

aerofly 5

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Manual

Version 1.3



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1. Introduction

With the AeroFly 5 you have chosen a modern and future-proof product. Based on the proven technology of our award-winning AeroFly Professional Deluxe, we have fully re-developed the AeroFly 5 over a period of 4 years. Thanks to this new development, the AeroFly 5 can now efficiently utilize modern graphics cards and multi-core processors and thus provide you with an unbelievably realistic experience and outstanding graphic quality. In addition to the photo-sceneries and multi-pano sceneries with improved model graphics, the AeroFly 5 provides new 4D landscapes with unrivalled details, e.g. animated windsocks and trees, freely settable weather conditions and times of the day, animated water surfaces and freely configurable clouds.



The new physics of flight behind simulation are the heart of the AeroFly 5. They enable more radical manoeuvres for 3D aerobatics and offer extremely detailed behaviour on the ground so that the starting and landing behaviour of the models is simulated as true-to-life as possible. The dynamic wind field simulation now enables dynamic soaring on suitable slopes, takes upwinds and downwinds on slopes into account and simulates not only turbulences but also thermals depending on the landscape. The simulation of the helicopter was completely revised, likewise the simulation of the animated winch start and aero-tow.

Thank you for buying the AeroFly 5. We hope you enjoy flying the helicopters and aircrafts and exploring new landscapes.

2. System requirements

Before installing the AeroFly 5, please check that your PC meets the minimum system requirements listed below, otherwise trouble-free simulation cannot be guaranteed. During simulation, you can call up the frames per second display at any time by pressing the key combination **Shift+I**. This figure should always be over 33 FPS to ensure realistic simulation.

2.1 Computers running Microsoft Windows

Minimum system requirements

- 100% Intel Pentium 4 or AMD Athlon64 compatible CPU with 2.4 GHz
- 1 GB RAM
- 8 GB free hard disk storage
- DVD-ROM drive
- OpenGL 2.1 compatible 3D graphics card with min. 256 MB (at least as fast as NVIDIA 7600GT or ATI HD3650)
- Windows XP / Windows Vista / Windows 7
- A free USB port for connecting the USB interface / USB-GameCommander

Note: With a system that only fulfils the minimum requirements, the performance depends to a great extent on the loaded model and the landscapes. 4D landscapes require the following recommended system requirements to ensure smooth operation.

Recommended system requirements

- Intel Core 2 Duo or AMD Athlon64 X2
- OpenGL Version 3.1 compatible 3D NVIDIA or ATI graphics card with 512 MB. (At least as fast as NVIDIA GeForce 8800 or ATI Radeon HD4850)
- 2 GB RAM

2.2 Apple Mac OS X computer

Minimum system requirements

- Intel based Apple Mac computer with Mac OS X 10.5 or 10.6 (Leopard or Snow Leopard)
- 1 GB RAM
- 8 GB free hard disk storage
- DVD-ROM drive
- OpenGL Version 2.1 compatible 3D-graphics card from NVIDIA or ATI with 256MB (at least as fast as NVIDIA 8600, 9400 or ATI Radeon HD 2400)
- A free USB port for connecting the USB interface / USB-GameCommander

Note: With a system that only fulfils the minimum requirements, the performance depends to a great extent

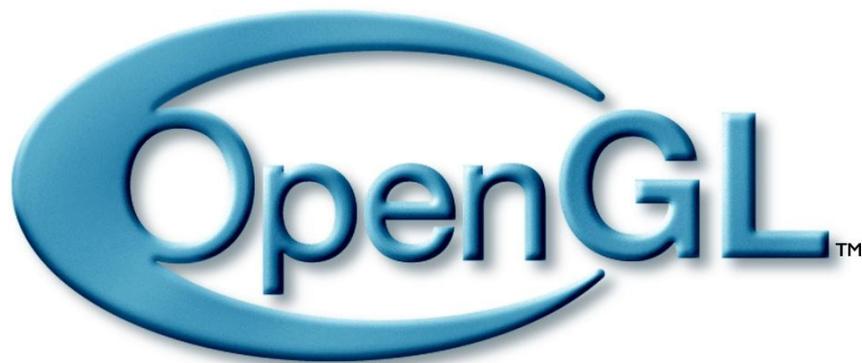
on the loaded model and the landscapes. 4D landscapes require the following recommended system requirements to ensure smooth operation.

Recommended system requirements

- Intel based Apple Mac computer with Mac OS X 10.5 or 10.6 (Leopard or Snow Leopard)
- 2 GB RAM
- 8 GB free hard disk storage
- DVD-ROM drive
- OpenGL Version 2.1 compatible 3D-graphics card from NVIDIA or ATI with 512MB (at least as fast as NVIDIA 9600 or ATI Radeon HD 4850)
- A free USB port for connecting the USB interface / USB-GameCommander

What is OpenGL?

AeroFly 5 uses the programming interface OpenGL, Version 2.1 upwards to display the 3D graphics. Contrary to Direct3D (DirectX), OpenGL also operates under systems that are not Microsoft Windows-based systems, e.g. Apple Mac OS X and Linux. **We urgently recommend installing the current 3D drivers for your 3D graphics card before installing AeroFly 5.** For this purpose, visit the website of the manufacturer of your graphics card (www.nvidia.de or www.ati.de). Current NVIDIA and ATI drivers in particular support OpenGL Version 3.1. on up-to-date 3D graphics cards so that Aerofly 5 not only operates faster but also looks better.



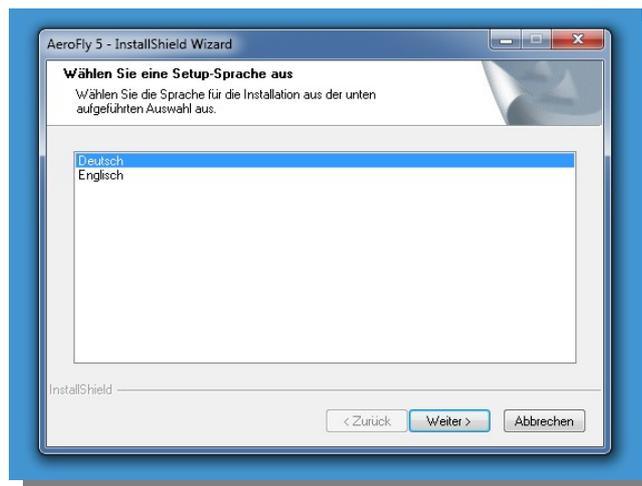
For more information on OpenGL, visit www.opengl.org.

3. Installation (Microsoft Windows)

Due to the high volume of data, AeroFly 5 is supplied on 2 DVDs. Insert the AeroFly 5 DVD marked „DISC 1“ into your DVD-ROM drive. This DVD also contains your 20-digit product key that you will require later for activation purposes.



AeroFly 5 uses the autostart mechanism of Windows to start the installation software automatically. Installation starts automatically and the set-up program start screen of the installation program appears. Select the desired language for installing AeroFly 5. Follow the further instructions of the installation program.



If you have deactivated the autostart feature in Windows Setup or if you have already installed an AeroFly 5 version, then installation will not start automatically. In this case, the installation program Setup.exe, which can be found in the main directory of the DVD-ROM, must be started manually. Click My Computer in the Windows Desktop and then the symbol for your DVD-ROM drive (the small Extra 330 aircraft symbol) with the right mouse button. A short menu appears. Choose the menu item "Open" and a window appears with the contents of the main directory for the AeroFly 5 DVD. Click the program Setup.exe to start installation.

Important information for users of Windows Vista and Windows 7: The installation program installs AeroFly 5 on systems with Windows Vista and Windows 7 not as usual in the program directory „C:\Program Files\“ but in the Windows home directory. This is necessary, as AeroFly 5 requires write access in this directory. If you do not require this, simply choose another directory in which you have write access as user, e.g. „C:\AeroFly 5\“.

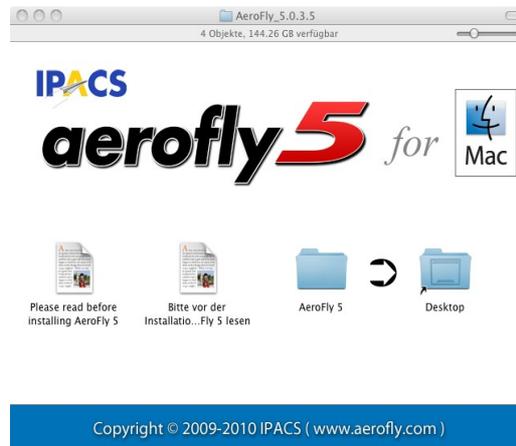
4. Installation (Apple Mac OS X)

Due to the high volume of data, AeroFly 5 is supplied on 2 DVDs. Insert the AeroFly 5 DVD marked „DISC 1“ into your DVD-ROM drive. This DVD also contains your 20-digit product key that you will require later for activation purposes.

1. Insert the AeroFly 5 DVD 1 into your DVD drive.



2. Drag the file "AeroFly-5.0.3.5.dmg" from DVD 1 to your Desktop.
3. Insert the AeroFly 5 DVD 2 into your DVD drive and drag the file "AeroFly-5.0.3.5.002.dmgpart" to your Desktop as well. Both files have to be in the same location.
4. Double click on the file „AeroFly-5.0.3.5.dmg“ on your Desktop.
5. A new window will open. Do not start AeroFly 5 direct from within this window.



6. Now drag the folder AeroFly 5 from this window to your Desktop.
7. You may now remove the two DMG files on your Desktop.
8. Now go into the folder AeroFly 5 on your Desktop and double click on the AeroFly 5 symbol to start AeroFly 5.

Note for advanced users:

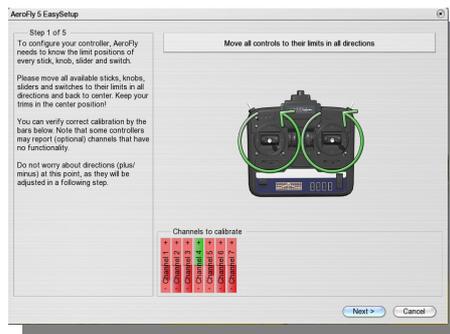
The default folder for Mac OS X applications is the Applications folder (located in /Applications on your hard drive). You may of course install AeroFly 5 here as well. Please note however that you need administrator rights to install and run AeroFly 5 from this location. To be able to run AeroFly 5 from this folder as a normal user (with no administrator rights) you need to give this user write access to the folder AeroFly 5. This can be done using the Mac OS Finder.

5. Calibrate transmitter or GameCommander

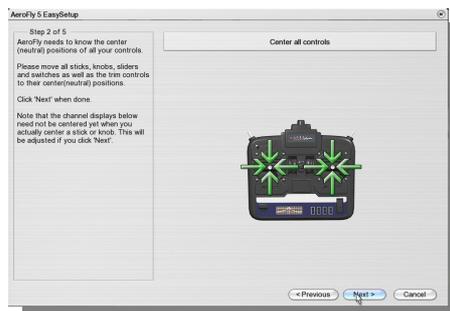
When starting the program for the first time, you must calibrate and set up your transmitter or GameCommander. AeroFly 5 will automatically assist you in Easy Setup. (The same applies if you wish to connect a new controller at a later stage and assign it to a player or model.). Easy Setup comprises 5 simple steps:

Step 1

Identification of control ranges of your transmitter/controller. Please ensure that all available switches, knobs and sliders are moved to their full extent of travel.



Step 2

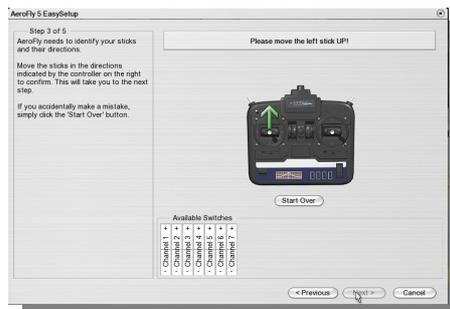


Identification of zero positions of all sticks, switches, knobs and sliders.

Step 3

AeroFly 5 operates with transmitters of different manufacturers. As there is a significant variation between the manufacturers, AeroFly 5 cannot automatically identify the exact channel to which your special controller transmits the individual stick signals.

This can be easily determined by moving the joystick in the 4 directions indicated by the arrow. Your control sticks are then clearly identified.



Note: If you are using a joystick, that does not have two sticks as is the case with a joypad, move an axis that you wish to define as throttle for 'left stick up', and 'left stick right' an axis for the aileron. For the right stick you then move the joystick up and to the right.

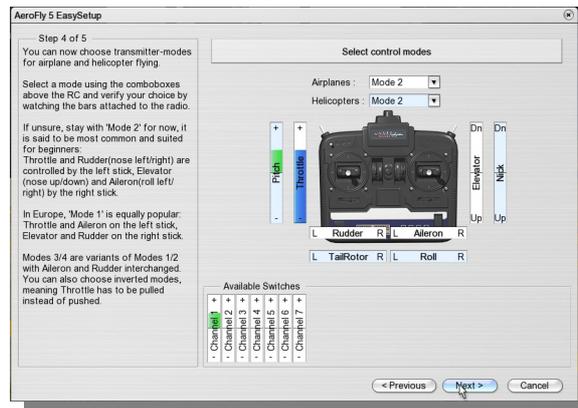
Step 4

Determine the assignment and function of the joysticks.

If you are flying for the first time, it is advisable to leave the settings at „Mode 2“. You then control the throttle with the left joystick and the direction (aileron and elevator) with the right joystick.

Should this setting not appeal to you, choose a different mode. The labelling on the bars will change accordingly so that you can check directly that every stick is moving exactly as you wish.

