VBAR CONTROL

SETUP-MANUAL

Mikado
Model Helicopters

VBAR CONTROL
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Attention When promped by the wizard, you have to re-set the servo arms during model setup of VBar Control to get them as close to the actual center postion as possible.

Attention Disconnect and remove the receiver of your old radio system from the helicopter.

Danger Disconnect the ESC or move the motor away from the main gear. This is to avoid the model accidentally spooling up during the setup process.

Attention On battery-powered helicopters, the ESC must ALWAYS must be connected to 'Colle/ESC' on a fullsize VBar with external sensor. In case it was connected to CH4 or Servo, please re-connect. On a Mini VBar, the ESC is always connected to RX B.

Attention On nitro-powered helicopters, the throttle servo must ALWAYS be conntected to Servo (on fullsize VBars with external sensor). In case it was connected to CH4 or Colle/ESC, please re-connect.

Danger Remove main rotor blades and tail rotor blades during setup and initial tests of the power unit and governor.

Attention After the update has been completed, the VBar is no longer accessible and can no longer be set up using the PC software. To perform an update to a newer 6.x firmware, you must load the recovery firmware first (see FAQ on www.vstabi.info).

Attention In case of an update gone wrong (interruption of the process, e.g. due to battery failure, computer crash, accidental disconnection of the USB lead or similar), please see our FAQ on www.vstabi.info on how to recover your VBar and start over.

Attention To switch back to VBar firmware for use with radios other than VBar Control, see our FAQ on www.vstabi.info on how to recover your VBar. After recovery, select an appropriate firmware from the list in 'File/Online Update' of the 5.x+ PC software. If necessary, get a license key from www.vstabi.info.

Attention You must create a new setup using the VBar Control's setup wizards for every VBar you convert to firmware version 6.x. Parameters will not be transferred on an already set-up 4.x or 5.x VBar. Setup files from older versions of the VBar software and firmware are not compatible and can not be loaded into the VBar by copying on the VBar Control's internal memory.

Attention VBar Control has only Apps for basic setup and flight operations installed by default. Register your VBar Control (see page 18 of the device manual) to access the App Store on www.vstabi.info (click on 'Applications' in the VBar Control Manager).

Updating an existing VBar or Mini VBar to communicate with your VBar Control Transmitter

Attention Do not connect the VBar Control Receiver Satellite yet. You may either connect the USB wire or a device to the Bluetooth/Control Panel connector, but not both.

- Log in to www.vstabi.info using your MikadoID (please check out our video tutorials on www.vstabi.info if you are not yet familiar with registration and online update of VBar Flybarless Controllers).
- Navigate to 'My VBars', check the list of devices registered to your MikadoID.
- If needed, register a new or used device to your MikadoID first.
- Click on the magnifying glass in the column 'Options' for the VBar in question. Click 'Add VBar Control Version' to enable the required firmware.
- Click on the globe icon below 'License' to get a license key for the device in question. You will receive an e-mail with a one-time link shortly.
- Click the link in the e-mail and follow the instructions on the screen.
- Use PC software 5.3+ (download available on www.vstabi.info) to perform File/Online Update for the device.
- Select 6.x firmware, click 'Load'. Wait for the update to install, do not disconnect the VBar during the process. Make sure your receiver power supply is sufficient and that the USB lead is firmly plugged into the VBar (mind the rubber protector especially on a Mini VBar).
- Turn off your VBar, disconnect the USB lead.

Only now connect the VBar Control Receiver Satellite.

- Turn on your VBar again (wait for 10 seconds: this will bring the VBar Control Receiver Satellite into Bind Mode).
- Turn on your VBar Control Transmitter.
- Select **Transmitter Setup**, **Bind** from the menu.
- Select the VBar (serial number) of the VBar you are about to set up.

BASIC SETUP USING THE WIZARD

Express-Version, Mikado LOGO series

Attention This specific Wizard assumes that the heli is built according to the manual (e.g. leading/trailing edge control of the main and tail rotor, mounting position of servos, distance of ball links on servo arms, direction of rotation on main and tail rotor etc.).

Attention Disconnect all servos on an already set-up model and disconnect the ball links to the swash plate and the tail rotor push rod. This is to avoid damage to the tail servo and to the mechanics during the setup process.

