VBAR CONTROL

Mikado
Model Helicopters

VBAR CONTROL DEVICE MANUAL

Mikado
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BENEFITS AT A GLANCE

Software Highlights:

- Setup, programming and adjusting of VBar-controlled models accomplished directly via VBar Control radio.
- No computer, control panel or smartphone necessary.
- Instant access to almost every flight parameter from the transmitter controls, even in flight.
- Easy programming for new helicopters via the familiar VBar setup wizard.
- New ESC setup wizard for programming all types of speed controllers.
- Bank switching with three banks.
- Real time logging and real time vibration analysis readable from the transmitter.
- Several telemetry functions are available, such as voltages, current, rpm, speed, and power consumption of the batteries (may need additional hardware).
- Storage of event log files like VBar event log, VBar Control event log, GPS way points, voltage/current logging etc.
- Multiple timer functions available with warnings and reminders via sound, voice, or vibration output.
- Wireless buddy boxing with two VBar Control radios, fully configurable.
- Easy bind process, allows bind and fly of any model equipped with VBar Control (e.g. a buddy‘s heli) with your own transmitter (Model Sharing).
- Software updates via internet using a simple VBar Control Manager app and the web browser.
- Option for adding new features via apps, simple installation via internet, supports both Windows and Mac OS X-PCs, no drivers needed.
- Additional airplane software will be available in summer 2014.

Hardware Highlights:

- 80 Channel 2.4 GHz FHSS bidirectional flight control, programming/setup and telemetry remote control system.
- VBar Control Satellite connects directly to VBar flybarless controller via 2.4GHz VBar-Link protocol.
- Unlimited model memory.
- Virtually unlimited number of control channels. High range, low latency, antenna diversity both on transmitter and receiver.
- Intelligent antenna monitoring and management.
- XXtra Bright Graphic Display featuring high contrast and ambient light sensor to automatically control the display brightness, making it equally well readable in bright sunlight and in the dark.
- Easy Dialog System with rotary dial for convenient and safe inputs, with optical, tactile and acoustic feedback.
- Precision gimbals with four ball bearings, fully adjustable.
- Collective stick equipped with optional throw limiter.
- Fully equipped with four 3-position-switches, two quick-break-switches and two rotation knobs, all fully programmable.
- Delicate rubber lining for comfortable, slip-free and safe holding.
- 3-point neck-strap attachment, for optimum balance.
- Large 2 Watt loudspeaker for alarms and voice output.
- Vibration alarm (adjustable).
- Internal 8 MB flash memory.
- Memory accessible as a USB memory stick, no drivers needed.
- 4.000 mAh Lithium Polymer battery allows for long run times.
- Charge through USB connector or built-in charger.
- Power supply for fast charging included.

INTRODUCTION

Welcome to VBar Control

Mikado Model Helicopters wants to thank you for choosing this highly specialized yet versatile product. To make the best use of your VBar Control and to safely operate and fly your radio controlled models, please read this device manual carefully. For software and model setup, see the quick start guides and manuals provided with this radio as well as documentation provided with the other appliances like motor, electronic speed controller, servos, the helicopter kit itself. For latest information, new features and updates, please visit our product web site www.vstabi.info.

VBar Control and the VBar Control accessories have been developed and manufactured in Germany. They are state-of-the-art products following highest quality and safety requirements. Every device has been inspected thoroughly during manufacturing and initial programming. VBar Control meets European requirements (ETSI) as well as US-American requirements of the Federal Communications Commission (FCC). VBar Control has been flight-tested thoroughly. Highest standards with regard to high noise immunity and operational reliability have been applied.

☞ **Attention** Unforeseeable changes in manufacturing processes and software development make this manual subject to change without notice. Mikado Model Helicopters recommends visiting the product web site www.vstabi.info regularly to get the latest information regarding your VBar Control transmitter.

☞ **Attention** Mikado Model Helicopters strongly recommends connecting the VBar Control transmitter to a personal computer at least every six months, and make a connection to the internet using VBar Control Manager to get the latest updates automatically.

☞ **Attention** For service and support regarding programming and operation of your VBar Control and other Mikado products, please feel free to contact your local dealer or visit our product web site www.vstabi.info and the technical support forum there.
Telephone and e-mail-support are available through ((Adressblock Mikado USA und Mikado Potsdam, generell: Landing-Page www.mikado-heli.de/VControl, auf der die wichtigsten Sachen kurz und knackig beschrieben und verlinkt sind))

What is VBar Control?

VBar Control is an advanced multi-function FHSS radio control system for model helicopters and, in the future, also for airplanes and other radio controlled model operations. With it's unique concept of programming and operation, it's the ideal companion to go with your radio controlled and VBar equipped models.

Purpose, modifications and export regulations

VBar Control is designated for use with model helicopters, in the future for use with model airplanes. VBar control is not designated for any other purpose than remote control of models for recreation or hobby.

