VBAR CONTROL

DEVICE MANUAL

80 Channel 2,4 GHz FHSS

VBAR CONTROL

Press/Rotate

1	Off	96%	

Timer 00:00 / 17:40

Gov. 0 — RX Voltage 4.8V

LOGO 500

XXtra Bright Graphic Display

Mikado
Model Helicopters

Easy Dialog System

Select

Mikado
Model Helicopters

VBAR CONTROL
DEVICE MANUAL

v1.01 05-2014

TABLE OF CONTENTS

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

Thank you for choosing this highly specialized yet versatile product. To safely operate and fly your radio controlled models using the VBar Control, you must read and follow this device manual carefully. For software and model set-up, see the quick start guides and manuals provided with this radio, as well as documentation provided with the necessary components, such as motor, electronic speed controller, servos, the helicopter kit itself. For latest information, new features and updates, visit our product web site www.vstabi.info.

VBar Control and the VBar Control accessories are 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 strongly recommends that you visit 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** We provide general information and video tutorials on our support web site www.vstabi.info/VBar_Control.

☝ **Attention** For service and support regarding programming and operation of your VBar Control and other Mikado products, please 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

Mikado Model Helicopters GmbH
Friedrich-Klausing-Str. 2
14469 Potsdam
Germany
phone +49 331 23749-0
info@mikado-heli.de
www.mikado-heli.de

What is VBar Control?

VBar Control is an advanced multi-function FHSS radio control system for model helicopters. With it's unique concept of programming and operation, it is 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 (and in the future also 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 relevant authorities may be required. If in doubt, contact your dealer to ensure that all regulations applicable have been met. VBar Control must not be used to control other than unmanned radio-controlled 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 render the warranty void.

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 death, or massive 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 stop using VBar Control.

In public places, such as airports, hospitals, or racetracks for example, special limitations may apply.

Transmission is impeded or blocked when any objects are in the line of sight to the model. This degrades control response or even causes the model to go out of control. Always operate a radio-controlled model so you can safely control it within line of sight.

Handling the VBar Control

Check that all parts and manuals are provided in this box (see package contents on page 9). 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 (available at www.vstabi.info) to connect VBar Control to the internet and upgrade 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 or if there is any precipitation. Electronics may malfunction if they get damp or wet.

⚠ **Warning** Never disassemble or modify VBar Control beyond what is described in this manual. Heat, 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.) may 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 that all fail safe precautions regarding an electric speed controller are met. Connect a flight pack only when sticks and switches are set to lowest/motor off position. When turning off power, always turn off the receiver/model first, also disconnect the flight pack. Note: as a safety precaution, VBar control can only be turned off after the connected VBar Flybarless 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** When using components from other manufacturers, you must make sure that all components in the system are compatible with each other. Especially the power supply of the radio control system as a whole must be suitable to meet the needs of all appliances connected. Malfunctioning components or components 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 components are sensitive to shock. Avoid hard impacts. Do not drop them. This may cause malfunction.

⚠ **Warning** If you detect that control degrades, stop operation of your model, 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 areas. The model may get out of control, or malfunction may occur, causing injury or physical damage.

⚠ **Warning** Every electronic component that has gone damp or wet may malfunction at any time, even if it seems to work again normally after being fully dried. Do not continue to use such components 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 any liquids spilled on the electronics, like water or fuel?
» Make sure all linkages are secure and no slop or binding occurs in operation.
» Make sure that the overall vibration level on the model is low, and that all control functions work reliably when the power unit and drive train are 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 for takeoff, and test the control functions and operation close by but at a safe enough distance for several minutes. Do not fly at great distances.
» Familiarize yourself with safety precautions, such as how to switch off the motor in case of any unwanted/uncontrolled operation. This is to take the energy and vibration out of the system. Be prepared to attempt an emergency landing/autorotation.

☝ **Attention** VBar Control will warn if the battery level falls below 3.5 V. VBar Control will switch off automatically when the battery level falls 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 not 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 use a soldering iron on the electronics.

☠ **Danger** Never use batteries other than those sold by Mikado Model Helicopters. The batteries have been carefully selected and adapted for use in VBar Control. Always monitor the charging process, even though the integrated charging circuit takes care of the proper charging parameters. Stop the charging process immediately if the device gets hot.

» Never allow the battery to have any contact with liquids.

» Never damage the insulation, connecting wires, connectors.

» Stop using a battery that has taken damage to the insulation, connecting wires, connectors.

» Battery liquids are dangerous. If your eyes, skin or clothes come 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 and charging time. When operating times or charging times start to differ strongly, the end of a battery's 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 in high temperature, or in very dusty or very humid conditions.

» Store the VBar Control and the battery outside of the reach of infants and children.

» 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. To dispose of a Lithium Polymer battery, discharge the battery, insulate the terminals with tape. Then take it to a store/dealer who can dispose of small rechargeable batteries, or take it to a collection point for harmful substances.

» Never keep the VBar Control in direct sunlight for an extended time. Keep it in the shadow when it is not used.