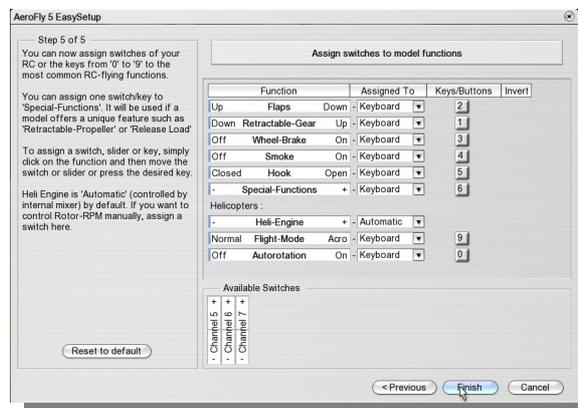
If you are a professional and want to make your own assignments, select „*Advanced Channel Setup*“ in the controller menu on completion of the Easy Setup.



Step 5

Assign keys of your keyboard or controller of your transmitter to the most frequently used model functions.

A default setting already exists. If you wish to change this, simply use automatic assignment: Click the horizontal bar of a function and move the desired slider when prompted or press the desired key or knob on the joystick. Please note that only the keys 0..9 can be used on the main or numerical keyboard.

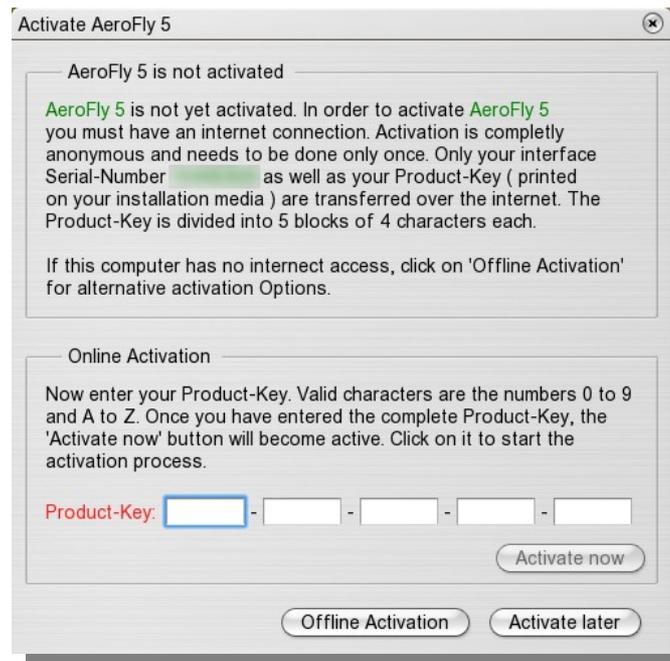


Check that all functions have been assigned as required by moving the individual sliders. The direction of a slider can be reversed by marking the box in the column „*Invert*“.

For further details on how to set up the functions, see Chapter [12. Menu „Controller“](#) below.

6. Activate AeroFly 5

After successfully calibrating, AeroFly 5 must be activated so that all models and sceneries can be used. Activation is restricted to your USB interface and/or the USB GameCommander and not to a specific PC so that AeroFly 5 can be installed and used on different computers. Activation is anonymous and is only required once. Only the serial number of your USB interface and/or USB GameCommander and the product key that are on the installation DVD 1, are transmitted. The product key is sub-divided into 5 blocks of 4 characters. Shortly after starting the program and after your transmitter and/or GameCommander is calibrated, the activation window appears.



The fastest way to activate is directly in AeroFly 5. Should the PC on which you have installed AeroFly, have no Internet connection, please click, „*Offline Activation*“ for alternative activation possibilities.

7. Load aircraft model

Load an aircraft model by clicking „Model“ and then „Load Aircraft“ in the main menu of AeroFly 5.



Folder list/filtering (top left)

Set medium range aircraft type to be displayed.

You can compile the file „Favorites“ yourself by right-clicking your favourite model and then choosing „Add to Favorites“ in the context menu that appears.

The file „Recently Flown“ automatically contains a list of the 9 models that you flew last.

Display mode (bottom left)

Switch between thumbnail and detailed text display of the available models.

Sort by (bottom left)

Sort models by name, size or other criteria.

Preview and model information (right)

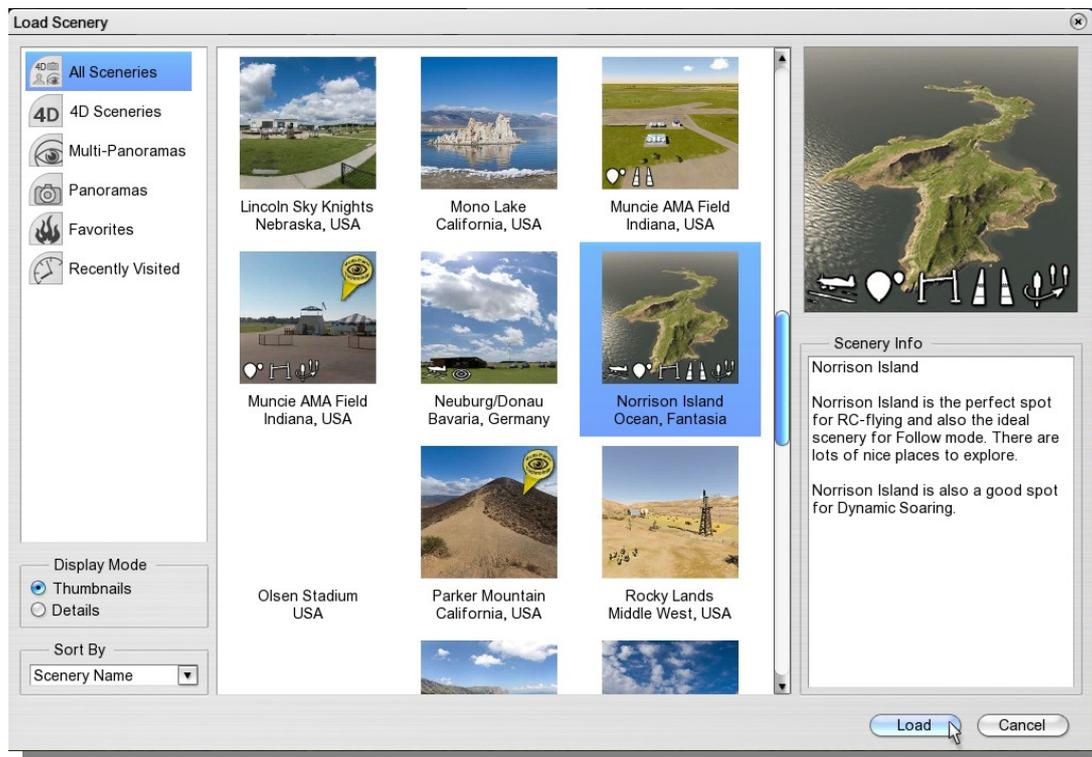
At the top right you can see a preview of the chosen model, underneath a detailed description.

Available configurations (in the middle on the right)

The default setting is inactive. Only after creating additional configurations of a model with the aid of the model editor (or after having received same by downloading), can you determine which configuration requires loading.

8. Load scenery

Load a scenery by clicking „*Scenery*“ and then „*Load Scenery*“ in the main menu of AeroFly 5.



Refer to the points described in [Load aircraft](#) for loading sceneries.

Available contests

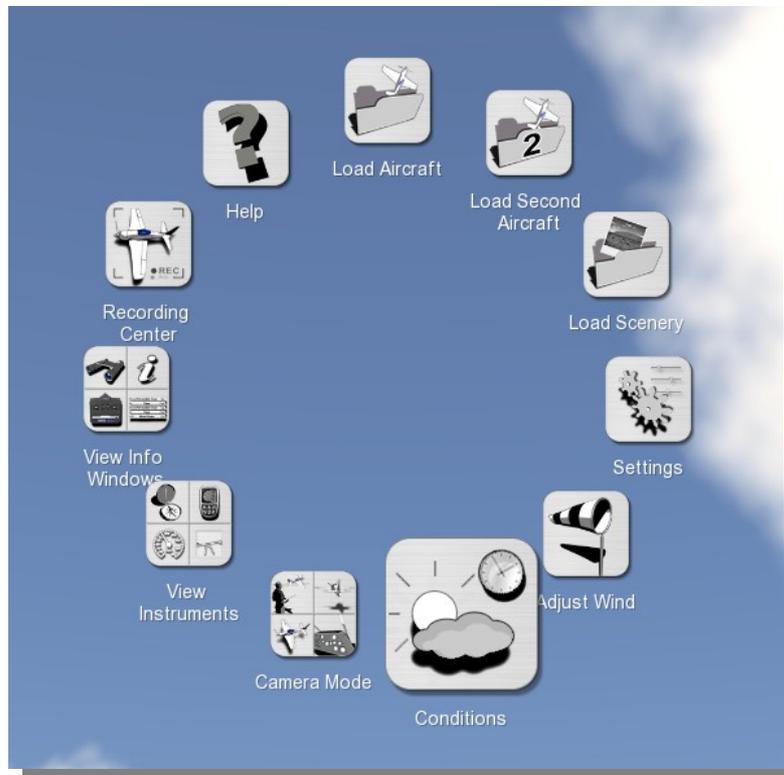
The thumbnails contain a number of small white symbols. These symbols show directly what contests are available in a scenery. In detail view, the contest symbols are replaced by letters.

| Symbol | Contest | Abbreviation (Detail view) |
|--------|----------------------|----------------------------|
| | Balloon Pop | B |
| | Limbo | L |
| | Pylon Race | P |
| | Air-Race | A |
| | Landing Contest | S |
| | Autorotation landing | R |

9. Quick launch menu

Use the right mouse button for quick access to the most frequently used functions:

Click any part of the screen with the right mouse button whilst no other window is open. The ring-shaped quick launch menu appears.



Select the desired function in the usual manner using the left mouse button.

Sub menus

The options „*Information Window*“, „*Instruments*“ and „*Camera mode*“ are sub-divided into four sections, each of which controls a different function. Click the desired sub-item with the mouse.

Note: If you are in a photo scenery or are connected to the network, you do not have as many options. In 4D landscapes, you do not have the choice of camera modes or flight conditions (time of day, clouds, fog). In multiplayer mode you cannot change the scenery.

Note: The AeroFly 5 main menu still provides access to *all* functions. It appears automatically at the top of the screen when the mouse is moved.

10. Instruments and Information Window

You can activate the following instruments and information in the form of small transparent windows in the menu „View“ or alternatively using the [Quick launch menu](#):

Information:

- Binoculars
- Flight information
- Transmitter
- Model functions
- Console

Instruments:

- Compass/Wind
- Variometer
- Tachometer
- Landing aid

Note: The windows appear at the default positions. However, you can assign them as you require. Move the mouse to a window and keep the left mouse button pressed to move it. The arrangement of the windows remains the same even if you exit AeroFly 5 and re-start it later. Some of the instruments and/or information windows are described below.

10.1 Variometer

This instrument that is vital to the glider indicates energy-compensated climb and descent rates in the round vario scale. The following parameters are also displayed as text:



- **Vz:** The absolute climb/descent rate
- **ASL:** Altitude above sea level(NN)
- **AGL:** Altitude above ground
- **dH:** Difference in height to last starting point
- **Time:** Flight time since the last start

With gliders that are equipped accordingly (e.g. 'Intention'), the loudspeaker symbol enables you to receive and emit an acoustical signal or to suppress same.

10.2 Model functions

This window lists the special functions of the current model and their assignments. Standard functions, e.g. throttle, elevator, etc. do not appear here. A button is located under the bar. Click this to set up the functions should you wish to change the current assignment.

Please note that some models have *no* special functions. The window remains hidden as long as you do not touch it with the mouse.

This window indicates which signals your model is currently receiving. The most frequent channels are as



follows:

Aircrafts: Landing gear, wheel-brake, flaps, towing hook, smoke, special functions

Helicopters: Helicopter motor, flight mode and autorotation

Note: Beginners often ask the question „Why isn't my helicopter flying?“ or „Why isn't my model moving?“. Consult this information window for answers to these questions.

Note: Take into account that autorotation is deactivated in helicopters in flight mode 'N' (Normal), as long as you have not activated the corresponding slider or the assigned key. For 3D or return flight, switch to flight mode 'A' (Acro).

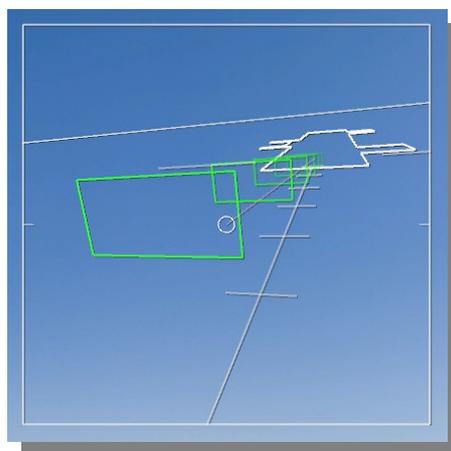
Note: To facilitate operation, the AeroFly 5 is equipped with an automatic mechanism for landing gear, wheel-brake and towing hook functions: When the model is reset (e.g. press the space bar, 'B' or 'D'), these functions are reset to their default value.

The landing gear is then (irrespective of the slider position) automatically extended. Only when the landing gear switch is moved again in direction 'Retract', is this automatic mechanism deactivated.

After re-positioning the model, all hooks are also closed and the wheel-brake open so that you can now start.

10.3 Landing assist

This landing assist that was specially developed for the AeroFly 5 is intended to facilitate the correct approach and landing in photo sceneries after brief practice.



The landing assist window shows a schematic diagram of **the view** of the runway **from the cockpit** of the model.

The green squares mark the appropriate landing corridor. In the background you can see the horizon, a schematic diagram of the actual runway and a centre line with subdivisions on the ground.