Outside of the country of manufacture, VBar Control has to be approved by the laws applicable in the country of import, especially regarding emission of radio frequencies. On every re-export, VBar Control may be subject to regulations. Prior to use, approval of the responsible authorities may be required. If in doubt, contact your dealer to assert that all regulations applicable have been met. VBar control must not be used to control other than unmanned radio control models on line of sight.

Mikado Model Helicopters takes no responsibility for any modification or replacement of parts on VBar Control. Any modification other than described in the product documentation may void warranty.

Icons used in this manual

☝ **Attention** Problems and physical damage or physical injury may occur if not followed carefully.

⚠ **Warning** Dangerous conditions may occur, causing serious physical injury or even death, or high physical damage, if not followed carefully.

☠ **Danger** Dangerous conditions may occur, causing death, serious physical injury or high physical damage if not followed carefully.

☒ **Procedures** and actions that are prohibited.

☑ **Procedures** or actions that are mandatory.

GENERAL SAFETY PRECAUTIONS

Precautions for the use of the 2.4 GHz band

VBar Control operates in the 2.4 GHz band which is in common use with e. g. industry, science and medical (ISM) applications. It is widely used for microwave ovens, short-range wireless communications like wifi, bluetooth, cordless appliances like headphones, or amateur radio. Excessive use of the 2.4 GHz band (like in urban areas) may degrade the control response and range of VBar Control. If you experience adverse radio interference, immediately cease using VBar Control.

At public places like airports, hospitals, racetracks special limitations may apply.

Transmission is impeded or blocked by objects in the line of sight to the model, degrading control response or even causing the model go go out of control. Always operate a radio controlled model where it can be safely visually controlled.

Handling the VBar Control

Check that all parts and manuals are provided. Turn on VBar Control and check that the battery is charged properly. We recommend that you connect your VBar Control to the wall charger or to a personal computer using the USB cable to fully charge the battery. We also recommend to install the VBar Control Manager to connect to the internet and upgrade the VBar Control to the latest software.

If there are any items or manuals missing, please immediately contact your local dealer or the service department of Mikado Model Helicopters.

⚠ **Warning** Never use VBar Control on rainy days. Electronics may malfunction if they get wet.

⚠ **Warning** Never disassemble or modify VBar Control beyond what is described in this manual. Heat generation or even fire or an electric shock may cause injury or physical damage.

⚠ **Warning** The power unit (engine/motor/gears) as well as rotating parts (rotor head and blades, tail rotor head and blades etc.) can start up at high speeds, causing danger.
Always turn on VBar Control first, and make sure the throttle stick/switch is set to the lowest/motor off position, then turn on the receiver/model. Make sure all fail safe precautions regarding an electric speed controller are met. Only connect a flight pack when sticks and switches are set to lowest/motor off position. When turning off power, always turn off the receiver/model first, disconnect the flight pack first. As a safety precaution, VBar control can only be turned off after the connected VBar controller and receiver have been turned off.

⚠ **Warning** Pay full attention when setting up an electronic speed controller (ESC) or an IC engine. Injury or physical damage can be caused.
Do not start an IC engine with the throttle set to a high rpm position. Injury or physical damage can be caused.

⚠ **Warning** Mind adverse conditions when using appliances from other manufacturers. Especially the power supply of the radio control system as a whole must be suitable to meet the needs of all appliances connected. Malfunctioning appliances or appliances drawing too high a current or generating back voltages may disrupt the safe operation of the radio control system as a whole.

⚠ **Warning** VBar Control and the VBar Control Receiver as well as the VBar and the other appliances are susceptible to impacts. Never apply hard impacts or drop them. This may cause malfunction.

⚠ **Warning** When degraded control is detected, cease operation of your model and check battery and general condition. The model may get out of control, causing injury or physical damage.

⚠ **Warning** Never operate the model next to known radio interference, passing vehicles or people, next to high-voltage power lines, buildings, and be careful in mountainous parts.
The model may get out of control or malfunctions may occur, causing injury or physical damage.

⚠ **Warning** Every electronic appliance that has gone wet and seems to work again normally after being fully dried may malfunction at any time. Do not continue to use such appliances and contact the service and support of the company for the product for a check-up.

☝ **Attention** Before any radio control operation, check the following:
- » are the batteries charged fully/sufficiently?
- » is there enough fuel in the tank?
- » are there any liquids spilled over the electronics, like water or fuel?
- » make sure all linkages are secure and no slop or binding occurs in operation.
- » make sure the overall vibration level on the model is low, and that all control functions work reliably when the power unit and drive train is running at the expected rpm.
- » make sure all fail safe precautions are met: in case of a loss of control the motor/engine must turn off.
- » when running the power unit/drive train, keep clear of rotating parts and mind the danger of main or tail rotor blades spinning.
- » On the first flights of a newly set up model, select a safe place to start from, and test the control functions and operation in the vicinity but at a safe distance for several minutes. Do not fly at great distances.
- » Familiarize yourself with safety precautions, like switching off the motor in case of any unwanted/uncontrolled operation to take the energy and vibration out of the system and attempt an emergency landing/autorotation.