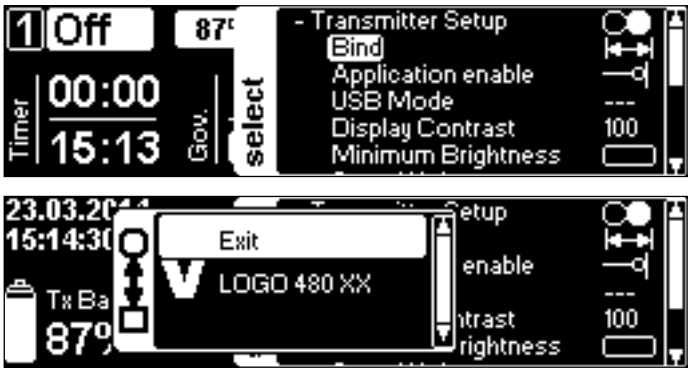
Attention A VBar that is connected to the VBar Control System for the first time will automatically cause the setup wizard to start. A VBar that has already been connected to a VBar Control System will just connect. In this case, select **Heli Setup Wizard** from **Model Setup**, **Setup Tools** in the menu to start the setup process.

Attention For LOGO series helicopters, the collective and cyclic values will be set automatically to factory defaults. This requires the heli to be set up by following the manual exactly. To check or to make changes to the setup according to your personal wishes or taste, re-enter the Heli Setup Wizard again after the initial setup and select **Edit Current Model**.

Turn on your VBar Control Transmitter. Turn the motor switch to OFF-position if prompted.

Power up the VBar with the VBar Control Receiver Satellite connected.

If the VBar Control Receiver Satellite is not yet bound to your VBar Control Transmitter, first turn on the receiver, wait for 10 seconds, then turn on the transmitter. Select **Transmitter Setup**, **Bind** from the menu, Select the VBar (model name or serial number) of the VBar you are about to set up.



Select **Model Setup**, **Setup Tools**, **Heli Setup Wizard** from the menu.

In the **Heli Setup Wizard**, select the Mikado LOGO you want to set up (for other brands, see page 8 in this manual).

Carefully read the instructions given in the Wizard.

Select **Load values...** from the menu. This will load factory defaults for the LOGO series type and size into the VBar Flybarless Controller. Wait a few seconds for the process to finish.

Mount the VBar or sensor of the VBar, as shown in the manual of your LOGO and as shown in the Wizard.

Connect the swash plate servos according to the graphics shown in the Wizard (nose of the model pointing away from you). In case you encounter issues with the control directions later on, double check proper connection of the servos again. Now mount the servo arms as close to 90° as possible to the servos/links. Connect the links to the swash plate.

Check if the swash plate is moving correctly according to the stick inputs. If not, reverse. All three swash plate servos will be reversed simultaneously.

Use the trim controls to level the swash plate (90° to the main shaft for aileron and elevator, good visual judgment is precise enough) and to set it to the center of it's available collective throw. Make sure the servo arms are truly at 90° to the servos/links now. If not, adjust the links to the swash plate by the same amount, and/or move servo arms to achieve the least necessary electronic trim.

Attention For adjusting 0° collective, fold the blades and visually check that they are on the same level. There is no method more precise than the folding method.

Select the tail servo type (see list on page 16 or www.vstavbi.info/tailservos). In case your servo is not listed, check the specs of your servo for center pulse (mandatory parameter) and frame rate. Select the adequate center pulse and the frame rate that comes closest to, but does not exceed, the frame rate which your servo can handle.

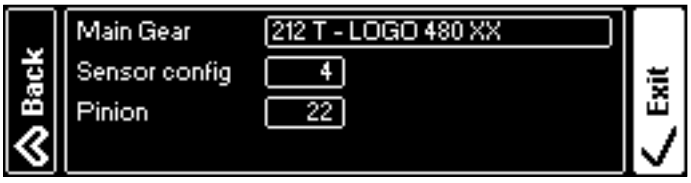
Only now connect the servo to the VBar Flybarless Controller and mount the servo arm as close to 90° as possible to the servo/tail push rod. The final trim will be done by the Autotrim feature (see page 14). For optimum performance, 90° angles should apply from the servo arm to the push rod and from the push rod to the bell crank on the tail gear box. This can be adjusted properly with the heli turned off, so you can move the servo arm and push rod manually.

Check the servo direction; reverse if necessary. Select and set the limits by moving the stick to both directions and using the EDS dial to fine-tune. On initial setup, the value is set very low (40), to avoid binding and damage to the servo and the mechanics. A sensible range of values will be 80-110. If necessary, move the ball link on the servo arm to get into this range. In case the values for both directions differ immoderately, move the servo arm one notch over it's true center position and try again.