To land proceed as follows:

- At a suitable distance, try to align your model parallel to the centre line on the ground. Focus *almost entirely* on the landing assist window, as your model is far away from the view position.
- Control the height and descent rate so that you fly as far as possible through the centre of the green squares in succession. In doing so observe *only* the landing assist.
- During the last seconds (on reaching the last green square) keep your eyes on the model to touch down smoothly. Congratulations on your successful landing!

10.4 Console

The bottom left section of the AeroFly 5 window or full screen is reserved for console outputs. This „*Window*“ is always visible and cannot be deleted.



It contains not only information on the currently chosen camera mode but also on the next steps. Pay attention to these outputs during training and contests.

11. Various camera modes

AeroFly 5 offers 4 different camera modes for observing the models. Activate these camera modes using the F-keys F5 to F8 or optionally via the menu „*View*“.

Note: Only the camera mode „*Fixed View Mode*“ is available in the photo sceneries.

11.1 Setting the field of vision

In all camera modes, you can minimize and maximize the field of vision of the camera using the keys 'A' and 'Y'. Key 'A' minimizes your field of vision, i.e. the model is easier to see whereas you see less of the landscape, as if you are looking through a telephoto lens. Key 'Y' enlarges your field of vision so that you can see more of the landscape although the model is smaller. Depending on the distance and size of your screen, simply experiment until you have found your optimal setting.

11.2 Choosing the start position

Every landscape offers various start positions for the models. In 4D landscapes additional positions are possible for the viewer. Use the keys 'V' and 'B' to switch to these different positions. If you have found a suitable position, press the space bar to continually restart the model from this position.

In order to achieve the different viewer positions in the multi-pano sceneries, press the Page Up/Down keys. The keys 'V' and 'B' are only for switching between the different model positions.

The different modes are described as follows:

11.3 Fixed view mode (Key F5)

This is the standard mode for all model aircraft. The camera is in a fixed position and focusses on the model. In this mode, the following keys are available in the 4D sceneries for further setups:

- **Arrow key left / right:** To move around the actual position of the model.
- **Arrow key up / down:** To move towards and away from the model.
- **Page up / down:** To change the height of the viewing position (higher/lower).

11.4 Follow mode (Key F6)

In Follow mode, you fly behind the model. Just imagine that you are connected to the model by a rubber band.

- **Arrow key up / down:** Arrow key up / down: The virtual band that connects the camera to the model becomes shorter and/or longer, so that you are either flying closer to the model or further away from it.
- **Key Pos1 / Exit:** The camera flies as close as possible behind the model and/or far behind the model.

11.5 Model camera (Key F7)

In this mode, the camera is located at a freely settable position round the model and moves together with the centre of gravity of the model. This mode is highly suitable for viewing the model in flight. The camera does not completely turn with the model on its longitudinal and transverse axis. Starting and landing is somewhat tricky in this mode. The following keys are available in this mode:

- **Arrow key left / right:** To rotate around the model.
- **Arrow key up / down:** To turn towards the model and/or away from the model. You can achieve a distance of max. 4 model radii away from the model.
- **Page up / down:** The viewer is positioned higher or lower. You are looking down or up at the model.
- **Key Pos1 / Exit:** The viewer is positioned directly in front of and/or directly behind the model.

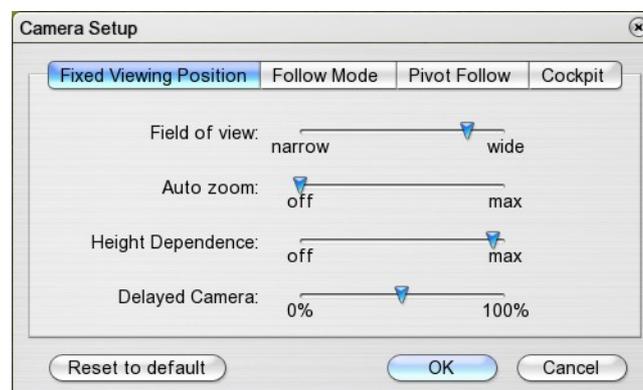
11.6 Cockpit mode (Key F8)

In this camera mode you are situated directly in the model, i.e. the camera completes exactly the same movements as the model. The cockpit mode is divided into further sub-modes. To activate the different positions, press Key F8 repeatedly.

1. The first cockpit mode (first pressing of Key F8) sets the viewer at a position that is relative to the model and you are always focussed on the centre of gravity of the model. You rotate around the model using the arrow keys left / right / up / down and the page up / down keys.
2. The second cockpit mode sets the viewer at a fixed position and looks in the direction of flight. Your own model is not displayed in this mode.
3. Some models have additional fixed cockpit positions (option) with a fixed viewing direction. You can change the viewing direction in these modes using the arrow keys left / right / up / down and the page up / down keys.

11.7 Influence of the camera settings on flight behaviour

The different camera modes have additional parameters. Select „Camera Setup“ in the menu „View“. A point that is often underestimated, is the influence of the camera settings in the simulator on the *subjective* flight behaviour. Depending on the field of vision and delayed camera in the Fixed Viewer Mode, the flight behaviour of a model can change somewhat dramatically, although the *objective* flight behaviour has not changed at all.



Field of view: The further to the right the slider is moved (> Wide), the more you can see of the surroundings, simultaneously however, the model will quickly appear small at greater distances. How does this parameter influence the subjective flight behaviour? The more you can see of the surroundings, i.e. the slide control is positioned at Wide, the more noticeable are the changes of direction of the model and in

comparison to a narrow field of view, the model appears considerably more agile. In reality the field of vision is of course considerably wider and the movements of the model can be spotted sooner. If the slider is at *Narrow*, even steep heights or changes in direction are hardly noticeable, however the model can be seen considerably better at greater distances.

Auto zoom: If the Auto Zoom is activated, the field of vision of the viewer adapts automatically to the distance at which the aircraft is flying. If the model is close to the viewer, the Auto Zoom sets the field of view at Wide so that you can see more of the surroundings and prepare for landing or avoid obstacles. If the model flies further off into the distance, the field of view becomes automatically smaller so that the model can still be seen. This automatic mechanism however, can also influence the subjective flight behaviour decisively.

Height dependence: Due to the restricted field of view, it is sometimes difficult to identify the height of the model in relation to the viewer. If Height Dependence is activated, the model is displaced upwards or downwards depending on the position of the model in relation to the height of the viewer. Without realizing, many pilots fly directly overhead in the simulator due to the restricted field of view. If Height Dependence is activated, the model is then at the upper edge of the screen.

Camera delay: The parameter camera delay was actually introduced to compensate the influence of the small field of vision on the monitor and to introduce a greater degree of dynamism than it would have in reality with a wide field of vision. Camera delay ensures that the camera does not instantaneously follow the accelerations of the model so that changes in the altitude of the model can be recognized sooner. This is extremely important for landings and the smooth performance of aerobatics. Simultaneously, however in the case of an extreme 3D helicopter flight, the model may appear to move because the camera is not always focussed on the model. Simply set the parameters to suit your personal preferences and flying style.

If you are still not satisfied with the actual flight behaviour, the next step is deflection control.

12. Moving the camera and model

Simply use the mouse to move the camera and the model e.g. into the desired starting position.

Note: The following functions are only available in the mode „*Fixed View Mode*“ (Key F5) or in Walk Mode (Taste W).

Moving the camera



Press the left mouse button anywhere in the window. The pointer becomes a symbolic eye with arrows. Keep the left mouse button depressed and move the mouse to swivel the camera. Press F5 to focus again on the model.

Position model



Move the mouse to the middle of the model. The pointer now becomes the four-way arrow. Keep the left mouse button depressed and move the mouse to drag the model to the required position. Up and down movements move the model further away or bring it closer.

Turn model



Move the mouse to the edge of the model. The pointer now becomes a symbol of rotating arrows. Keep the left mouse button depressed and move the mouse to turn the model.

Lift/lower model



Position the mouse above or below the model. The pointer now becomes a symbol of arrows, that point up and down. Keep the left mouse button depressed and move the mouse up and/or down to lift or lower the model. You can simultaneously move it to both the right and left.

13. Menu „Controller“

All set-ups that relate to your transmitter, GameCommander or gamepad/joystick, can be found in the menu „Controller“:



Scan for new controllers

Choose this menu item if you wish to connect a new controller for yourself or for a second player. After scanning, controllers are displayed in the menu and can be selected as required. See following point.

Assign controllers

In the menu under 'Controller Player 1' and 'Controller Player 2' you can directly assign a controller to a player. All the identified controllers are displayed for selection (in this case a transmitter at the interface cable and a joystick).

Controller mode

Assign the sticks to each individual player.

Assign sliders

Opens the relevant window from the Easy Setup mode in which you can assign the sliders or keys to the most common model functions. See Step 5 in [Paragraph 4. Calibrating Transmitter or GameCommander](#).

Advanced channel setups

This menu contains the advanced setups in which the professionals have access to all possible model functions. You can also make more customized setups.

Initial controller setup

Here you can return to the various easy function setups of the Easy Setup mode. Compare [Paragraph 4. Calibrate transmitter or GameCommander](#) above.

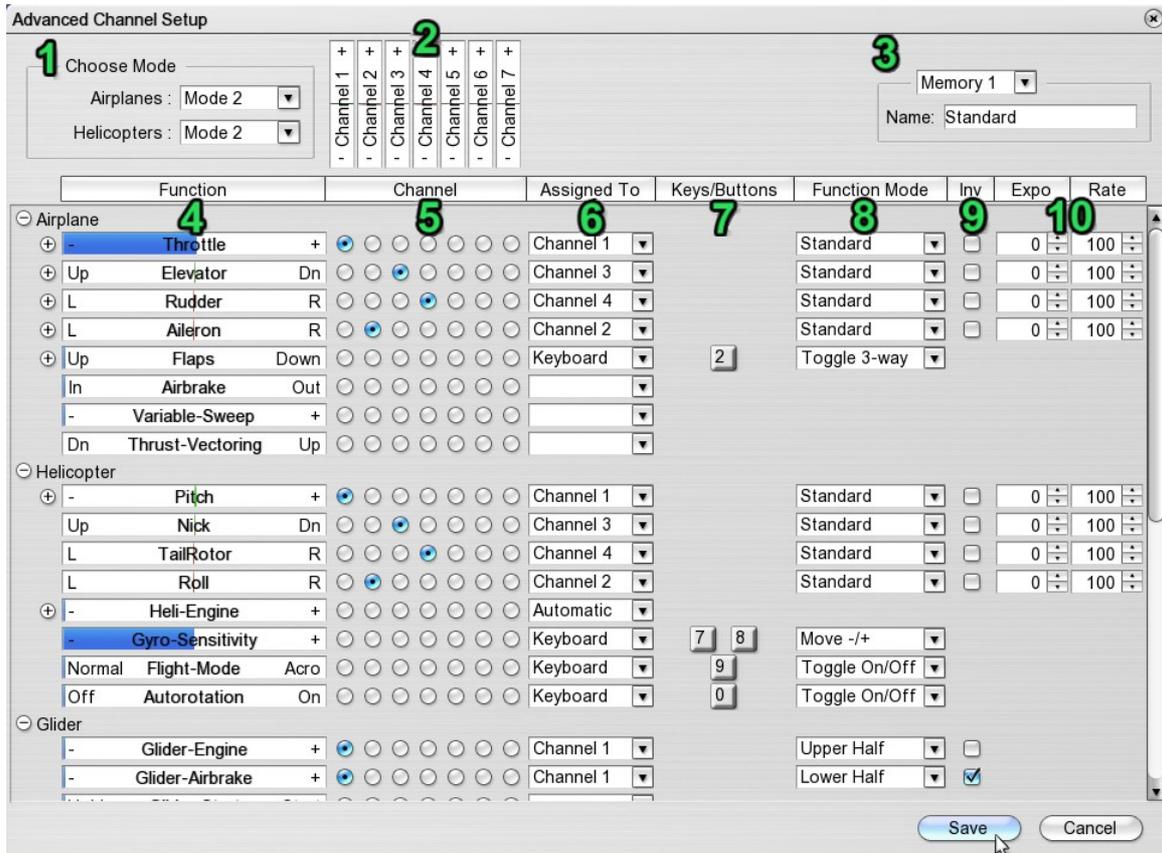
Calibrate and Configure: Re-start complete Easy Setup.

Calibrate only: If one/several channels are incorrectly calibrated, you can recalibrate here. (Steps 1 and 2 of the Easy Setup mode)

Mode selection: Reopens Step 4 of the Easy Setup mode, in which you can choose the transmitter modes for aircrafts and helicopters and see which stick controls which function.

13.1 Advanced channel setups

AeroFly 5 offers you complete freedom over the setup of all functions in 'Advanced Channel Setups':



Select mode (1):

At the top left you can once again select a transmitter mode for both aircrafts and helicopters. Select the mode first that best meets your requirements and then assign your individual channels.

Channel display (2):

Displays the channels that your transmitter/GameCommander supports. Move a stick to display the assigned channel.

Note: In the case of joysticks, only the analog axes are displayed and not the digital buttons. See below for assigning buttons.

Disk space (3):

Here you have the possibility to define and subsequently call up four different default settings for your controller. Set up 'Memory 1' first and enter a name. If you wish to define a further configuration, select 'Memory 2', enter a new name, make the necessary changes and click 'Save'.

Function bars (4):

This is the list of the model functions available in AeroFly 5. They are sorted into aircrafts, helicopters, gliders, etc. You can display/hide parts of the list using the small plus and minus symbols. (Under throttle, e.g. you will find 4 further sub-functions - throttle-1 to throttle-4. However these only apply to special models).

Automatic assignment: Click a function bar. A small window opens. Move the stick, slider, switch or

press a key 0..9 or button on the joystick to assign the function.

Channel assignment (5):

You can also use the mouse to assign a channel (in the tradition of Aerofly Pro Deluxe).