☝ **Attention** VBar Control will warn if the battery level gets below 3.5 V. VBar Control will switch off automatically when the battery level gets below 3.2 V except when a model is connected (safety feature).
Land immediately and turn off the model if a battery warning occurs.

Built-in rechargeable Lithium Polymer Battery and Battery charger

- Take special care with the following to prevent unwanted heat generation, fire and explosion.

Danger Use only the supplied wall charger with the appropriate adapter. Check the voltage in the country you are in, it must not exceed 100-240 V AC.

» Do not misconnect (+) and (–)
» Do no place VBar Control or the charger next to heat or open fire.
» Keep open terminals (+) and (–) away from conductive materials like metal surfaces, carbon fibre, tools.
» Never disassemble or modify VBar Control beyond what is described in this manual, and never solder.

Danger Never use other than genuine batteries from Mikado Model Helicopters. The batteries have been carefully selected and adapted for use in VBar Control. Always monitor the charging process, even if the integrated charging circuit takes care of the proper charging parameters. Stop the charging process immediately if you experience excess heat.

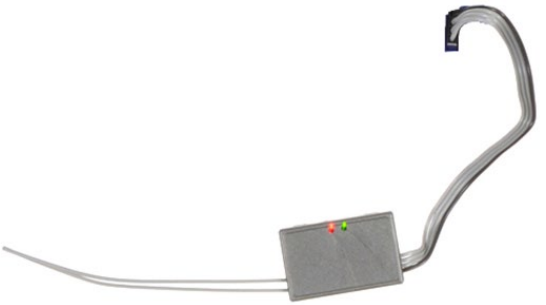
» Never wet the battery with any water.
» Never harm the insulation, connecting wires, connectors.
» Do no longer use a battery that has taken damage to the insulation, connecting wires, connectors.
» Battery liquids are dangerous. If your eyes, skin or clothes get in contact with these, rinse thoroughly and wash your clothes with clean water.
» Always monitor the condition of your batteries by checking the operating time, charging time. If operating times or charging times start to differ strongly, the end of their lifetime may have come.
» Battery failure may cause your model going out of control, causing dangerous situations.

Attention Never store your VBar Control and the battery inside in high temperature, very dusty or very humid conditions.

» Store the VBar Control and the battery inside outside of the reach of infants.
» Never charge the battery of your VBar Control in very cold conditions (lower than 0 °C).
» A used Lithium Polymer battery is not domestic waste. Discharge the battery, insulate the terminals with tape or the like, and bring it to a store/dealer that disposes of small rechargeable batteries, or bring it to a collection point for harmful substances.
» Never keep the VBar Control in direct sunlight for extended time. Keep it in the shadow if it is not used.

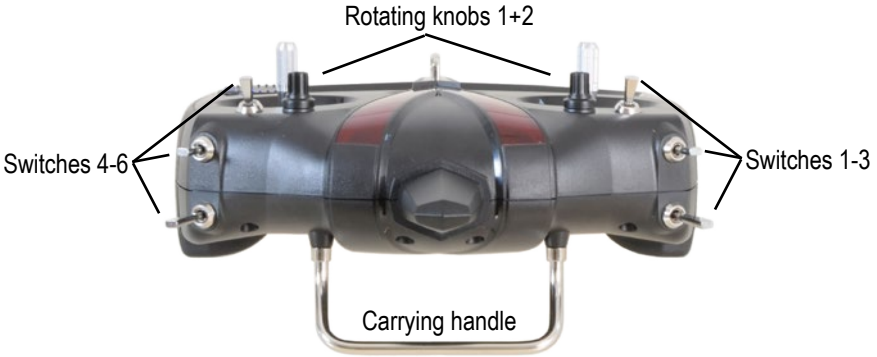
PACKAGE CONTENTS

- VBar Control transmitter
- Wall charger with connector for your area
- USB lead
- VBar Control Receiver (optional)
- VBar Flybarless controller (optional)
- Neck strap
- This device manual
- Software setup manual