Select the type of Governor you intend to use: **External Governor** (means the ESC will do the rpm control, VBar Control will loop through the throttle signal) or VBar **e-Governor** (means VBar Control and the VBar Flybarless Controller will govern rpm).

In case you select the External Governor, the Wizard will finish here. Continue setting up your ESC on page 11.

If you you select **VBar e-Governor**, check and select the type of main gear and pinion on your heli (to calculate the gear ratio automatically) and set the Sensor configuration properly (half the pole count of your electric motor, e.g. '5' for a 10-pole motor).
The values for the most popular Mikado Combos will be pre-set already. The Wizard will finish here.



Attention Certain Mikado OEM-ESCs (like the YGE 160 HV from Mikado 700 and 800 XXtreme-Combos) come pre-programmed and ready for use. These controllers you do not need to set up using a prog card or other means. For non-Mikado ESCs or YGE 90 LV ESCs from Mikado Combos, please go to the **ESC Setup Wizard** (see page 11).

Express-Version, non-Mikado helis

Attention Disconnect all servos on an already set-up model and disconnect the ball links from the swash plate and the tail rotor push rod. This is to avoid damage to the tail servo and to the mechanics during the setup process. Also disconnect the throttle servo linkage on a nitro helicopter.

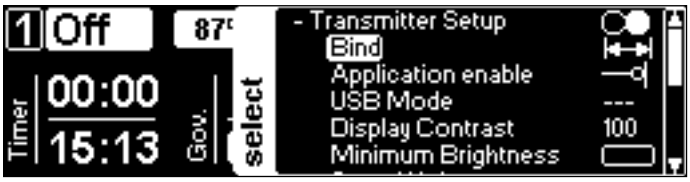
Attention A VBar that is connected to the VBar Control system for the first time will automatically cause the setup wizard to start. A VBar that has already been connected to a VBar Control System will just connect. In this case, select **Heli Setup Wizard** from **Model Setup**, **Setup Tools** in the menu to start the setup process.

Attention To set up VBar Control with a nitro heli, you will need the Nitro Governor App.

Turn on your VBar Control Transmitter. If prompted, turn the motor switch to OFF-position.

Power up the VBar with the VBar Control Receiver Satellite connected.

If the VBar Control Receiver Satellite is not yet bound to your VBar Control Transmitter, first turn on the receiver, wait for 10 seconds, then turn on the transmitter. Select **Transmitter Setup**, **Bind** from the menu, Select the VBar (model name or serial number) of the VBar you are about to set up.



Select Model Setup, **Setup Tools**, **Heli Setup Wizard** from the menu.

In the **Heli Setup Wizard**, select the size of the heli you want to set up (for Mikado LOGO series, see page 6 in this manual).

Carefully read the instructions given in the Wizard.

Select **Load values...** from the menu. This will load factory defaults for the heli type and size into the VBar Flybarless Controller.

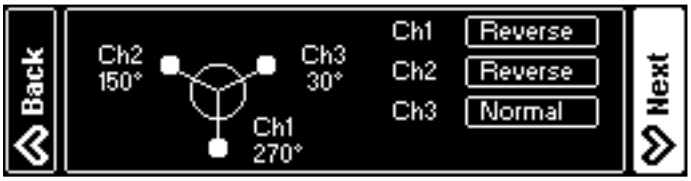
Mount the VBar or sensor of the VBar in suitable a place, as recommended in the heli's manual. Accordingly, select the proper alignment of the sensor in the Wizard.

Select the swash plate type of your heli.

Select the direction of rotation of your heli.

Select leading or trailing edge control depending on the layout of the rotor head.

Connect the swash plate servos according to the graphics shown in the Wizard (nose of the model pointing away from you). If you encounter issues with the control directions later on, double-check the servo connections. Now mount the servo arms as close to 90° as possible to the servos/links. Connect the links to the swash plate.



Attention On a 4-point-swash-plate, double-check servo directions and servo throws prior to connecting the links to the swash plate, to avoid binding and damage to the servo and the mechanics. For precision setup, please get the Free Swash Plate Configuration-App from www.vstabi.info.

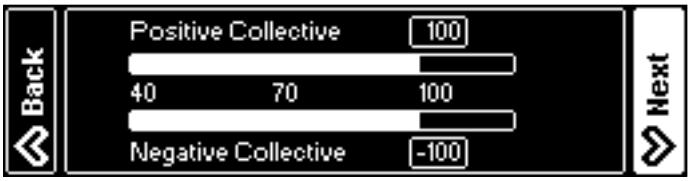
Check if the swash plate is moving correctly according to the stick inputs. If not, reverse the individual servos as necessary.