Assignment (6):

The selected channel is displayed once again as a text. This column is only significant if you want to assign a function to the keyboard or a button. For this purpose, select either 'Keyboard' or 'Button'. A few functions, e.g. 'Helicopter Engine' also has an 'Automatic' function. Choose this to automatically control (internal mixer) the engine. See [12.2 Set up Engine Controller for Helicopter](#).

Keys/buttons (7):

In this column you have an overview of which keys/buttons are assigned to which function. If a channel is assigned to the function, there is no entry in this column.

***Automatic assignment:* Click a key/button symbol and a small information window opens. Press a key 0..9 or a button on the joystick to assign the function.**

Function mode (8):

Here are two possibilities:

- Analog mode (if a channel is assigned to the function)

Standard: The complete channel is used to control the function.

Upper half: Only the upper half of the channel is used.

Lower half: Only the lower half of the channel is used

Example: To be able to control *two different* functions A and B with a knob or 3-step switch, assign the corresponding channel to both functions and select the upper half for function A and the lower half for function B.

- Digital mode (if keys/buttons are assigned to the function)

On/off switch: Press the key to switch between On and Off.

3-way switch: Press the key to switch between -100, 0, +100, etc.

Hold = On: The function only advances to +100 when the key is depressed

Step '+/-': The left key moves the function *step-by-step* to the left (-),
the right key to the right (+)

Move '+/-': The left key moves the function *steplessly* to the left (-),
the right key to the right (+)

Virtual analog: Simulates an analog channel with the aid of one or two keys.
The longer the key is depressed, the greater the deflection.
Release the key and the deflection is reduced.

A greater/smaller deflection is achieved and maintained by quickly/slowly pressing the key.

Examples:

The flaps or variable sweep can be retracted or extended steplessly using 'Move +/-' and by assigning two keys. Alternatively, using the '3-way switch' three positions are possible with just one key.

A towing hook is logically defined as 'Hold = On', so that it is only opened briefly when the corresponding key is pressed.

A wheel-brake can be defined as 'Virtual analog'. The longer the key is depressed, the greater the braking effect. To brake slightly, just press and release the key alternately.

Inv (9):

For analog channels the direction of movement can be reversed (inverted) by ticking.

Expo/Rate (10):

Expo can be selected between 0 and 100 so that the neutral position can be more precisely controlled whilst still allowing the full extent of travel on the controls.

Expo = 0: No change– stick travel = servo travel

Expo = 100: Fine adjustment of small servo travels (with long stick travel)

Recommendable are settings up to approx. Expo = 50. Higher settings are only recommended in extreme cases.

Rate can be selected between 20 and 150 and defines the full extent of travel of the function. Rate = 40 means e.g., that the servo travel will only be 40% of the normal travel when the stick is at its full extent of travel.

Dual-Rate (11):

Using Dual-Rate you may switch between two different Expo and Rate settings during flight.

Note: Most modern computer transmitters already offer the Dual-Rate functionality internally. If you want, you can use your own transmitter for setting up Dual-Rate. If you are however using a GameCommander or if you don't want to set up your own transmitter, you may use AeroFly 5 to simulate Dual-Rate.

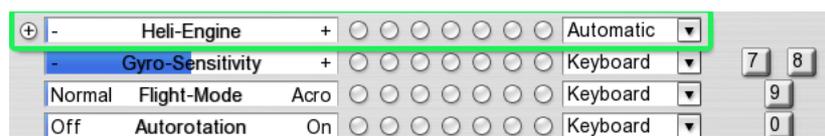
Assign this function as usual by clicking on the 'D-R' bar and moving the desired channel, switch or key you would like to use. Alternatively you may choose a channel direct from the list.

If you now move the assigned channel or switch, all values for Expo and Rate will switch between the default setting (black) and Dual-Rate setting (blue).

Now adjust for both settings your desired values for Exo and Rate for each model function.

13.2 Set up engine controller for helicopter

A standard feature of the AeroFly 5 is an automatic setting for controlling the engines of all helicopters.



Helicopter engine 'Automatic' (Standard):

'Automatic' means: Depending on the model and flight mode, the engine revs up automatically and is controlled automatically according to the pitch channel.

'Normal' flight mode:

Positive pitch means more throttle, negative pitch less throttle. (linear rising throttle curve).

This mode is used for starting the engine and hovering.

Flight mode 'Acro' (Idle Up):

Both positive pitch and negative pitch mean more throttle (V-shaped throttle curve).

This mode is suitable for inverted flying and aerobatics.

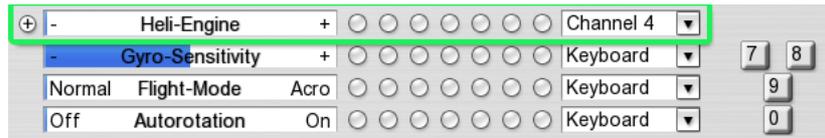
Autorotation:

The rotor is not connected to the engine and does not react to throttle.

Manual setup for helicopter engine:

If you wish to control the speed manually or use the helicopter throttle curves of your transmitter, assign the

channel of your transmitter on which the engine signal is transmitted to the function 'Helicopter Engine'.



The function 'Flight mode' is then insignificant, as you control the engine directly. Autorotation functions as usual and separates the main rotor from the engine.

13.3 Set up engine controller for glider (engine)

The default standard is as follows:

Throttle stick from the central position upwards: Engine control (if the glider has an engine)

Throttle stick from the central position downwards: Glider airbrake (or 'Butterfly')



Key '6': Retract/extend retractable propeller



You will find the function of the retractable propeller further down in the list underneath 'Special functions'.

Manual setup for glider ('Advanced channel setups'):

Pilots with a transmitter that has sufficient free switches, will prefer the following setup, that can be selected manually in the window 'Advanced channel setups':



The auxiliary engine control is assigned to a free switch or knob of the transmitter (in this case channel 7). The glider airbrake can now be assigned to *Full Stick Travel*. (Set function mode from 'Lower half' to 'Default'. Tick 'Invert', if you want to pull the stick to brake.

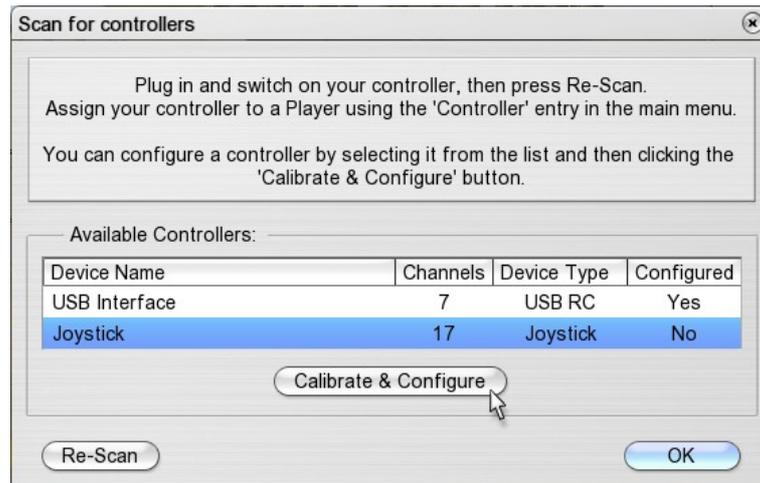
Extending and retracting the retractable propeller can be assigned as required to the same channel that controls the engine or another channel can be used for this purpose.

14. 2-player mode

Describes how to set up a controller for the second player. The 2-player mode requires at least one PC that meets the recommended standard requirements.

14.1 Connect second controller

1. Connect a second controller. This can be either a further transmitter with interface cable, a GameCommander, joystick or joypad.
2. Select the first item „Scan for new controllers“ in the menu 'Controller'.
A list of available devices then appears.



Select the new device and click 'Calibrate and configure' to go through the Easy setup for the new device. ([4. Calibrate transmitter or GameCommander](#))

3. Load a second model by selecting the item „Load Second Aircraft“ in the menu „Model“. (Compare also [6. Load flight model](#))
4. Assign the new controller to the second model by selecting the new device underneath „Controller Player 2“ in the menu „Controllers“.

14.2 Split-screen

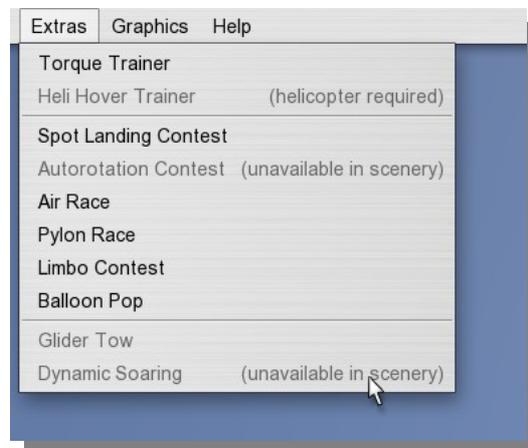
In the default setting, the screen is split vertically when a second model is loaded. The left half is for Player 1, the right half for Player 2. Split the screen *horizontally* (upper/lower image) return to the single image by pressing the 'S' key or via the menu „View“ under „Split-screen“.

14.3 Glider tow

To tow a glider, see [14.6 Glider tow](#).

15. Contests and flight training modes

The flight training and contests that are available in a scenery and that are possible with the current model are displayed in the menu „Extras“. The remaining options are greyed-out (deactivated) with the corresponding remark.



Select your desired training or desired contest to open the corresponding window where you will find further information and assistance.

15.1 Torque trainer

Load an appropriate aircraft. Select the menu item „Torque Trainer“. Click the start button or press the space bar to move the model into position and activate the trainer.



The default setting enables you to influence the elevator and the rudder. The trainer balances the model again when you let go of the stick. You can purposely create a state of imbalance just to see how the trainer reacts.

Now practise controlling *one* function (e.g. elevator) more and more by yourself by moving the slider into the neutral position or further to the left. If you can cope with the elevator, try the rudder next and then the throttle separately. Once you have mastered this, you can manually control two functions in the next step.

The aileron plays a special role. When controlled by the trainer, the latter will always attempt to position the model so that you can see it from above. If you want to allow rolling, move the slider for the 'Aileron' to 'manual'.

Whenever you set up the slider controllers, the trainer takes over completely for three seconds so that you have time to re-position your hands on the stick.

15.2 Spot landing

Load an aircraft and a scenery that offers a spot landing contest. Select the menu item „*Contest Spot Landing*“. A target appears on the runway and the model is automatically positioned at the target point.



Start the plane and try to make as many landings as possible on the target line within the given time. The scores you have achieved will be totalled.

15.3 Pylon race

Load the appropriate model and a scenery that has a pylon race. Select the menu item „*Pylon Race*“. A course comprising 2 or 3 pylons is set up and your model moved into a start position.

In a 4D scenery, you will receive an overview of the course. Click the check box „*Help*“ to display or hide the course.

Press „*Start*“ in the contest window or the space bar to start the race.

Penalties: In order to make the race more interesting, a player who misses one or more pylons will not be disqualified immediately. As a penalty the player *will not be allowed any throttle for the duration of the penalty*.

15.4 Air race

Load an appropriate model and a 4D scenery that has an air race. Select the menu item „*Pylon Race*“. A course comprising several airgates will be setup and your model moved into a start position.

You will now see an overview of the course. Click the checkbox „*Help*“ to display or fadeout the course.

Press „*Start*“ in the contest window or the space bar to start the race.

Penalties: In order to make the race more interesting, a player who misses one or more pylons will not be disqualified immediately but *will not be allowed any throttle for the duration of the penalty*.

15.5 Dynamic soaring

Load an appropriate glider model (e.g. Intention) and a scenery that enables dynamic soaring (Creek Island, Norrison Island, Parker Mountain).

Select „*Dynamic Soaring*“ in the menu „*Extras*“. The glider is moved to a predefined start position and the wind adjusted automatically to achieve dynamic soaring. Select this menu item several times to try out all possible dynamic soaring positions.



Note: Dynamic soaring is performed on the leeward side (backside) of the ridge (to the left of the picture). The start positions are selected so that the model is launched into the updraft of the oncoming wind (windward side) (to the right in the picture). (The glider could otherwise run out of energy on the leeward side). Gain altitude by flying with the updraft, turn and dive down on the leeward side and climb back up again to fly back below the boundary layer (on the leeward side of the ridge). Cross the boundary layer again from below close to the ridge, turn and dive down again on the leeward side, etc.

15.6 Glider tow

Load a glider model (e.g. Intention) and tow plane (e.g. Wilga)

Select the menu item „*Glider Tow*“ in the menu „*Extras*“, or press Key 'F', to move the models automatically into position for connecting to a tow rope. The tow plane must taxi slowly until the tow rope is taught before accelerating.



Note: If glider towing positions are not provided in a particular scenery, the models will remain at their current positions and will be connected to the tow rope should they be on the ground and positioned sufficiently close to one another.

15.7 Winch launch and helper

For glider models, AeroFly 5 has two further innovations: The winch launch and the helper, who launches the model. Load an appropriate model (glider), go through all the possible start positions in the usual manner using Key 'V' or 'B'. Once you have found the desired position, press the space bar to start. To restart, simply press the space bar again.