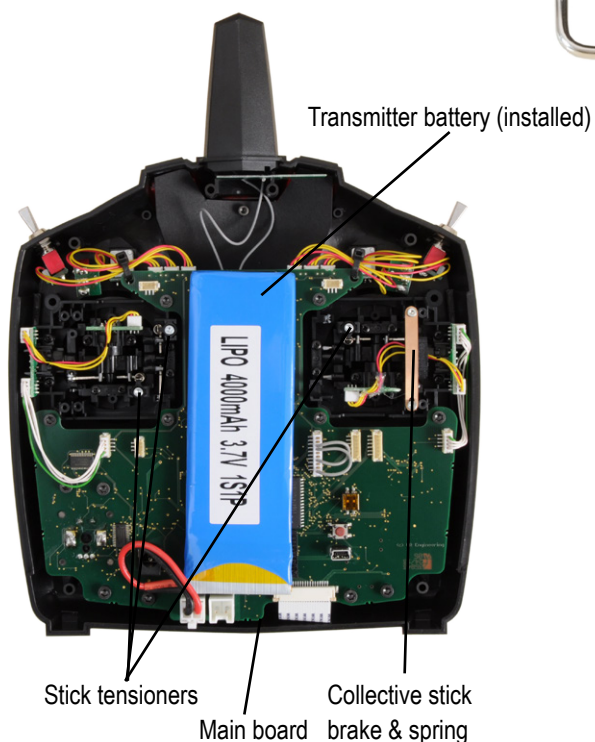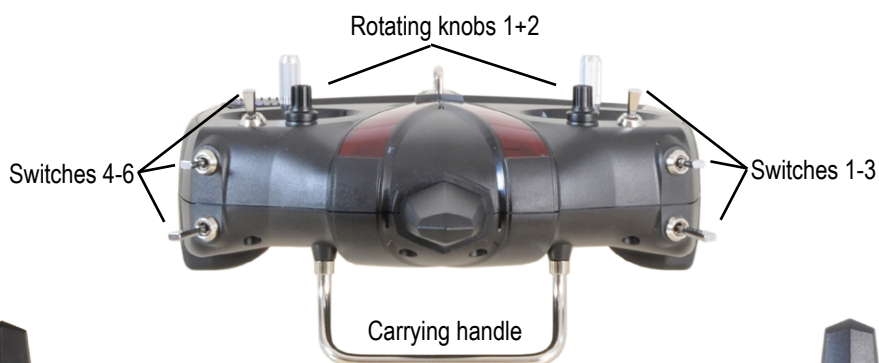## PACKAGE CONTENTS

■ VBar Control Transmitter
■ Neck strap
■ Wall charger with connector for your area
■ USB lead
■ VBar Flybarless controller (optional)
■ VBar Control Satellite Receiver (optional)
■ 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

Antenna

Gimbals

Adjustable sticks

Speaker

Rubber grip lining

3-point neck-strap attachment

Easy Dialog System Dial (EDS) with LED ring

XXtra Bright Graphic Display

Ambient light sensor

Rotating knobs 1+2

Switches 4-6

Switches 1-3

Carrying handle

Transmitter battery (installed)

Stick tensioners

Main board

Collective stick brake & spring

Charging connector and Reset button with protective rubber cover

USB connector with protective rubber cover

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), and at the same time rotate 90° clockwise.
- Turn off your VBar Control by pressing down the EDS Dial, and at the same time rotate 90° anti-clockwise. Choose OK from the Shutdown menu by rotating the EDS, 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 powering 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 still-closed setup menu, which is labelled **select**.
- The EDS Dial is both navigator (turn right or left) and selector (press down).

⚠ **Important** Before you begin to set up a VBar equipped model, you must adjust at least basic settings such as **Stick Mode** and **Mandatory Switches** assignments. You must also remove the stepped brake plate from the collective stick gimbal and possibly change the collective stick to match your preferred stick mode (see page 14).

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 without input.
- Without a VBar Control Receiver connected, you can access only 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 device you want to bind. See page 16.

Application enable helps to enable or disable the Apps you wish to use. Check or uncheck the boxes as is applicable. 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 decide to disable or uninstall the App in order to empty menus or free 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).
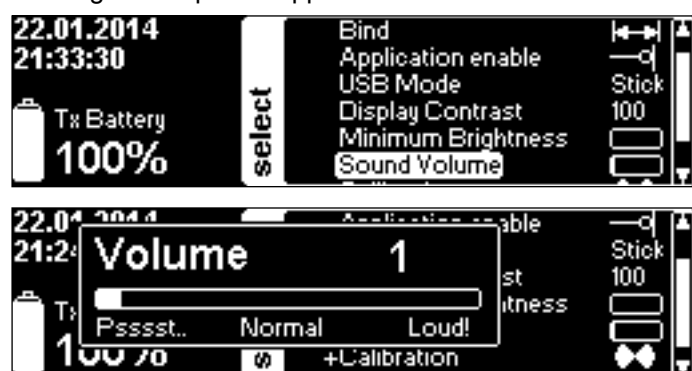