Use the trim controls to level the swash plate (90° to the main shaft for aileron and elevator) and to set the swash plate to the center of it's available throw for collective. Make sure the servo arms are exactly at 90° to the servos/links now. To do so, adjust the links to the swash plate and/or move servo arms to achieve the least possible electronic trim.

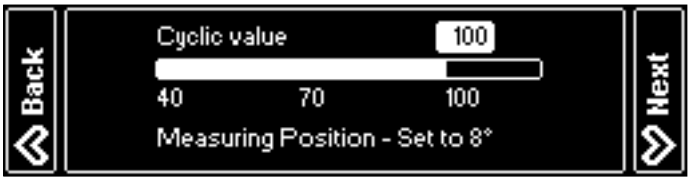
Attention For adjusting 0° collective, fold the blades and visually check that they are on the same level.

Attention For the next step, unfold the blades to take load from the servos.

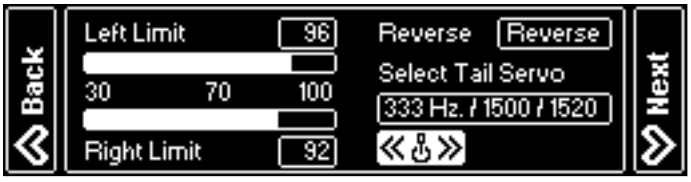
Set the minimum and maximum collective angles independently. The geometry on your heli is OK if 12-14° can be achieved within 80-100 points here.



Calibrate the control loop by adjusting the Cyclic value for 8°. Move one blade over the tail boom for measuring. The geometry on your heli is OK if 8° can be achieved within 80-110 points here.



Select the tail servo type (see list on page 16 or www.vstabi.info/tailservos). In case your servo is not listed, check the specs of your servo for center pulse (mandatory parameter) and frame rate. Select the proper center pulse and the frame rate that comes closest to, but does not exceed, the frame rate your servo can handle.



Only now connect the servo to the VBar Flybarless Controller and mount the servo arm as close to 90° as possible to the servo/tail push rod. The final trim will be done by the Autotrim feature (see page 14). For optimum performance, 90° angles should apply from the servo arm to the push rod and from the push rod to the bell crank on the tail gear box. This can be adjusted properly with the heli turned off, so you can move the servo arm and push rod manually.
Check the servo direction, reverse if necessary. Select and set the limits by moving the stick to both directions and using the EDS dial to fine tune. On initial setup, the value is set very low (40) to avoid binding and damage to the servo and the mechanics. A sensible range of values will be 80-110. If necessary, move the ball link on the servo arm to get into this range. In case the values for both directions differ immoderately, move the servo arm one notch over it's true center position and try again.

Select the type of Governor you intend to use: **External Governor** (means the ESC will do the rpm control, VBar Control will loop through the throttle signal) or **VBar e-Governor** (means VBar Control and the VBar Flybarless Controller will govern rpm).

If you select the **External Governor**, the Wizard will finish here. Continue setting up your ESC on page 11.

If you select **VBar e-Governor**, calculate and enter the gear ratio of your heli, and set the Sensor configuration properly (half the pole count of your electric motor, e.g. '5' for a 10-pole motor). The Wizard will finish here.

Attention To set up your ESC, now go to the **ESC Setup Wizard** (see page 11).

Attention In order to select the **VBar n-Governor**, you need to have the Nitro Governor App intstalled on your VBar Control Transmitter.

The value for **Sensor Config** is the count of magnets or other markers defining the count of rpm. Calculate the gear ratio of your heli and enter the value here.

The actual configuration of the **n-Governor** will be done by means of the Nitro Governor-App (please download the manual for this app from the list of apps on www.vstabi.info).

ESC SETUP WIZARD

YGE 90 LV and similar with Mikado OEM-firmware for stick programming

Select **Model Setup**, **Setup Tools**, **ESC Setup Wizard** from the menu.

Danger Take safety precautions so the power unit can not start up accidentally and cause physical injury or physical damage.

Select **YGE** from the menu.

Carefully read the instructions on the screen of your VBar Control Transmitter. Your heli and the VBar Flybarless Controller must be set up using the wizard. Both must be wired properly according to the manuals prior to entering this menu.

To start with the ESC programming wizard, move the collective stick to full negative. The screen will change so you can start the actual setup.

To enter the programming mode of the ESC, cut power to your VBar Flybarless Controller, wait for the current screen to disappear. Move the collective stick to full positive. Now turn on your VBar Flybarless Controller again.