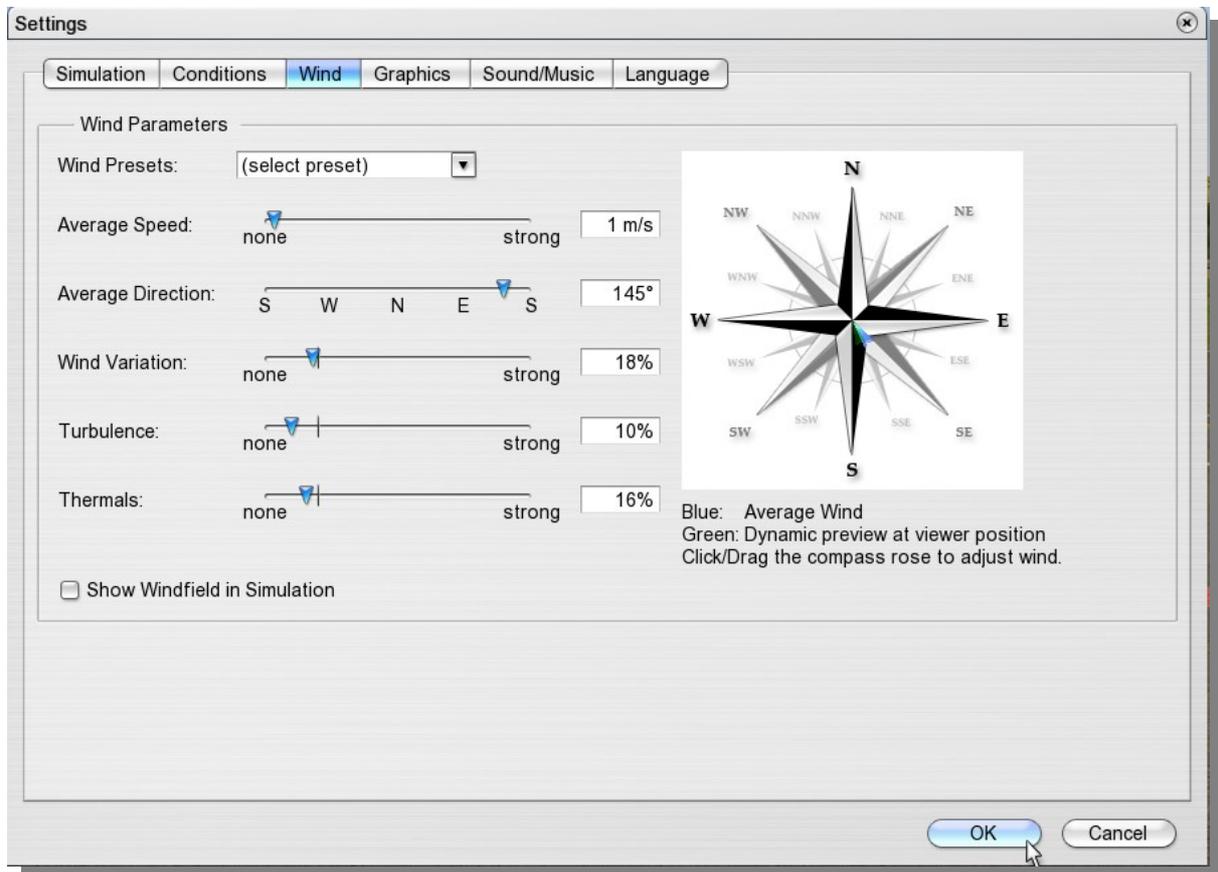


Note: Should winch starts and start positions with helpers not be provided in a scenery, you still have the possibility to lift the model manually 2m or 50m and launch it using Key 'J' or 'H'.

16. Adjust wind

AeroFly 5 has a complex simulated wind model that is fully influenced by the underlying terrain (upwinds, downwinds, deflection, slipstreams and eddies on the leeward side) plus statistically fluctuating wind forces and directions, turbulences and a dynamic thermal simulation (emergence, growth, rise and dispersal of thermal hoses).

The wind simulation offers the following options so that you can adjust the wind to meet your requirements:



Wind default settings:

Select one of the default settings for a scenery.

Average speed:

Select the wind speed.

Please note that this is an average value. Depending on the variations of wind (see below) and the terrain, completely different wind conditions may arise at your current position.

Mean direction:

Define the direction of the wind. (Compare also variations)

Wind variation:

Defines how the wind will vary both in the direction and force, over a longer period of time.

0% is equivalent to an extremely constant wind (e.g. sea wind)

100% is equivalent to an extreme fluctuating wind.

20% is the default value.

Turbulence:

Influences short-term fluctuations in the wind.

0% is equivalent to a completely interference-free laminar airflow.

100% is equivalent to extreme fluctuations.

20% is the default value.

Please note turbulence increases when the wind force increases. Turbulences of 50% with an extremely weak wind force are hardly noticeable, however a strong wind with the same setting can be felt very clearly.

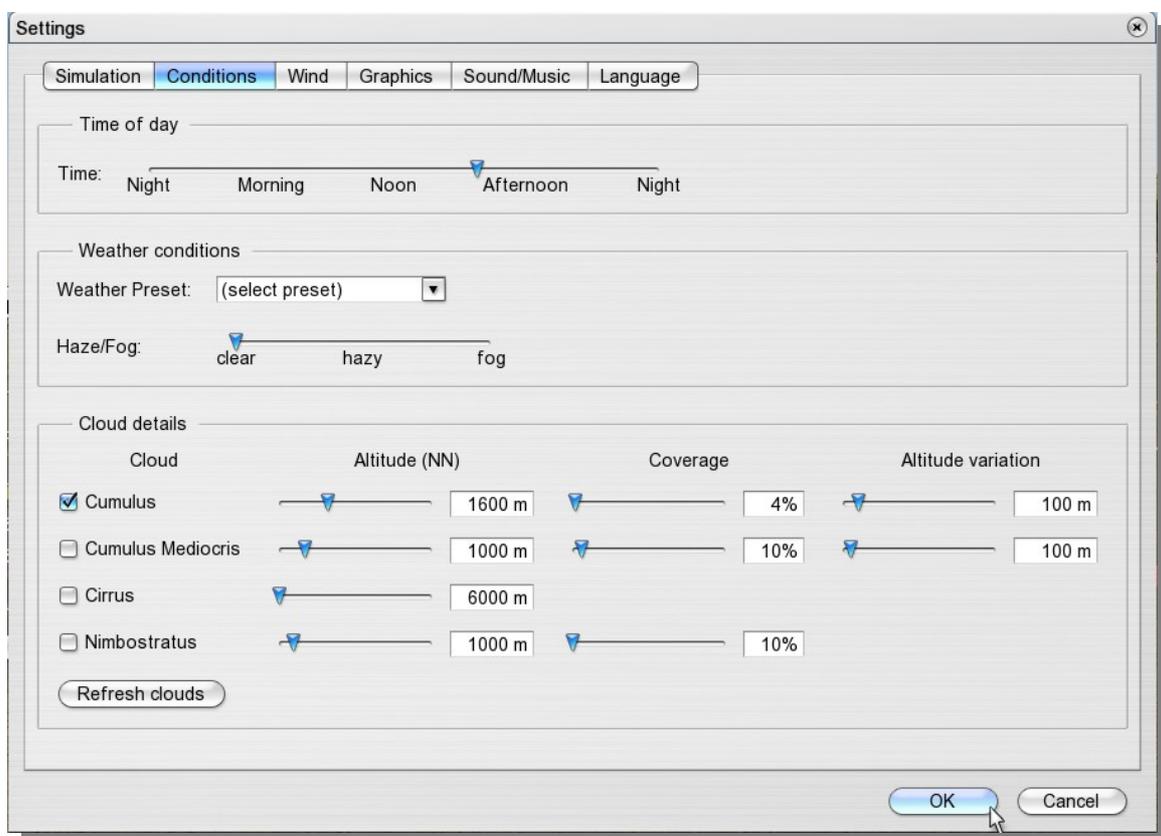
Thermals: To control the force of the thermal upwinds. Take into consideration that thermals also depend on the sunlight, terrain and wind force. Sunny 'southern slopes' therefore, obviously have better upwinds than shaded terrain. A strong wind suppresses thermal circulation.

Show wind field: Tick this box to display, arrows and thermal hoses that show the current wind conditions during simulation. The green arrows signalize upwinds, the glider pilot should avoid red arrows.

Note: Click the compass (right) to adjust the direction and force of the mean wind. Simultaneously, you can assess in the dynamic preview (green arrow) how strong the wind will be at the current camera position and how it will vary.

17. Set flight conditions

AeroFly 5 with its 4D sceneries offers the unique possibility of freely setting the time and weather. Simply click the mouse to switch from a sunny morning to a clouding evening, night and fog.



Daytime: Select the time of day (position of sun) with this slider.

Weather presetting: Select one of the default settings for a scenery.

Haze/Fog: Set the density of the haze and in turn the visibility. Values to the right of the average setting are equivalent to fog that is becoming more dense.

Clouds: You can activate/deactivate any type of cloud (available in the scenery) separately and influence its parameters.

Note: Settings with a high cloud density place high demands on the hardware and have a dramatic effect on the simulation (particularly older computers).

18. Record and play back flights

With AeroFly 5 you can easily record and play back your flights. You can also provide other AeroFly 5 users with your recorded and stored flights. To record, select „Recording Window“ in the menu „Recording“ and the following window will appear with the following options:



- | | |
|--------------------------|--|
| File name | Enter a name for filing your recording. |
| Description | Enter the text to describe your recording. (optional) |
| Rec | Starts a new recording |
| Play | Plays back a recording. |
| Pause | Interrupts the playback. |
| Stop | Stops the recording or the playback. |
| Load | Reloads a saved recording. Please note that only recordings that were made in the current scenery can be loaded. |
| Save | Saves the current recording under the file name and description entered above. |
| Cancel | Closes the recording window and stops the current recording. |
| Look at recording | The camera follows the recorded model and not the actual model of the player as is normally the case |
| Hide my model | The current player model is hidden, only the recording is visible. |

Note: Press the 'R' key to control a recording more straightforwardly: Simply press 'R' to start a new recording. Press 'R' again to stop it.

18.1 Exchange flights with other users

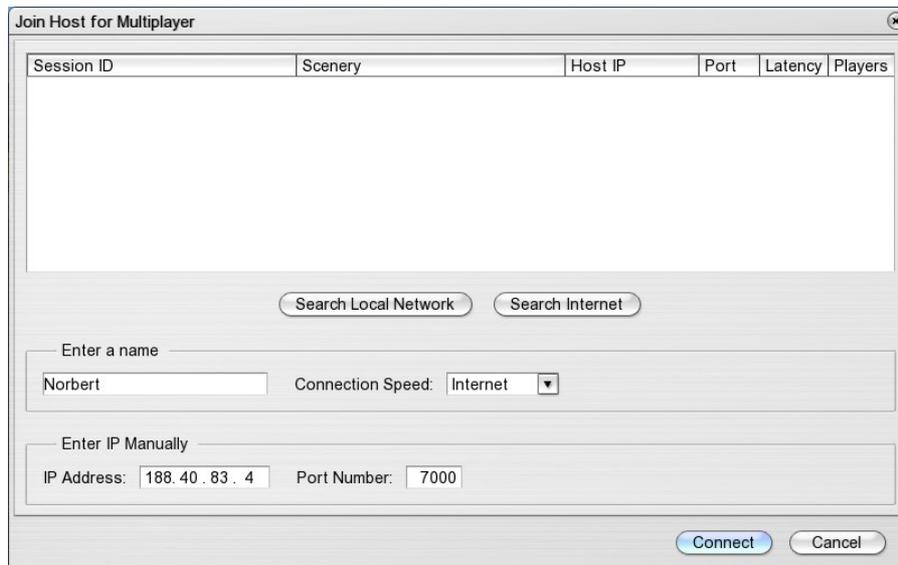
If you wish to exchange recorded flights with other AeroFly 5 users, simply copy the files in the „Recordings“ directory of the AeroFly 5 installation and then copy these files into the „Recordings“ directory of the other user.

19. Multiplayer mode

With the AeroFly 5 multiplayer mode, you can fly simultaneously with up to 16 pilots on different PCs. The computers should ideally be interconnected via TCP/IP and LAN cable. A connection via the Internet is also possible, however a DSL-2000 connection at least or a faster one is required.

19.1 Log in to an AeroFly 5 multiplayer session

In order to join an existing multiplayer session, click „Join“ in the menu „Multiplayer“ in the AeroFly 5 and the following window appears:

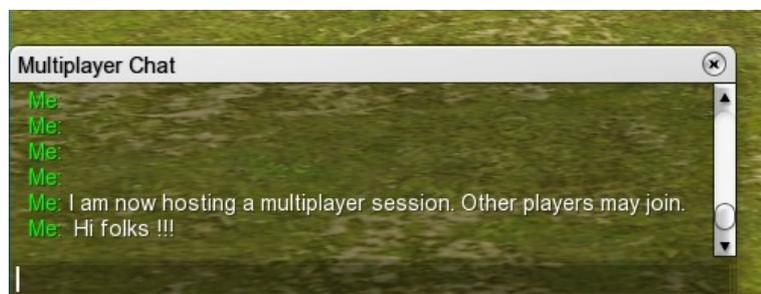


If you wish to fly with other players over the Internet, click on the button „Search Internet“. After a short while you will see a list of active AeroFly 5 sessions running.

Important note: In order for AeroFly 5 to find all running servers you need to open the UDP Port 7000 on your computer. If you have a local firewall or a router, ensure you open UDP Port 7000.

If you wish to participate in a multiplayer session in your local LAN, click „Search Local Network“ to automatically search for the current AeroFly 5 server.

Connection speed: As a connection speed you can choose between the LAN or the Internet. If you have an Internet connection, then you should select *Internet*, so that the data volume that requires transmitting is reduced compared to the LAN connection.



After successfully connecting, the chat window opens. You can now see the other players and send them short text messages. In order to keep track of the pilots and their position in 4D sceneries, you can open the radar window. Click „Show Radar“ in the menu „Multiplayer“.

The name of the player, the model velocity and the difference in altitude is also displayed above each model

of a network player. If you do not require this display, simply click „*Show Player Tags*“ in the menu „*Multiplayer*“.