**Display Contrast** sets the black/white contrast of the display.

Minimum Brightness sets the low threshold for the ambient light sensor. The display will not go darker than the value set here. To save on battery life, use the lowest convenient value.
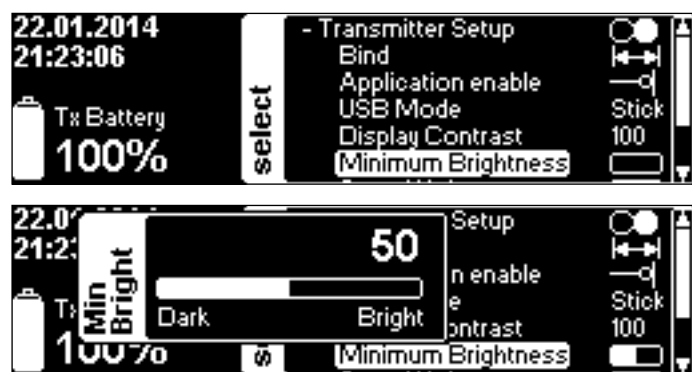
Sound volume is for the EDS Dial feedback as well as for warnings and Speech Apps.

Assign and Calibrate lets you select the stick mode (mind that you have to change the hardware if you switch between throttle-left and throttle-right modes, see page 14). In case you want to have the collective stick reversed, choose modes 5-8 instead.
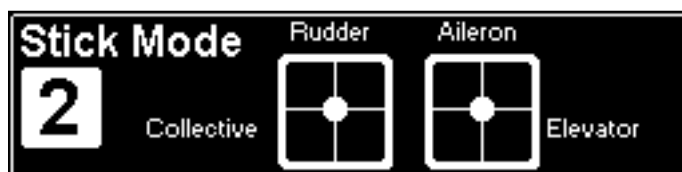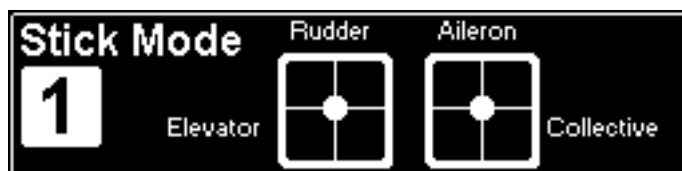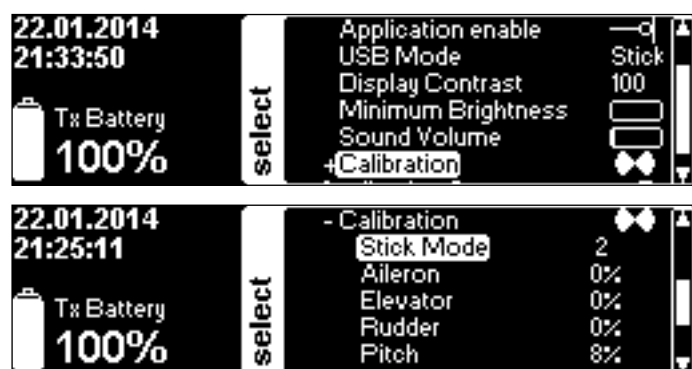
You can calibrate the gimbals by selecting one control function at a time and thereby 'show' the VBar Control the limits and the center position by just moving the stick. It will learn and store the values automatically.
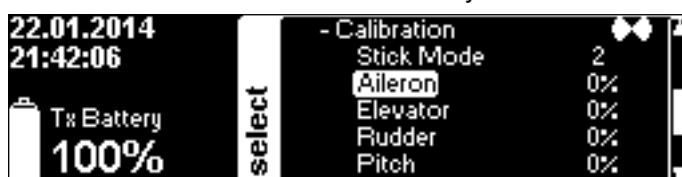
Collective Center Fine allows to set the zero collective position, even though the gimbal has no spring to center itself. Move the stick to the precise mechanical center position according to the zero pitch line on the gimbal's scale, press **Set Zero**!.
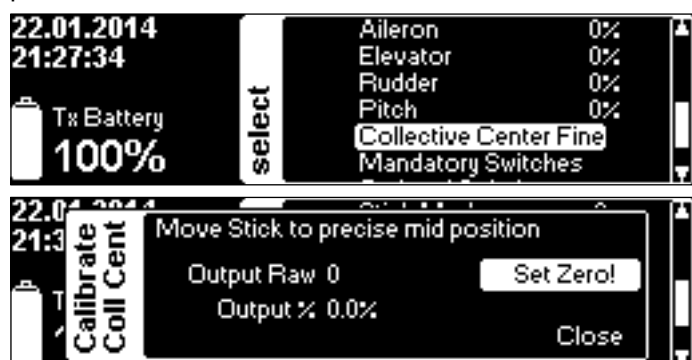
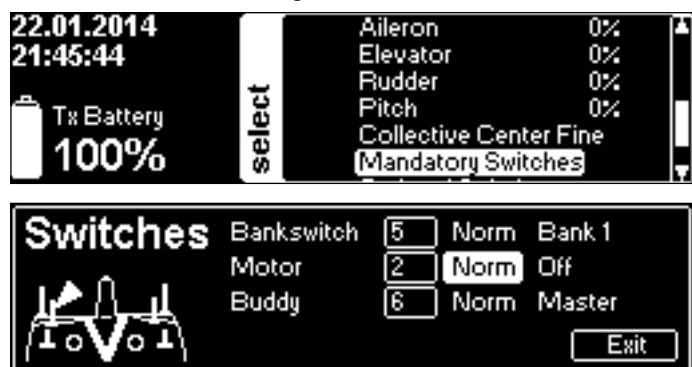**Mandatory switches** assigns three switches needed for basic flight operations and the directions according to your liking. Defaults are Motor—upper left, Bank switch (flight modes)—upper right, Buddy Box—lower right. The graphics show the actual assignments.