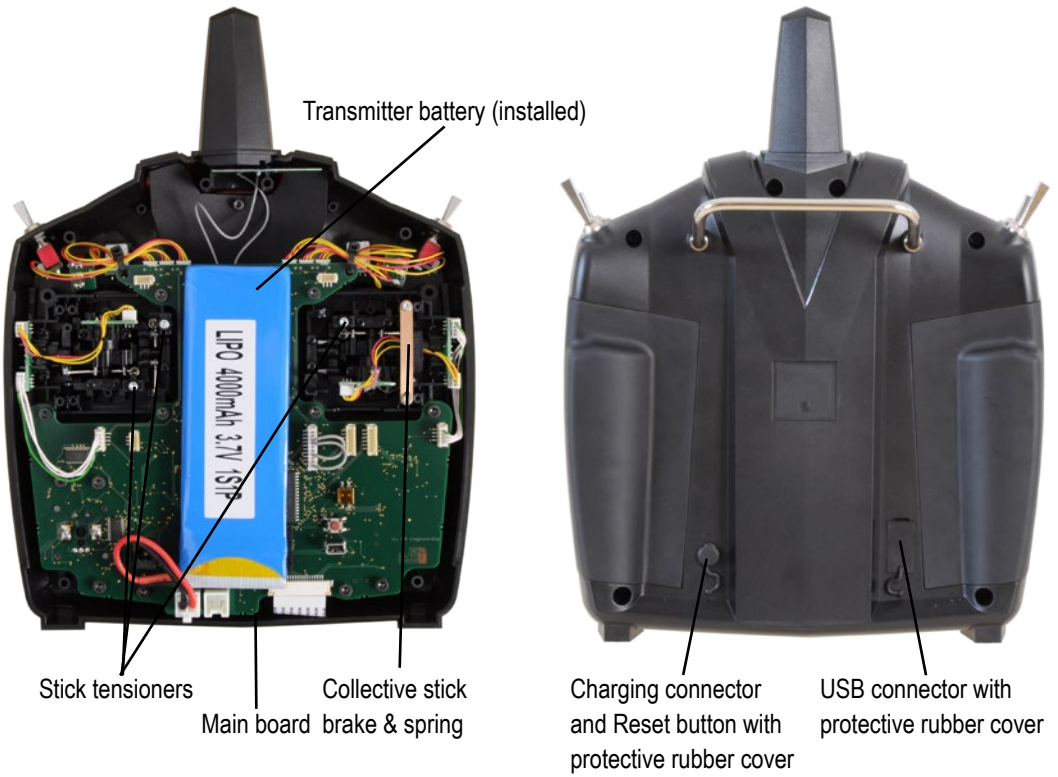


TRANSMITTER CONTROLS AND FEATURES

- Gimbals
- Adjustable sticks
- Switches 1-6
- Rotating knobs 1+2
- Easy Dialog System Dial (EDS) with LED ring
- XXtra Bright Graphic Display
- Ambient light sensor
- 3-point-neck-strap attachment
- Speaker
- Rubber grip lining
- Antenna
- Carrying handle

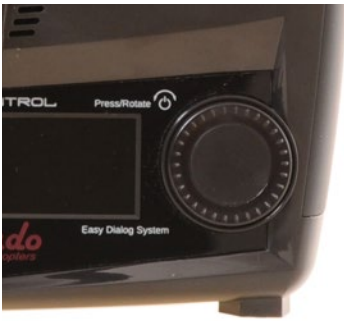


- USB connector with protective rubber cover
- Charging connector and Reset button with protective rubber cover
- Transmitter battery (installed)
- Stick tensioners
- Collective stick brake & spring
- Main board



BASIC TRANSMITTER OPERATION

How to turn the VBar Control on and off



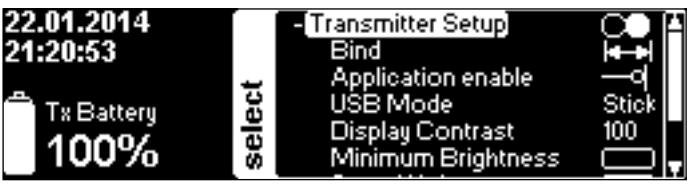
- Turn on your VBar Control by pressing down the Easy Dialog System Dial (EDS Dial), at the same time, rotate 90° clockwise.
- Turn off your VBar Control by pressing down the EDS Dial, at the same time rotate 90° anti clockwise. Choose OK from the Shutdown menu by rotating the EDS again, then click OK.
- Mind that you cannot turn off your VBar Control as long as a VBar Control Receiver is connected, so always turn off your model first.

The main screen and the Easy Dialog System

- On power on, the main screen shows the current date and time in the upper left corner.
- The transmitter battery status is displayed in the lower left corner with an icon and the percentage.
- The current version number is displayed in the lower right corner.
- To the right, next to the EDS Dial, you see the closed setup menu labelled (select).
- The EDS Dial is both navigator (turn right or left) and selector (press down).

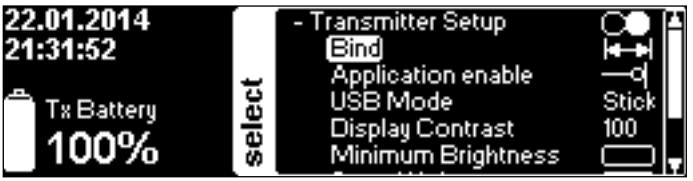
Basic VBar Control Setup

- Rotate or press the EDS Dial to access the menu. If you do not continue, it will close again after a few seconds to free the display.
- Without a VBar Control Receiver connected, you can only access the transmitter setup functions.