Your VBar Control transmitter and the VBar Flybarless Controller are in a programming mode now that allows you to program the ESC using the collective stick, as if it was connected to a regular receiver.

Now follow the YGE programming procedure as shown on the screen: Wait for the ESC to confirm it is in programming mode (20+2 beeps). Move the collective stick to full negative (wait for one beep), again to full positive (wait for two beeps), and again to negative (wait for two beeps).

Now press Exit, and power-cycle your VBar Flybarless Controller again for the ESC to start up in regular mode again.

Kontronik ESCs

Select Model Setup, **Setup Tools**, **ESC Setup Wizard** from the menu.

Danger Take safety precautions so the power unit can not start up accidentally and cause physical injury or physical damage.

Select **Jive** from the menu.

Carefully read the instructions of your Kontronik ESC and the instructions on the screen of your VBar Control Transmitter. Your heli and the VBar Flybarless Controller must be set up using the wizard. Both must be wired properly according to the manuals prior to entering this menu.

Move the collective stick to full negative to start with the ESC programming wizard. The screen will change so you can start the actual setup.

Plug in the programming jumper of the Kontronik ESC. To enter the programming mode of the ESC, cut power to your VBar Flybarless Controller, wait for the current screen to disappear. Now turn on your VBar Flybarless Controller again.

Your VBar Control transmitter and the VBar Flybarless Controller are in a programming mode now, which allows you to program the ESC using the collective stick, as if it was connected to a regular receiver.

Now follow the Kontronik programming procedure. Remove the programming jumper, wait for the ESC to confirm. Now wait for the ESC to indicate ‘Mode 4’ with four consecutive beeps, and confirm with moving the collective stick to full positive. The ESC will confirm again.

Now press Exit, and power-cycle your VBar Flybarless Controller again for the ESC to start up in regular mode again.

Attenteion If you want to program further features of your Kontronik ESC, just go through the ESC Setup Wizard again. At the last step, just wait for the ESC to indicate the desired mode (e.g. 9 consecutive beeps for LiPo mode, 10 consecutive beeps for KSA mode, 11 consecutive beeps for constant rpm control mode).

Unknown/other ESCs

Select Model Setup, **Setup Tools**, **ESC Setup Wizard** from the menu.

Danger Take safety precautions so the power unit can not start up accidentally and cause physical injury or physical damage.

Select **Other** from the menu.

Carefully read the instructions of your ESC and the instructions on the screen of your VBar Control Transmitter. Your heli and the VBar Flybarless Controller must be set up using the wizard. Both must be wired properly according to the manuals prior to entering this menu.

To start with the ESC programming wizard, move the collective stick to full negative. The screen will change so you can start the actual setup.
See the manual of the ESC for understanding the required setup procedure.

To enter the programming mode of the ESC, cut power to your VBar Flybarless Controller, and wait for the current screen to disappear. Now turn on your VBar Flybarless Controller again.

Your VBar Control transmitter and the VBar Flybarless Controller are in a programming mode now, which allows you to program the ESC using the collective stick, as if it was connected to a regular receiver.
Once finished with the programming, press Exit, and power-cycle your VBar Flybarless Controller again for the ESC to start up in regular mode again.

Attention If it is required that you program each feature of your ESC individually, just go through the ESC Setup Wizard again for each required step in the ESC setup manual.

GENERAL SETTINGS

Express/Basic Setup

Attention All parameters explained here are banked, which means you can set different values for three different banks/flight modes (four, in case you want to use bank four for autorotation. To use this feature, install the Pro Parameters-App). The parameter for the active bank is highlighted in white. The highlighting changes immediately when you operate the switch assigned to bank switching.

Attention Once you enter a value (like 'Mainrotor Expo') and move one of the rotary knobs, the knob automatically assigns itself to the parameter in question. Note that the rotary knob position is absolute. This means if it is set to 50 for a specific value, and you enter a bank which has a value of 70, rotating the knob will make the parameter jump to 50 first, before it changes to the selected value. The rotary knob stays assigned until you turn off the transmitter or change the assignment, even if you exit the setup to the main screen.

Attention To avoid accidental changing of parameters, you may assign a switch to temporarily lock and unlock changing parameters with the rotary knobs. Alternatively you may lock this feature completely (Transmitter Setup/Assign & Calibrate/Mandatory Switches).

Attention You may also change values with the EDS Dial. Note that the position of the EDS Dial is relative. This means it will always change parameters from where they are currently set. This feature is only active for the parameter currently selected from the menu.