Optional switches lets you assign **Option 1-3** functions to switches according to your liking. Later you will assign **Option 1-3** functions within additional apps. For this, you may require additional hardware and/or software.
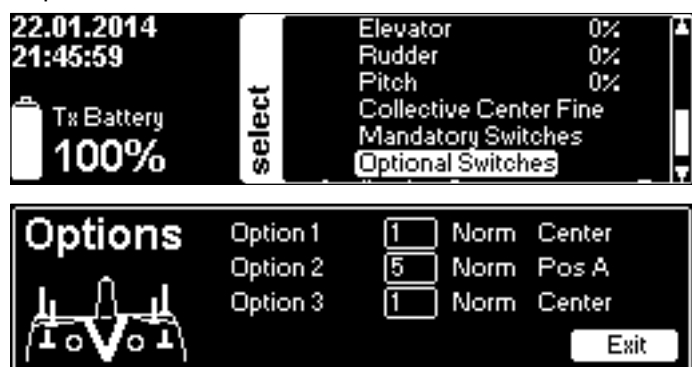
Transmitter name allows you to name your radio. To enter the name, select the position and then the character, using the EDS dial. Select **Exit** when done, select **Reset** to clear the name and start over.
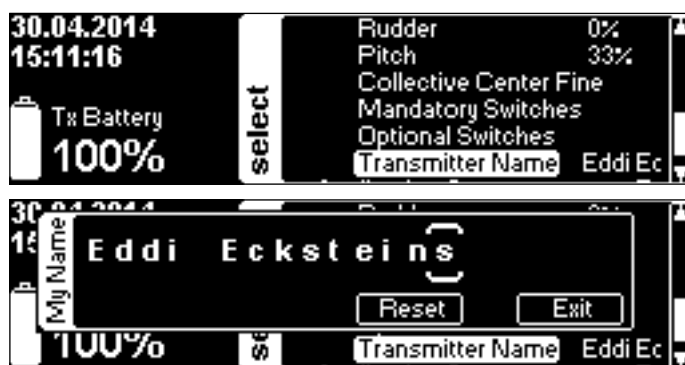
Application Setup

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, PH0 x 50 Philips screwdriver, pliers.
- Turn off your VBar Control transmitter
- Remove the neck strap.
- Put the VBar Control transmitter face down on a soft surface.

① Remove the six screws M3x20 mm to take off the bottom case. Then flip the case over so the screws fall out of the bottom case.

- Flip the still-closed transmitter 90° to the left, and carefully start opening VBar Control like a book.
- Carefully disconnect the both switch wires and the vibration alarm motor, and open the VBar Control fully, like a book.
- Do not touch the main board!

② Locate and unscrew the metal brakes from the existing throttle stick.

- If the stick mode is already OK for you, just remove the stepped brake.

③ Unplug the wire going through the plastic brake.

④ Unscrew the plastic brake on one end and unhinge it on the other end.

⑤ Reconnect the wire, make sure to fix it in the plastic clip.

⑥ Unscrew spring tensioner of the existing 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.

⑦ Remove the metal bracket by gently pulling it out, away from where the spring was attached.

⑧ Disconnect the wire which now has to go through the plastic brake.

⑨ Carefully thread it through the opening in the plastic brake and fix the wire in the plastic clip.

- Re-connect the wire.

⑩ 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.

⑪ Place the metal bracket 180° from it's original position on the other side, under the future elevator stick.

- Take care that everything is rotated 180° compared to where you dismounted the parts.

