’s only weak point as a lot of rudder is required and the turn is best performed with

a little throttle. The XTR Texan flies the exact same way and also needs throttle to complete the stall turn.

The Kyosho P-40 Warhawk (photo 15) is a rolling and looping machine when powered by a strong engine. It can tip stall if provoked in a very tight, cross-controlled (right aileron and left [top] rudder) turn, but is otherwise fairly gentle for a fighter and a lot of fun to throw around the sky. Inverted flight is a joy in the P-40. As photo 15 shows, the XTR P-40 flies as if Kyosho had "kitted" it.



Photo 16



Photo 17

The Kyosho Spitfire flies about the same as does their P-40. It gains speed fast going downhill, needs a longish takeoff roll and has few bad flight habits. Best of all, the retractable landing gear rotates outwards toward the wingtips just like it does in the simulator. I can't find any obvious difference in the way the XTR Spitfire handles compared to the more solid version.

Photo 17 is of the XTR's F-86 Sabre jet. I have not yet flown this Kyosho model, (read no one has yet brought one to the field while I was there or I certainly would have if I had to *bribe* them) but it is listed here to show that not all XTR aircraft spin propellers. The F-86 is ducted fan powered, not turbine. It flies a lot like the ducted fan models I have flown, quickly losing momentum in verticals and taking forever to accelerate in level flight. Curiously, the XTR's F-86 does not have retractable landing gear. I can only assume this is because the Kyosho model does not either.



Photo 18



Photo 1

The XTR uses the excellent Modellbau Katana (photo 18) as its giant scale aircraft. The real-world model is about the size of a 38% Extra (my estimate) and uses a big gasoline engine for power. The Reflex XTR simulator offers the ability to fly 3-D maneuvers. The Katana performs great 3-D maneuvers such as the torque roll, the aircraft hovers in a vertical position; the Waterfall, the aircraft flips over completely many times while descending; and the Blender, a fast-rotating flat spin. The Katana is offered in four different color schemes that otherwise fly the same.

The accuracy of this simulator is illustrated by my experience trimming the Katana for knife edge. Many large scale aerobatic models, like the Katana, will walk in knife-edge flight. Knife-edge flight occurs when the aircraft is rolled 90-degrees so that one wing tip points directly at the ground. Top rudder, rudder pointing away from the ground, is used to hold level flight. Sometimes, especially if left rudder is being used to maintain altitude, an airplane will “walk”, drift either towards the canopy or towards the fuselage bottom, while holding knife-edge flight. “Walking” also makes slow rolls difficult to make pretty as the airplane drifts sideways with rudder application during the roll.

Trimming an aerobatic airplane means mixing some elevator with the rudder, using the computer transmitter, to eliminate walking and to allow the airplane to hold straight, knife-edge flight. Well, the XTR’s Katana walked towards the fuselage bottom with left rudder in the knife-edge. So I went into my JR 8103 transmitter and mixed in two points of “up” elevator with left rudder. Just as in the real world, the Katana now flew a straight line in knife-edge and the slow roll straightened out. How is that for faithfully reproducing real-world model flight?



Photo 19



Photo 20



Photo 21



Photo 22

The Reflex XTR Simulator contains many 3-D aerobatic models. There are several types, from larger glow-powered aircraft to small electric “Foamies” (small, but very nimble electric-powered aircraft made from sheet foamboard) and about everything in between. All can perform excellent 3-D aerobatics in the right hands. But, if you fly these aircraft enough on the XTR, yours will become the “right hands”.

That is what a simulator does. It allows pilots to expand their flying skills without risking their aircraft. You can even fly when it is raining and snowing outside and you will not even get wet or cold. Simulators let a pilot practice a single difficult maneuver, such as a torque roll or rolling

circle, over and over again, each time improving their piloting skills and adding to their maneuver repertoire`.