Mainrotor Parameters

- Exponential
  alters the control curve from stick (input) to swash plate (output) in a way that it feels less direct/aggressive around center.
- Style
  affects the overall response of the heli: Higher values result in a more precise feel (can be compared to a heli on a simulator), lower values result in a more vivid feel (can be compared to the feel of a flybarred heli).
- Agility
  sets the overall roll and flip rate of the model. It can be compared to Dual Rate on conventional radios. The sensible range is from 60 (for scale flight) through 80-90 (for sports- and 3-D-flying) to 110 (for aggressive 3-D-flight).
- Gain
  adjusts the gyro gain for the aileron and elevator gyros. Higher values result in a tighter, crisper feeling on the cyclic controls. Too high a value will result in oscillations after stick inputs. The sensible range is from 40 (for 250 size helis) through 90 (for 500-800 size helis) to 120 (for large scale ships). This value will be pre-set by the choice of heli in the setup wizard.
- Autotrim

Autotrim activates the automatic trim feature of your VBar Flybarless controller. If enabled, the VBar will automatically trim the swash plate and the tail when the following conditions are met: the motor must be running, collective must be in the range for hovering, and the cyclic and tail sticks must be left alone.
To perform a trim flight, bring the heli into a stable hover in front of you, then let it drift with no further stick inputs. If heli moves to far away, bring the heli back into a stable hover in front of you. After a few iterations you will notice that the heli will drift less and less, until it finally (almost) remains in the position you put it in.
To verify the quality of a trim flight, do a stationary pirouette: the heli should stay in place.
Now land and move the collective stick to 0° collective or slightly below, to prevent the autotrim function from continuing the trim process.
The learned values will be saved if you deactivate the auto trim feature, or if you cut power your VBar.

Note: Do a trim flight only in calm weather conditions. Wind will affect the quality of the trim flight.

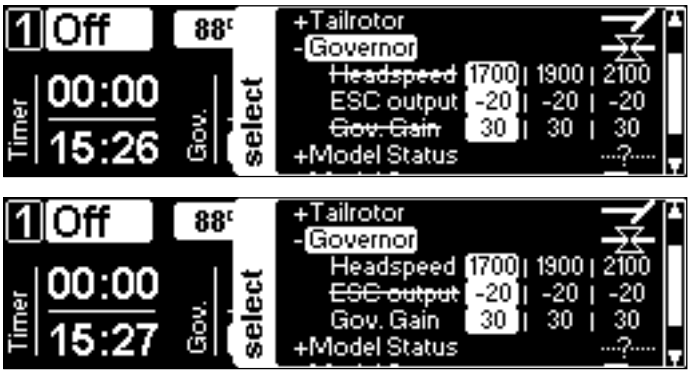
Note: You can alter the trim values here to manually trim e. g. the tail center position, too. Swash plate trims should be done in the Heli Setup Wizard.

Note: Trim flight is a global parameter. You get the best results if you perform the trim flight at the rpm setting you mainly intend to use with a particular heli.

Tailrotor Parameters

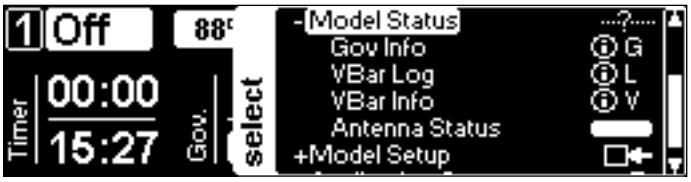
- Exponential
  alters the control curve from stick (input) to tail rotor (output) in a way such that the helicopter responds less directly/aggressively around stick center. The pre-set value of 50 resembles the stick feeling of a standard AVCS heading hold gyro.
- Rate
  sets the overall pirouetting rate. A value of 100 corresponds to about one pirouette per second. This value can be compared to Dual Rate on conventional radios.
- Gain
  adjusts the gyro gain for the tail rotor gyro. Higher values result in a tighter, crisper feeling on the tail control. Too high a value will result in oscillations after stick inputs or in fast forward flight. The sensible range is from 40 (for 250 size helis) through 60 (for 400 and 450 size helis) and 90 (for 500-800 size helis) to 120 (for large scale ships). This value will be pre-set by the choice of heli in the setup wizard.
  Depending on the tail servo used and the rpm, it may be necessary to alter this value for all banks/flight modes.

Governor



- Headspeed
  If you use the VBar governor, you set the desired headspeed here.
- ESC Output
  If you use an external governor, the throttle value will be set here.
- Governor Gain
  If you use the VBar governor, the overall gain of the governor can be set here. Starting value for the electric governor is 30. Too high a gain will cause the rpm to pump in normal flight. Too low a gain will cause inconsistent headspeed.