⑫ Put the plastic holder in the slot, and hinge the spring to the bracket and the plastic holder. You may use the cable tie from the USB lead, and form a hook to handle the spring. **The wire to the elevator gimbal must lie flat on the connector board there, such as not to bind against the bottom case when the elevator stick is moved to it's end position.**

- Adjust the springs on all sticks to your liking.
- Carefully close the VBar Control again, and re-connect the switch wires and the vibration alarm motor.
- Carefully replace the bottom case, **so as not to squeeze or damage any wires.**
- Fasten the six screws but 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 of your choice. Fix the stick by twisting both halves against each other.
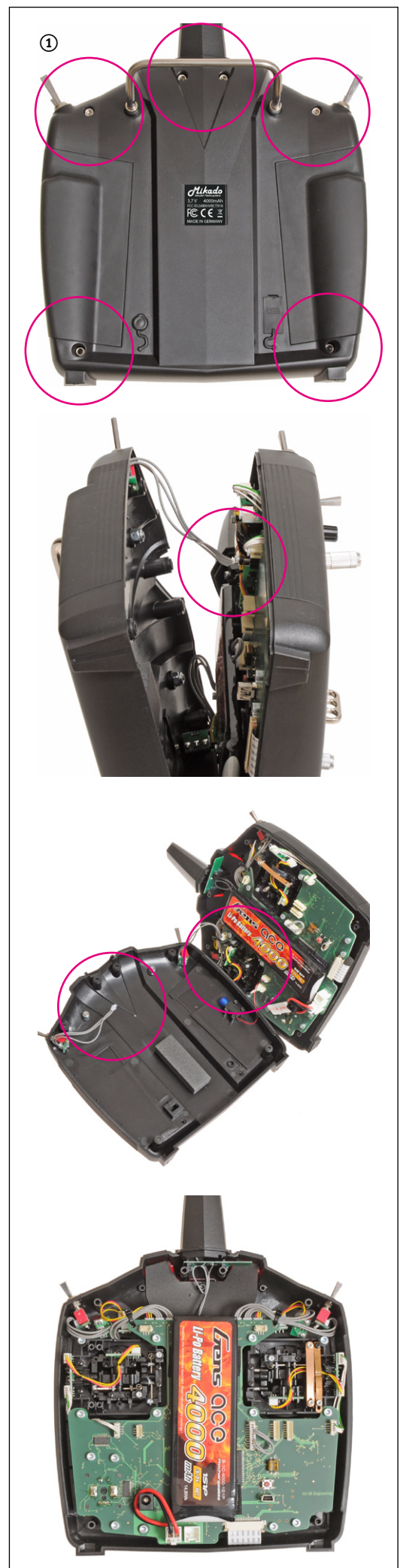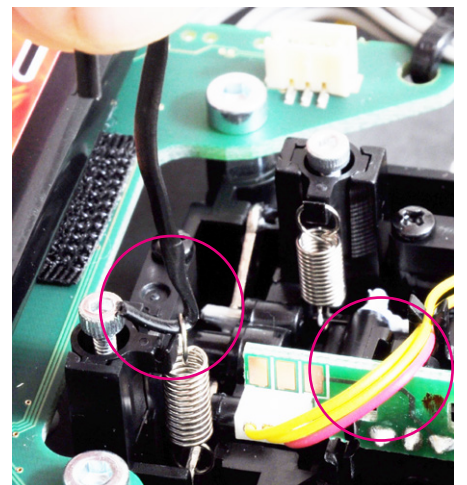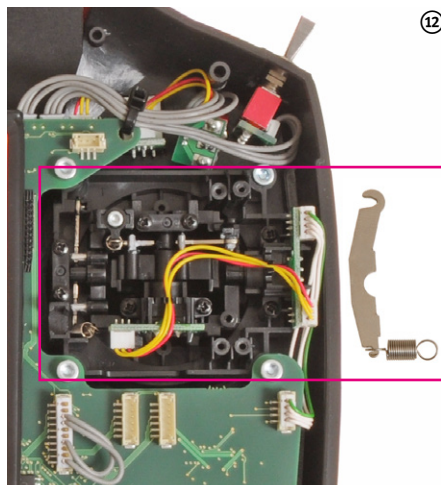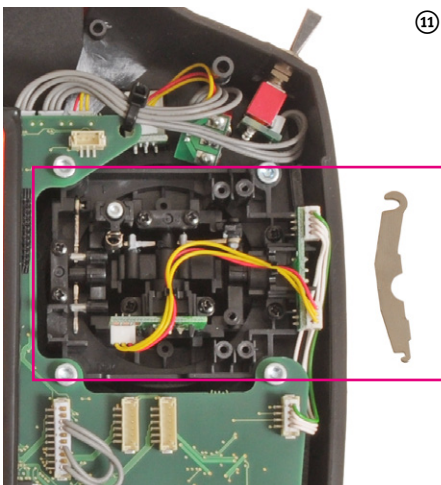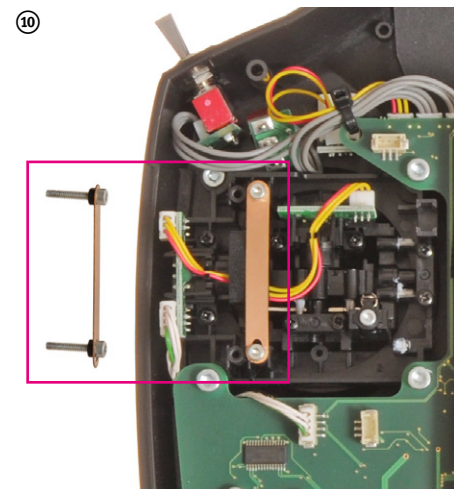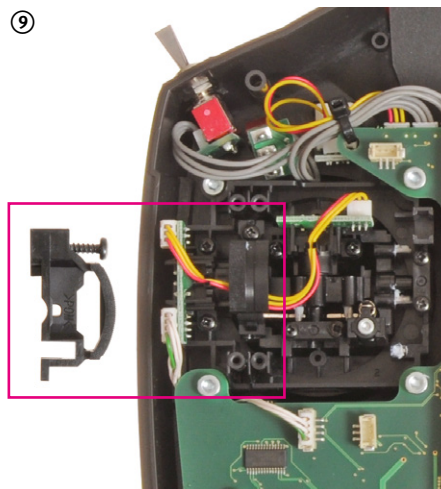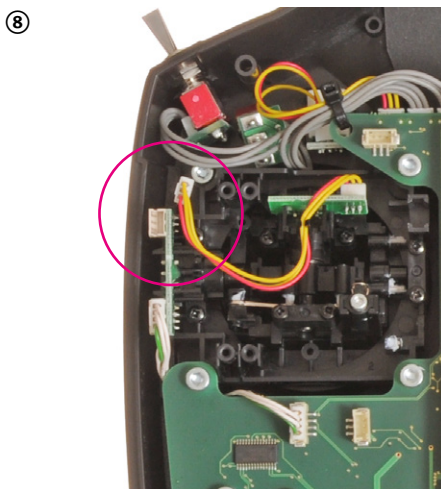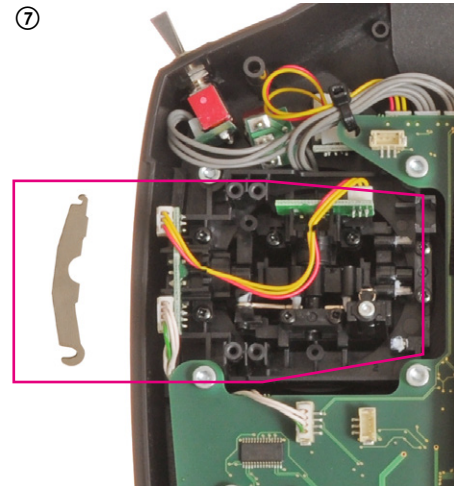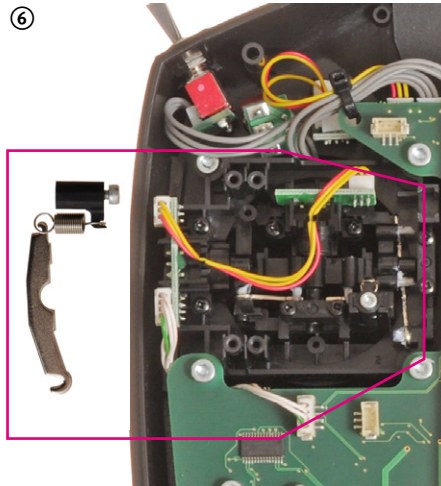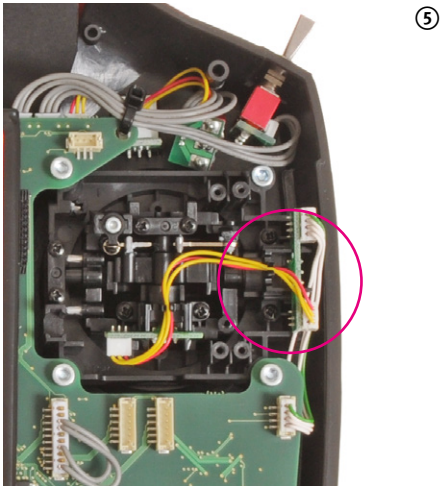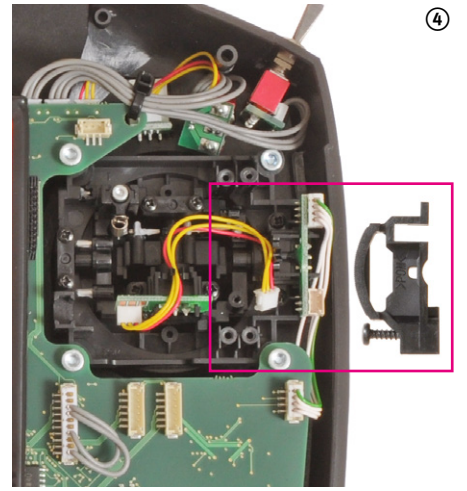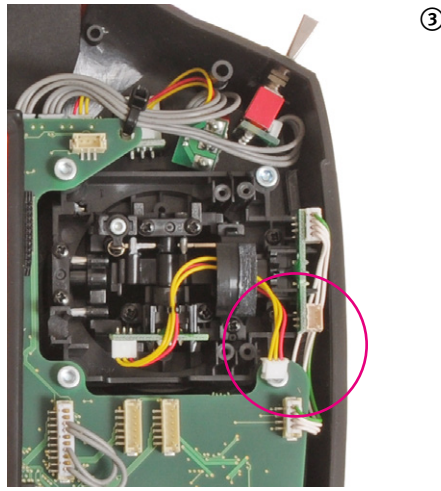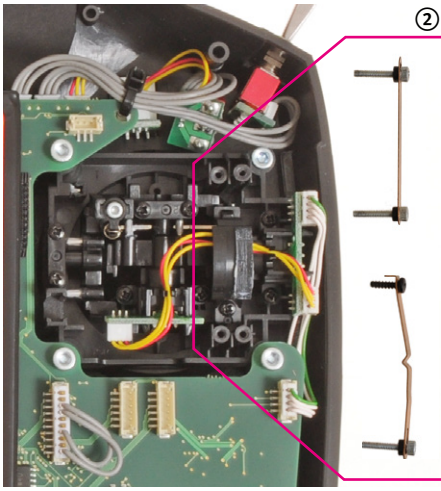
How to use VBar Control as a USB Game Controller
- Select USB mode **Simulator** from the Transmitter Setup.
- Connect the USB lead to your computer.
- There is no driver needed on Windows PCs nor on Macs. The operating system will detect VBar Control automatically as a game controller.
- In your preferred 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 behavior of your real-life models, too.