19.2 Set up server for AeroFly 5

In order to set up a multiplayer session, the AeroFly server application must run on a PC. This can be realized either directly in the AeroFly 5 or (preferably) via the independent application „AeroFly 5 Server“. Simply start the AeroFly 5 server by clicking „AeroFly 5 multiplayer Server“ in the AeroFly 5 program group and a window appears that can remain open. Alternatively, click „*Set up Server*“ and the following window appears:



- **Name of Session:** Enter the name of the multiplayer session. Other players then see this name when they are looking for an AeroFly server on the LAN.
- **Your player name:** Enter your name under which you are visible for the other players.
- **Max. number of players:** The multiplayer session can be limited to a specific number of players. The default setting is 8. The higher the number of players, the faster your Internet connection should be to allow for smooth and realistic simulation. A LAN connection normally suffices for up to 8 players playing simultaneously.
- **Port Number:** The port number is significant if you wish to play AeroFly via the Internet. Certain Internet providers may block some port numbers. If this is the case, just enter another port number.
- **Connection speed:** Select between LAN or Internet. If you wish to operate via the Internet, then select *Internet*, so that the data volume that requires transmitting is reduced compared to the LAN connection.

The first player of a multiplayer session defines the scenery, environmental conditions, e.g. time of the day, visibility and wind force for flying. With the exception of the current scenery, all parameters can be changed by the Master during a session.

Other players can log in as soon as an AeroFly 5 server is running.

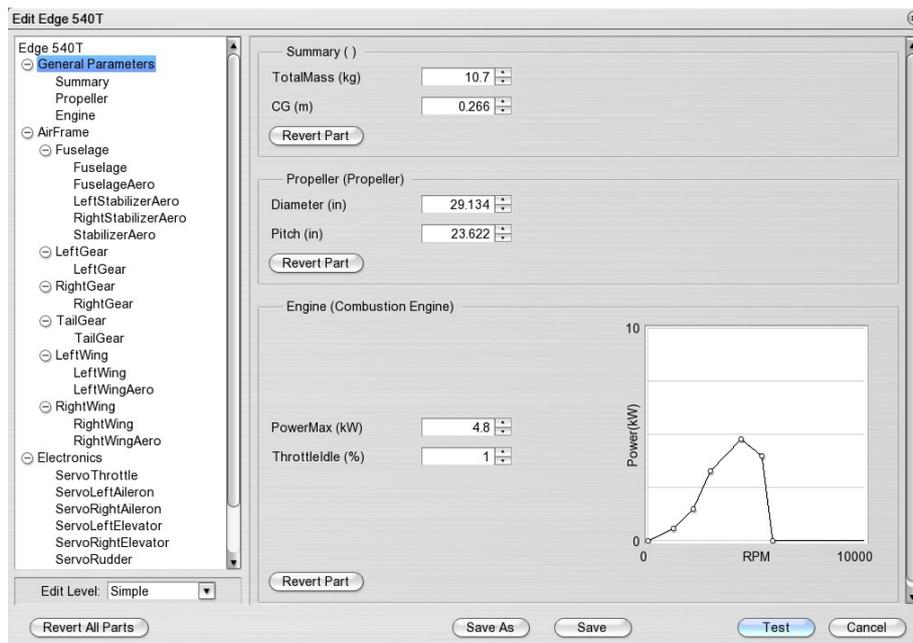
20. Model editor

Modify a model and adapt it to your requirements.

Note: Due to the numerous adjustment possibilities and parameters, it is extremely easy to over-adjust a model so that smooth flying is no longer possible. Should this occur, you can return to the default settings at all times (see 19.4).

20.1 Open model editor

Select the menu item „*Edit Aircraft*“ in the menu „*Model*“ and the following window appears:



20.2 General information

All available components are displayed on left side of the window in a folder structure. Click a component or a component assembly and it will appear on the right side for editing.

Revert All Parts Reset all changes since opening the editor window.

Save as Save the model and enter a new name and description.
If necessary, clear existing settings.

Save Save the model under the current name

Test Close editor and test changes at the model

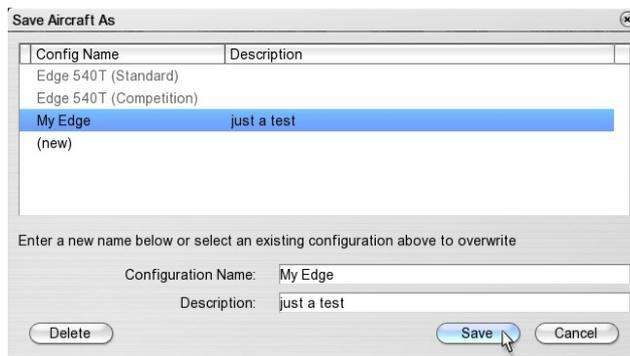
Cancel Close editor and cancel all changes

Revert Part Reset changes to a part

Note: You cannot overwrite the supplied AeroFly 5 Standard models. A new name (e.g. **Edge 540T (edited)**) is automatically created when you select „*Save*“.

20.3 Save and delete changed models

Select „*Save As*“ in the model editor or „*Save Aircraft As*“ in the menu „*Model*“ to open a dialog where you can save your current settings or delete configurations that you no longer require after setting.



The list displays all existing model configurations. The AeroFly 5 default configurations are displayed in grey and cannot be changed or deleted.

Click on an existing configuration, then *Save* to overwrite it.

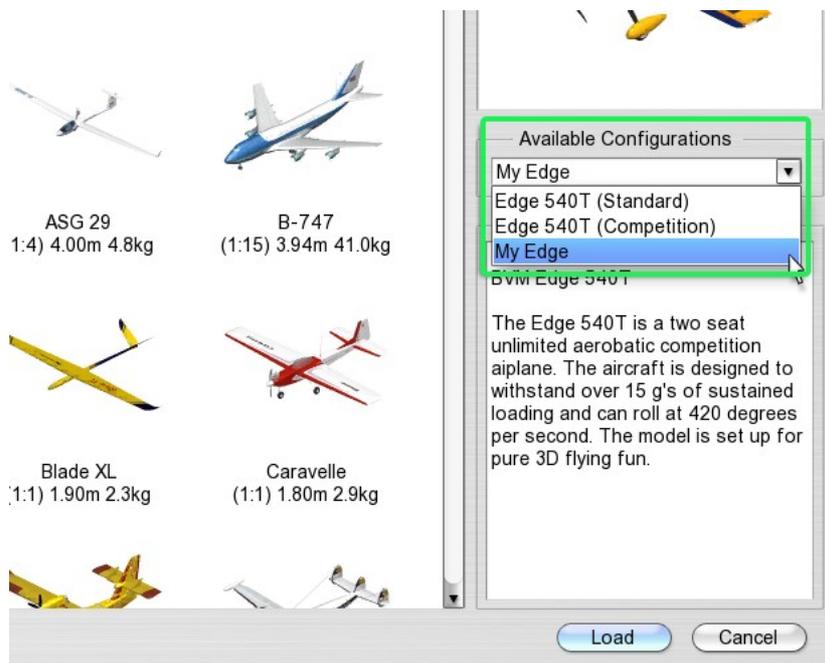
(new) Click here to create a new configuration, then enter a name and description.

Save Enter a name and a short description of the set configuration and press „*Save*“.

Delete Click the desired configuration in the list which is then highlighted in blue and „*Delete*“ to remove the configuration.

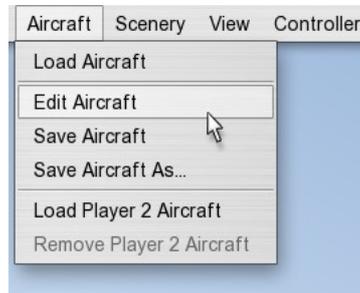
20.4 Load changed models

Your changed and stored models appear in the dialog window (see [Load aircraft](#)) under „*Available Configurations*“. Select the configuration that you wish to load.

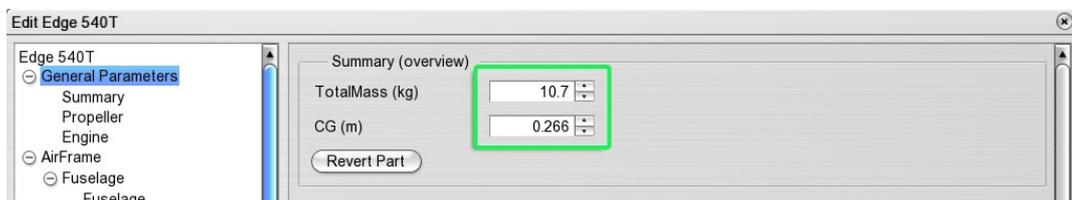


20.5 Example: Edit aircraft

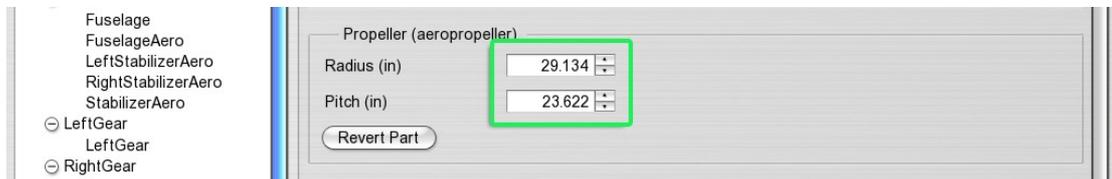
In this example, the weight, centre of gravity, propeller, engine power and rudder deflections of the Edge 540T need changing. Load the Edge 540T (Standard) and select the menu item „*Edit Model*“ in the menu „*Model*“ to open the model editor:



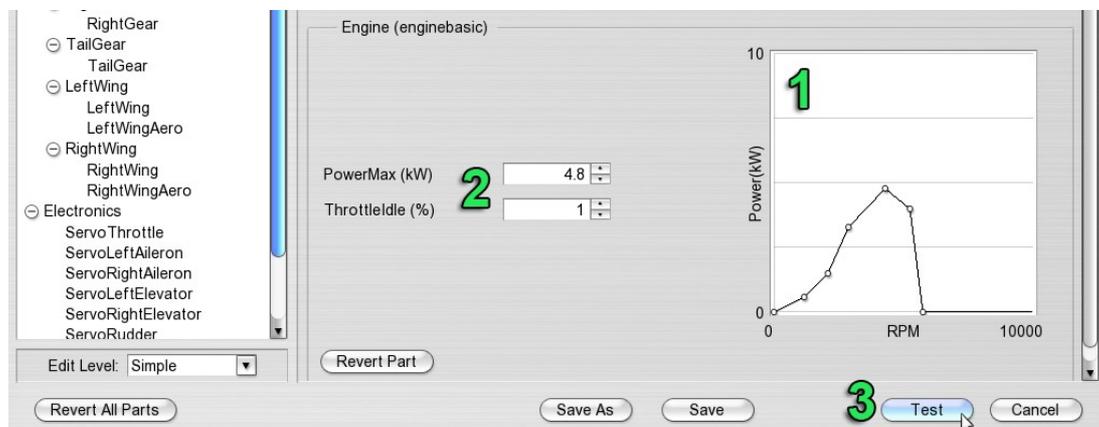
On the left side select „*General Parameters*“. The total mass and the centre of gravity (measured from the front edge of the surface) is displayed at the right.



Enter 12 kg for the *Total Mass* and move the *Centre of Gravity* (CG) slightly forward and enter 0.22.



Change the propeller by entering the values for *Diameter* and *Pitch*. Please note that these values are usually entered in inches and must therefore be entered in inches in the model editor.



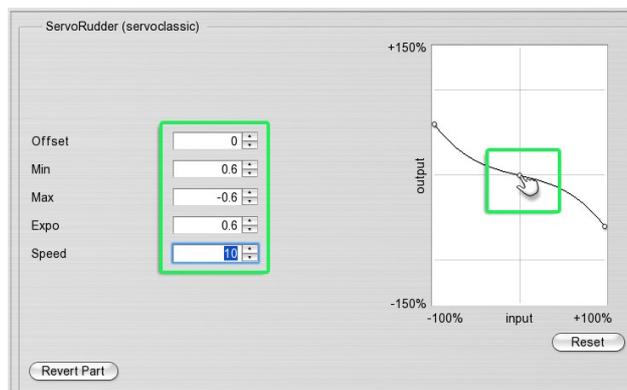
Before testing the settings, change the engine power: The power curve of the engine can be edited by shifting **(1)** the individual control points of the curve in the diagram using the mouse. Click a line between the control points and a new control point will appear automatically.

If you just wish to change the maximum power, enter the desired value directly under *Power* (2), the control points of the power curve are then adapted automatically.



Click „*Test*“ (3) to fly the model in the simulator with the changed settings. Please note that although the changed settings affect the flight behaviour, they are not yet saved and are lost when you load a new model (this can also be used for resetting purposes). Simply reload the default configuration of the model.

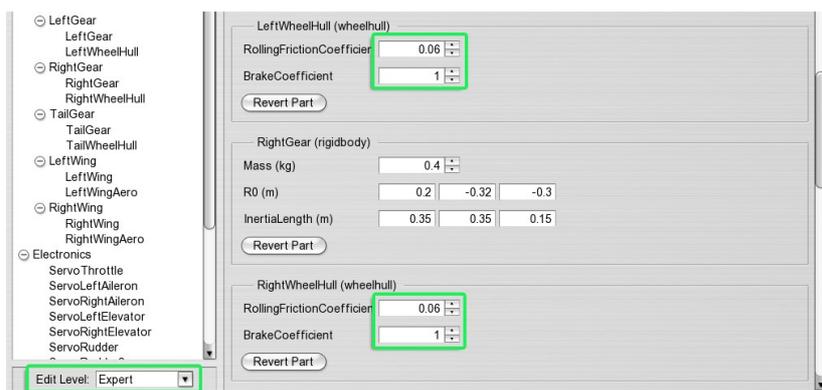
Before saving the model, the rudder deflections must be adjusted. Open the model editor again and select *Servo Rudder* on the left side under *Electronics*:



The control curve of the servo is displayed on the right side. For every stick position (*input*) the corresponding servo position (*output*) is displayed. Depending on the installation position of the servo, the curve either rises or falls until the correct control direction is reached as shown in the example.