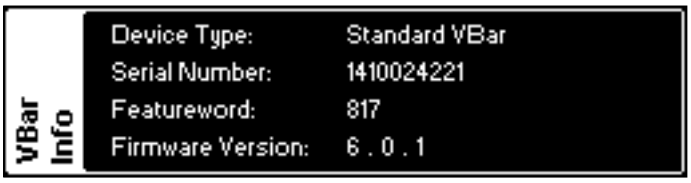
Model Status



- Governor Info
  shows information like requested rpm, current rpm and throttle output to the ESC/throttle servo, as well as whether the governor is in active or inactive state, at the low or full throttle limit, in bailout or failsafe mode. The Ramp indicator will light up during the automatic spool-up of the governor.

- VBar Log
  shows the live log of your VBar Flybarless Controller. The last VBar Event Log files will also be saved on your VBar Control Transmitter for later analysis.

- VBar Info
  shows the type, firmware version and serial number of the VBar connected.



Attention: this is where you find the serial number of the VBar connected to VBar Control. Use it e.g. to register at www.vstabi.info or to open a service request if necessary.

- Antenna status
  shows a live reading of both the VBar Control Transmitter antennae and the VBar Control Receiver Satellite antennae. In case the values fall below the threshold line, check the corresponding antennae.

Danger Do not use the VBar Control System until the cause for the issue has been found and resolved.

- Model name
  The model name can be set or altered in the Model Set-up, Setup Tools menu.

- Save/Load Setup files
  You may save the settings of any VBar connected to a file on your VBar Control transmitter. The saved file can serve as a backup, for reverting to earlier or different settings, or for transferring settings from one VBar to the next. The saved file can be copied to your PC using the USB connection for an additional backup or to share it with our service staff.

Tail-Servo List

Manufacturer	Servo type	Frequency	Center pulse
ACE	DS0606	333 Hz	1.500 µSec
ACE	DS0606 n	333 Hz	760 µSec
Airtronics	94758	333 Hz	1.500 µSec
Airtronics	94761	333 Hz	1.500 µSec
Align	DS 520	333 Hz	1.500 µSec
Align	DS 525 M	333 Hz	1.500 µSec
Align	DS 620	333 Hz	1.500 µSec
Align	DS 650	333 Hz	1.500 µSec
Align	DS 651	333 Hz	1.500 µSec
Futaba	S 9253	333 Hz	1.500 µSec
Futaba	S 9254	333 Hz	1.500 µSec
Futaba	S 9257	333 Hz	1.500 µSec
Futaba	S 9451	333 Hz	1.500 µSec
Futaba	S 9650	333 Hz	1.500 µSec
Futaba	S 3153	333 Hz	1.500 µSec
Futaba	S 3154	333 Hz	1.500 µSec
Futaba	BLS 451	333 Hz	1.500 µSec
Futaba	S 9251	333 Hz	760 µSec
Futaba	S 9256	333 Hz	760 µSec
Futaba	BLS 251	333 Hz	760 µSec
Futaba	BLS 256 HV	333 Hz	760 µSec
Futaba	BLS 257	333 Hz	1.500 µSec
Graupner	HBS 770	333 Hz	1.500 µSec
Hitec	5925 MG	333 Hz	1.500 µSec
Hitec	6965 HB	333 Hz	1.500 µSec
Hitec	HSG-5083MG	333 Hz	1.000 µSec
JR	8900 G	333 Hz	1.500 µSec
JR	3400G	333 Hz	1.500 µSec
JR	2700 G	200 Hz	1.500 µSec
JR	8700 G	200 Hz	1.500 µSec
JR	810 G	200 Hz	1.500 µSec
JR	MP 80 G	333 Hz	1.500 µSec
JR	SPG 01	333 Hz	1.500 µSec
JR	MP 83 GWV	333 Hz	1.500 µSec
Logictech	2100 G	333 Hz	1.500 µSec
Logictech	6100 G	333 Hz	1.000 µSec
MKS	HBL 950 HV	333 Hz	1.500 µSec
MKS	HBL 980 HV	333 Hz	760 µSec
MKS	HBL 669	333 Hz	760 µSec
MKS	BLS 980	333 Hz	760 µSec
MKS	BLS 990	333 Hz	760 µSec
MKS	DS 95 i	333 Hz	760 µSec
MKS	DS 760	333 Hz	760 µSec
MKS	8910A	333 Hz	760 µSec
Robbe	FS 61 BB	333 Hz	1.500 µSec
Savox	SB-2272 MG	333 Hz	1.500 µSec
Savox	SB-2271 MG	333 Hz	1.500 µSec
Savox	SC-1257 TG	333 Hz	1.500 µSec
Savox	SH-1290 MG	333 Hz	1.500 µSec
Sky	HDS-577	200 Hz	1.500 µSec
Sky	HDS-877	200 Hz	1.500 µSec
Torq	BL 9188 HV	333 Hz	760 µSec
Torq	BL 9088	333 Hz	760 µSec

Note: if your type of servo is not in this list, please look up the parameters in the manual of the servo or on the internet.

