

SPEKTRUM®

FAT' SHARK
RC VISION SYSTEMS

SPMVS1100 / SPMVR1100 Instruction Manual

SPMVS1100 / SPMVR1100 Bedienungsanleitung

SPMVS1100 / SPMVR1100 Manuel d'utilisation

SPMVS1100 / SPMVR1100 Manuale di Istruzioni

NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, LLC. For up-to-date product literature, visit horizonhobby.com and click on the support tab for this product.

Meaning of Special Language

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.



WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, LLC. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

WARNING AGAINST COUNTERFEIT PRODUCTS

Thank you for purchasing a genuine Spektrum product. Always purchase from a Horizon Hobby, LLC authorized dealer to ensure authentic high-quality Spektrum product. Horizon Hobby, LLC disclaims all support and warranty with regards, but not limited to, compatibility and performance of counterfeit products or products claiming compatibility with DSM or Spektrum.

NOTICE: This product is only intended for use with unmanned, hobby-grade, remote-controlled vehicles and aircraft. Horizon Hobby disclaims all liability outside of the intended purpose and will not provide warranty service related thereto.

WARRANTY REGISTRATION

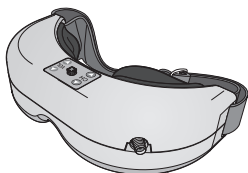
Visit www.spektrumrc.com/registration today to register your product.

Box Contents

* Items not included with SPMVR1100



Headset Carry Case



Teleporter Headset



FPV Downlink Kit
(ultra micro camera and
video transmitter) *



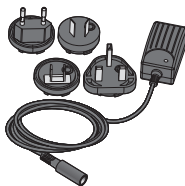
7.4V 760mAh Li-Po
Battery w/Discharge
Adapter



5.8GHz Antenna



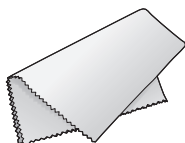
Y-Harness *



Charger

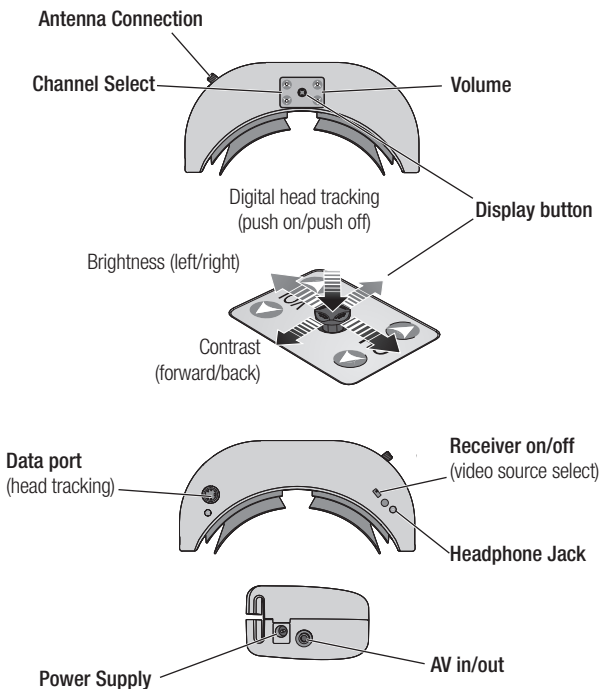


AV Cable*

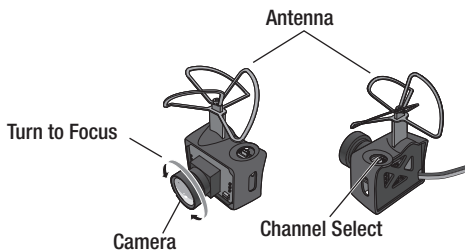


Cleaning Cloth

Teleporter Headset Functions



Camera Functions



Product Specifications:

Camera and Video Transmitter: (SPMVA1100)

Input power: 3.3–4.2V (1S supply)
Power consumption: 300mA @ 3.7V (1S)
Imager: 1/6" VGA CMOS
Camera Lens: 0.95mm IR cut
Field of view: 115°diagonal (90°horizontal)
Operating temp: -10° to 60°C
Square: 13.2 X 17.6 X 9mm
Lens dimensions: 9mm X 10mm diameter
Antenna dimensions: 20mm X 25mm diameter
Video output: Analog NTSC video out
Frequency: 5.8GHz (7 channels available)
Weight: 4.5 g (with case)

Headset (SPMVS1100 Only):