Binding a VBar Control Satellite 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 Satellite Receiver connected.
  - » Wait a few seconds for the VBar Control to scan for available devices.
  - » Select the VBar Control Satellite Receiver from the list.
  - » VBar Control will confirm with the message 'Connected'.
- Option 2
  - » Turn on the VBar with the VBar Control Satellite Receiver connected.
  - » Wait for 10 seconds for the receiver to go into bind mode.
  - » Only now 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 Satellite Receiver from the list.
  - » VBar Control will confirm with the message 'Connected'.

☞ **Attention** If the re-binding procedure is no completed, a previously bound VBar Control Satellite 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 VBar Control 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 without a PC, 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 hours.

- When left on the wall charger, trickle charge will keep the battery fully charged.
- Charging time from the USB cable will be approx. 10 hours (with the transmitter turned ON) or 40 hours (with the transmitter turned OFF). This is due to technical regulations of the USB power supply.
- You may connect both the USB cable and the wall charger at the same time. 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 always uses the least power needed for the display.

- Range check, check of antennae

Once a VBar Control Satellite Receiver is connected, you can check the antenna status at **Model Status/Antenna Status**. You will see bars indicating the overall link power as well as the signal strength of the four antennae (Tx=radio, Rx=receiver).
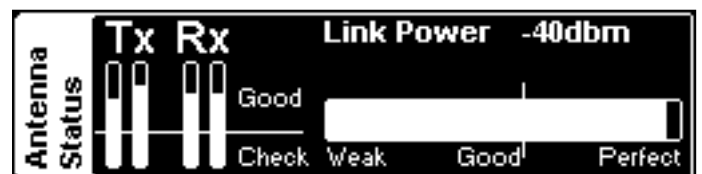
⚠ **If** one of the four vertical bars falls below the indicated threshold, stop using VBar Control and find and remedy the cause.

For a range check, walk around your model in a 30 ft/10 m radius. Point the antenna of VBar Control at the model as if you were flying it. Link power may not read below the vertical threshold line.

⚠ **If** link power falls below the vertical threshold line, re-arrange the antennae and repeat the test.

☒ **Do** not place the model onto a metal surface for this test.

VBAR CONTROL SATELLITE RECEIVER

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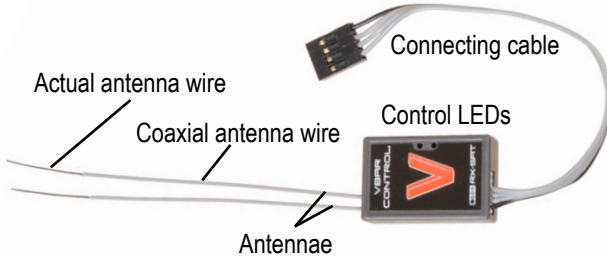- Connector
- Connecting cable (for Mikado VBar or Mini VBar only)
- Control LEDs

Control LEDs
- The green LED signals that the receiver is bound to and synchronized 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 on the receiver, take waterproofing measures if necessary.
- 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 and that they are not bent or kinked.

Placement of Antennae in the Model
- Place the antennae in a way so the actual antennae do not touch frames or chassis elements. The free space around the tip should have the size of a table tennis ball.
- If 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, their mutual 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 only in a gentle arc, not 90° sharp, so 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.

☞ **If** you are mounting the VBar Control Satellite inside a fuselage, always perform a comprehensive range check.

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 (= login name to at www.mikado-heli.de) 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 connect to the internet and register with our support web site www.vstabi.info.

» If you have not done so already, 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 latest firmware and features available.