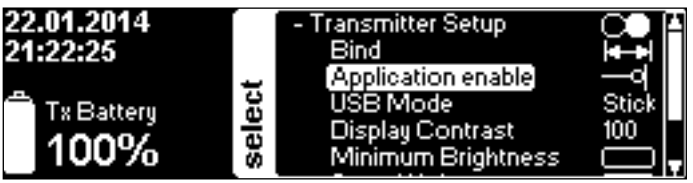


Transmitter Setup

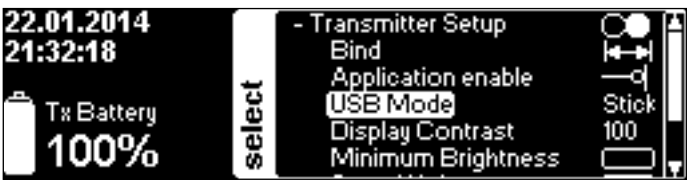
Bind a VBar Control Receiver to the VBar Control transmitter. Click for a list of available devices (10 digit serial number of connected VBar Flybarless controller or model name for already set-up models), select the one you want to bind. See ((Querverweis))



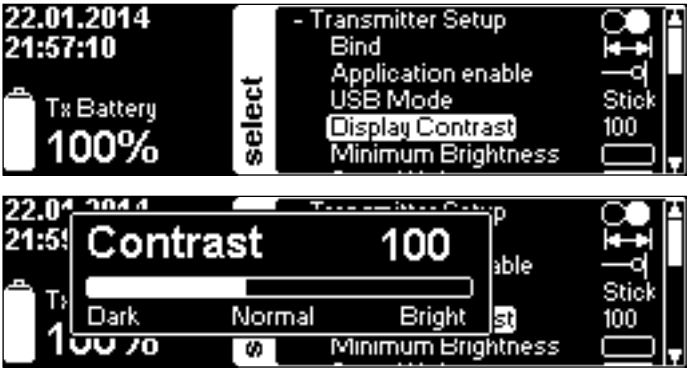
Application enable helps to enable or disable the Apps you want to use. Check or uncheck the boxes. Disabled Apps will not show in the setup process. All setup information required for flight operation is stored in each individual VBar, so you will not lose functionality or settings if you disable or even uninstall the App to free menus or memory.



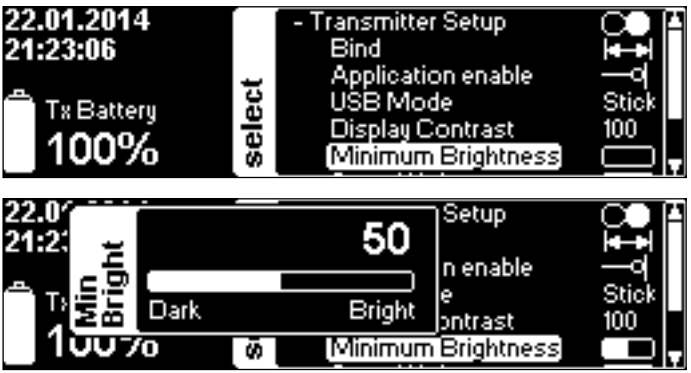
USB Mode allows to choose between USB Stick mode (for normal operation or setup/update purposes), Simulator (renders the VBar Control a USB game controller to go with your favorite simulator), or No USB (disables the USB connector temporarily).



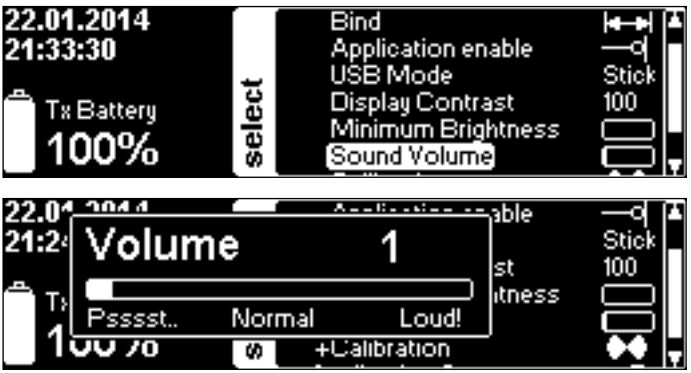
Display Contrast sets the black/white contrast of the display.



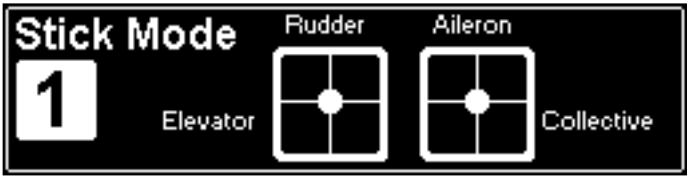
Minimum Brightness sets the low threshold of the ambient light sensor. The display will not go darker than the value set here. To save battery life, use the lowest convenient value.

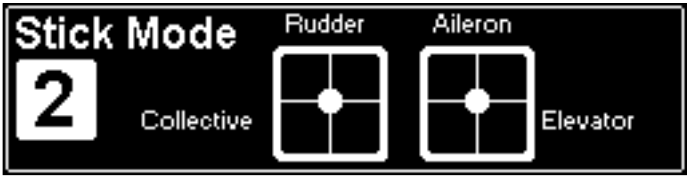


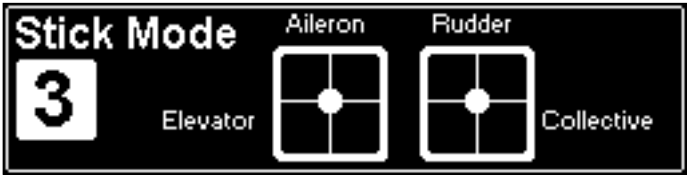
Sound volume for the EDS Dial feedback as well as for warnings and Speech Apps.