Field of View: 25 deg diagonal
IPD distance: 63.5mm (fixed)
Input power: 7–13V (2S–3S Li-Po)
Battery: 7.4V 760mAh Li-Po battery with safety circuit (included)
Power consumption: 200/350mA (direct/wireless)
Video Receiver: 5.8GHz (7 channels available)
Weight: 163 g



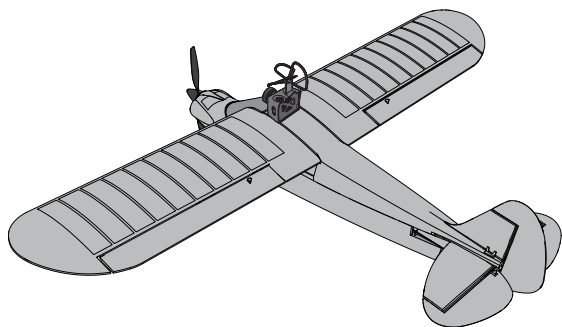
CAUTION: Do not power the headset or downlink kit without the antenna attached. Doing so will damage the transmitter and receiver amplifiers. Amplifier damage is not covered by warranty.

Installation and Use

NOTICE: The downlink kit included with the Spektrum™ Ultra Micro FPV System is designed for use in ultra micro airplanes, Helicopters and multi-rotors. Do not attempt to use the downlink kit with larger aircraft. The FPV system is a low-power, line of sight system.

Mounting the Downlink Kit

1. Select a mounting location on your aircraft that is close to the center of gravity and will provide a point of reference, such as the landing gear or motor mount.
2. Apply double-sided foam tape to the downlink kit.
3. Secure the downlink kit to the fuselage. Keep the FPV downlink as far away from the aircraft receiver as possible.
4. Make sure your video transmitter has a clean line of sight from the aircraft. Position the antenna away from the fuselage.



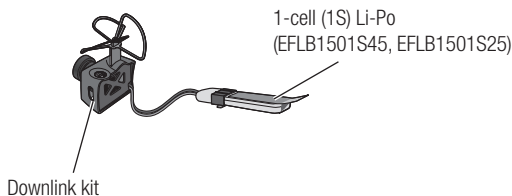
NOTICE: Remove the lens cap before setting up and flight.



Powering the Downlink Kit

Option 1

- Connect a 1-cell (1S) Li-Po (not included) directly to the downlink kit.



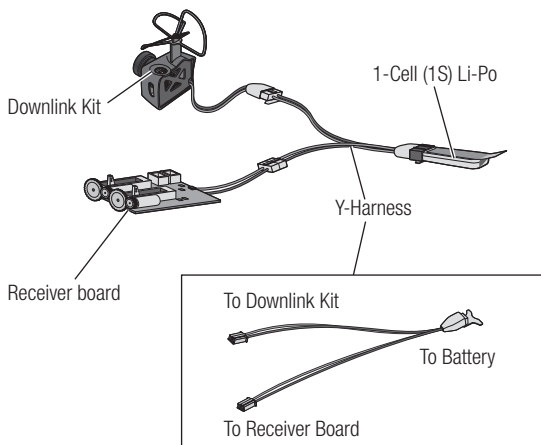
Option 2

- Using the included Y-harness, connect the downlink kit directly to the 1-cell (1S) flight battery of your aircraft.



CAUTION: Always land the model before the battery reaches low voltage cutoff (LVC), otherwise power will be lost to the receiver and camera.

Immediately land the model and disconnect the flight battery to prevent over-discharge. Never use the included Y-harness with sailplane models.



Charger Warnings

The battery charger included with your product has been designed to safely charge the Li-Po battery.



CAUTION: All instructions and warnings must be followed exactly. Mishandling of Li-Po batteries can result in a fire, personal injury and/or property damage.

- By handling, charging or using the included Li-Po battery, you assume all risks associated with lithium batteries.
- If at any time the battery begins to balloon or swell, discontinue use immediately. If charging or discharging, discontinue and disconnect. Continuing to use, charge or discharge a battery that is ballooning or swelling can result in fire.
- Always store the battery at room temperature in a dry area for best results.
- Always transport or temporarily store the battery in a temperature range of 40–120° F (5–49° C). Do not store the battery or model in a car or direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Always charge batteries away from flammable materials.
- Always inspect the battery before charging.
- Always disconnect the battery after charging, and let the charger cool between charges.
- Always constantly monitor the temperature of the battery pack while charging.
- **ONLY USE A CHARGER SPECIFICALLY DESIGNED TO CHARGE LI-PO BATTERIES.** Failure to charge the battery with a compatible charger may cause a fire resulting in personal injury and/or property damage.
- Never discharge Li-Po cells to below 3V under load.
- Never cover warning labels with hook and loop strips.
- Never leave charging batteries unattended.
- Never charge batteries outside recommended levels.
- Never charge damaged batteries.
- Never attempt to dismantle or alter the charger.
- Never allow minors to charge battery packs.
- Never charge batteries in extremely hot or cold places (recommended between 40–120° F (5–49° C)) or place in direct sunlight.