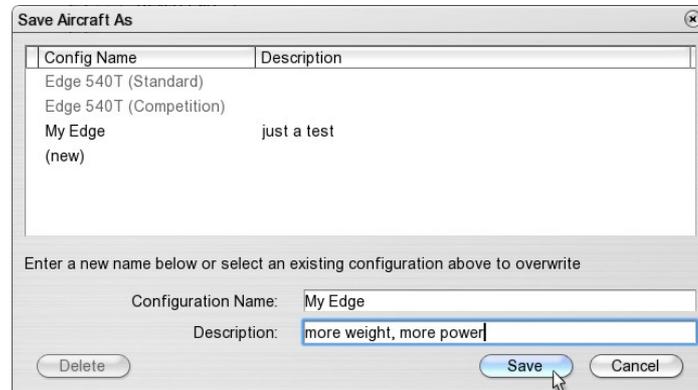
You can change the curve by moving the control points on the curve using the mouse or by directly entering the corresponding values. With the Expo setting you can influence the shape of the curve to achieve a more sensitive control reaction (around the neutral position) while still allowing the full extent of travel.

The model that has now become heavier, still rolls too far when landing, so that the rolling friction coefficient at the ground still needs increasing. Select *Expert* at the left under *Edit Level* to display further parameters of the model:



Select both *Left Wheel* and *Right Wheel* under *Aerodynamics* and set the rolling friction coefficient at 0.1 for each wheel.

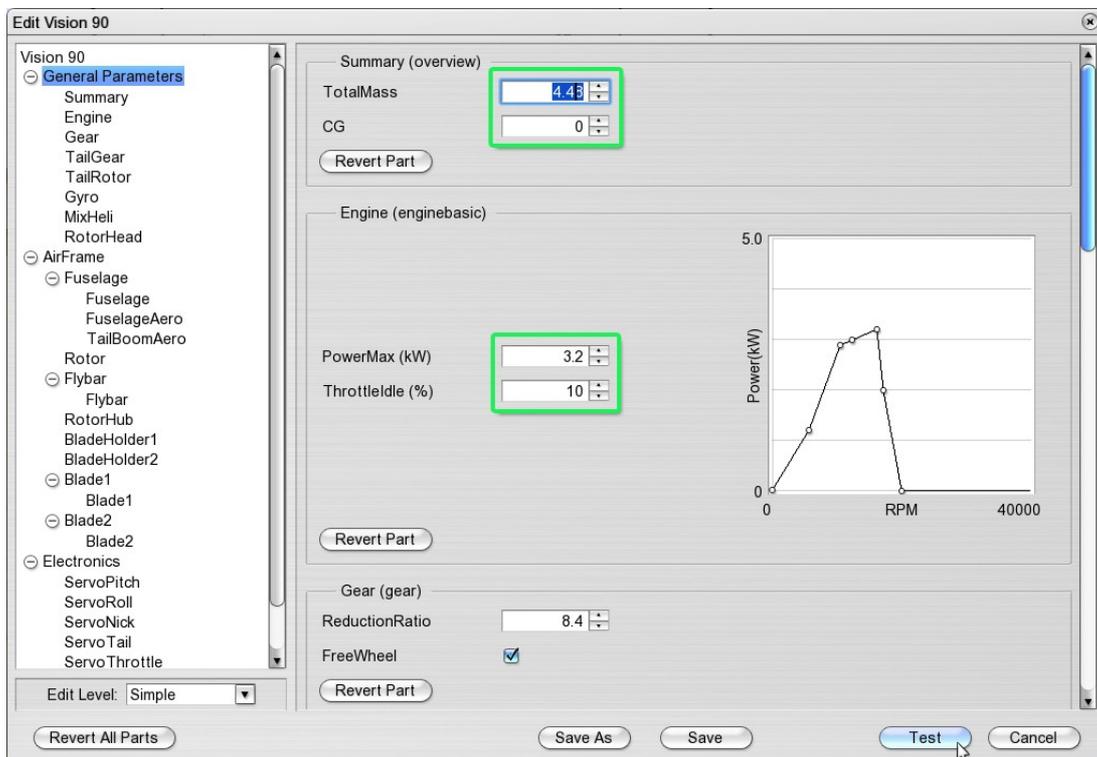
Click „*Save As*“ to save the model with the changed settings:



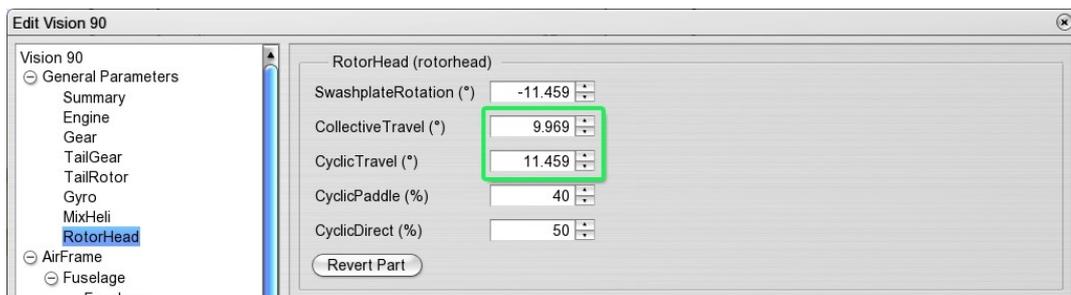
Enter the configuration name and the description that will be displayed in the dialog window for these settings. Click „*Save*“ to save the settings and to return to simulation.

20.6 Example: Edit helicopter

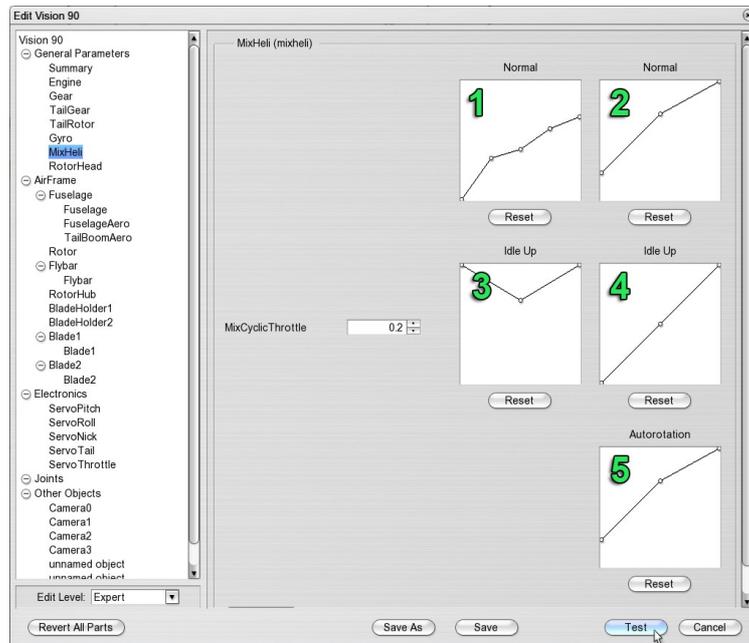
In this example, the weight, pitch, control curves and the gyro sensitivity of Vision 90 are changed. Load the model Vision 90 and open the model editor.



Select *General Parameters* and set the new values for the *Total Mass* and *Engine Power*. Set the *Edit Level* at *Expert* and select the parameter *Rotor Head*:



Here you can set all the entire control paths that are available for the collective and cyclical pitch. These are maximum values, that can be reduced by the pitch curve settings depending on the flight phases. Select *Mix Helicopter* in the parameter list:

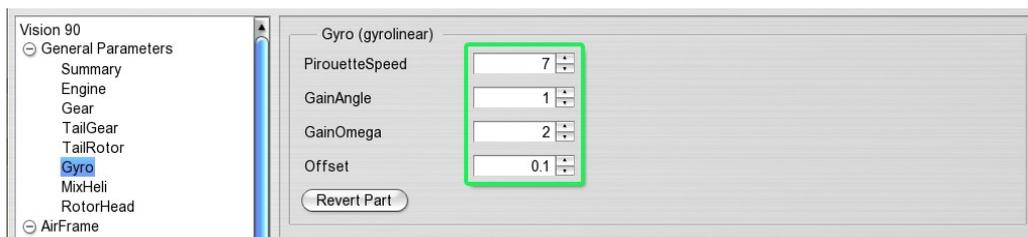


With this parameter you can set the pitch and throttle curves for the three flight phases *Normal*, *Idle Up (Acrobatic)* and *Autorotation*. Please note that the throttle curve is only used when the channel *Helicopter Engine* is set at *Automatic*, otherwise the engine will be controlled by the throttle channel of your remote control (Compare Paragraph [12.2](#)).

The examples on the left contain the throttle curves for the flight phases *Normal* (1) and *Idle Up* (3). The throttle values can be set between Idle (down) and Full Throttle (up) for every position of the pitch stick (horizontal position in the graph). In the flight phase *Autorotation*, the engine is always in idle or switched off.

The examples on the right are the settings of the pitch curves for the flight phases *Normal* (2), *Idle Up* (4) and *Autorotation* (5). The horizontal position in the graph corresponds again with the position of the pitch stick, the vertical position with the pitch values predetermined by the rotor head. In this example the predetermined pitch travel for the rotor head is $\pm 12^\circ$, so that the top point in the graph is therefore equivalent to $+12^\circ$ pitch and the lowest point -12° .

Select Gyro in the parameter list on the left:



Enter the pirouette speed that the gyro should reach when the stick is at the full extent of travel in the *Speed* box.

The *GainAngle* shows how the gyro reacts to deviations from the set position and how the tail reacts. Enter zero to deactivate the Heading Hold function.

The *GainOmega* determines the extent of the reaction to rotations. Set this value so that the tail is adequately controlled yet vibrations do not occur.

Click Test, Save or Save as to save the settings and to return to simulation.

20.7 Part parameters

The following describes the parameters of the individual parts. Depending on the model, some parts are either not provided or more than one part is provided (e.g. engines for multi-engine machines). Select the individual parts in the model editor on the left side in the file structure and the corresponding parameters appear on the right.

Summary



Summary ()

TotalMass (kg)

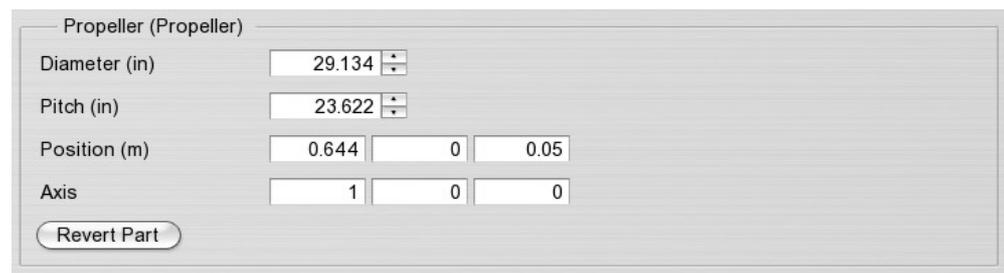
CG (m)

Total mass Enter the desired total mass of your model.

CG (Centre of gravity) Airplanes: Set the position of the centre of gravity – measured from the leading edge of the wing *to the back*.

Helicopter: The values refer to the rotor axis. Enter positive values to move the centre of gravity *forward*.

Propeller



Propeller (Propeller)

Diameter (in)

Pitch (in)

Position (m)

Axis

Diameter Propeller diameter in inches

Pitch Propeller pitch in inches

Position The centre of the propeller. The first value refers to the position along the longitudinal axis of the aircraft (positive front - negative back), the second value refers to the position along the transverse axis (positive left - negative right) and the third value along the vertical axis (positive up - negative down).

Axis Alignment of the propeller axis along the longitudinal, transverse and vertical axis.

Turbine



TurbineRight (Turbine)

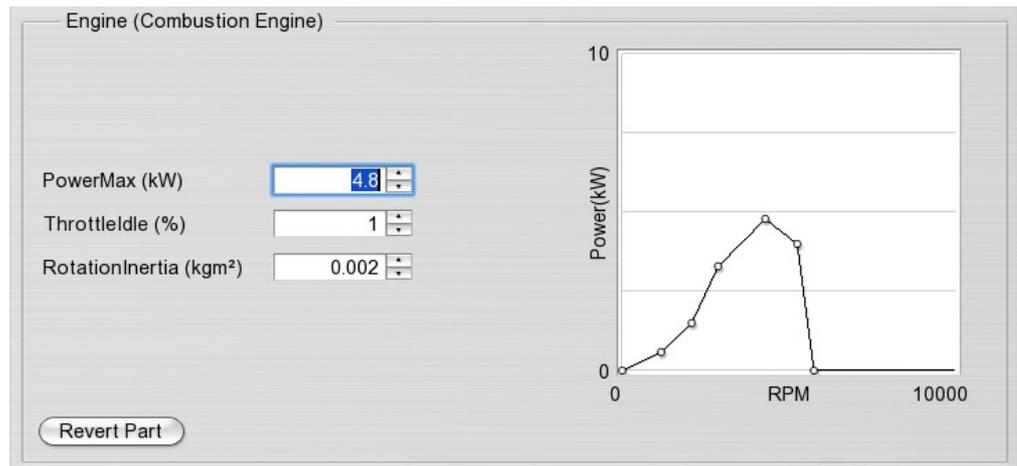
MaximumThrust (N)

RotationInertia

Maximum Thrust Maximum thrust in Newton

RotationInertia Inertia of the turbine is approximately equivalent to the time that the engine requires to accelerate from idle to maximum speed.