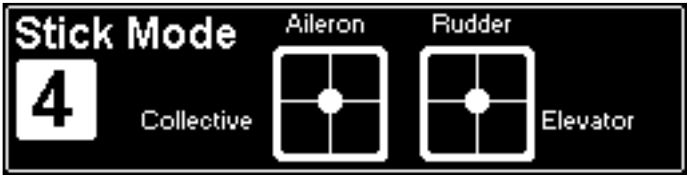


Assign and Calibrate here you can select the stick mode (mind that you have to change the hardware if you switch between throttle-left and throttle-right modes). In case you want to have the collective stick reversed, choose modes 5-8 instead.





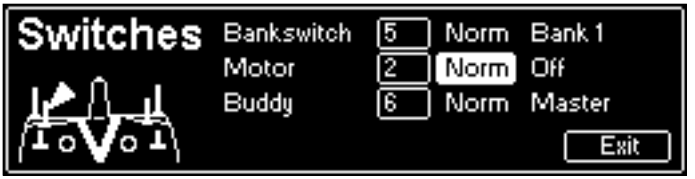




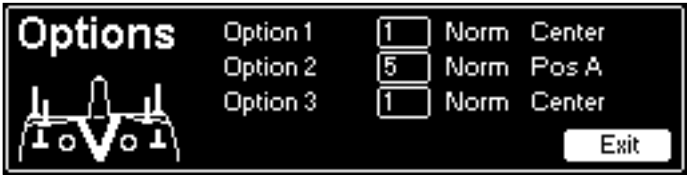
You can calibrate the gimbals by selecting one control function at a time and 'show' the VBar Control the limits and the center position just by moving the stick. It will learn and store the values automatically.

Collective Center Fine allows to set the zero collective position although the gimbal has no spring to center itself. Move the stick to the precise mechanical center position according to the zero pitch line on the gimbal's scale, press (Set Zero).

Mandatory switches assigns three switches needed for basic flight operations and the directions according to your liking. Defaults are Motor–upper left, Bank switch (flight modes)–upper right, Buddy Box–lower right. The graphics show the actual assignment.



Optional switches assigns Option 1-3 functions to switches according to your liking. You will then assign Option functions within additional apps. May require additional hardware and/or software.



Application Setup

Allows for basic settings of different apps.

How to change the stick mode and adjust the stick tension, how to change the stick length

- Tools needed: 3 mm and 2 mm hex screwdrivers, small Philips screwdriver, pliers.
- Turn off your VBar Control transmitter
- Remove the neck strap.
- Put the VBar Control transmitter face down on a soft surface.
- Remove the six screws M3x20 mm to take off the bottom case.
- Flip the still-closed transmitter 90° to the left, carefully start opening VBar Control like a book.
- Carefully disconnect the switch wire there and open the VBar Control fully like a book. The screws will fall out of the bottom case.
- If you find it easier, also disconnect the second switch and the vibration alarm motor.
- Do not touch the main board!
- Locate the spring tensioner of the former elevator stick (next to the battery, to the left or to the right).
- Gently unhinge the spring and remove both the plastic holder and the spring.
- Remove the metal bracket by gently pulling it out, away from where the spring was attached.
- Unscrew the metal brake from the former throttle stick.
- Unscrew the plastic brake on one side and unhinge it on the other side.
- Carefully unplug the wire going through the plastic brake and carefully unthread it through the opening in the plastic brake.
- Re-connect the wire.
- Place the metal bracket 180° from it's original position on the other side, under the elevator stick to come.
- Mind that everything is rotated 180° compared to where you dismounted the parts.
- Put the plastic holder in the slot there, and hinge the spring to the bracket and the plastic holder.
- Carefully unplug the connector on the throttle stick to come that will have to go through the plastic brake you have removed on the other side, thread it through the brake, and re-connect it.
- Fix the plastic brake by hinging it on one side and screwing it in place.
- Fix the metal brake and tighten to your liking.
- Use the inner holes for a smooth brake feeling, or the outer holes for a stepped brake feeling.
- Adjust the springs on the other three sticks to your liking.
- Carefully close the VBar control again, and re-connect the lower switch wire. Should you have disconnected the other switch wire and the vibration alarm motor, too, reconnect them before closing the VBar Control.

- Carefully replace the bottom case, as not to squeeze and harm any wires.
- Fasten the six screws and do not over-tighten them.
- To change the stick length, carefully twist the upper half of the stick counter-clockwise to loosen the stick while holding the lower half. Adjust the lower and the upper half to the length you like. Fix the stick by twisting both halves against each other.