Charging the Headset Battery Pack With Included Charger

1. Connect the charger to the wall outlet. The charger LED will be solid green.
2. Connect the battery to the charger. The charger LED will be solid red.
3. The charger LED is solid green when charging is complete.
4. Disconnect the battery from the charger and unplug the charger from the wall outlet.



CAUTION: If at any time during the charge process the battery pack becomes hot to the touch, unplug the battery immediately and discontinue the charge process.

Charging the Headset Battery Pack With Optional Chargers

1. Connect the Li-Po battery pack balance lead to your battery charger. If your battery charger requires you to connect the battery power for charging, use the included battery charge adapter.
2. Follow your battery charger instructions for charging a 7.4V 760mAh Li-Po battery.

Using the Headset



CAUTION: Do not power the headset or downlink kit without the antenna attached. Doing so will damage the transmitter and receiver amplifiers. Amplifier damage is not covered under warranty.

NOTICE: Do not leave the headset exposed to direct sunlight. Sunlight is magnified by the lens and will burn holes in the LCD color filter (appears as white open areas). LCD damage is not covered under warranty.

Keep goggles in their protective case when not in use.

1. Attach the antenna to the headset.
2. Insert the battery into the slot on the right of the headband. Insert the barrel connector on the fully charged battery into the socket on the side of the headset. The headset powers on when connected and must be unplugged to turn it off.
3. Look through the headset and press the Channel Up/Down buttons. Clean channels will have a consistent static background. Channels with interference will display horizontal static lines. Select one of the clean channels. A long beep sounds on channels 1 and 7.
4. Once you have chosen a clean channel in the headset, select the same channel on the video receiver.
 - Press Left or Right on the Display Button to adjust the video contrast in the headset.
 - Press Forward or Back on the Display Button to adjust the video brightness in the headset.
 - Press Down on the Display Button to change the video zoom in the headset. The normal display shows the entire image. The zoom display crops the image in the headset and is used with digital head tracking.



Spektrum Ultra Micro FPV Transmitter Channels

Channel 1	5470 MHz
Channel 2	5760 MHz
Channel 3	5780 MHz
Channel 4	5800 MHz
Channel 5	5820 MHz
Channel 6	5840 MHz
Channel 7	5860 MHz

5. When the headset battery gets low, the headset will emit a beeping that gets progressively more rapid as the battery voltage drops. Always land and recharge the headset battery when you begin to hear the headset beep.

Digital Head Tracking

- **Long Press:** Depressing the Display Button toggles head tracker mode (active/deactivate). With digital head tracking active, the image will zoom in and the image will digitally pan and tilt in response to head motion.
- **Short Press:** Resets center reference position (both analog/digital).

Analog Head Tracking

Analog head tracking output is always on.

- Connect the data cable to the data port on the headset and the trainer port on your transmitter.
- Analog head tracking will allow a gimbal mounted camera to pan and tilt in response to head motion.

Head Tracking Menu Navigation

Option part required to connect to your Spektrum transmitter (FSV1410).

To enter head tracking menu, hold the Display Button while inserting battery and immediately release the button after barrel insertion.

Tip: Reversing pan/tilt direction will affect digital head tracking as well.

Beep code Mode

- 1 short beep: Pan/Tilt on ch 5/6
- 2 short beep: Pan/Tilt on ch 6/7
- 3 short beep: Pan/Tilt on ch 7/8
- 4 short beep: Reverse pan direction
- 5 short beep: Reverse tilt direction
- 1 long beep: Adjust servo center point*
- 1 short beep: Restore factory defaults
- 2 long beep: no selection made, automatically exits menu

* Press the Display Button to gain manual control of the camera with the headset.