VBAR AND MINI VBAR

Safety Instructions

Danger An R/C controlled helicopter is not a toy! While moving, the rotor blades pose a serious danger to persons and things. You must obey all safety instructions of the manufacturer for operation of your helicopter.

Attention VBar is not an autopilot! VBar may be installed in helicopters which are suitable for flying without flybar. During installation and operation you must follow all instructions given in the software and in this manual. VBar may not be operated in wet conditions (high humidity or rain). If the helicopter shows vibrating behavior during flight, operation of the helicopter is to be stopped immediately. Do not continue flying until the cause for vibration has been eliminated.

Caution When setting up, disconnect the motor wires or remove the pinion gear to avoid accidental spooling up of the helicopter while setting up the speed controller (ESC) functions. The same applies when loading unknown setup or preset-files, as they may transport other settings as you have on your heli!

Attention Never connect the Gyro-Sensor to a port other that it's own or it will be destroyed immediately and beyond repair.

Attention Never connect power to RX A, RX A is signal transmission-only.

Attention A heli equipped with VBar draws higher currents than a conventional flybarred heli. Make sure you use a sufficient power supply.

Wiring your VBar/Mini VBar

Servo/Funktion	Mini VBar	VBar Silverline
VBar Control Satellite	CP	Control Panel
Swash plate (the actual assignment is shown in the setup wizard)	CH1 CH2 CH3	Channel 1 Channel 2 Channel 3 Channel 4
Tail rotor servo	RD	Tail Servo
Electronic speed controller (ESC)	RX B	Colle/ESC
Throttle servo (Nitro)	—	Servo
RPM sensor	Signal lead (usually orange) to RX A, upper pin; supply voltage e.g. to RX C using a Y-harness. Attention: do not apply more than 5 V on RX A, for higher receiver voltage use a voltage divider.	Sensor II (Recommendation: only connect the signal lead here, connect supply voltage to a free connector on the servo side of the VBar using a spare servo connector.)
Gyro sensor	—	Gyro Sensor
Telemetry	RX-1, RX-2	RX1, RX2

Attention polarity is always shown on the label of the VBar. The brown lead (negative terminal) of the servo connectors must point to the label. For extra connectors on e.g. VBar Silverline, see the markings on the label, too.

Attention Additional power supply may be connected to any free port on the servo side (Mini VBar: do not use RX A for power supply, if necessary use Y-harnesses).

Attention USB is only used for firmware updates. Do not connect at the same time with a VBar Control Satellite.

Note: the remaining connectors may be used for special functions (e.g. retractable landing gear, light). Information will be provided in the relevant manuals to specific Apps. You can download these manuals from www.vstabi.info.

Attention If you chose to use a VBar with other radio control systems, please refer to the Quick Start Guide provided on www.vstabi.info. You must install a different firmware on the VBar for use with other radio control system.

Initialization

During Initialization, the VBar goes through a self-test. The helicopter must be at rest during this test.

» Note for Mini VBar: During the self-test, the V flashes (blinks). When the test is finished, you will see a brief twitching (jump) of the swash plate. Also the V stops blinking and will be lit up continuously.

» Note for VBar with external sensor: The V starts flashing blue-green-red in a sequence.

Pre-Flight Check

Before each flight you must double-check the active direction of the swash plate and the tail rotor. To do so, lift the helicopter up and move it along the three axis. The swashplate must tilt noticeably against the movement. The tail rotor must create thrust against the direction of rotation on the yaw axis.

» Note for VBar with external sensor: The sensor LED will show it's activity in three different colors: red for aileron, green for elevator, blue for tail.

Exemption from Liability

Mikado does not assume liability for completeness or correctness of the content of this manual and of the software provided.

The user assumes all liability for all potential damages or claims that might arise from the operation of the VBar and his helicopter.

Accessories

You will find accessories to be used with VBar on Mikado's website www.mikado-heli.de