How to use VBar Control as a USB game controller

- Select USB mode ‘Simulator’ from the Transmitter Setup.
- Connect the USB lead to your computer.
- There is no driver needed on Windows PCs as well as on Macs. The operating system will detect VBar Control automatically as a game controller.
- In your preferred simulator software, select VControl as a controller and set up/calibrate as needed.
- Attention use the Simulator’s menus to adjust the Simulator to the VBar Control transmitter. Do not change settings (e. g. switches) in your VBar Control transmitter; this will affect use of your real-life models, too.

Binding a VBar Control Receiver

- Option 1
  - » Turn on VBar Control transmitter
  - » Make sure motor/throttle controls are in off position
  - » Select ‘Bind’ from the Transmitter Setup menu
  - » Turn on the VBar with the VBar Control Receiver connected
  - » Wait a few seconds for the VBar Control to scan for available devices
  - » Select the VBar Control Receiver from the list
  - » VBar Control will confirm with the message ‘Connected’
- Option 2
  - » Turn on the VBar with the VBar Control Receiver connected
  - » Wait for 10 seconds for the receiver to go into bind mode
  - » Turn on VBar Control transmitter
  - » Make sure motor/throttle controls are in off position
  - » Select ‘Bind’ from the Transmitter Setup menu
  - » Wait a few seconds for the VBar Control to scan for available devices
  - » Select the VBar Control Receiver from the list
  - » VBar Control will confirm with the message ‘Connected’

☞ **Attention** In case the re-binding procedure is no completed, a previously bound VBar Control Receiver remains bound to the last VBar Control transmitter it was bound to. The binding information is not automatically deleted by mistakenly powering up the model. Just turn the model off, turn on your VBar Control transmitter, then turn on the model again: it will re-connect at once.

Battery charging

- The built-in battery will be charged every time it is connected to a personal computer, using the USB cable. A green light will come on in the EDS Dial when the VBar Control is connected to a live USB port.
- To charge VBar Control away from a personal computer, connect the wall charger provided to a wall outlet. Select the appropriate adapter for your country. A red light will come on in the EDS Dial when the VBar Control is connected to the wall charger.
- Connect the charger to VBar Control.
- Charging time from the wall charger will be approx. 1.5 hrs.
- When left on the wall charger, trickle charge will keep the battery fully charged.
- Charging time from the USB cable will be approx. 10 hrs (with the transmitter turned ON) or 40 hrs (with the transmitter turned OFF). This is due to technical regulations of the USB power supply.
- You can positively connect both the USB cable and the wall charger. The integrated charging circuit in your VBar Control transmitter will always use the input with the highest power and disable the other input.
- In case the battery is exhaustively discharged, the charging time will noticeably increase to safely get the battery back to life.

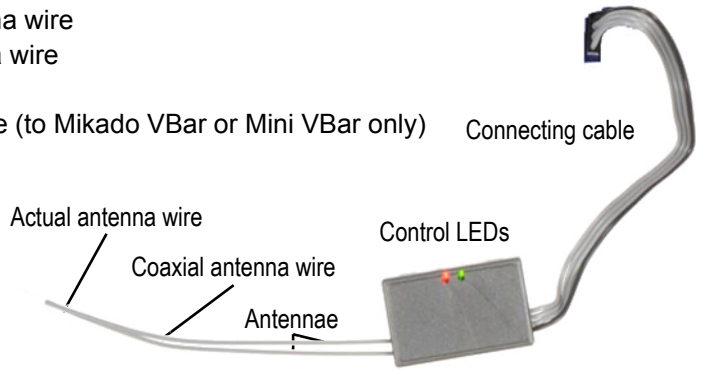
Tips for using your VBar Control transmitter

- Power saving
  Set the low threshold of the ambient light sensor to a low value, so the transmitter can always use the least power needed for the display.
- Range Check
  ((how to?))
- Recovery
  ((how to?))

VBAR CONTROL SATELLITE RECEIVER

Features

- Antennae
  - » Coaxial antenna wire
  - » Actual antenna wire
- Connector
- Connecting cable (to Mikado VBar or Mini VBar only)
- Control LEDs



Control LEDs

- The green LED signals the receiver is bound to and synced with VBar Control.
- The red LED flashes when data are being sent, e. g. telemetry is active.

VBar Control Receiver installation

- Place the receiver next to the VBar Flybarless controller.
- Fix it using e. g. double sided adhesive tape or velcro tape. Make sure it does not touch the frames/chassis directly to avoid vibration influence.
- Avoid places where liquids could spill the receiver, take waterproofing measures if need be.
- Avoid places where high temperature changes can occur.
- Take measures so wires or antennae do not get damaged e. g. by sharp-edged carbon fiber or aluminum frames.
- Make sure the connector is securely attached and the wire is not subject to tension or kinking.

Placement of antennae in the model

- Place the antennae in a way so the actual antennae do not touch frames or chassis elements and have free space around the tip by the size of a table tennis ball.
- In case the actual antennae touch conductive or shielding material such as metal or carbon fiber surfaces, the reception will be reduced considerably.
- Align the antennae in a way so they point at a 90° angle.