Photo 23



Photo 24

Good simulators, like the Reflex XTR, can even expand a pilot's experience flying different aircraft. Not many newer pilots have a Pitts Special (photo 23) or a Tiger Moth (photo 24) to throw around the sky. In fact, few have any biplanes to fly. Using the XTR, a "biplane-less" pilot learns how quickly a biplane's extra drag slows it down and that, while having two wings may make it look old fashioned with gentle teddy-bear handling, a slow, tight turn with a little too much "up" elevator transforms the teddy into a grizzly. Good experience for a new pilot and there is always that "reset" button to try again.



Photo 25

Speaking of rare models and new flight experiences, how about flying a Kyosho T-33 jet powered by an electric ducted fan. This aircraft truly teaches the concept of throttle control and energy management. A new pilot learns both with this XTR aircraft. And there is always that beautiful reset button. (If a genie ever offers me one wish, I am going to ask for a real-world reset button on my transmitter. How about it Futaba, Hitec and JR? Can you guys make one?)



Photo 26



Photo 27

There is even a trainer available for new pilots to use when perfecting takeoff and landing skills (photo 26). This airplane flies very much like SIG Kadet with slow gentle handling, good ground control and an excellent glide. And when those bushes jump out into the runway (photo 27), there is always that reset button.

There are many more aircraft available in the Reflex XTR simulator package, too many to show them all here. There are also update packages available with additional airplanes like a giant P-47 complete with retracts and flaps, a Cessna 337 twin with flaps and a "trainer" Cessna 152, also with flaps. There are slope gliders, electric powered gliders, all sorts of electric-powered models, and even an F-3A Pattern aircraft to fly those giant and graceful Precision Aerobatic Maneuvers. On the opposite performance end is an ancient scale Bleriot.

This three-channel, no ailerons, model of the first full-size airplane to fly across the English Channel (in 1912 I believe) is just as underpowered as was the original. Curiously, the rudder control is on the left-side (throttle/rudder) transmitter stick rather than on the right-side aileron stick as most model pilots would set it up. Flying this model really teaches a new pilot that the left hand stick is there for flying, not as a thumb rest whenever the throttle is not being moved. I strongly recommend new pilots fly the Bleriot a lot. Doing so will teach that left hand how to fly when rudder is needed on a four-channel model.

The Reflex XTR has a feature that I have not yet tried but one that sounds very interesting. Using photos of your aircraft, the XTR will import your own model airplane into the simulator. You will have to set its flight parameters. It is probably best to input parameters from a similar XTR aircraft and then adjust them until the virtual version of your airplane flies the same as the real world example. When the sun don't shine, you can be inside flying "your airplane" practicing those rolling loops.



Photo 28



Photo 29

As for the flying fields, there are some really stunning, wide open, flying sites in the XTR simulator. These are hard to represent here but photos 28 and 29 show opposite ends of just one such field.

In the real world, most flying fields have “protected” areas prohibiting over flight. Such areas could be houses, the pit area and roads. Other simulators ignore this basic fact but the XTR does not. If you fly over a prohibited area, like the field house, giant red bars appear in the sky. If the aircraft is flying below 20 feet, the flight ends. If the aircraft’s altitude is higher than 20 feet, the flight continues but the red bars remain in the sky until your aircraft leaves the prohibited area. The red bars should be thought of as the XTR’s way of representing other pilots at the field shouting out, “Hey, not over the pits!”



Photo 30



Photo 31

There is an indoor gym for flying small electric 3-D models (photo 30). If you are adventuresome, you can even fly small electric-powered airplanes like the Spitfire inside the large basketball court (photo 31). While the indoor aerobatic models in the XTR are fun to fly inside, flying outdoor models like the Spitfire inside teach new pilots to manage airspeed and turning radii while holding a set altitude.



Photo 32

No matter how good you think you are, I wouldn’t suggest flying the Katana inside (photo 31) as I was only able to get it all the way around the gym once despite many attempts. It was fun trying, but there was nothing to be learned in doing so and learning is what this simulator is for.