■ 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 connect to the internet and register with our support web site www.vstabi.info.

» If you have not done so already, 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 latest firmware and features available.

☒ **Never** disconnect the VBar Control transmitter while USB or 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 an extended time: the update process can take several minutes if many files have to be transferred and updated.

Registration, Update, Getting Additional Software Features (VBar Control Apps)

■ Mikado Model Helicopters strongly recommends that you register your VBar Control transmitter using your MikadoID.

■ Registration helps us keeping you informed about latest developments, changes, necessary updates, safety bulletins and the like.

■ 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.
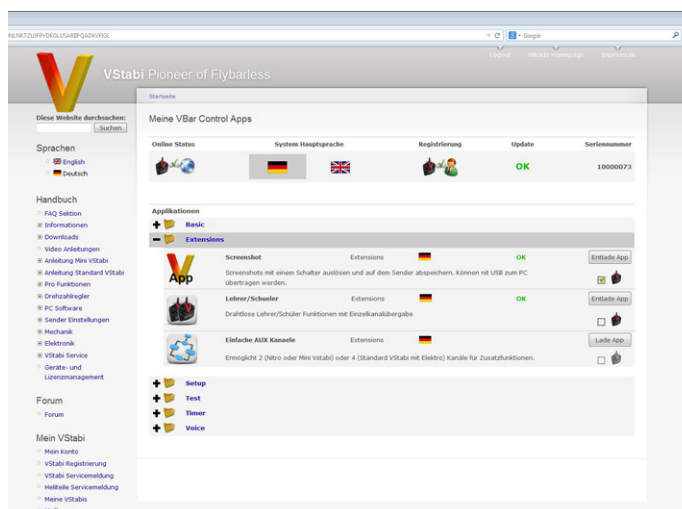
■ VBar Control Manager lets you connect your VBar Control to the internet to receive automatic updates. Just click on 'Applications' to access the App Store for VBar Control. There you find a selection of Apps for all kinds of tasks.

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 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.

TECHNICAL DATA

VBar Control Transmitter

Working temperature range	0 °C to +40 °C 32 °F to 104 °F	
Current consumption	Standby	190 µA
	Normal	280 mA
	Maximum	1,200 mA
Weight	880 g	

VBar Control Satellite Receiver

Working temperature range	-5 °C to +45 °C 23 °F to 113 °F	
Current consumption	Receive	max. 70 mA
	Transmit	max. 80 mA
Supply voltage	3.5 to 8.4 V (2S LiPo)	
Weight	8 g	

VBar Silverline

Working temperature range	-5 °C to +60 °C 23 °F to 140 °F
Current consumption	ca. 120 mA
Supply voltage	3.5 to 8.4 V (2S LiPo)

Mini VBar Blueline

Working temperature range	0 °C to +50 °C 32 °F to 122 °F
Current consumption	ca. 80 mA
Supply voltage	3.5 to 8.4 V (2S LiPo)

GETTING SUPPORT AND SERVICE FOR YOUR VBAR CONTROL

Warranty

Mikado Model Helicopters offer free warranty repair or replacement during the legal warranty period applicable 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 components 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. We will provide a repair estimate to the customer.

Repairs will only be made if VBar Control can be used safely again in the future.

Please note that costs of some repairs might exceed the value of the device and might not be economically sensible.

Attention Legal 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 before you send it in for warranty or general repair. The device may 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 worldwide 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.

Spare parts and accessories for your VBar Control are available at www.mikado-heli.de.

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 Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.

R&TTE Statement

Attention This equipment complies with the regulations of R&TTE directive 1999/5/EC. It carries the CE sign which demonstrates conformity and is accepted within the EU as well as additional countries such as Sweden, Norway, Estland and Switzerland for example. VBar Control may be sold and used in these countries. Please note that it is solely in the user's responsibility to put radio equipment into service.

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification

Issued Under the Authority of the
Federal Communications Commission
By:

Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719

Date of Grant: 04/17/2014

Application Dated: 04/17/2014

Mikado Model Helicopters GmbH
Friedrich-Klausing-Str. 2
Potsdam, 14469
Germany

Attention: Ralf Buxnowitz

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: 2ABXHVBCRX10
Name of Grantee: Mikado Model Helicopters GmbH
Equipment Class: Part 15 Spread Spectrum Transmitter
Notes: VBar Control 2.4GHz FHSS Satellite Receiver

FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
15C	2401.0 - 2481.0	0.099		
15C	2401.0 - 2481.0	0.096		

Grant Notes

Output power listed is conducted. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

TCB

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Germany

Attention: Ralf Buxnowitz

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: 2ABXHVBCTX10
Name of Grantee: Mikado Model Helicopters GmbH
Equipment Class: Part 15 Spread Spectrum Transmitter
Notes: VBar Control 2.4GHz FHSS Remote Control Transmitter

FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
15C	2401.0 - 2481.0	0.102		
15C	2401.0 - 2481.0	0.098		

Grant Notes

Output power listed is conducted. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.