- Separate the antenna tips as far as possible, distance is even more important than achieving a 90° angle.
- Do not unnecessarily cover the actual antennae.
- Do not bend or kink the actual antennae.
- The coaxial wires may be bent, but in a gentle arc, not 90° sharp, as not to damage the actual antenna wire inside.
- Separate the antennae as far as possible from electric motors, electronic speed controllers or other sources of electric/electronic noise.
- Separate the antennae as far as possible from conductive or shielding materials/surfaces. When installed inside a fuselage, try and place the antenna tips outside the fuselage.
- Use of extension leads for positioning the VBar Control Receiver in scale fuselages is possible.

UPDATING AND ENHANCING YOUR VBAR CONTROL TRANSMITTER

Installing and using VBar Control Manager

- PC
  - » Go to our product web site www.vstabi.info, browse to the downloads section and get a download link for the VBar Control Manager (you will need a MikadoID to do so).
  - » After the actual download, open the installer and follow the instructions on the screen.
  - » The program will be installed to the \Program Files-Folder on your hard disk. A shortcut will be created on your desktop.
  - » Double click the shortcut.
  - » Once the VBar Control is connected to the Computer, VBar Control Manager will automatically try to connect to the internet and register with our support web site www.vstabi.info.
  - » If need be, log in to www.vstabi.info using your MikadoID.
  - » VBar Control Manager will always check for updates and automatically and install them to your VBar Control transmitter, so you always have the newest firmware and features available.

☞ **Attention** Never disconnect the VBar Control transmitter while USB/File System operations are in progress. Check the display on your VBar Control transmitter and the VBar Control Manager prior to unplugging the USB cable. Please be patient especially if you did not connect your VBar Control transmitter to the internet for a prolonged time: the update process can take several minutes if many files have to be transferred and updated.

- Mac
  - » Go to our product web site www.vstabi.info, browse to the downloads section and get a download link for the VBar Control Manager (you will need a MikadoID to do so).
  - » After the actual download, open the disk image (.dmg-file) and copy the VBar Control Manager App to your /Applications Folder.
  - » Double click the App.
  - » Once the VBar Control is connected to the Computer, VBar Control Manager will automatically try to connect to the internet and register with our support web site www.vstabi.info.
  - » If need be, log in to www.vstabi.info using your MikadoID.
  - » VBar Control Manager will always check for updates and automatically install them to your VBar Control transmitter, so you always have the newest firmware and features available.

☞

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Registration, Update, getting additional software features (VBar Control Apps)

- Mikado Model Helicopters strongly encourages you to register your VBar Control transmitter using your MikadoID.
- Registered users have access to free software, upgrades and updates as well as to the App Store on our support web site www.vstabi.info.
- Registration helps keeping you informed about latest developments, changes, necessary updates, safety bulletins and the like.

RECYCLING VBAR CONTROL AND THE RECHARGEABLE BATTERY

Recycling the built-in rechargeable battery
Spent Lithium Polymer batteries are not domestic waste. Discharge the battery, insulate the terminals with tape or similar, and bring it to a store/dealer that disposes of small rechargeable batteries, or bring it to a collection point for harmful substances.

VBar Control Transmitter and Receivers
Used electronic devices are not domestic waste. You can reduce the environmental impact of electronics at the end of their useful life through proper recycling. Please refer to your local regulations or contact your local dealer to learn how to dispose of used small electronic devices properly.

DATA SHEETS

GETTING SUPPORT AND SERVICE FOR YOUR VBAR CONTROL

Warranty

Mikado Model Helicopters offer free warranty repair or replacement only if VBar Control is faulty during or after use according to the specification and this manual, and based on the regulations of Mikado Model Helicopters.
Mikado Model Helicopters will charge cost for repairs or replacements necessary e. g. because of improper use, after the warranty period, and without proof of purchase provided.
Warranty will be limited to the VBar Control itself and does not cover other appliances on the model like servos, power units, the model itself and especially non Mikado products.
Mikado Model Helicopters do not take responsibility for any physical damage or physical injury as well as loss of use or data saved on the device or any similar claim.
After the warranty period has expired, or in case the damage was not a warranty issue, Mikado Model Helicopters will repair VBar Control with costs, the customer will be informed beforehand.
Repairs will only be made if VBar Control can be used safely again in the future.
Please mind that costs of some repairs might exceed the value of the device and might not be economically sensible.

Attention Warranty periods may differ depending on the laws applicable in the country you live in. Please ask your local dealer/distributor for further details.

Attention Make sure you save the files on your VBar Control to your computer in case of a warranty or general repair. The device could be reset and re-installed at the service shop, causing loss of all data saved on the internal memory.

After Sales service

Mikado Model Helicopters provides extensive after sales service on the forums at the support web site www.vstabi.info as well as via e-mail through service@mikado-heli.de (Germany, Europe) and support@mikadousa.com (The Americas).
Spare parts and accessories are available at www.mikado-heli.de (Germany, Europe) and www.mikadousa.com (The Americas).

COMPLIANCE INFORMATION FOR THE U.S., EUROPE AND OTHER COUNTRIES

FCC Statement

☞ **Attention** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

☞ **Attention** To assure continued FCC compliance: Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate this equipment.