Combustion engine



Throttle curve

In the case of a combustion engine, you can set up the throttle curve with the aid of a graph to meet your specific requirements (e.g. according to the data sheet of a real engine). The speed dependent power (RPM) is displayed. The torque curve is automatically generated as a consequence of the power curve.

Click the control point in the graph and keep the left mouse button depressed to move it. Click on a free area of the curve to insert a new control point.

PowerMax

Maximum engine power in kW. The values of the power curve are automatically scaled if this value is changed.

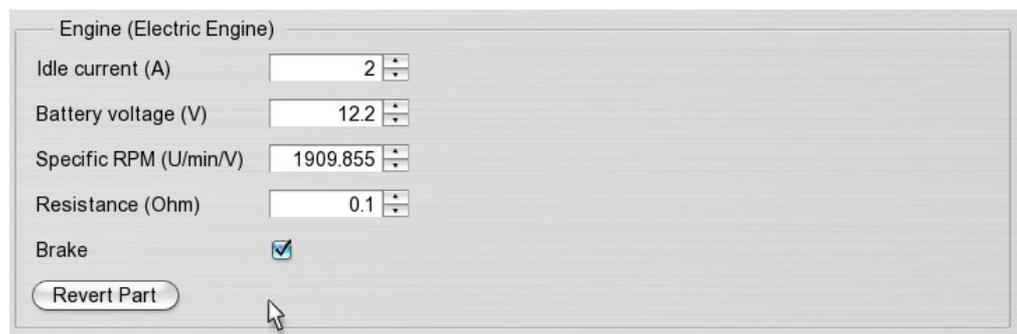
ThrottleIdle

Idle setting

RotationInertia

Moment of inertia of the engine in kg m^2 . The higher the values the slower the response of the engine.

Engine (Electric)



Idle current

Idle current of the engine in ampere

Battery voltage

Battery voltage in volt

Specific RPM

RPM per volt

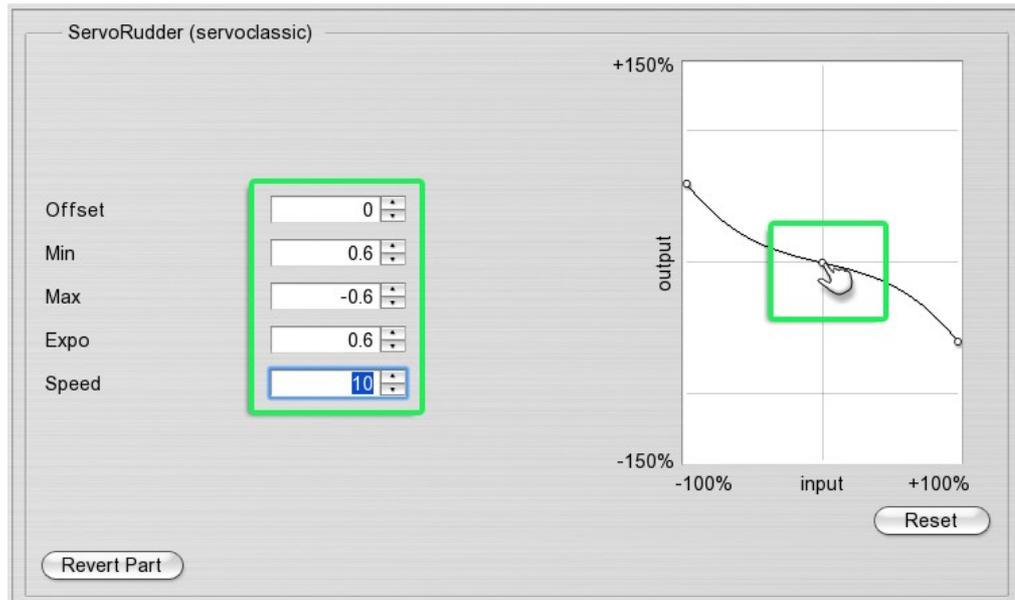
Resistance

Internal electric resistance

Brake

If this option is activated, the engine is short-circuited by the controller and brakes hard when the throttle is released. If the brake is not activated, the engine/propeller can continue to rotate driven by the force of the air stream and the braking impact on the model is increased.

Servo

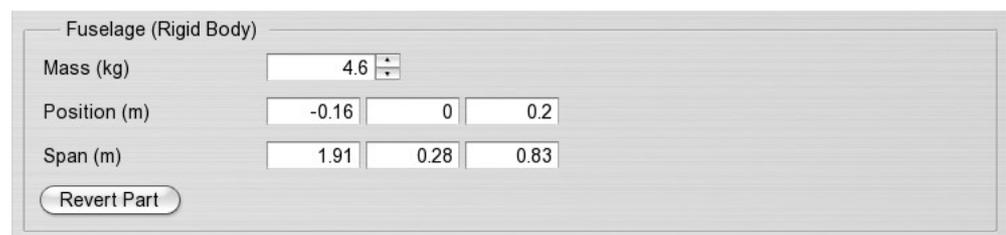


| | |
|-----------|--|
| Offset | Sets zero offset |
| Min / Max | Maximum negative/positive deflection |
| Expo | Sensitivity round the neutral position. Expo > 0 improves the controllability of smaller deflections while maintaining the full extent of deflection. |
| Speed | The entire servo position is controlled in 1/speed seconds . Speed 10 therefore means 0.1 second delay. Simply set up the servo with the aid of the curve and move the control points to the desired positions. |

Note: Please note that output values from -150% to +150% are displayed. Normally, however only values up to +-100% should be used. In other words, a value of more than 100% throttle with a servo-motor is pointless.

Parts (Rigid Bodies)

In the case of simulation, the models comprise individual parts / rigid bodies. The weight, span and the position of the parts can be changed separately, if for example you wish to test the influence of the different weights of the wings on flight behaviour. If you only want to change the total mass or the centre of gravity of the model, refer to „*General Parameters*“ | „*Overview*“.



| | |
|----------|---|
| Weight | Weight of the individual part in kg. Please note that the settings only refer to a single part. If you want to reduce the weight of the wings, you must change the values for both wing elements. |
| Position | Centre of the component. The first value indicates the position along |

the aircraft axis (positive front - negative back), the second value, the position along the transverse axis (positive left – negative right) and the third value along the vertical axis (positive up – negative down).

Span of the component along the longitudinal, transverse and vertical axis. This is used to determine inertia of the body wrt. rotations

Joints (only Edit Level Experts)

The individual parts are connected in the simulation by so-called spring-damper elements (Joints). You can set the stability and vibration damping of these connections under *Joints*. Normally, no changes are necessary unless you wish to soften e.g. the wing or the retractable gear characteristics.

The following applies to all parameters: The higher the set values, the more rigid a joint becomes and the more it is dampened. The values with the index 'x' refer to movements/ rotations along the longitudinal axes (front-back), those with the index 'y' and/or 'z' to movements / rotations around the transverse or vertical axis.

Note: The settings in this window can lead to numerical instability in the simulation and make the model unsuitable for use in particular, if the values are too high. In this case, reload the model with the default settings, (compare Paragraph 19.4).

| Parameter | Value |
|--------------------------|-------|
| Force x (N/m) | 50000 |
| Force y (N/m) | 50000 |
| Force z (N/m) | 50000 |
| Damping x (N/m/s) | 200 |
| Damping y (N/m/s) | 200 |
| Damping z (N/m/s) | 200 |
| Torque x (N/rad) | 10000 |
| Torque y (N/rad) | 10000 |
| Torque z (N/rad) | 10000 |
| Rot. Damping x (N/rad/s) | 2 |
| Rot. Damping y (N/rad/s) | 2 |
| Rot. Damping z (N/rad/s) | 2 |

Revert Part

Force Spring force constant to prevent relative movement of parts

Damping Damping of movement

Torque Torsion constant to prevent relative rotation of parts

Rot. Damping Damping of relative rotations

Wings / tail unit aerodynamics

StabilizerAero (Aerodynamics)

Span (m)

Area (m²)

PropwashPercentage (%)

Revert Part

| | |
|--------------------|--|
| Span | Semi-span of each wing |
| Area | Area of each wing / each tail unit |
| PropwashPercentage | Influence of the propeller wind (wake/downwash) on the area of the stabilizer : 100% completely in the propeller wake 0 % no influence of the propeller / outside propeller wake |

Fuselage aerodynamics

FuselageAero (Aerodynamics)

Drag long.

Drag lat.

Drag vert.

Lift lat.

Lift vert.

Revert Part

| | |
|-------------------|---|
| Longitudinal drag | Drag coefficient (cd-value) in direction of flight |
| Lateral drag | Drag coefficient for lateral (left/right) air resistance |
| Vertical drag | Drag coefficient for air resistance from above or underneath |
| Lateral lift | Lift coefficient for lateral air resistance (e.g. knife-edge manoeuvre) |
| Vertical lift | Lift coefficient for air resistance from above or below |

Wheel

FrontWheelHull (Wheel)

RollingFrictionCoefficient

BrakeCoefficient

Revert Part

| | |
|----------------------------|--|
| RollingFrictionCoefficient | Rolling friction coefficient on smooth surfaces. Greater values reduce the models ability to move smoothly. |
| BrakeCoefficient | Force of the brake, only when the model is equipped with wheel brakes, otherwise this parameter has no effect. |

Gear

Gear (Gear)

ReductionRatio

Efficiency (%)

FreeWheel

ReductionRatio

Reduction ratio of the gear '1 : this value'

FreeWheel

The gear is equipped with a free wheel function if checked

Efficiency

Efficiency coefficient of gear as a percentage

Rotor head

RotorHead (Rotorhead)

SwashplateRotation (°)

CollectiveTravel (°)

CyclicTravel (°)

CyclicPaddle (%)

CyclicDirect (%)

Swash plate rotation

Virtual swash plate rotation

Collective

Maximum possible pitch travel, can be reduced by pitch curves in the helicopter mixer depending on the flight phases

Cyclic

Maximum cyclic pitch adjustment

CyclicPaddle

Cyclic pitch control by paddle(flybar) as a percentage

CyclicDirect

Cyclic pitch control by swash plate as a percentage

Gyro

Gyro (Gyro)

PirouetteSpeed

GainAngle

GainOmega

Offset

Pirouette Speed

Pirouette speed. A value of 10 is equivalent to approx. 600°/ second.

GainAngle

Extent of reaction of the gyro to deviations from the set position and corresponding reaction of tail. If you enter zero, the heading hold function is deactivated.

GainOmega

Determines the force of the reaction to rotations. Set this value so that the tail

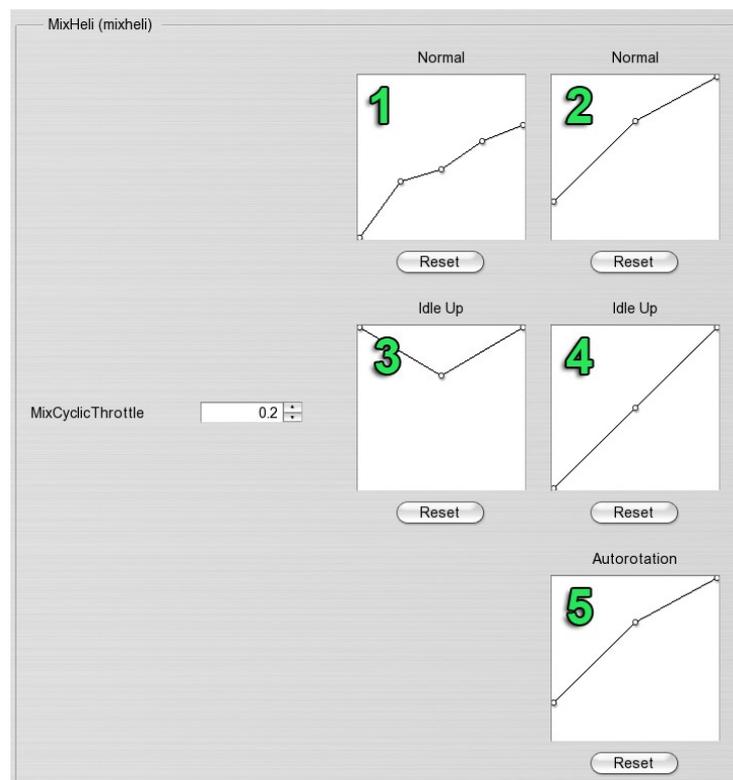
is not subject to vibrations.

Offset

Control value without corrections to the gyro. Ideally this value should be set so that the tail is kept stable when hovering without control inputs when both values for *Heading Hold Force* and *Damping* are set at zero. In this constellation, the gyro operates best.

Helicopter mixer

This is used to set the pitch and throttle curves for the three flight phases *Normal*, *Acrobatic / Idle Up* and *Autorotation*. Please note that the throttle curve is only used when the channel *Helicopter Engine* is set at *Automatic*, otherwise the engine will be controlled by the throttle channel of your remote control (compare Paragraph [12.2](#)).



Throttle curve (1)

Throttle curve for the flight phase *Normal*

Pitch curve (2)

Pitch curve for the flight phase *Normal*

Throttle curve (3)

Throttle curve for the flight phase *Idle Up*

Pitch curve (4)

Pitch curve for the flight phase *Idle Up*

Pitch curve (5)

Pitch curve for the flight phase *Autorotation*

Mix throttle cyclic

Mix throttle for cyclic deflections to compensate for the higher energy requirements

The horizontal position in the graphs is equivalent to the position of the pitch stick, the vertical position to the throttle values between 0% and 100% and/or the pitch values determined by the rotor head. If, for example, a $+12^\circ$ pitch travel is defined for the rotor head, the top point in the graph is equivalent to $+12^\circ$ pitch and the lowest point is equivalent to -12° .

21. Contact and Support

If you have questions regarding AeroFly 5, please contact:



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There you will also find a discussion forum,
where you can contact us and
other AeroFly 5 professional owners.