Photo 33

Just to remind pilots that this simulator, while fun, is there for a real-world purpose, the XTR shows you what the painful results of your piloting miscues will mean in the bad old real world outside your electronic box. Do something wrong and your airplane can look like the Spitfire in photo 33. The XTR designers went to a lot of trouble designing this simulator to accurately reflect real-world model flying so that a pilot can use this educational tool to increase piloting skills and prevent real-world results similar to those in the photo. While fun, the XTR is far too exact to be used as a toy. For example, just as in the real world, there is no “pause button” in the XTR. If you are going in, keep fighting hard to save it because you can’t stop the action.



Photo 34



Photo 35

In order to help newer pilots better learn takeoffs, landings and approaches, the XTR simulator has a non-real airport using drawn graphics. Flying from this field, the pilot can set different pilot stations and have several points of view. Extra graphics are available such as the glide slope indicator in photo 34. By following this path around the sky, the pilot can keep the airplane inline with the runway and at the proper altitude for the approach. Sky-borne grid marks are available so the pilot always knows the aircraft’s exact location during all phases of the flight (photo 35). These helpful tools speed the learning process.

### Helicopters

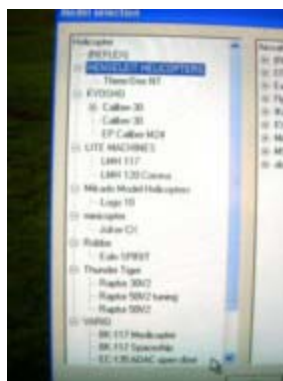


Photo 36

One of the best things about RC simulators, the Reflex XTR included, is that RC pilots can experience helicopter flying without the initial expense and frustrations usually associated with beginning any new phase of the sport. But the XTR goes a lot further. Photo 36 shows just some of the available helicopter models, (there are more helicopters past the scroll point).

When transitioning from airplanes to helicopters on the XTR, it is best to reinitialize the transmitter in the program. Some control directions are reversed in the helicopter mode and there are some trim changes. This is not unusual in simulators. Reinitializing the transmitter is very easy in the XTR and takes but a few moments to do. It is easier than resetting all the individual control directions and trim centers.



Photo 37



Photo 38

There are many scale helicopters, even small electric ones that can be flown indoors. Some helicopters have collective pitch and some do not. While I cannot personally vouch for the accuracy of the XTR's helicopters, I believe that the designers must have taken the same extra care to make these models fly correctly that they did with the airplanes.



Photo 39

There are several hi-performance aerobatic helicopters included in the mix. These machines can fly inverted, sideways and about every attitude in between. They can perform outside loops, rotating stall turns and even hover while inverted. Of course, I was able to do all these maneuvers in one short flight but honestly, that flight was just an attempt to learn to hover! I am getting better at helicopter flying after using the XTR, but I still have a long way to go yet.

But that is one of this simulator's best features. I can learn at my own pace without needing an instructor and without damaging any equipment. The helicopters are all "in trim", vital for any successful helicopter flight, and respond beautifully. Now all I need is some practice time.

#### **Summary**

The Reflex XTR is an extremely realistic RC simulator. Unlike other simulators, you can not fly through yourself. Hit the high grass and the airplane stops or noses over. Touch a wingtip against a rock and the flight ends with a broken wing. Land too hard and the gear will collapse. All the airplanes fly exactly as they would in the real world. There are even in-flight engine failures (if you wish), turbulence, crosswinds, sun glare and deep shadows.

The 3-D graphics are great and gave me the feeling I was actually at the fields in Germany. I almost felt I should brush up on my old school German! There were a few adjustments needed, especially thrust vectors, but the Windows programming made them very easy to do. At about \$170, the XTR costs less than most airplanes but offers the newer RC pilot the chance to fly dozens of different aircraft and helicopters, indoors or outside.

For more information on this truly excellent simulator, please go to <http://www.modelrectifier.com/products/rcFlightSimulators/index.asp>