To adjust the camera center position:

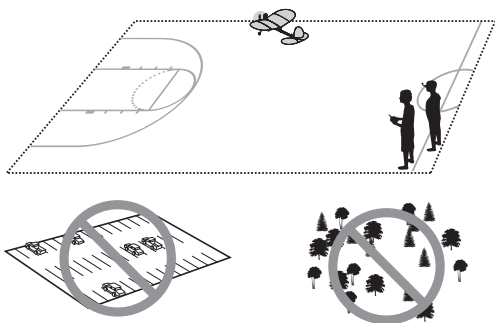
1. Move the headset to the desired camera center position.
2. Press the Display Button to save the new center position.

IMPORTANT: Make sure the servos are near the center point before adjusting the camera center position, otherwise, the servo travel may be limited.

Flying with the Ultra Micro FPV System

Consult local laws and ordinances before operating FPV (first person view) equipment. In some areas, FPV operation may be limited or prohibited. You are responsible for operating this product in a legal and responsible manner.

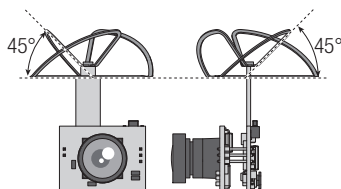
1. Power on your radio transmitter, then power on the aircraft.
2. Remove lens cap from camera.
3. Power on the headset to make sure the channel is clear and then the video transmitter.
4. Perform a range test before flying.
5. Fly in open areas, away from people, trees, cars, and buildings. The range of the system can be impacted by any obstructions blocking your signal. It is normal to see break up in the video going behind trees etc.



NOTICE: Do not use the ultra micro FPV system in low light or other instances where visibility is restricted.

Caring for the Video Transmitter Antenna

If your video transmitter antenna gets bent or flattened as a consequence of a hard landing, bend the antenna so the lobes are at a 45° angle to the bottom plane of the antenna, as shown at the right.



Spektrum Ultra Micro FPV Troubleshooting

Problem	Possible Cause	Solution
No image, display is completely dark	No power supplied to the video transmitter or headset	Check the power connections
		Make sure the battery is fully charged
No image, display is glowing dark gray	Video source switch is set to external receiver mode	Ensure the video source switch is switched to headset mode
Static on all channels	Video transmitter power is off	Make sure the video transmitter LED is on
Horizontal lines in the headset display	Digital interference on the selected channel	Choose a cleaner channel
Blurry Image	Image is out of focus	Rotate the lens slowly to focus the camera

1-YEAR LIMITED WARRANTY

What this Warranty Covers - Horizon Hobby, LLC, (Horizon) warrants to the original purchaser that the product purchased (the "Product") will be free from defects in materials and workmanship for a period of 1 year from the date of purchase.

What is Not Covered - This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, or (vi) Product not compliant with applicable technical regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

Purchaser's Remedy - Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability - HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law - These terms are governed by Illinois law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

WARRANTY SERVICES

Questions, Assistance, and Services - Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please visit our website at www.horizonhobby.com, submit a Product Support Inquiry at <https://horizonhobby.quickbase.com/db/bghj7ey8c?a=GenNewRecord>, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

Inspection or Services - If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. An Online Service Request is available at http://www.horizonhobby.com/content/_service-center_render-service-center. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for service. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

NOTICE: Do not ship LiPo batteries to Horizon. If you have any issue with a LiPo battery, please contact the appropriate Horizon Product Support office. Warranty Requirements - For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date.

Non-Warranty Service - Should your service not be covered by warranty, service will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for service you are agreeing to payment of the service without notification. Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website http://www.horizonhobby.com/content/_service-center_render-service-center.

ATTENTION: Horizon service is limited to Product compliant in the country of use and ownership. If received, a non-compliant Product will not be serviced. Further, the sender will be responsible for arranging return shipment of the un-serviced Product, through a carrier of the sender's choice and at the sender's expense. Horizon will hold non-compliant Product for a period of 60 days from notification, after which it will be discarded.

Warranty and Service Contact Information

Country of Purchase	Horizon Hobby	Contact Information	Address
United States of America	Horizon Service Center (Repairs and Repair Requests)	servicecenter.horizonhobby.com/ RequestForm/	4105 Fieldstone Rd Champaign, Illinois, 61822 USA
	Horizon Product Support (Product Technical Assistance)	www.quickbase.com/db/ bghj7ey8c?a=GenNewRecord 888-959-2305	
	Sales	sales@horizonhobby.com 888-959-2305	
United Kingdom	Service/Parts/Sales: Horizon Hobby Limited	sales@horizonhobby.co.uk +44 (0) 1279 641 097	Units 1–4, Ployters Rd, Staple Tye, Harlow Essex, CM18 7NS United Kingdom
Germany	Horizon Technischer Service	service@horizonhobby.de	Christian-Junge-Straße 1 25337 Elmshorn, Germany
	Sales: Horizon Hobby GmbH	+49 (0) 4121 2655 100	
France	Service/Parts/Sales: Horizon Hobby SAS	infofrance@horizonhobby.com +33 (0) 1 60 18 34 90	11 Rue Georges Charpak 77127 Lieusaint, France
China	Service/Parts/Sales: Horizon Hobby – China	info@horizonhobby.com.cn +86 (021) 5180 9868	Room 506, No. 97 Chang- shou Rd. Shanghai, China 200060

FCC Information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



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

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 5740 to 5860MHz frequency range.

IC Information

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Compliance Information for the European Union

Declaration of Conformity (in accordance with ISO/IEC 17050-1)

No. HH2014100201

Product(s): FPV System - Ultra Micro

Item Number(s): SPMVS1100

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE Directive 1999/5/EC, EMC Directive 2004/108/EC, and LVD Directive 2006/95/EC:

EN 300 440-1 V1.6.1

EN 300 440-2 V1.4.1

EN 301 489-1 V1.9.2: (2011-09)

EN 301 489-3 V1.6.1 (2013-08)

EN55022:2010 + AC:2011

EN55024:2010

EN 62479:2010

EN 60950-1:2006+A11:2009+A1:2010+A12: 2011



Signed for and on behalf of:
Horizon Hobby, LLC
Champaign, IL USA
October 2, 2014

A handwritten signature in black ink, appearing to read 'Mike Dunne', written in a cursive style.

Mike Dunne
Executive Vice President
Product Divisions
Horizon Hobby, LLC

Compliance Information for the European Union

Declaration of Conformity (in accordance with ISO/IEC 17050-1)

No. HH2014092903

Product(s): Teleporter V4 Video Headset
Item Number(s): SPMVR1100

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the EMC Directive 2004/108/EC:

EN55022:2010 + AC:2011

EN55024:2010



Signed for and on behalf of:
Horizon Hobby, LLC
Champaign, IL USA
September 29, 2014

A handwritten signature in black ink, appearing to read 'Mike Dunne', written in a cursive style.

Mike Dunne
Executive Vice President
Product Divisions
Horizon Hobby, LLC



Instructions for disposal of WEEE by users in the European Union

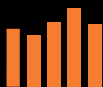
This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

Replacement Parts / Ersatzteile / Pièces de rechange / Pezzi di ricambio

Part #	English	Deutsch	Français	Italiano
SPMVG1100	Goggles	Videobrille	Lunettes	Occhiali
SPMVA1100	FPV Ultra Micro Camera	FPV Ultra Micro Kamera	Module Ultra Micro FPV	Videocamera
FSV1701	1000mAh 2 cell headset battery	1000mAh 2S Headset Akku	Batterie 2S 1000mA pour lunettes	Batteria occhiali 1000mAh 2 celle
FSV1410	SPM/JR 1m HT Data Cable	SPM/JR 1m HT Datenkabel	Câble data SPM/JR longueur 1m	Cavo dati
FSV1802	Universal Prong Battery Charger	FSV Universal Prong Akkuladegerät	Cordon adaptateur de charge universel	Caricabatterie
SPMVX1100	Y harness	Y-Kabel	Cordon Y	Prolunga a Y
FSV1807	Replacement rubber eye cups	FSV Ersatz Augen-Gummi-auflagen	Œillets en caoutchouc de remplacement	Ricambio conchiglie oculari in gomma

Optional Parts / Diverse Teile / Pieces Optionnelles / Pezzi Opzionali

Part #	English	Deutsch	Français	Italiano
FSV1805	Headset Diopter Insert Kit	FSV Dioptereinsätze Headset	Kit de lentilles correctrices	Kit inserto diottrie per gli occhiali FPV
EFLB1501S45	150mAh 1S 3.7V 45C LiPo	E-flite 150mAh 1S 3.7V 45C LiPo Akku	Batterie Li-Po 1S 150mA 45C	150mAh 1S 3.7V 45C LiPo
EFLB1501S25	150mAh 1S 3.7V 25C LiPo	E-flite 150mAh 1S 3.7V 45C LiPo Akku	Batterie Li-Po 1S 150mA 25C	150mAh 1S 3.7V 25C LiPo



SPEKTRUM®

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Patents pending.